No. 676,244. Patented June 11, 1901.

W. S. SHERMAN.

LABEL ATTACHING MACHINE.

(Application filed May 25, 1899. Renewed Nov. 28, 1900.)

(No Model.) 10 Sheets—Sheet 1.

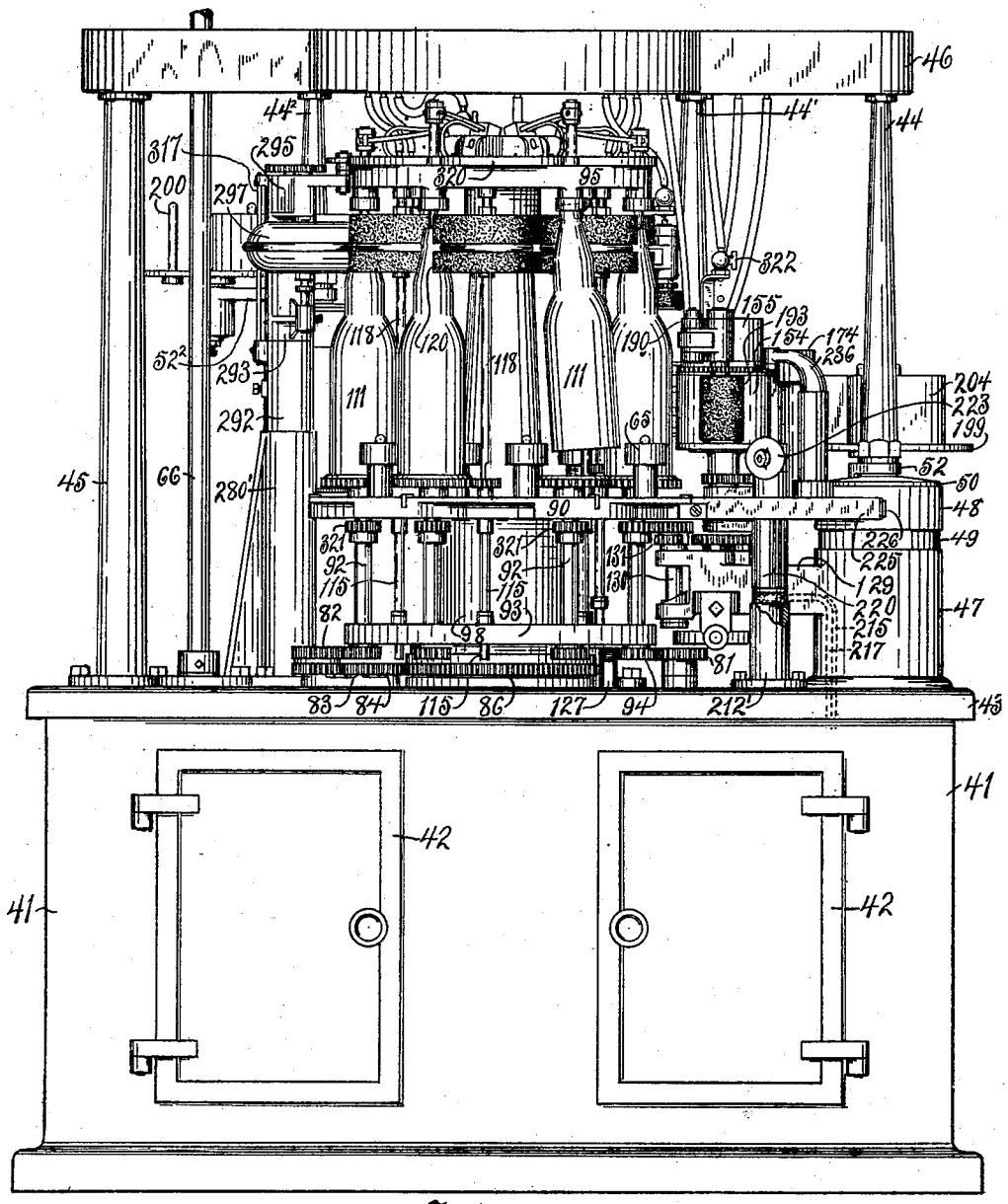

Fig. 1.

Witnesses.
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Fig. 2.

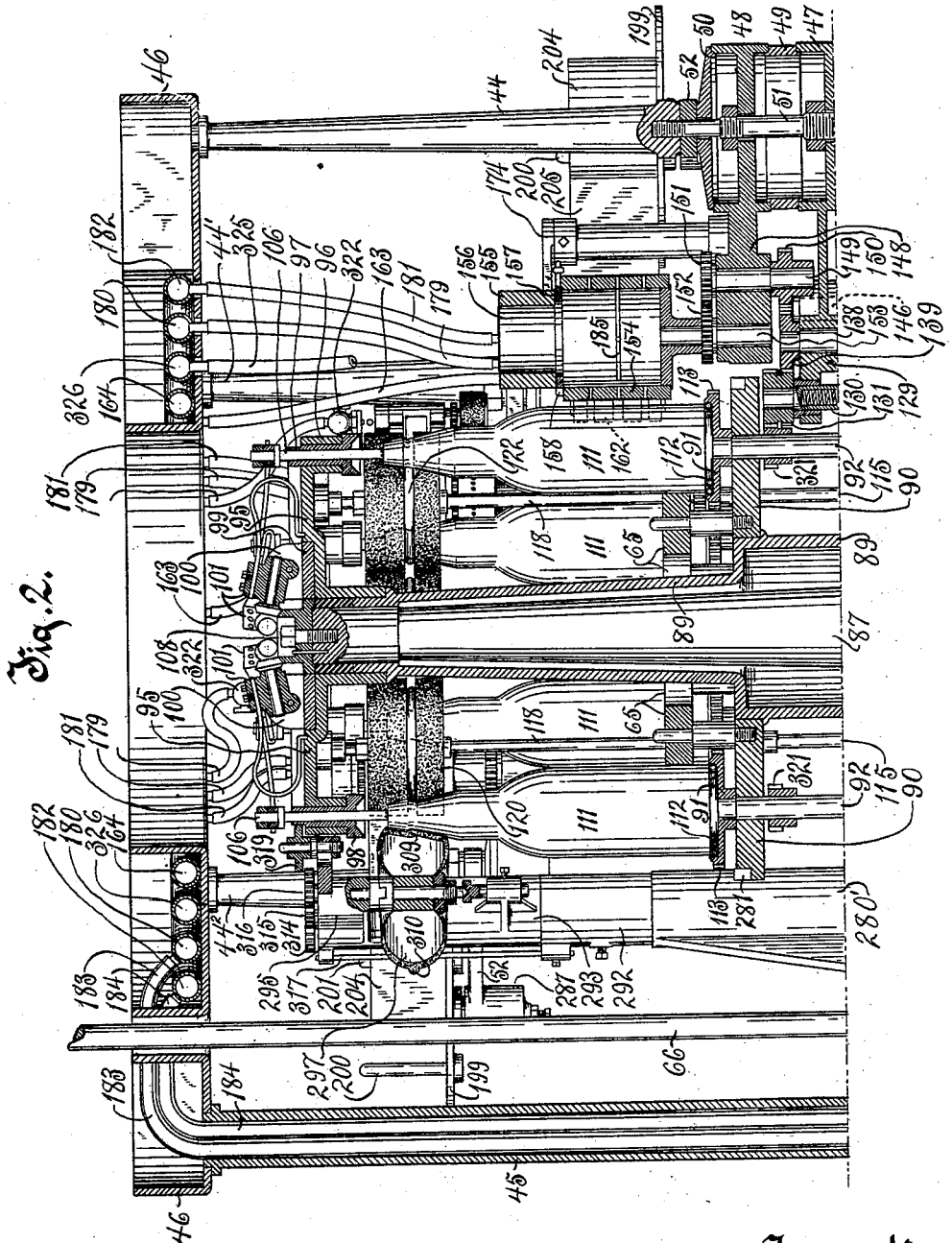

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Fig. 3.

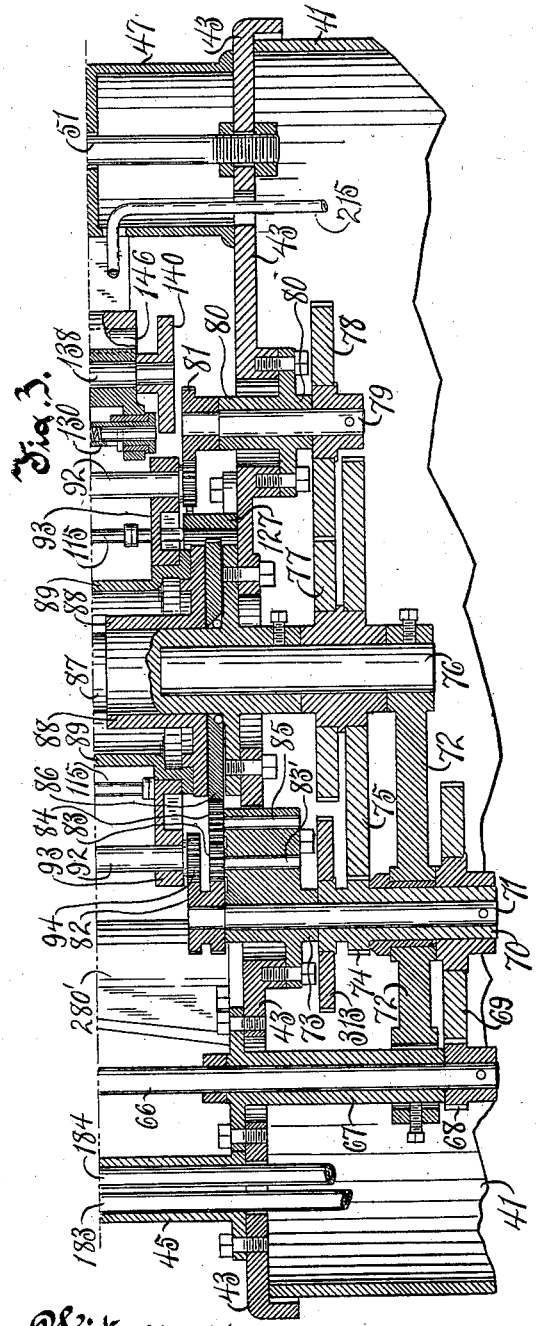


Fig. 5.

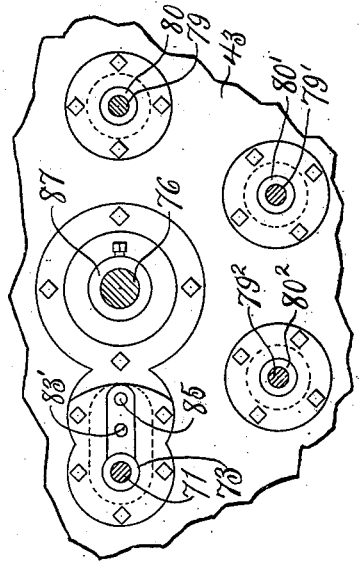
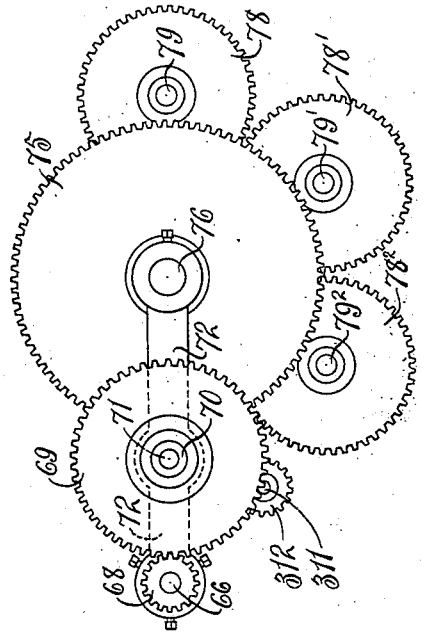


Fig. 4.



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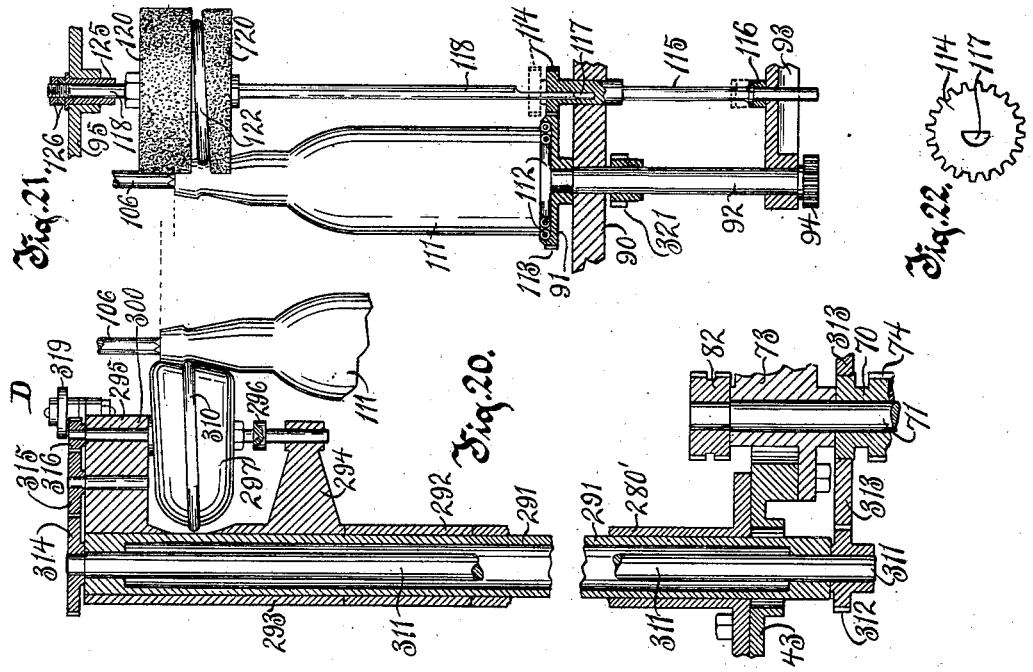

Fig. 21.

Fig. 22.

Fig. 20.

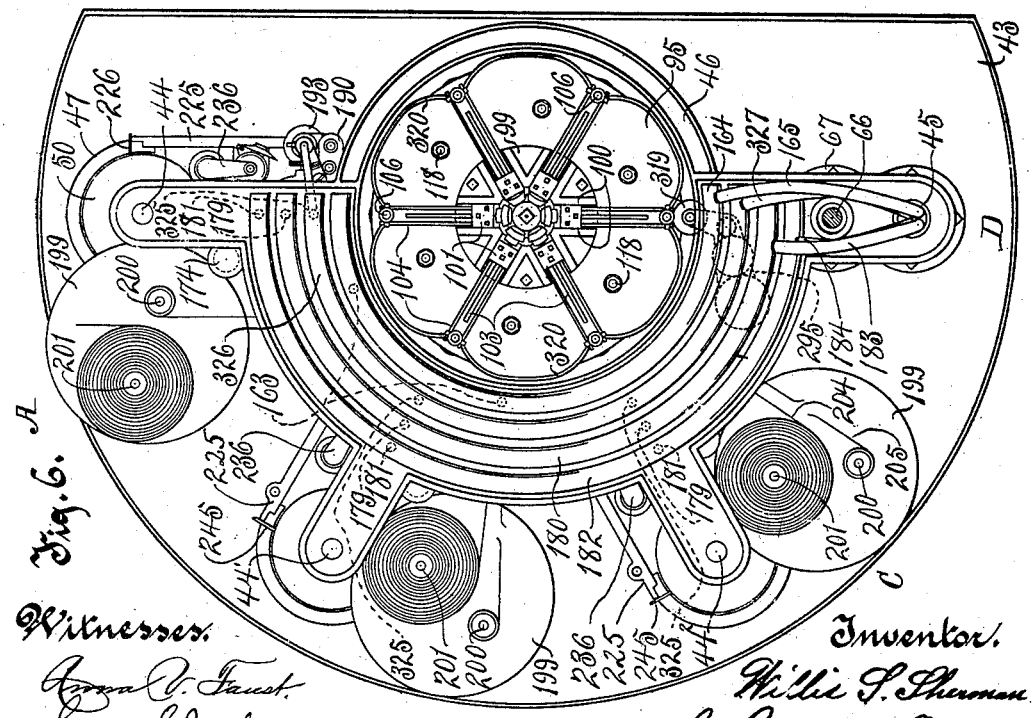

Fig. 6.

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Fig. 7.

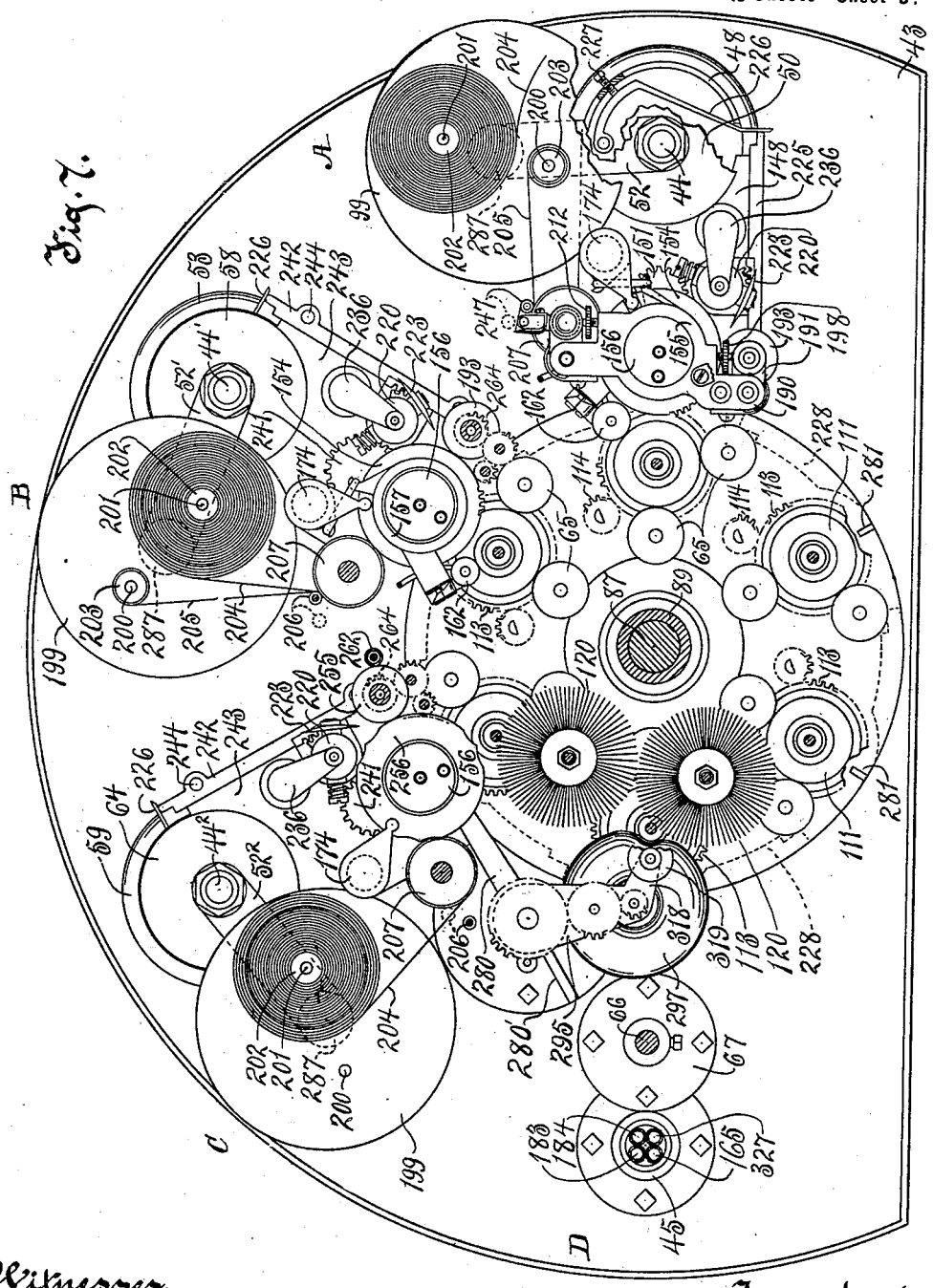

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Fig. 8.

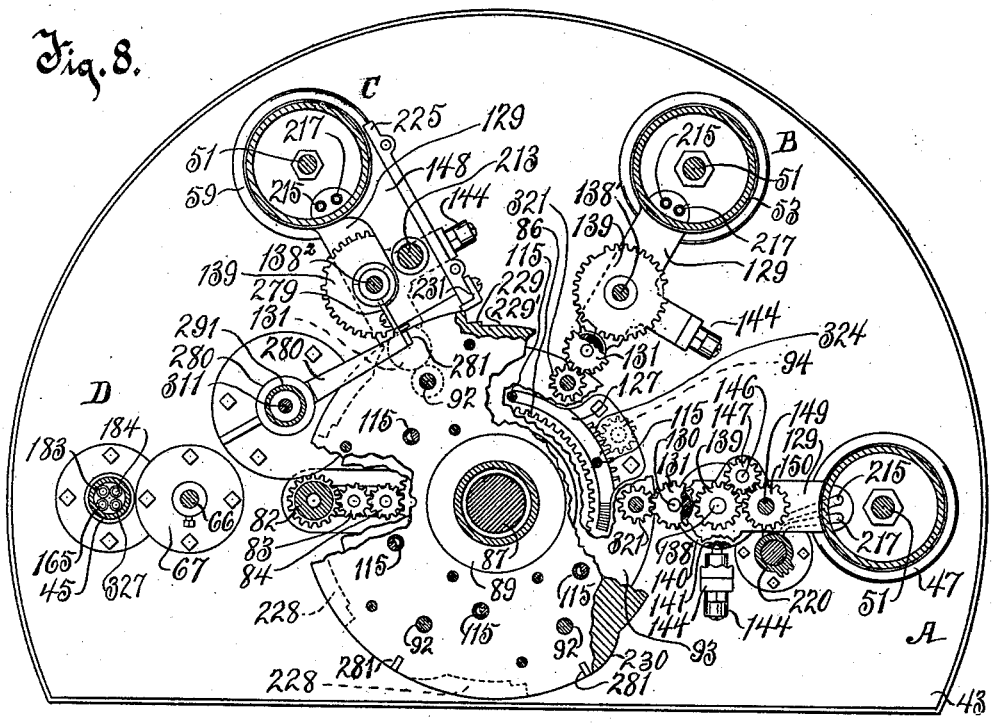

Fig. 9.

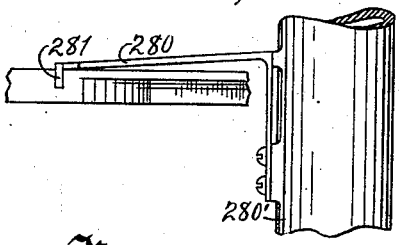

Fig. 11.

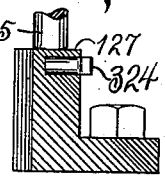

Fig. 12.

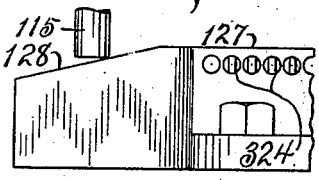

Fig. 10.

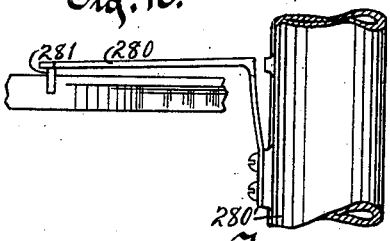

Fig. 13.

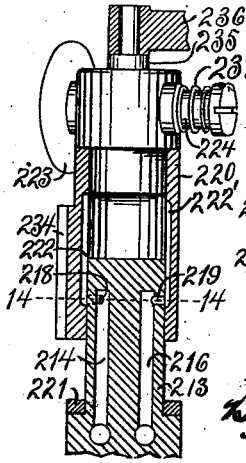

Fig. 14.

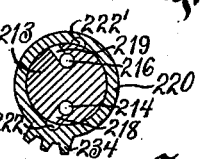

Fig. 15.

Fig. 11.

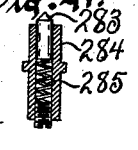

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Fig. 16.

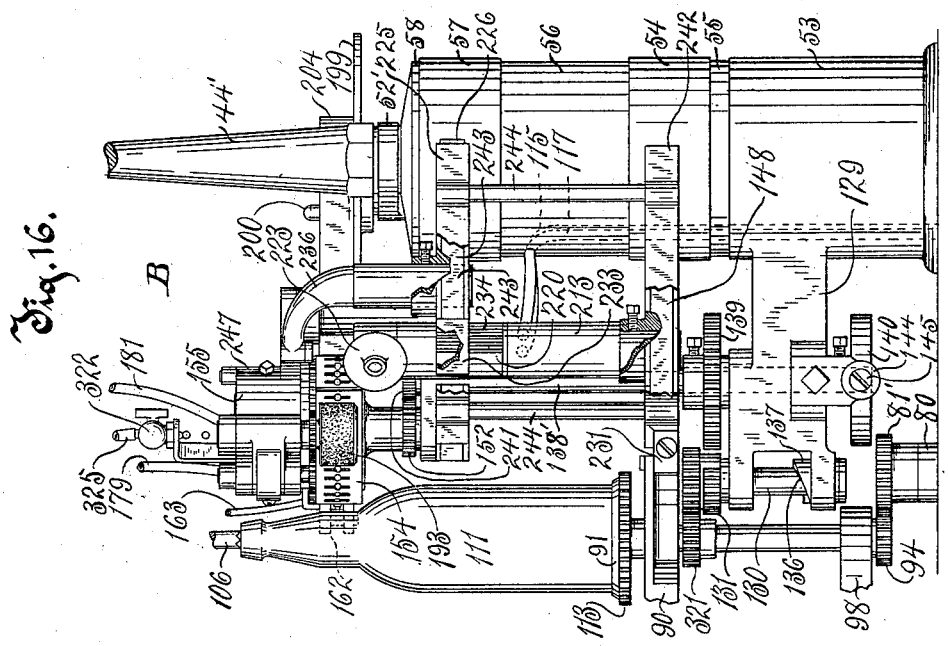

Fig. 17.

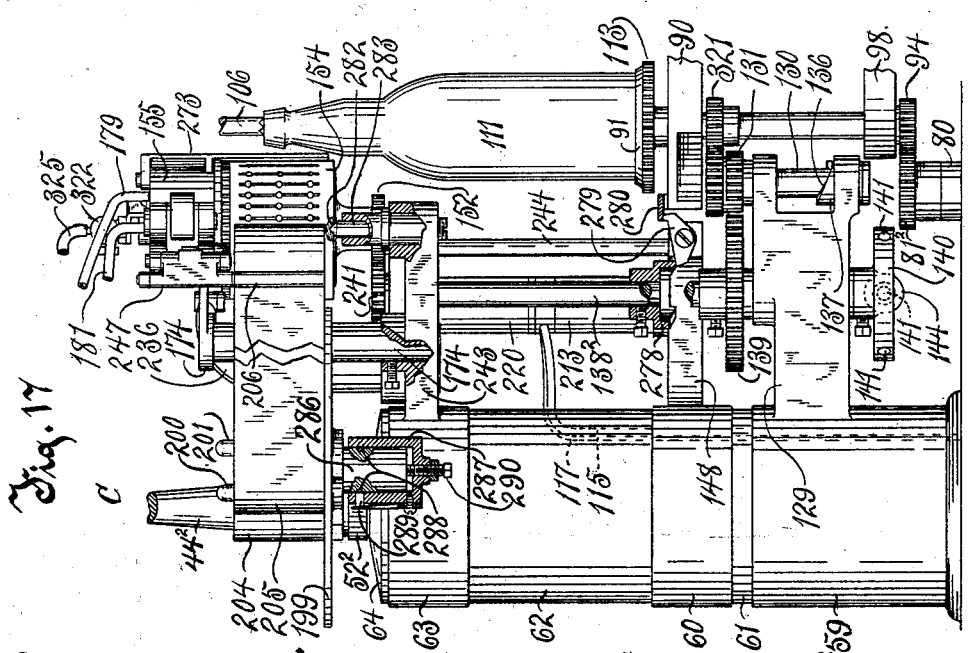

Fig. 18.

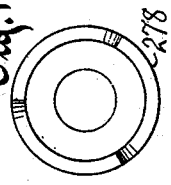

Fig. 19.

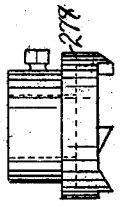

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Fig. 23.

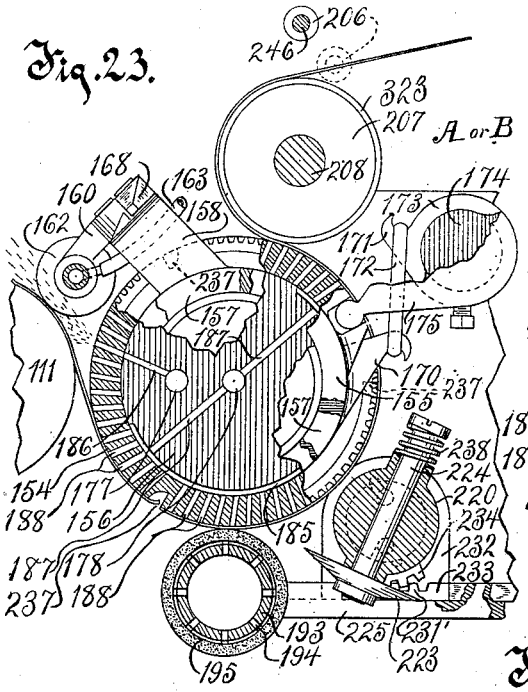


Fig. 24.

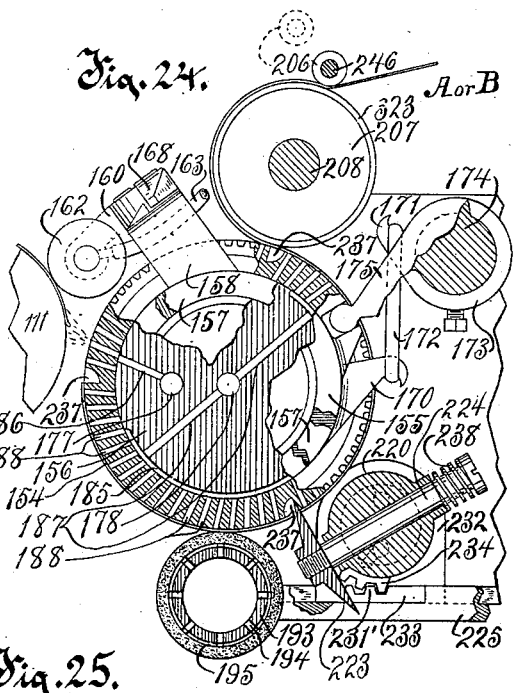
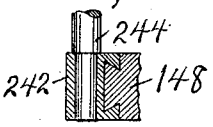


Fig. 25.



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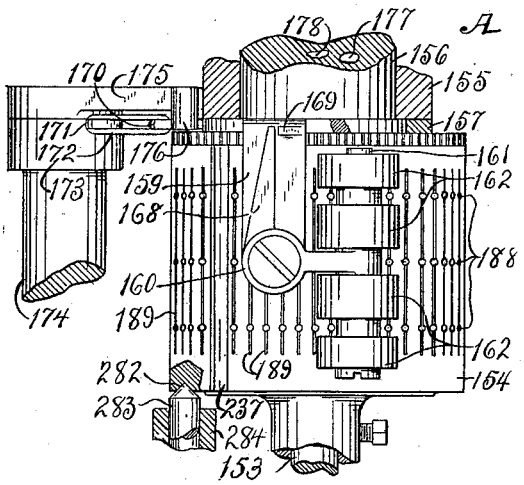

Fig. 27.

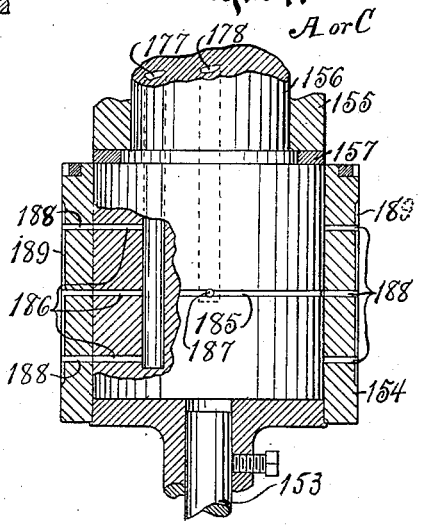

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Fig. 30.

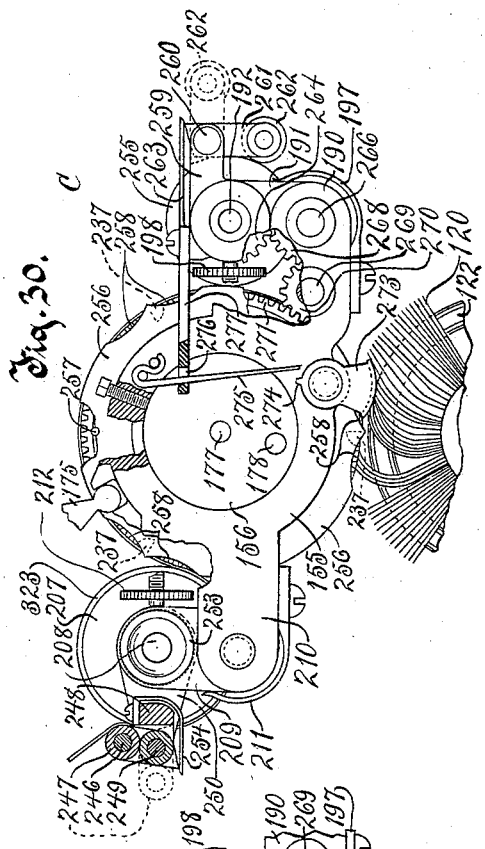

Fig. 31.

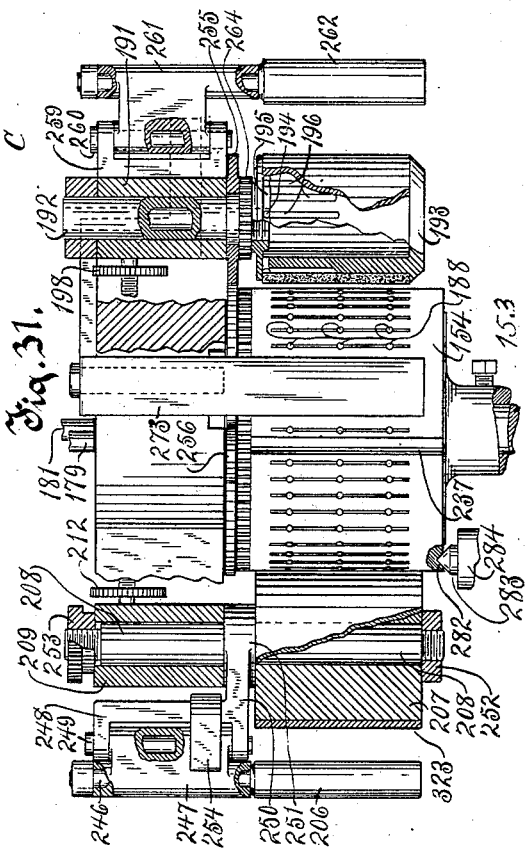

Fig. 28.

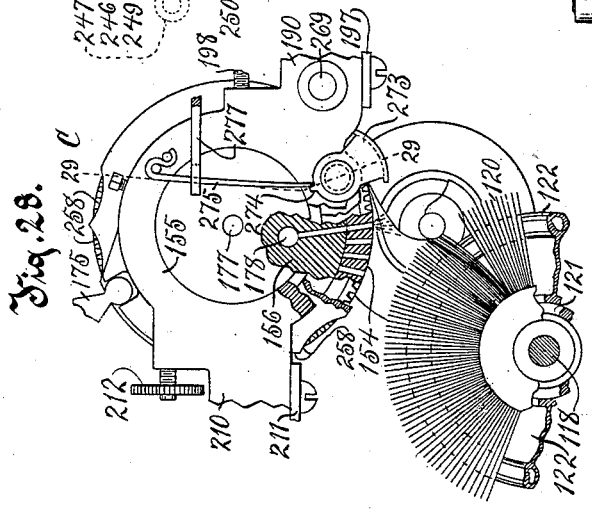

Fig. 29.

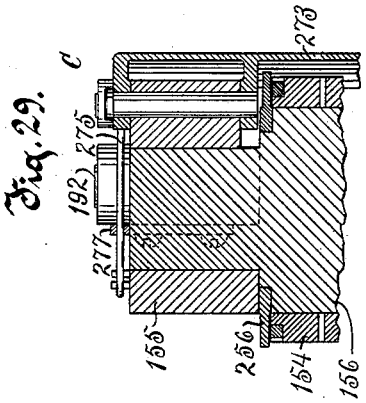

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Fig. 32.

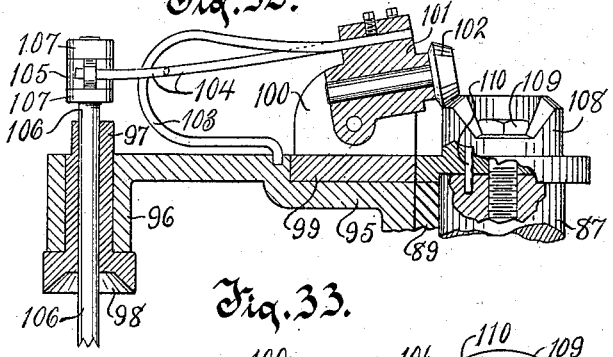


Fig. 33.

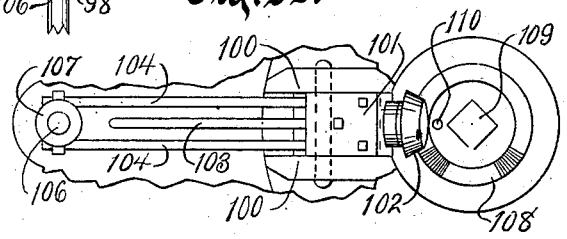


Fig. 34.

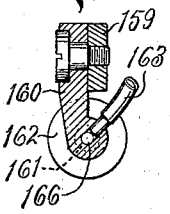


Fig. 35.

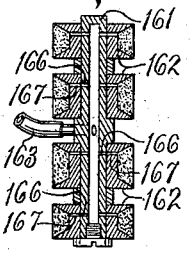


Fig. 36.

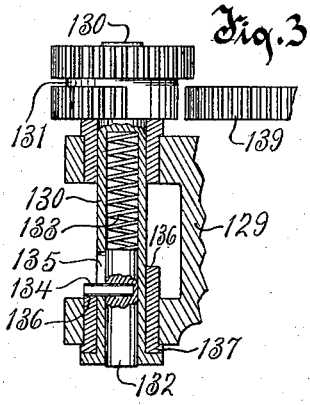


Fig. 37.

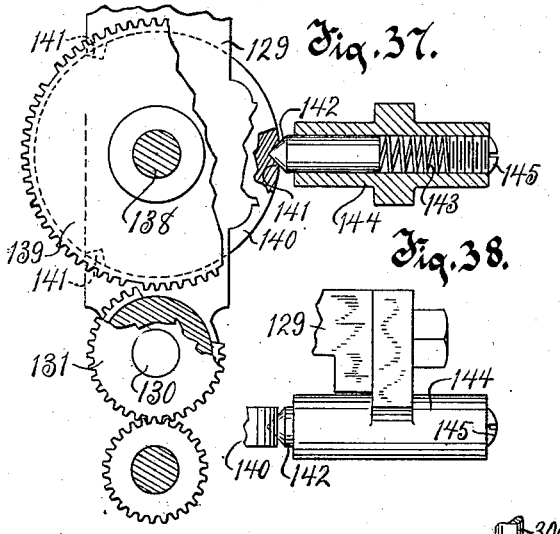


Fig. 38.

Fig. 39.

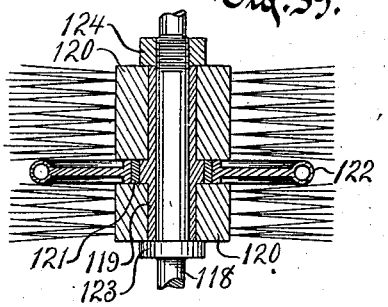
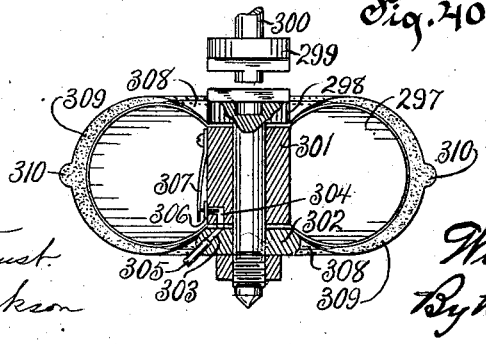


Fig. 40.



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UNITED STATES PATENT OFFICE.

WILLIS S. SHERMAN, OF MILWAUKEE, WISCONSIN.

LABEL-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,244, dated June 11, 1901.

Application filed May 25, 1899. Renewed November 28, 1900. Serial No. 37,984. (No model.)

To all whom it may concern:

Be it known that I, WILLIS S. SHERMAN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Label-Attaching Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in label-attaching machines.

The object of the invention is to provide an improved form of machine which will perform the operations of affixing labels to bottles or other receptacles and also for affixing tin-foil, if desired, these operations being performed automatically in an efficient and rapid manner; and with this end the invention consists of certain improvements upon the construction covered in my pending application for Letters Patent, filed December 10, 1897, Serial No. 661,456, for improvements in label-attaching machines.

In the accompanying drawings, Figure 1 is an elevation of the complete machine, the label-drum, which shows in this view, having the label therearound. Fig. 2 is a vertical sectional view of the machine with the exception of the lower portion thereof, the plane of the section being through the center of the table and through the center of the first station, certain of the parts being broken away and certain of the parts at the rear of the machine being omitted for the sake of clearness. Fig. 3 is a vertical section through the lower portion of the machine, which does not show in Fig. 1, the section being taken on the same plane as Fig. 1, the base-frame being broken away. Fig. 4 is an inverted plan view of the gearing for driving different portions of the mechanism, the gearing being shown on a reduced scale. Fig. 5 is an inverted plan view showing the bearing-boxes for the gearing of Fig. 4 and the mode of fastening said boxes, the gearing being omitted and this view being also taken on a reduced scale. Fig. 6 is a plan view of the machine, showing the label and tin-foil spools in place. Fig. 7 is a plan view of the machine with the top removed, showing only portions of the teeth of the pinions and gears, and all the brushes and their spindles excepting two being omitted. Fig. 8 is a plan view of the table, parts in horizontal section and parts broken away. Fig. 9 is a detail of the pawl mechanism for stopping the table. Fig. 10 is a similar view showing the pawl in a different position. Fig. 11 is a cross-section through the segmental rack, showing one of the inserted teeth. Fig. 12 is a view of the outer face of Fig. 11. Fig. 13 is a vertical sectional view of the motor on a plane indicated by the line 13 13 of Fig. 15. Fig. 14 is a cross-sectional view of the motor on the line 14 14 of Fig. 13, showing the ports and passages opened to compressed-air supply. Fig. 15 is a cross-sectional view of Fig. 13 on the same plane as Fig. 14, but showing the ports and passages to the compressed-air supply closed and the vacuum-ports open. Fig. 16 is a front elevation of the station designated in the specification as station B, parts being broken away. Fig. 17 is a rear elevation of the station designated C throughout the specification, parts being broken away. Fig. 18 is an inverted plan view of the cam for releasing the mechanism for stopping the table. Fig. 19 is an elevation of said cam. Fig. 20 is a vertical sectional view through the support for the pneumatic smoothing device and allied parts, parts being broken away. Fig. 21 is a detail view of the brush mechanism and rubber roll for affixing the tin-foil. Fig. 22 is a plan view of the automatically-operating gear for driving the brush. Fig. 23 is a plan view of the label-attaching drum and allied mechanism, parts being broken away, said drum and allied mechanism being arranged at both stations A and B. Fig. 24 is a similar view showing the parts in a different position. Fig. 25 is a section through the motor-operating slide. Fig. 26 is an elevation of the label-carrying drum and the affixing-rolls for the label. Fig. 27 is a section through one of the label-carrying drums, a portion of the interior plug being broken away. Fig. 28 is a plan view of the foil carrying and affixing drum located at station C and the brush mechanism for the foil, parts being broken away and showing a bottle in position and the foil partly thereon. Fig. 29 is a section on the line 29 29 of Fig. 28. Fig. 30 is a plan view of the parts shown in Fig. 8, showing a different position of the guard and also showing additional parts adjacent to the drum. Fig. 31

is an elevation of the foil carrying and affixing drum shown in Figs. 28 and 30. Fig. 32 is a detail of the device for holding the upper portion of the bottle, parts broken away. Fig. 33 is a plan view of Fig. 32, showing the upper portion of the frame. Fig. 34 is a sectional view through the arm which forms a bearing for the axis of the affixing-roll. Fig. 35 is a central vertical sectional view through the affixing-rolls. Fig. 36 is an elevation and part-sectional view of the intermediate gearing between the bottle-gearing and the station-gearing for all the stations excepting station D. Fig. 37 is a plan of Fig. 36, parts in section and parts broken away. Fig. 38 is an elevation of the positioning mechanism shown in Fig. 37. Fig. 39 is a sectional view through one of the brushes carried by the table and through the flexible roll which contacts with the foil on the bottle. Fig. 40 is a sectional view of the pneumatic smoothing device, showing the male member of the clutch separated; and Fig. 41 is a detail view of the mechanism for positioning the cutting edge of the drum with relation to the knife.

For the sake of clearness I will divide my machine throughout the description thereof into four separate subdivisions or parts, which I will describe as "stations" and indicate the same, respectively, by the letters A, B, C, and D. Station A is the station at which the body-label is affixed, B the station where the neck-label is affixed, C the station where the tin-foil is affixed to the neck, and D the station where the tin-foil is firmly smoothed to the bottle by the same brush which previously acted at station C and also by the pneumatic smoothing device at station D. These stations are arranged equal distances apart.

Referring to the drawings, the numeral 41 indicates the base of the frame, having a straight front and curved sides and rear, as most clearly shown in Figs. 1, 6, 7, and 8. The base-frame, however, may be of any desirable form; but I prefer to adopt the form herein shown, as the curved sides and rear permit the operator to quickly pass around the machine for access to the different portions thereof. This base portion is advisably in the form of a compartment having the front doors 42 42, whereby the attendant can readily enter the compartment, and thereby gain access to the gearing, which projects below the top of the base. The top portion of the base forms the support for the top plate, carrying the working parts of the machine. This top plate is indicated by the numeral 43. Extending upwardly from the top plate are a series of standards or supports, three of said standards or supports being designated, respectively, by the numerals 44, 44′, and 44^2. Standard 44 is located at station A, standard 44′ at station B, and standard 44^2 at station C. There is also a fourth standard, which is designated by the numeral 45, which may extend upwardly from any desired point of the top plate, preferably from a point near station D. This standard is tubular, as most clearly shown in Fig. 2, in order to form a conduit for the tubes hereinafter referred to. The several standards mentioned form a support for a top frame 46. The bases of the several standards are of peculiar construction. The base for the standard 44 consists of the annular plates 47 and 48, the intermediate spacing-ring 49, and the top portion 50. Passing through plates 47 and 48 and through the top portion 50 is a bolt 51, the lower extremity thereof being threaded, said threaded portion taking thereon nuts located, respectively, above and below the plate 43. The bolt is also threaded intermediate of its ends at two places, as clearly shown in Fig. 2, and these threaded portions receive nuts which are turned down, respectively, against the plates 47 and 48. The upper end of the bolt passes through an arm 52, which bears on the top 50. The upper extremity of the bolt is threaded and enters a threaded socket in the lower end of the standard 44, said lower end of the standard being screwed down on the threaded extremity of the bolt, and thereby clamping the top portion 50 and the arm 52 to the base portion.

The base of the standard 44′, as shown in Fig. 16, consists of the plates 53 and 54 and the intermediate spacing-ring 55. Above the plate 54 is another spacing-ring 56, which is of the required height to bring the label carrying and affixing drum, hereinafter referred to, to the proper height. Above the spacing-ring 56 is another plate 57 and above this plate a top portion 58. Above the top portion is an arm 52′, similar to the arm 52, and above this arm is the standard 44′. All these parts are secured together by a bolt similar to the bolt 51, which connects standard 44 to the base-plates.

The base of the standard 42^2, as shown in Fig. 17, is constructed similar to the base of the standard 42′, the annular plates of said base of standard 42^2 being indicated by the numerals 59 and 60, respectively, the spacing-rings by the numerals 61 and 62, respectively, the plate above spacing-ring 62 by the numeral 63, and the top of the base by the numeral 64. The arm between the top 64 and the standard is indicated by the numeral 52^2.

The main driving-shaft of the machine is designated by the numeral 66. This shaft is driven by any suitable source of power and preferably passes downwardly through the top frame 46 and is journaled in a bearing 67, as shown in Fig. 3. The lower portion of this shaft carries a pinion 68. This pinion is in mesh with a gear-wheel 69, the hub of said gear-wheel surrounding a journal-sleeve 70, said sleeve being mounted fast on a shaft 71. The sleeve 70 has a bearing in an arm 72. The shaft 71 is journaled at its upper end in a bearing 73, as shown in Fig. 3. The sleeve 70 has also mounted thereon a pinion 74, which pinion is in mesh with a gear-wheel 75,

the hub of said gear-wheel being loose on a shaft 76. The hub of the gear-wheel 75 is also formed or provided with another gear-wheel 77, which is in mesh with a gear-wheel 78, the hub of which is fast on a shaft 79. Gear-wheel 78 is located at station A. The bearing-box of shaft 79 is indicated by the numeral 80. The upper end of shaft 79 carries a pinion 81. Gear-wheels, shafts, and pinions, similar to gear-wheel 78, shaft 79, box 80, and pinion 81, are located at stations B and C. The similar gear-wheel at station B is indicated by the numeral 78′, its shaft by the numeral 79′, its bearing-box by the numeral 80′, as shown in Figs. 4 and 5, and the similar pinion by the numeral 81′, as shown in Fig. 16. The similar gear-wheel at station C is indicated by the numeral 78^2, its shaft by the numeral 79^2, its bearing-box by the numeral 80^2, as shown in Figs. 4 and 5, and the similar pinion by the numeral 81^2, as shown in Fig. 17.

The upper end of shaft 71 carries a double gear-wheel 82. The lower member of this double gear-wheel meshes with a pinion 83, said pinion being at the upper end of a shaft 83′, which shaft is journaled in the bearing-box 73. Pinion 83 meshes with another pinion 84 at the upper end of a shaft 85, said shaft being also journaled in the bearing-box 73. This pinion 84 meshes with a friction-wheel 86, provided peripherally with teeth. It will be understood that the friction-gear 86, which is shown in the present illustration of the invention as being driven by the train of gears, could be driven from either of the shafts 79, 79′, and 79^2.

The main standard, around which the table, hereinafter referred to, revolves, is indicated by the numeral 87. The friction gear-wheel 86 loosely surrounds the lower portion of this standard and has preferably antifriction-balls interposed between the edge of its opening and the standard. The lower end of the standard 87 is socketed, as clearly shown in Fig. 3, and in this socket is fastened the upper end of the shaft 76, which forms the axis of the gear-wheels 75 and 77. To the lower end of shaft 76 the arm 72 is fastened, the opposite end of said arm being adjustably secured to the main driving-shaft 66, the adjustability being secured by means of set-screws, as clearly shown. Supported on the top of the friction gear-wheel 86 and surrounding the lower portion of the standard 87 and forming a bearing therefor is a bushing 88. If desired, a layer of friction-paper or any other desirable material may be interposed between the bushing and the friction-gear. Surrounding the main standard 87 is a tubular column 89, the lower end of said column being secured to the bushing 88. It will be understood that the bushing 88 and its upwardly-extending bearing could be made integral with the column 89, if desired. Secured to the column 89 or formed integral therewith is an intermediate plate 90, forming the bottle-carrying portion of the table. Arranged on the top of this plate is a series of sockets 91 for the lower ends of the bottles. These sockets are carried at the upper ends of the shafts 92, the lower ends of said shafts being journaled in an annular plate 93, fast on the tubular column 89 and forming the lower portion of the table. The lower ends of these shafts carry pinions 94. As the table is revolved these pinions are brought into mesh with the upper member of the double gear-wheel 82 at station D and into mesh with the pinions 81, 81′, and 81^2, located, respectively, at stations A, B, and C, so that the bottles are revolved when they arrive at the several stations.

Carried rigidly at the upper end of the tubular column 89 is a top plate 95, more clearly shown in Fig. 2. This plate is provided on its under side, at or near its outer edge, with a series of tubular depending bosses 96, the bores of said bosses extending through the plate. Into these bores are fitted tubular stems 97. These stems extend below the lower ends of the bosses and are enlarged, the enlargements formed on their under sides with conical sockets 98, in which the upper ends of the bottles are centered. Secured to the top plate 95 is an annular disk 99, provided with sets of parallel walls 100 100, as clearly shown in Figs. 32 and 33. Pivoted in and oscillating between each set of walls is a head 101, forming a bearing for the shaft of the roller 102. Each head 101 has connected thereto one end of a bent spring 103. The opposite end of each spring bears in a suitable recess in the top plate 95. Two spring-arms 104 104 are also connected at their inner ends to each bearing-head 101. The outer ends of these spring-arms pass loosely through lugs projecting laterally from a collar 105, mounted loosely at the upper end of a revoluble holding-pin 106. Each holding-pin 106 is journaled in its appropriate tubular stem 97. The lower end of each holding-pin is formed with a plurality of teeth, as clearly shown in Fig. 32. The loose head 105 on the upper portion of each holding-pin is mounted thereon between fixed collars 107 107.

Secured to the top of the standard 87 is a cam 108, said cam being preferably secured by means of a screw 109 and a pin 110, said pin adapted to hold the cam 108 in position on the standard 87. The bottom face of this cam also bears against the upper end of the tubular column 89 and is frictionally adjusted thereto by means of the screw 109, a slight space being left between the bottom of the cam and the top of the standard 87 for the purpose of permitting of the taking up of wear by the turning of the screw 109.

The bottles to be labeled are indicated by the numeral 111 and are advisably arranged on the table so as to be equal distances apart. The lower ends of these bottles are supported by the sockets 91, which sockets preferably carry flexible cushions, advisably in the form

of rings 112 or coiled tubing, on which the bottles rest. The circumference of each socket 91 is provided with teeth, forming a gear-wheel 113. These several gear-wheels 113 mesh with pinions 114, formed or provided at the upper ends of chuck-spindles 115. The lower end of each chuck-spindle is journaled in the plate 93 and the upper ends of these spindles in the plate 90 of the table. Each chuck-spindle is formed near its lower end with an annular shoulder which is adapted to contact with a rubber cushion 116 beneath the same and supported by the plate 93, as clearly shown in Fig. 21. Each chuck-spindle is revoluble and vertically movable in its bearings, and a semicircular socket 117 extends downwardly through the upper end of each spindle for a desired distance. In said socket of each chuck-spindle fits the lower reduced end of a brush-spindle 118, said lower reduced end conforming in shape to the socket and fitting therein in such manner as to prevent binding. The upper end of each brush-spindle is encircled by a metal sleeve 119, (see Fig. 39,) and this sleeve is surrounded by the hubs of a two-part brush 120. The sleeve is formed with a central enlargement, and surrounding this enlargement is a bushing 121. Surrounding this bushing in turn is the hub of a contact-wheel 122, said wheel being preferably formed of rubber and having its rim advisably tubular in cross-section. The lower end of the sleeve 119 and the hub of the lower part of the brush 120 rest on a shoulder 123 on the spindle 118, and a nut 124 takes onto an upper threaded end of the spindle and is adapted to be turned down against the upper end of the sleeve 119 and the upper end of the hub of the upper section of the brush. Inasmuch as the central enlargement of the sleeve 119 is somewhat wider than the hub of the contact-wheel and its brush, when the nut is turned down tightly the two sections of the brush are clamped to the shoulder 123, so as to revolve with the spindle, while the contact-wheel 122 is free to revolve by external frictional contact. The two-part brush and the contact-wheel are so located on each brush-spindle as to be directly opposite the foil to be affixed to the bottle. The upper extremity of each brush-spindle has its bearing in a bushing 125, which is arranged in an opening in the top plate 95 of the table. (See Fig. 21.) The upper extremity of each brush-spindle above the plate 95 is threaded, and this threaded portion is engaged by nuts 126 126, said nuts being jammed, so as to form a shoulder to suspend the brush-spindle. The means for raising and lowering the chuck-spindles 115 consists of a segmental cam 127, secured to the top 43 of the base 41, said cam having a level or plane surface and an incline 128. As the table revolves and the lower ends of the chuck-spindles ride up the incline onto the plane surface of the cam said chuck-spindles are necessarily raised to the dotted-line position shown in Fig. 21, so as to throw the pinion 114 out of mesh with the gear-wheel 113, with the result that as the bottles arrive at the stations at which the brushes are not used said brushes will not revolve; but when the bottles arrive at stations where the brushes are to be operatively employed the lower end of each chuck-spindle after it reaches the end of the plane surface of the cam descends, so as to again bring the pinion 114 into mesh with the gear-wheel 113, and hence cause a rotation of the chuck-spindle and the brush-spindle.

Carried by the supporting-plate 90 of the table are a series of centering-rolls 65, there being two of said rolls adjacent to each bottle-socket 91 and close enough thereto to bear against the lower end of a bottle carried in each socket.

The mechanism at station A will now be described.

Extending laterally from the annular plate 47 of the standard 44 is an arm 129. Journaled in the bifurcated extremity of this arm is a spindle 130. (See Figs. 1, 2, 3, 8, and 36.) This spindle carries at its upper end a two-part gear-wheel 131, one of the members of said gear-wheel being a mutilated gear—in the present case the lower member being shown as mutilated. The spindle 130 is tubular from one end for a desired distance, as shown in Fig. 36, and in the bore of the tube is fitted a plug 132. Between the inner end of the plug and the end of the tubular bore of the spindle is arranged a spring 133. Extending laterally from the plug is a pin 134, said pin projecting through an elongated slot 135. The outer end of this pin rides on a cam-surface 136, formed on the end of a bushing 137. (See Figs. 16, 17, and 36.) The function of this spring is to hold the pin in contact with the cam-surface, and as the spindle is revolved the plug is raised by the cam-surface and is returned by the action of the spring. The purpose of this construction is to return the mutilated gear-wheel to an initial position, which occurs when the pin of the plug rides down the decline of the cam to the lower end of said decline, the mutilated gear-wheel having been returned to its initial position when said pin reaches the said lower end or terminus of the decline. Also journaled in the arm 129 is a spindle 138. This spindle carries at one end a gear-wheel 139, which is in line to be engaged by the teeth of the mutilated member of the two-part gear-wheel 131. Where a wheel 139 is employed of considerable circumference, and which is the case, for instance, at stations B and C, (see Figs. 8 and 37,) it is convenient to leave out a tooth at certain points of the periphery. This provision is made in order to obtain a full contact of the teeth of the wheel 139 with the teeth of the mutilated member of the gear-wheel 131. The opposite extremity of this spindle carries a wheel 140, said wheel being shown in detail in Fig. 37. This wheel is provided peripherally with a plurality of

equidistant recesses 141, (in the present illustration three.) One recess, however, might suffice if the gearing were changed. These recesses are adapted to be engaged by an actuated pin 142, preferably actuated by means of a spring 143. The pin works in a casing 144, fastened in a projection from the arm 129, which casing also confines the spring, and the tension of the spring is adjusted by means of a screw 145. The function of this pin is to assist in positioning the gear 139 and the label-carrying drum, as will hereinafter more fully appear. Also journaled in the arm 129 is a spindle 146. (Shown in dotted lines in Fig. 2, in broken section in Fig. 3, and in plan in Fig. 8.) This spindle carries a pinion 147, which meshes with the gear-wheel 139. Projecting from the annular plate 48 of the base of standard 44 is an arm 148. In this arm is journaled a spindle 149, said spindle carrying a gear-wheel 150, which meshes with the pinion 147, said pinion being clearly shown in Fig. 8. This spindle 149 carries another gear-wheel 151, which meshes with a gear-wheel 152, carried by a spindle 153, (see Fig. 2,) said spindle being journaled in the arm 148. The spindle carries a label-carrying drum 154. Above this drum is a collar 155, in which is fitted the reduced end of a cylindrical plug 156. The major portion of this plug is surrounded by the label-carrying drum. An intermediate portion of the plug is surrounded by a ring 157, which has a lateral extension 158. Said lateral extension 158 in turn is provided with a rigid downwardly-extending arm 159. (See Figs. 23, 24, 26, and 27.) Pivoted to the downwardly-extending arm 159 is an arm 160. This arm carries a spindle 161, (see Figs. 34 and 35,) and on this spindle are loosely mounted a series of rolls 162, which are suitably spaced apart, as shown in Fig. 35. Each roll is preferably formed of two portions—viz., an inner hub portion which surrounds the spindle and an outer soft peripheral portion, preferably of some suitable absorbent material, in order to take up water. It will be seen from Fig. 35 that the spindle 161 is tubular, and leading to the bore thereof is a flexible water-tube 163, which tube extends for connection to a circular water-pipe 164, said water-pipe being carried by the top frame 46 and supplied by means of a tube 165, which extends from any suitable source of supply through the tubular standard 45 and connects with said pipe 164. The spindle 161 is provided with one or more openings 166, leading from the bore thereof outwardly, which openings register with openings 167 through the inner portions of the rolls 162. By this means the water supplied to the bore of the spindle 161 is free to pass outwardly through the registering openings connecting the bore with the outer absorbent peripheral portions of the rolls. Extending from the pivoted arm 160 is a finger 168, preferably of spring material. (See Figs. 23, 24, and 26.) The free end of this finger is adapted when the rolls are not in contact with the bottle to contact with a lug 169 on the downwardly-extending arm 159, (see Fig. 26,) with the result that the rolls are normally at a slight incline. In Fig. 26 of the drawings the finger 168 is shown as just out of contact with the lug 169 and the rolls 162 in a perpendicular or substantially perpendicular position, which positions of the finger and rolls are the positions assumed by said parts when the rolls are in contact with a straight bottle or a bottle without any considerable taper. If, however, a bottle having considerable taper is brought into contact with the rolls, it is necessary that the rolls should be canted in order to make them conform to the taper of the bottle. This is provided for by having the pivoted arm 160, it being understood that the bottles are generally small at the bottom. When a bottle is withdrawn from contact with the rolls, the rolls are prevented from swinging too far by reason of the contact of the finger 168 with the lug 169, and hence said lug holds the rolls at a normal position. It will also be noted that the rolls 162 have an independent rotation on the spindle 161. By reason of this if a bottle with which the rolls contact is of a tapering form the speed of rotation of each roll will conform to the speed of rotation of the adjacent surface of the bottle. Provision is made for causing an adjustably-yielding contact of the rolls 162 with the bottle. This provision is carried out by providing the ring 157 with an outwardly-extending hook 170. (See Figs. 23 and 24.) This hook is connected with another hook 171 by a flexible band 172. The hook 171 extends from a collar 173, said collar being adjustably mounted on a standard 174, extending upwardly from the arm 148. Extending from the standard 174 is an arm 175. (See Figs. 23, 24, and 26.) The free end of said arm is in engagement with the collar 155, which is located above the label-carrying drum. A stop 176 depends from the arm 175. When a bottle is not in engagement with the rolls 162, the flexible band 172 holds hook 170 in contact with the stop 176 and the roll in position for contact with the bottle. When, however, a bottle contacts with the rolls, the extension 158 is necessarily acted upon, and this causes a turning of the ring 157, which turning of the ring causes a movement of the hook 170 and a stretching of the flexible band 172, as clearly shown in Figs. 23 and 24. When the bottle leaves the rolls, the contraction of the flexible band necessarily carries the ring 157 back to its former position, which ring in turn carries the extension 158 and the rolls back to their normal position. The arm 175 by reason of its engagement with the collar 155, located above the label-carrying drum, holds said collar against revoluble movement.

Extending vertically from the upper end of the plug 156 and downwardly to a point near the lower end of the plug are two passages 177 and 178, the former being an air-supply

passage and the latter an exhaust-passage. To the upper end of the air-supply passage 177 is connected a flexible tube 179. The upper end of this tube connects with a pipe 180, carried by the top frame 46. To the upper end of exhaust-passage 178 is connected a flexible tube 181. The upper end of this tube connects with a pipe 182, also carried by the top frame 46. Communicating with pipe 180 is another tube 183, which leads through the tubular standard 45 and connects with any suitable source of air-supply. Connecting with pipe 182 is a tube 184, which also extends through the tubular standard 45 and connects with any suitable exhausting device. The plug 156 has also formed partly around its circumference a channel 185. The inlet-passage 177 has a plurality of branch passages 186 (see Fig. 27) leading therefrom out through the plug. The circumferential passage 185 has two branch passages 187 187, which lead to the exhaust-passage 178.

The label-drum is provided around its circumference with series of circumferentially-alined openings 188, which are connected by means of vertical grooves 189. These openings 188 extend through the drum and are adapted to be brought into register with the passages 186 in the plug. Air is forced through the tube 183, thence into pipe 180, thence through tube 179, thence through passage 177, and out through passages 186 and openings 188 and the air directed against the label for the purpose of positioning the label on the bottle, as hereinafter more fully referred to. It will be seen from Fig. 23 that the air is forced out of the openings 188 in a direction to strike the bottle and pass between the spaces between the rolls 162. If instead of spacing the rolls 162 a solid roll were provided, it will be evident that the effective action of the blast would be interfered with, inasmuch as the retardation of the blast by a solid roll would be apt to create eddies, and thereby cause the label to follow the outline of the eddies and seriously interfere with the proper affixing of the label on the bottle. It will be seen that my arrangement of rolls 162 practically forms a vented roll. This roll need not necessarily be formed by a series of separate rolls spaced apart, inasmuch as the same function could be accomplished by a continuous roll having a series of annular recesses, or a continuous roll could be provided formed of a suitable screening or perforated material without departing from the spirit and scope of my invention.

In order to hold the label on the drum, I provide a suction through the passages 188 into the circumferential channel 185, through the branch passages 187, through the passage 178, tube 181, pipe 182, and tube 184.

Extending from the collar 155 is an arm 190, (see Figs. 1, 7, and 30,) the outer end of said arm being bifurcated. Between the furcate parts of this arm is pivotally mounted another arm 191. The outer end of arm 191 carries a spindle 192, the lower end of said spindle being connected to a paste-roll 193. (The paste-roll at station C is shown in detail in Fig. 31.) The paste-roll 193 consists of two portions—viz., an inner cylindrical portion and an outer foraminous cover. The inner cylindrical portion is provided at its top with a series of radiating openings 194, which open into an annular groove 195 in the outer surface of the inner portion of the paste-roll. Extending downwardly from the groove 195 are vertical channels 196, which facilitate the absorption of the paste by the outer foraminous cover. A spring 197 (see Figs. 28 and 30) bears at its free end against the arm 191 and holds the paste-roll yieldingly in contact with the label-drum.

Turning into a threaded socket in the collar 155 is a small knurled thumb-screw 198, the outer end of said screw forming a stop to limit the inward swing of the paste-roll caused by the action of the spring 197.

The numeral 199 indicates a plate having pins 200 and 201 extending upwardly therefrom and over which pins are adapted to be passed spools 202 and 203, respectively, and on which spools are carried continuous label-strips 204 and 205. The plate 195 is adapted to be revolved in the manner hereinafter described, whereby when the label-strip is almost exhausted on one spool the other spool is brought into proper position to permit the label to be carried off of said other spool. The label-strip is carried off its spool and is fed by hand between a small roll 206 and a large roll 207, the latter being adjacent to the label-drum. The small roll is normally at the dotted-line position shown in Fig. 24 or the full-line position shown in Fig. 23. When, however, it is desired to change the feed of the label from one nearly-exhausted spool to another, the roll 206 is swung around to the full-line position shown in Fig. 24 or to the dotted-line position shown in Fig. 23, so as to bind the nearly-exhausted label. After this the end of the new label is passed between the old label-strip and the roll 207. As soon as the new label-strip is carried around adjacent to the label-drum the old label-strip is broken or severed, as shown in Figs. 6, 7, and 17, and the roll 206 is again thrown out of contact with the label. The construction whereby the small roll 206 is thrown into or out of engagement with the label will be hereinafter fully described. The roll 207, it will be understood, is rotated by its frictional contact with the label-drum. This roll is mounted on a spindle 208, said spindle being carried by an arm 209, which arm is pivoted to an extension 210 projecting from the collar 155. The roll 207 is held yieldingly in contact with the label-drum by means of a spring 211 pressing against the arm 209. Turning in a threaded socket in the collar 155 is a knurled thumb-screw 212, the outer end of which forms a stop to limit the movement of the roll toward the label-drum.

Secured to the top plate 43 of the base 41 is a hollow stand 212′, (shown in Fig. 1,) which receives the lower portion of a stationary piston 213, (see Fig. 13,) said lower portion of the piston being secured in the hollow stand. The piston is provided with a shoulder, which rests on the upper end of the stand 212′. (See Fig. 1.) The piston is extended above the upper end of the hollow stand of the cylinder, and said piston forms a part of the operating mechanism of the label-cutting device. It has a channel 214 formed therein, to which a pipe 215, extending from any suitable source of supply, is connected, said pipe adapted to conduct compressed air into the inlet-channel. (See Figs. 1 and 8.) The exhaust-passage of the stationary piston is indicated by the numeral 216. The lower end of this exhaust-passage connects with a vacuum-chamber (not shown) by means of a tube 217. Both the inlet and discharge channels terminate at their upper extremities below the upper end of the piston and have extending therefrom, respectively, branch passages 218 and 219. Surrounding the stationary piston is a knife-carrying cylinder 220. On the shoulder of the piston rests a rubber buffer 221, which is adapted to act as a cushion for the lower end of the knife-carrying cylinder when said cylinder descends. The knife-carrying cylinder is provided with the opposite longitudinal ports 222 222′, which are adapted as the cylinder is oscillated in the manner hereinafter described to respectively register with the branching passages 218 and 219, leading from the inlet and exhaust passages of the piston. The head of the cylinder is formed with a solid plug forming a journal-box, and the cutting-knife (designated by the numeral 223) is provided with a spindle 224, which passes through and is journaled in the plug. The outer end of the spindle is provided with a screw-head. (See Figs. 13, 23, and 24.) It will be understood that the cutting-knife is of circular form and is mounted revolubly on the end of the spindle.

The numeral 225 (see Figs. 1, 6, 7, 23, and 24) indicates a longitudinally-actuated bar, which bar is slidingly fitted, preferably by a dovetail connection, to the arm 148 in the case of station A. The bar is actuated in one direction by a spring 226, which acts on one end of the bar, the tension of said spring being adjustable by means of a suitable adjusting-screw 227. The bar is actuated in an opposite direction by a series of cam formations 228 on the under side of the supporting-plate 90 of the table. Each cam formation at its initial end has two steps 229 and 229′, and the terminal end of each cam formation is formed with a gradually-rising surface 230. A wear-shoe similar to 231 (see Fig. 8) is secured to that end of the bar 225 which is adapted to act on the cam-surface 228. The longitudinally-actuated bar is also provided with a series of teeth forming a small rack 231′. Inasmuch as the cylinder 220 must be turned just a certain distance in order to bring its inlet-ports into register with the inlet-ports of the stationary piston when said cylinder is operated in one direction and the exhaust-ports of the cylinder into register with the exhaust-ports of the stationary piston when said cylinder is oscillated in the opposite direction, provision must be made for stopping the longitudinal movement of the rack 231′ at the right point. In order to provide for this, I form an opening 232 through the arm on which the rack-bar is mounted and through which opening the knife-motor passes, as clearly shown in Figs. 23 and 24. This opening 232 also cuts through the dovetail recess of the arm 148 for a certain distance, and in this cut-out portion of the dovetail recess is placed a separate plate 233, which is secured to the longitudinally-actuated bar 225, and is reciprocated in said opening by and with the bar. This plate has formed thereon the teeth 231′. The plate 233 is not quite as long as the cut-out portion of the dovetail recess, whereby as said plate is reciprocated in the manner pointed out its ends are adapted to contact with the shoulders formed by the cut-out portion of the dovetail recess, and thereby limit the reciprocation of the rack in either direction. (See Fig. 24.) The teeth 231′ on the plate 233 mesh with teeth 234 formed on the knife-carrying cylinder, whereby the reciprocation of the rack-plate causes the proper oscillation of said knife-carrying cylinder. It will be understood that the movement of the longitudinally-actuated bar toward the table will cause a turning of the knife-carrying cylinder in a direction to bring the inlet-passage 222 of said cylinder into register with the passages 218 and 214 of the stationary piston. The compressed air is now free to pass from the passage 214 to the space above the stationary piston, where it acts between the end of the piston and the head which forms the journal-box for the spindle of the knife and causes an ascent of the knife-carrying cylinder to the limit permitted by a rubber buffer 235, arranged above the head or journal-box of the knife-spindle, said rubber buffer being supported or held by a rigid arm 236 (shown in Fig. 1) and extending upwardly from the arm 148. This movement is sufficient to permit the knife to pass the distance of the width of the label, and thereby cut said label transversely. It will be noticed particularly from Figs. 23, 24, 26, and 31 that the outer surface of the label-carrying drum is formed with one or more elongated notches 237. In the present illustration of my invention I have shown three of such notches. These notches receive the cutting-knife, and the straight wall of each notch forms, in connection with the cutting edge of the knife, a complete shear cut. The augmented space formed by the curved surface of each notch permits the knife to enter the notch freely as the knife is swung in the arc of a circle. The knife makes its cut while

the drum is stationary and the table is revolving. As will be seen from Fig. 23, when the knife is not coacting with one of the notches of the drum a spring 238, which encircles the spindle of the cutting-knife between the screw-head of said spindle and one side of the journal-box, holds the knife against a projection extending from the other end of the journal-box. When, however, the cutting edge of the knife comes into contact with the straight wall or shear edge of the notch of the drum, the knife will be stopped. The cylinder, however, not having completed its partial rotation will draw away from the knife, leaving a space between the end of the journal-box and the inner face of the cutting-disk and at the same time compressing the coiled spring. With the continued rotation of the cylinder the knife advances inwardly along the straight or shear edge of the notch toward the center of the label-drum until the longitudinally-movable bar and the cylinder 220 come to a state of rest. Preferably the spindle or axis of the cutting-disk is arranged at a slight incline to the center line of the cylinder in order to effect a perfect shear cut. The return or outward movement of the bar 225 is effected by the inner end of said bar riding out on the incline 230 of the cam 228. This return movement causes the cutting-knife to be turned back to its normal position. (Shown in Fig. 23.) At the same time the cylinder 220 is revolved, so as to bring the discharge-passage 222′ into register with the passages 219 and 216 of the stationary piston, so as to permit of the down movement of the cylinder 220 with its knife. In order to guard against unnecessary jar on the down movement of the cylinder 220, the upper end of passage 222′ terminates short of the cylinder-head, so that an air-cushion is formed between the upper end of the stationary piston and the under side of the cylinder-head.

In regard to the inward movement of the longitudinally-actuated bar 225 it is to be stated that as the table revolves the inner end of said bar or the wear-shoe thereof will ride around on the periphery of the table. When the table is stopped, the wear-shoe will be in the position shown in Fig. 8 and the moment the table resumes its revolution the end of the bar will jump from the periphery of the table onto the first step 229. This has the effect of bringing the knife close to the cutting edge of the notch of the drum. The end of the bar will next pass onto the step 229′, which will give the knife the proper cutting tension with the cutting edge of the notch of the drum, as hereinbefore explained, by the action of the spring 238. The end of the longitudinally-actuated bar will now continue to ride along the cam 228 until it reaches the incline 230, which will have the effect of forcing the bar outwardly, as hereinbefore explained.

It will be understood that all the principal parts hereinbefore described as applicable to station A are duplicated at stations B and C, and wherever such parts appear at stations B and C they are in the main indicated by the same reference-numerals. There are features of mechanical construction and arrangement, however, at stations B and C which differ from station A. These differences will now be pointed out with relation to station B.

At stations B and C there is a change in the gearing for rotating the label-carrying drum. At these stations the pinion 147 and gear-wheel 150, forming part of the train of gears at station A, are omitted and rotation conveyed to the label-carrying drum by the intermeshing of the mutilated member of the two-part gear-wheel 131 with the gear-wheel 139. At stations B and C the spindle 138 of gear-wheel 139 is extended upwardly and carries a pinion 241. These spindles at said stations B and C are indicated, respectively, 138′ and 138². The pinion 241 meshes with the gear 152 of the label-carrying drum. The simplified construction of gearing for operating the label-carrying drums at stations B and C is rendered possible by reason of the fact that at stations B and C the centers of the drum and the centers of the gear-wheel 139 are sufficiently far apart to admit of a more direct connection of the gears.

The bases of the standards 44′ and 44² at stations B and C are built up higher than the base 44 of the standard at station A by means of the additional annular plates and spacing-rings hereinbefore referred to, for the reason that it is necessary that the standards at stations B and C be higher at said stations B and C as the label-drums at said stations are on a higher plane. I therefore provide at each station B and C in addition to the bar 225 another bar 242. (See Fig. 7.) The bar 225 at these stations has a sliding connection with an arm 243. The bar 242 is connected to the bar 225 by means of rods 244 244. This forms practically a sliding frame, which works in exactly the same manner as the sliding bar 225 of station A. This changed location of the rack is rendered necessary in view of the increased height of the frame and of the motor for operating the knife.

At stations B and C the knife-motors are carried by the arm 148 instead of by the top plate 43 of the base, as in the case of the motor at station A. By this means the construction is simplified.

At station B the label-carrying drum is only provided with a single series of circumferentially-arranged openings 188, and hence there are but two of the pressing-rolls 162, with a space therebetween forming a single recess for the one set of openings.

As heretofore stated, the small roll 206 is adapted to be swung from a normal position into contact with the label on the roll 207. This is effected by providing the roll 206 with an upwardly-extending spindle 246, said spindle being revoluble in a journal-box 247, Figs.

17, 30, and 31. This journal-box is provided with a projecting arm which fits between the arms of a bracket 248. A pin 249 extends through the arms of the bracket and through the arm of the journal-box, and this pin forms a pivot upon which the journal-box may be turned so as to swing the roller into or out of contact with the label on the roller 207. It will be noticed that the bracket 248 is formed with an arm 250, which connects it with a spacing-boss 251, integral with the spindle 208. (See Fig. 31.) A jam-nut 252 takes onto the lower end of the spindle 208 and supports the roller 207. On the upper threaded end of the spindle is a knurled nut 253.

The function of the several parts which have just been described will now be pointed out. If, for instance, the cutting mechanism which coacts with the cutting notches of the drum is cutting labels of a length, say, of three inches and it is found after the cutting mechanism acts on the labels to cut between the printed matter which is to constitute each separate label that the label is cut one-fourth of an inch in advance of the place where it is required to be cut, then the operator loosens the nut 253 and swings the spindle 208, arm 250, and bracket 248, together with the parts carried by said bracket, so that the roll 206 will be advanced one-fourth of an inch on the roll 207, whereby the proper cut between the labels is insured. The nut 253 is of course again tightened. In other words, the distance between the point where the initial end of the label-strip is started to the cutting-knife, following the curve of the roll 207 and the drum, must always be an exact multiple of the length of one of the labels—that is to say, when the adjustment of the roll 206 is correct each label will be cut at the same relative place. For instance, if a label is cut at a point between the printed matter on the labels and a label is started between the rolls 206 and 207, with the roll 206 in proper position with relation to the cutting edge, then the succeeding labels will also be cut through the same relative point. A spring 254 acts on the projection from the journal-box 247, (see Fig. 30,) and when the roll 206 is in contact with the roll 207 this spring tends to yieldingly preserve the contact. When the roll 206 is thrown out of contact with the roll 207, said spring also engages back of the projection and maintains the roll in the dotted-line position.

At station C there is a means shown for throwing the paste-roll into and out of contact with the foil on the drum for the purpose of pasting the foil at the initial and terminal ends of said foil. This mechanism consists in mounting on the spindle of the paste-roll a wheel 255. (See Fig. 31.) The ring 157, which surrounds an intermediate portion of the plug 156 in the case of stations A and B, is omitted at station C and an annular plate 256 substituted therefor, which plate surrounds the plug and is fastened to the label-drum by means of a pin 257, (shown in Fig. 30,) which pin passes through the plate into the drum, and consequently causes the plate to revolve with the drum. The plate is provided peripherally with double cut-away portions 258, corresponding in location to the location of the cutting-notches of the drum. As the drum rotates, the wheel 255 on the spindle of the paste-roller follows the contour of the periphery of the plate 256, and when the wheel 255 rolls into the double cut-away portions 258 the paste-roll is permitted to contact with the rear and initial ends of the foil in order to apply paste thereto. As the paste-roll contacts only at these certain points, there are only certain portions of the roll that the paste will be taken from, while on other portions of the paste-roll the paste will remain. The journal-box of the paste-roll is formed with an arm 259. This arm carries a pivot-pin 260, and on this pin is pivoted another arm 261, which arm at its outer end is formed into a journal-box for a distributing-roll 262, which may be formed of any suitable material. This distributing-roll is shown in full line in Fig. 30 as in contact with the paste-roll in order to distribute the paste evenly around said roll. In dotted lines in Fig. 30 the distributing-roll is shown as thrown on the pivot out of contact with the paste-roll, to which position the roll is swung whenever for any reason it is desired that it should not contact with the paste-roll—as, for instance, when it is desired to remove the paste-roll. A spring 263 acts to hold the distributing-roll either in contact with or out of contact with the paste-roll.

In order to rotate the paste-roll at station C, a gear-wheel 264 is mounted on the spindle of said paste-roll. The arm 191, which extends from the spindle of the paste-roll, is pivotally connected by a spindle 266 with the arm 190, extending from the collar 155. The spindle 266 carries thereon a gear-wheel 268, which meshes with the gear-wheel 264. The arm 190 carries another spindle 269, and this spindle carries a gear-wheel 270, which meshes with gear-wheel 268 and also with a gear-wheel 271 at the top of the drum. As the drum rotates it is evident that through this train of gears the paste-roll is rotated, so that the peripheries of the drum and paste-roll are rotated toward each other and with a surface speed of the paste-roll greater than the surface speed of the drum, thereby causing the paste to be spread onto the foil, as with a brush. The paste-roll is held in contact with the drum by means of the spring 197, hereinbefore referred to.

The rotation of the paste-roll at stations A and B is accomplished by a similar train of gearing to that just described.

It will be understood that the label-carrying drums at stations A and B are on a plane below the plane of the brushes, while at station C the label-carrying drum is on a plane

with the brushes. Pivotally secured to the collar 155 of the label-drum at station C is a guard 273, said guard provided with a projecting lug 274. (See Figs. 28, 29, 30, and 31.) A spring 275 is secured at station C at one end by means of two pins to the collar 155, and the other end of this spring is in position to contact with the lug 274 of the guard 273. This spring passes through an elongated slot 276 of an arm 277. This arm may be an extension of the spring 263. The guard 273 is normally at the position shown in Fig. 28. It will be understood that at station C the drum carries the tin-foil to be affixed with the side of the foil on which the paste is applied at the initial and terminal ends of said foil outermost. As the table is revolved and the brushes are successively being swung past the drum at station C a brush will act on the guard and swing said guard on its pivot to the position shown in Fig. 30. This will hold the brush out of contact with the foil on the drum, and consequently prevent the paste from getting onto the brush. After the table has revolved sufficiently far to bring the brush to working position and out of register with the drum the rotation of the table is stopped and the drum begins to revolve. With the revolution of the drum the recess of the annular plate 256 is brought to position to permit the wheel 255 of the paste-roll spindle to pass into said recess, and consequently an inward movement of the arm 277 is produced. This inward movement will release the spring-arm 275, and thereby cause an engagement of the free end of said spring-arm with the lug 274 of the guard 273, whereby said guard is turned back to normal position in order to permit the foil to pass from the drum to the bottle by the action of the rotation of the drum and by the action of the blast.

It will be understood that inasmuch as at station C only the tin-foil is applied to the bottle the smoothing and affixing rolls employed at stations A and B are omitted at station C and merely the two-part brush 120 and the contact-roller between the two parts of the brush are employed for affixing the foil to the bottle.

Mechanism must be provided for releasing the table. This mechanism is shown as located at station C and consists of a cam-wheel 278, which is mounted on the spindle 138^2. This cam-wheel actuates a lever 279. One end of this lever passes under a pawl 280, said pawl being carried by a standard 280'. The table has projecting therefrom a series of lugs 281, corresponding to the number of bottle-sockets on the table, said lugs adapted to be engaged by the pawl 280 as the table revolves. As each successive lug 281 is brought around into position to contact with the pawl 280 the table is necessarily stopped, so that the bottles are in register with stations A, B, C, and D. It will be understood that the pawl 279 before it is engaged by one of the lugs 281 is in the position shown in Fig. 10; but after the engagement, the pawl being of spring material, is forced back against a stop projecting from the standard 280', as shown in Fig. 9, the spring-pawl therefore acting to cushion the table in stopping said table. The spring, however, after the table is stopped is not strong enough to cause any movement of said table against the force of the driving friction. After the several operations at the stations are completed the cam 278 will have been rotated sufficiently far to cause a turning of the lever 279 on its pivot, so as to raise the pawl 280 to the Fig. 10 position, and thereby permit the table to again rotate. This lever 279 also has an additional function in connection with the pin 142, which engages the recesses 141 in wheel 140. When the pawl has been raised to the position shown in Fig. 10, the table 90 will continue its rotation, and at this time it is of course necessary to release the pawl 280 in order to engage the next stop of the table. This is effected by reason of the pin 142 engaging the recess 141, the pin not being in the center of the recess at the time the pawl is released. This engagement of the pin will cause a partial rotation of the shaft 138^2 and the cam 278, which partial rotation of the cam will release the lever 279 and also the supported pawl 280. At station C, I also show mechanism for accurately positioning the cutting edge of the drum with relation to the cutting-knife to guard against improper positioning due to lost motion of the gearing. While this mechanism is not absolutely essential, it is provided for the purpose of securing greater accuracy of work of the machine. It will be understood that this mechanism is also duplicated at stations A and B. It consists in providing the bottom of each drum with a series of equidistant recesses 282, one of which being shown in Figs. 17, 26, and 31, which are adapted to be engaged by a pin 283, mounted in a casing 284 and pressed by a spring 285, located in the casing, said spring being properly tensioned by means of a screw. (See Figs. 17 and 41.) This pin is adapted to engage one of the recesses when the label-drum is in position to cut off a label. When the label-drum again starts to revolve, the pin rides out of the recess. Attention is also directed to the fact that the pin 142, which is adapted to engage the recesses 141 in wheel 140, acts to position the gearing and also assists the pin 283 in positioning the drum. It is necessary to position the gearing in order to bring the terminal tooth of each series of teeth in wheel 139 in position to be engaged by the first tooth of the mutilated gear-wheel 131.

In regard to the label-spools at stations A and B and the tin-foil spools at station C, (designated by the numerals 202 and 203) mounted on the plate 199 and which have heretofore been referred to, it is to be stated that the plate 199 at each of said stations is revoluble, the pivot for each plate consisting

of a depending journal 286. This journal fits in a box 287. These boxes are at the ends of the arms 52, 52′, and 52², located at stations A, B, and C, respectively. The journals 286 are each provided with diametrically opposite recesses 288, said recesses adapted to be engaged by a spring-actuated pin 289. Passing through the bottom of each box 287 is a supporting-screw 290. The recesses 288 should be slightly elongated vertically in order to permit the screw 290 to adjust the journal 286 vertically, this adjustment being for the purpose of positioning the labels with respect to the drum. Whenever the label or foil, as the case may be, has been almost exhausted on one of the spools, the plate is grasped by the hand and turned, the pin 289 riding out of the recess. The turning is continued until said pin snaps into the opposite recess. This will bring the other label-carrying spool in correct position for the label to be started and unwound.

The mechanism at station D will now be described. Referring to this mechanism, the numeral 291 indicates a tubular standard which passes through standard 280′ and is fastened therein. This standard 291 carries above the standard 280′ a collar 292. Above the collar 292 and supported thereon is a swinging sleeve 293, said sleeve provided with a projecting arm 294. At the upper end of the sleeve 293 projects another arm 295. Adjustably fastened in the arm 294 is a step 296 for the lower end of the spindle of a smoothing device 297. The upper portion of this spindle forms one member 298 of a centering and driving clutch, the other member of said clutch being indicated by the numeral 299 and carried at the lower end of a spindle 300, said spindle being journaled in the arm 295. The smoothing device 297 is preferably of the form of a hollow inflatable cushion. The upper bordering edge of the opening thereof is clamped between the clutch member 298 and the upper end of a sleeve 301. The lower bordering edge of the opening of the smoothing device is clamped between the lower surface of the sleeve 301 and a collar 302, all the parts being bound together by a nut in such a manner as to render the inside flexible sack of the smoothing device airtight. In order to introduce air into the inner sack of the smoothing device, I form an opening 303 through the collar 302, said opening registering with a passage 304 through the clamping portion of the inflatable sack and through the sleeve 301 and communicating with the interior of the sack. In the outer end of the opening 303 is fitted a tube 305, which may be connected up to any suitable source for supplying an inflatable agent, such as air. The passage 304 is controlled by means of a valve 306. This valve is carried at the end of a spring-arm 307. The valve normally closes the passage 304 by the action of the spring-arm; but when the inflating agent is forced through the passage the valve is thereby opened, but will be automatically closed by the action of the spring when the inflating agent is cut off. Rings 308, of flexible material, are clamped with the inflatable sack, and to these rings are secured, preferably by stitches, a soft outer covering 309. This outer covering has formed thereabout a rounded bead 310, said bead adapted to engage the neck of the bottle below the shoulder at the upper end of the bottle, as clearly shown in Fig. 20. Extending through the tubular standard 291 is a shaft 311. This shaft carries at its lower end a pinion 312, said pinion meshing with a gear-wheel 313, carried on the sleeve 70. The shaft 311 carries at its upper end a gear-wheel 314, which meshes with another gear-wheel 315, which in turn meshes with a pinion 316, carried at the upper end of the spindle 300. From this construction it will be seen that when rotation is imparted to the spindle 71 said rotation is imparted to the shaft 311 and from said shaft to the spindle 300, and consequently the smoothing device is thereby rotated. A spring-arm 317 (see Fig. 2) is secured at one end in a lug projecting from the collar 292 and at its other end is secured in a lug extending from the swinging sleeve 293. Projecting from the arm 295 is another arm 318, (see Fig. 7,) which carries a laterally-adjustable journal-pin, on which is mounted a roller 319. (See also Fig. 7.) The edge of the upper portion of the top plate 95 is formed with a series of cam formations 320, (see Figs. 1 and 6,) and the roll 319 is adapted to ride around these cam formations. When the roll is riding on the raised portions of the cam formations, it carries the smoothing device 297 free from contact with the brushes as the table revolves, thus avoiding any unnecessary wear and tear on the smoothing devices. When, however, the bottle comes to position to be acted upon, the roll rides in the depressions between the cams and allows the smoothing device to act on the foil. The object of the spring-arm 317 and the swinging sleeve 293 is to tension the smoothing device 297 and at the same time admit of the roll 319 following the cam-surfaces and permitting the smoothing device to be carried away from the brushes.

The general operation of the machine will now be explained.

In the first place the driving-shaft 66 is rotated by any suitable power. The pinion 68, mounted on this shaft, communicates its rotation to the gear-wheel 69. The pinion 74, which is mounted on the journal-sleeve 70, on which the gear-wheel 69 is also mounted, being in mesh with the gear-wheel 75, communicates rotation to said gear-wheel 75. The gear-wheel 77, mounted on the hub of gear-wheel 75, being in mesh with gear-wheel 78, rotation is also imparted to said gear-wheel 78. The rotation of shaft 71 will cause a rotation of the double gear-wheel 82 at the upper end of this shaft, and as the lower mem-

ber of this double gear-wheel is in mesh with a pinion 83, and as pinion 83 meshes with another pinion 84, and pinion 84 in turn meshes with the friction-gear 86, said friction-gear is finally rotated. This friction-gear therefore is continually rotated during the operation of the machine. This rotation of the friction-gear will cause a rotation of the table; but this rotation of the table is necessarily intermittent, owing to the engagement with the table of the mechanism hereinbefore described for intermittently stopping said table. As the lower portion of the tubular standard 89 is secured to the bushing 88 and as said bushing rests on the friction-gear 86, the rotation of said friction-gear will normally carry around with it by friction the table and parts carried by said table. When, however, the table is stopped by the stopping mechanism, said stopping mechanism will overcome the tendency of the table and its parts to be rotated by friction, and hence the friction-gear 86 will continue to rotate while the table is thus held against rotation. The shafts 92, which carry the bottle-sockets, are rotated by means of the engagement of the pinion 94, located at the lower end of each bottle-socket spindle, with the pinions 81, 81′, and 81^2, located, respectively, at stations A, B, and C, and by the engagement of said pinion 94 with the upper portion of the double gear-wheel 82, located at station D. It will be understood that these bottle-socket spindles are only rotated as the table arrives and is stopped at each station. At station A the pinion 81 engages a pinion 94. At station B the pinion 81′ engages a pinion 94. At station C the pinion 81^2 engages a pinion 94, and at station D the upper portion of the double gear-wheel 82 engages a pinion 94.

The rotation of the spindle-carrying brushes will now be described. This rotation is effected by means of the engagement of the gear-wheels 113 around each bottle-socket with the pinions 114, carried at the upper ends of the chuck-spindles 115. Each pinion 114 is held out of engagement with the gear-wheel 113, as shown by dotted lines in Fig. 21, by reason of the engagement of the lower end of the chuck-spindle with the level or plane surface of the cam 127, the end of said spindle riding on this level surface during a part of the revolution of the table. It will be understood that these brushes are only intended to perform their function of affixing the tinfoil to the upper end of the bottle at station C. Just after a bottle leaves station B and just before the bottle commences to revolve the lower end of the chuck-spindle reaches the end of the plane or level surface of the cam and descends one of the inclines similar to 128, whereby the pinion 114 is brought into mesh with the gear-wheel 113. At this time the gear-wheel 113 is revolved, and consequently revolution is thereby imparted to pinion 114, and hence to the spindle 118 and the brushes carried by said spindle.

The label-carrying drums are rotated in the following manner: It is to be noted that each bottle-socket spindle carries a pinion 321, which has not heretofore been referred to. The pinion of each bottle-socket spindle is adapted to be brought into meshing engagement with the upper portion of the double gear-wheel 131, located at stations A, B, and C, as each spindle is respectively brought to said stations. This engagement will cause a rotation of said double gear-wheel and its spindle. The rotation of the spindle 130 will cause the teeth of the mutilated member of the double gear-wheel 131, after a partial rotation of said mutilated gear member, to be brought into engagement with the gear-wheel 139, which gear-wheel will rotate wheel 147, and wheel 147 in turn will rotate the gear-wheel 150 and its spindle 149. As the spindle 149 also carries the gear-wheel 151 and as said gear-wheel 151 is in mesh with the gear-wheel 152 of the label-carrying drum, said label-carrying drum is of course necessarily rotated. The moment the table swings by, so as to disengage pinion 94 from gear-wheel 81 and pinion 321 from the upper member of the two-part gear-wheel 131, the rotation of the label-carrying drum is stopped and the pin 283 is forced into engagement with one of the recesses in the bottom of the label-carrying drum in order to adjust the position of said drum, and the pin 142 is forced into engagement with one of the recesses of wheel 140 in order to adjust the position of gear-wheel 139. It will be understood that when the label-drum ceases to rotate in the manner pointed out the blank space of the mutilated member of the double gear-wheel 131 registers with the gear-wheel 139, and the pin 134 is on the inclined portion of the cam 136 in a position to descend the incline. The action of the spring 133 on the plug 132 will cause a descent of said plug and a consequent downward riding of the pin 134 on the cam-surface, which will impart a slight rotation to the spindle 130, sufficient to bring the teeth of the mutilated gear member to its starting position, it being understood that the pin is then at the bottom of the two inclines on the cam.

At stations B, C, and D, as previously pointed out, the gear-wheels 147 and 150 are omitted and the label-carrying drums are rotated by the intermeshing of the gear-wheels 241, carried on the shafts 138′ and 138^2, located, respectively, at stations B and C and meshing with the pinion 152 of the label-drum.

The rotation of the paste-rolls at stations A, B, C, and D is accomplished in the manner already pointed out in the specification.

Referring to the different steps of the operation of the invention, it will be supposed that the table is being revolved and that a bottle is being carried toward station A. When the bottle reaches the proper position at this station, the table is stopped by the mechanism hereinbefore fully described. The bottle is

now rotated in the manner before explained and the label-drum at station A also rotated. It will be understood that before this operation takes place the label-strip is carried around between the roll 207 and the label-drum. By the rotation of the label-drum the label-strip is fed, said strip being held to the drum by the suction hereinbefore described. It will be readily seen that when the working or toothed surface of the double gear-wheel 131 disengages from the teeth of wheel 139 the rotation of the label-drum will cease and the pin 283 will engage one of the recesses of the drum, thereby positioning the drum as before explained and permitting the cutting mechanism to act in the manner also hereinbefore fully explained. The paste is fed into the inner portion of the paste-roller 193 through a flexible tube 325, which leads to a valve 322 for regulating the amount of paste fed to said paste-roll. The paste drips from the valve into the hollow spindle of the paste-roll. The paste so fed passes through the openings 194 and is taken up by the outer foraminous cover of said paste-roll and is applied by this cover to the outer portion of the label, this applying of the paste to the label, it will be understood, taking place while the drum is in motion. The tube 325 connects to a pipe 326, and this pipe is supplied with paste by means of a tube 327, which connects to pipe 326 and is extended therefrom through standard 45 and is connected with any suitable source of paste-supply. After a bottle has been operated upon at station A the releasing mechanism releases the table and said table starts to rotate in order to bring the bottle to station B. It will be understood that the label is being cut off at the time the table is in motion, or, in other words, when one of the bottles is being carried from one station to the other, so that immediately upon the arrival of the next bottle at station A the label with the paste thereon is ready to be blown onto the body of the bottle, the blast hereinbefore described forcing, first, the end of the label to the bottle or receptacle and then succeeding parts of the label to said bottle or receptacle. The label, with the paste on the outer side thereof, is transferred to the bottle with the pasted side of the label next to the bottle, as clearly shown in Fig. 23, the label being carried by the rotation of the bottle between said bottle and the rolls 162, said rolls smoothing and firmly affixing the label to the bottle. At station B a label is affixed to the lower portion of the neck of the bottle, and the same operations take place at said station as described in reference to station A, excepting that at station B the affixing mechanism consists merely of two rolls (see Fig. 16) instead of a greater number, as is necessary at station A, in view of the diminished width of the label-drum at said station B and the consequent diminished number of openings in the label-drum. At station C the same operations take place, excepting that at this station instead of affixing a label a tin-foil is affixed to the upper end of the neck of the bottle. The affixing-rolls 162, however, are omitted at this station, and in lieu thereof the two-part brush 120 and intermediate contact-roller 122 come into play, the two-part brush brushing the foil onto the upper end of the neck of the bottle and the contact-roll pressing the foil well beneath the shoulder of the neck of the bottle as well as holding the tin-foil against the action of the brush, said tin-foil being thereby made to conform to the irregular surface of the bottle. At station D the only operation which takes place is the engagement of the pneumatic smoothing device 297 with the already-applied tin-foil, said device finally smoothing the foil to the neck of the bottle, the smoothing device and the brush working together at this station. After a bottle has thus been successively acted upon at the several stations and after it finally leaves station D it can then at any time be readily removed from the table and another bottle substituted therefor.

In reference to the mechanism for properly adjusting and centering the bottles to the table it is to be stated that as the tubular column 89 revolves the several rollers 102 are adapted to rotate on the cam-surface 108 at the upper end of said column and to ascend one incline and descend the other, thereby traveling from a lower to a higher plane, and vice versa. As one of the rollers 102 travels up an incline it will cause the rocking head 101 to turn on its pivot and force downwardly the pin 106. This will cause said pin 106 to press on the stopper or cork of the bottle and force the lower end of the bottle firmly into the socket 91. After thus ascending the incline the roller rides around on the highest plane of the surface 108 until it reaches the other incline, which incline it descends. This descent allows the spring 103 to act on the rocking head 101 and cause a raising of the pin 106 out of contact with the stopper of the bottle, after which the roller rides around on the lower surface of the cam 108, which surface serves to hold the rocking head and the pin in their raised position. It will be understood, of course, that with each rocking the same operation is repeated. The object of providing the rocking head with the springs 104 104 is to permit said springs to allow or compensate for any inequalities in the stopper of the bottle or for any variations in the lengths of the bottles. In adjusting a bottle in the first place the upper end of the bottle is passed into the socket 98 and the lower end of the bottle swung against the rollers 65, which are adjacent to a bottle-socket 91, said rollers centering the lower end of the bottle directly in alinement with the socket 98.

Referring to the roll 207, it will be noticed that this roll is shown as provided with an outer cover 323, of some soft or yielding ma-

terial. This cover insures the pressing of the label firmly to the label-drum throughout the width of the label-strip.

While I have herein shown and described certain forms of construction for various parts of the machine, yet I do not wish to be understood in any sense as restricting myself to details of construction, as it will be apparent that various parts may be changed or modified without departing from the spirit and scope of my invention. The particular form of framework is of course non-essential. It is also not necessary that any particular direction of rotation of the bottles, brushes, &c., should be imparted thereto, so long as there is a relative motion therebetween. Again, it is not absolutely necessary to restrict myself to the particular arrangement of the openings 188 in the label-drum—that is, said openings being is circumferential alinement—inasmuch as it may be desirable to employ my machine for applying differently-shaped labels to bottles. In such case of course the openings referred to would be so arranged as to direct the blast onto the peculiarly-shaped label without waste of air or loss of vacuum. For instance, a diamond-shaped label is frequently applied to bottles. Under such circumstances the openings 188 could be arranged accordingly and the rolls 162 arranged to suit the new conditions, and the continuous strip of paper with the labels thereon could be made of diamond-shaped portions connected by a narrow strip, which strip could be severed by the cutting mechanism. Again, I wish it understood that my invention is not necessarily restricted to a plurality of stations, inasmuch as where one label is desired to be attached to a bottle the machine could be constructed with merely a single station, or, again, where but two labels are desired to be attached but two stations need be employed, and even additional stations similar to A B C may be employed where it is desired to attach more than three labels. Furthermore, the invention is not necessarily restricted to attaching labels to bottles, inasmuch as with slight variations it may be employed for attaching labels to cans or other receptacles.

In the present illustration of my invention I have shown the cam 278 as located only at station C. It will be understood, however, that this cam may be located at station B also, and by making a slight change in the mechanical arrangement of the machine the cam referred to could be disposed on shaft 138, which is similar to shafts $138'$ and 138^2, located at stations B and C. If the cam referred to were thus duplicated, an advantage would be gained, inasmuch as it might be desirable to use one, two, or all three stations, according to the number and kind of labels to be put onto the bottles. In case stations A and C are not needed—that is to say, if the machine is only desired for attaching one label—station C could be removed and station B put in place thereof, or all stations could be left and at one or more of said stations the labels need not be run onto the label-drum. In case one station is removed—for instance, station C—and station B substituted in place thereof the cam would operate the pawl 280 in a similar manner as explained in regard to station C. In case it is required only to put on two labels the mechanism at station C could be removed and the mechanism at station A transferred thereto. When the combination herein shown and described is used—that is to say, stations A, B, and C or more stations—the cam is placed at the station where the greatest amount of revolution of the bottle is required in order to wrap the label or the foil, it being understood that the speed of revolution of all the bottles is the same.

In view of the fact that the contact-wheel 122 and the pneumatic smoothing device 297 are flexible the rim of the contact-wheel will conform to the shoulder under the upper end of the neck of the bottle regardless of variations in the position of said shoulder due to different heights of bottles, and the same is true of smoothing device 297. This is clearly shown in Figs. 20 and 21, the dotted lines showing the differences in the heights of the bottles.

It will be noted that heretofore it has been stated that means are provided for moistening the outer foraminous cover of each affixing roll or series of rolls 162. When, therefore, the affixing-roll acts on the outer side of the label in order to apply the pasted side of said label to the bottle, instead of curling the label outwardly, which would be the natural tendency due to the moisture formed by the glue, and thereby interfering with the proper affixing of the label, the moisture applied to the outer side of said label will have a tendency to curl the label inwardly against the bottle to conform the label to the contour of the bottle, and thereby greatly assist the affixing operation.

It will be noticed that the side of the cam-block 127 is provided with a series of teeth 324. These teeth 324 engage the pinion 94 of each socket-spindle as the pinion passes from one station to the other, whereby the socket-spindle is revolved to a more or less extent between stations. The revolution so imparted is just sufficient to rotate the bottle, so that the neck-label at station B will be properly applied to the bottle—that is to say, the bottle will be turned the proper distance, so that when the neck-label is affixed the centers of the two labels will be in the same vertical plane or approximately the same vertical plane. The teeth 324 consist, preferably, of pins removably inserted in the cam-block, so that a greater or less number of pins may be employed in order to give the proper revolution to a bottle.

In all cases throughout the specification where intermeshing gears are employed and also shown in the drawings friction-wheels

or other forms of gearing may be substituted therefor without departing from the spirit and scope of my invention.

What I claim as my invention is—

1. In a label-attaching machine, the combination, of a table, a seat mounted thereon and having a contact-surface therearound, means for rotating the seat, a spindle carrying a wheel adapted to engage the contact-wheel of the seat, a brush-spindle connected to the wheel-carrying spindle and adapted to rotate therewith, and means for throwing the wheel-spindle into and out of mesh with the seat contact-wheel, said spindle-wheel being normally out of mesh with the seat-wheel, but being brought into mesh therewith at the time the brush-spindle is to be rotated.

2. In a label-attaching machine, the combination, of a table, a seat mounted thereon and having a contact-surface therearound, means for rotating the seat, a movable and rotatable spindle carrying a contact-wheel, a brush rotated by said spindle, and means for normally holding the wheel-carrying spindle at such position as to bring its wheel out of meshing engagement with the contact-surface of the seat, but permitting said wheel to be brought into mesh with the contact-surface of the seat at the period at which the brush should operate.

3. In a label-attaching machine, the combination, of a table, a seat mounted thereon and having a contact-surface therearound, means for rotating the seat, a spindle carrying a contact-wheel, a brush rotated by said spindle, and a cam operating on the wheel-carrying spindle to normally hold the contact-wheel out of mesh with the seat contact-surface, and to permit said wheel to mesh with the seat contact-surface at the time the brush-spindle is to be operated.

4. In a label-attaching machine, the combination, of a table, a seat mounted thereon and having a contact-surface therearound, means for rotating the seat, a removable and rotatable chuck-spindle carrying a contact-wheel, a brush-spindle chucked to the chuck-spindle so as to be rotatable but not movable therewith, and means for normally holding the wheel carrying the spindle at such position as to bring its wheel out of meshing engagement with the contact-surface of the seat, but permitting said wheel to be brought into mesh with the contact-surface of the seat at the time the brush-spindle is to be operated.

5. In a label-attaching machine, the combination, of a frame having a supplemental top frame, a bottle or receptacle carrying table, a label-carrying drum having blast and suction passages, means for operating the label-carrying drum, pipes supported by the supplemental top frame, means for supplying a blast to one of said pipes, means for creating a suction in the other of said pipes, a tube leading from the blast-pipe to the blast-passage of the drum, and a tube leading from the suction-pipe to the suction-passage of the drum.

6. In a label-attaching machine, the combination, of a frame having a supplemental top frame, a bottle or receptacle carrying table, a paste-roll having a passage or passages therethrough for the flow of paste to the exterior of said roller, a label-drum coöperating therewith, a pipe supported by the supplemental top frame, means for supplying paste to said pipe, and a tube leading from said pipe and communicating with the paste passage or passages of the paste-roller.

7. In a label-attaching machine, the combination, of a frame having a supplemental top frame, a bottle or receptacle carrying table, a label-affixing roll having a passage therein leading to the exterior of the roll, a pipe supported by the supplemental top frame, means for supplying a moistening liquid to said pipe, and a tube leading from said pipe to the passage of the affixing-roll, said affixing-roll adapted to apply the moistening liquid to the label.

8. In a label-attaching machine, the combination, of a spindle, a two-part brush mounted thereon adapted to contact with the neck portion of the bottle, and a contact-wheel intermediate of the two parts, adapted to press beneath the shoulder of the neck of said bottle.

9. In a label-attaching machine, a rotatable, flexible contact-wheel adapted to press beneath the shoulder of the neck of a bottle, said wheel being flexible in the direction of its axis.

10. In a label-attaching machine, the combination, of a brush-spindle having a shoulder thereon, a sleeve encircling the spindle and provided with an intermediate enlargement, a two-part brush having the hubs thereof surrounding the sleeve, said sleeve and the hub of one of the parts of the brush resting on the shoulder of the spindle, a nut turning on a threaded portion of the spindle against the opposite end of the sleeve and against the hub of the other part of the brush, and an intermediate contact-wheel surrounding the enlargement of the sleeve.

11. In a label-attaching machine, the combination of a rotatable brush adapted to act on a bottle or receptacle for the purpose of smoothing a label thereon, and a rotatable, flexible contact-roll 122 adapted to act in conjunction with the brush, said roll being flexible in the direction of its axis.

12. In a label-attaching machine, the combination, of a label-carrying drum, a spindle, a mutilated gear-wheel mounted on the spindle, means for rotating said mutilated gear-wheel, a gear-wheel adjacent to the mutilated gear-wheel, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel adapted to be engaged by the teeth of the mu-

tilated gear-wheel on the rotation of said mutilated gear-wheel, a gearing between the label-drum and the gear-wheel which is adjacent to the mutilated gear-wheel, whereby the rotation of the mutilated gear-wheel is imparted to the drum, and means for stopping the direct propulsion of the mutilated gear-wheel at the proper time and for continuing the rotation of said mutilated gear-wheel to the point from which it started so as to again bring its untoothed portion in line with the teeth of the said adjacent gear-wheel.

13. In a label-attaching machine, the combination, of a label-carrying drum, a spindle, a mutilated gear-wheel mounted on the spindle, means for rotating said mutilated gear-wheel, a gear-wheel adjacent to the mutilated gear-wheel, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel having one or more blank spaces between its teeth at one or more points, adapted to be engaged by the teeth of the mutilated gear-wheel on the rotation of said mutilated gear-wheel, a gearing between the label-drum and a gear-wheel which is adjacent to the mutilated gear-wheel, whereby the rotation of the mutilated gear-wheel is imparted to the drum, and means for stopping the direct propulsion of the mutilated gear-wheel at the proper time, and for subsequently continuing its rotation to the point from which it started, so as to bring its untoothed portion in line with the teeth of said adjacent gear-wheel.

14. In a label-attaching machine, the combination, of a label-carrying drum, a spindle having a tubular portion with a slot extending therethrough, means for rotating the spindle, a plug disposed in the bore of the tubular portion of the spindle, said plug having a finger projecting therefrom through the slot, a spring acting against the plug, a mutilated gear-wheel mounted on the spindle, a gear-wheel adjacent to the mutilated gear-wheel, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel adapted to be engaged by the teeth of the mutilated gear-wheel on the rotation of said mutilated gear-wheel, a label-drum, a gearing between the label-drum and the gear-wheel which is adjacent to the mutilated gear-wheel, whereby the rotation of the mutilated gear-wheel is imparted to the drum, and a cam on which the finger projecting from the plug bears, said cam in connection with the finger and the spring adapted, after the direct propulsion of the mutilated gear-wheel has ceased, to continue the rotation of said mutilated gear-wheel to the position from which it started, with its untoothed portion in line with the teeth of the said adjacent gear-wheel.

15. In a label-attaching machine, the combination, of a movable table carrying a spindle, a pinion mounted on the spindle, means for rotating said spindle, a fixed station, a label-carrying drum at said station, a double gear-wheel one of the members thereof adapted to be engaged by the pinion of the spindle which is carried by the table, as the table brings said pinion into meshing engagement therewith, and the other member of the double gear-wheel being mutilated, a gear-wheel adjacent to the mutilated gear member, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel adapted to be engaged by the teeth of the mutilated gear member on the rotation of said mutilated gear member, and a gearing between the label-drum and the gear-wheel which is adjacent to the mutilated gear member.

16. In a label-attaching machine, the combination, of a spindle, a mutilated gear-wheel mounted on the spindle, means for rotating said mutilated gear-wheel, a gear-wheel adjacent to the mutilated gear-wheel, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel adapted to be engaged by the tooth of the mutilated gear-wheel on the rotation of said mutilated gear-wheel, a label-drum, a gearing between the label-drum and the gear-wheel which is adjacent to the mutilated gear-wheel, whereby the rotation of the mutilated gear-wheel is imparted to the label-drum, and mechanism acting on the label-drum to position the same upon the cessation of the rotation of the drum.

17. In a label-attaching machine, the combination, of a spindle, a mutilated gear-wheel mounted on the spindle, means for rotating said mutilated gear-wheel, a gear-wheel adjacent to the mutilated gear-wheel, said mutilated gear-wheel when not rotating having its untoothed portion in line with the teeth of the adjacent gear-wheel, so that said gears are normally out of meshing engagement, but said adjacent gear-wheel adapted to be engaged by the teeth of the mutilated gear-wheel on the rotation of said mutilated gear-wheel, a label-drum, a gearing between the label-drum and the gear-wheel which is adjacent to the mutilated gear-wheel, whereby the rotation of the mutilated gear-wheel is imparted to the label-drum, and mechanism acting on the gearing to position the gearing after the stopping of the rotation of said gearing.

18. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a label-carrying device adapted for carrying a label-strip, an affixing-roll separate from and independent of the label-carrying device, and adapted to bear on the label-strip as the strip is forced onto the bottle, said affixing-roll provided with a blast passage or

passages, and means for causing a blast exterior of the affixing-roll and directed through the passage or passages of said roll and between the bottle and roll and against the label-strip, to force said strip onto the bottle.

19. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a label-carrying device adapted for carrying a label-strip, a plurality of spaced affixing-rolls adapted to bear on the label-strip as said strip is forced onto the bottle, and means for causing a blast to be directed between the bottle and the roll and against the label in order to force said label onto the bottle or receptacle.

20. In a label-attaching machine, the combination, with a label-carrying device, an affixing-roll adapted to bear against and affix the label to a bottle or receptacle, and means for moistening the roll so as to apply a moistening liquid to the outer side of the label.

21. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a labeling device, a swinging part located above the labeling device, an arm projecting from one point of the swinging part, an elastic connection between said arm and a fixed arm, a projection from another point of the swinging part, and an affixing-roll carried by the projection.

22. In a label-attaching machine, the combination, of a label-carrying device, a label-affixing roll having a foraminous or absorbent surface, and means for supplying a moistening liquid to the foraminous or absorbent surface, whereby said surface is adapted to apply the moistening liquid to the labels.

23. In a label-attaching machine, the combination, with a pivotally-carried spindle, of a label-affixing roll mounted thereon, the pivotally-carried spindle adapting the roll to conform to varying tapers of bottles or receptacles.

24. In a label-attaching machine, the combination, of a pivotally-carried spindle, a label-affixing roll mounted thereon, the pivotally-carried spindle adapting the roll to conform to varying tapers of bottles or receptacles, a finger projecting from the pivot, and a stop with which the finger contacts when the roll is not in contact with a bottle or receptacle, in order to limit the extent of the swinging of the roll.

25. In a label-attaching machine, the combination, of a label-drum, a feed-roll, a pivoted part in which the feed-roll is journaled, and means for yieldingly holding the feed-roll constantly in contact with the label-drum.

26. In a label-attaching machine, the combination of a movable bottle or receptacle carrying table formed or provided with a cam-surface, a bar slidingly mounted exterior of the table, and one end of the bar adapted to be acted upon by the cam of the table in order to force said bar in one direction, means for forcing the bar in an opposite direction, a rack formed or provided on the bar, cutting mechanism adapted to effect the cutting of a label, said cutting mechanism formed or provided with teeth adapted to be engaged by the rack, whereby as the rack is actuated the teeth thereof will engage the teeth of the cutting mechanism, and thereby cause said cutting mechanism to act.

27. In a label-attaching machine, the combination, of a movable bottle or receptacle carrying table formed or provided with a cam-surface, said cam-surface provided at its initial end with two steps, and at its terminal end with a gradually-rising surface, a bar slidingly mounted exteriorly of the table, and one end of the bar adapted to be acted upon by the cam of the table in order to force said bar in one direction, means acting on the opposite end of the bar to force said bar in the opposite direction, a rack formed or provided on the bar, and cutting mechanism adapted to effect the cutting of the label, said cutting mechanism formed or provided with teeth adapted to be engaged by the rack.

28. In a label-attaching machine, the combination, of a bottle or receptacle carrying table formed or provided with a cam-surface, a stationary piston having inlet and exhaust passages therein, a cylinder mounted around said piston and provided with inlet and exhaust passages adapted to register with the inlet and exhaust passages of the piston, and said cylinder also provided with teeth, cutting mechanism carried by the cylinder, a bar slidingly mounted exteriorly of the table, said bar formed or provided with a rack adapted to engage the teeth of the cylinder, one end of the bar adapted to be acted upon by the cam of the table in order to force said bar in one direction, means for forcing the bar in the opposite direction, and stops adapted to contact with the rack-bar in order to limit the degree of turning of the cylinder, whereby the inlet-passage of said cylinder is brought into register with the inlet-passage of the piston, when the cylinder is turned in one direction, and the exhaust-passage of the cylinder in register with the exhaust-passage of the piston, when the cylinder is turned in the opposite direction.

29. In a label-attaching machine, the combination, of a label-carrying drum, a feed-roll adapted to contact therewith, another roll constructed to be adjusted into or out of contact with the feed-roll, and means for causing the adjustable roll to contact with the feed-roll at different distances on the feed-roll, said adjustable roll and the feed-roll adapted to have a strip fed therebetween, said strip thence being fed between the feed-roll and the drum, and cutting mechanism adapted to coact with the drum in order to effect the cutting of the label, the distance of the point of action of said cutting mechanism from the point between the rolls where the strip is started being regulated by the adjustable roll so as to make said distance an exact multiple of the length of one of the labels.

30. In a label-attaching machine, the combination, of a label-carrying drum, a feed-roll adapted to contact therewith, an arm clamped to the axis of the feed-roll, a roll carried by the arm, said arm when unclamped permitting the roll carried thereby to be swung into contact at different distances on the feed-roll, said feed-roll and the roll carried by the arm adapted to have a strip fed therebetween, said strip thence being fed between the feed-roll and the label-carrying drum, and cutting mechanism adapted to coact with the drum in order to effect the cutting of the label, the distance of the point of action of said cutting mechanism from the point between the rolls where the strip is started being regulated by the roll carried by the adjustable arm, so as to make said distance an exact multiple of the length of one of the labels.

31. In a label-attaching machine, the combination, of a label-carrying drum, a feed-roll adapted to contact therewith, another roll constructed to be adjusted into or out of contact with the feed-roll, means for causing the adjustable roll to yieldingly contact at different distances on the feed-roll, said adjustable roll and the feed-roll adapted to have a strip fed therebetween, said strip thence being fed between the feed-roll and the drum, and cutting mechanism adapted to coact with the drum in order to effect the cutting of the labels, the distance of the point of action of said cutting mechanism from the point between the rolls where the strip is started being regulated by the adjustable roll, so as to make said distance an exact multiple of the length of one of the labels.

32. In a label-attaching machine, the combination of a label-carrying drum, a feed-roll adapted to contact therewith, another roll adapted to be adjusted into or out of contact with the feed-roll, a spring for holding the adjustable roll yieldingly in contact with the feed-roll when said feed-roll is adjusted in one direction, and constructed to hold the adjustable roll out of contact with the feed-roll when said adjustable roll is adjusted in the opposite direction, said adjustable roll and the feed-roll adapted to have a strip fed therebetween, said strip thence being fed between the feed-roll and the drum, and cutting mechanism adapted to coact with the drum in order to effect the cutting of the labels, the distance of the point of action of said cutting mechanism from the point between the rolls where the strip is started being regulated by the adjustable roll, so as to make said distance an exact multiple of the length of one of the labels.

33. In a label-attaching machine, the combination, of a label-carrying drum, a feed-roll, an arm clamped to the axis of the feed-roll, a pivot pin or stud carried by the arm, a spindle pivotally mounted on the pivot arm or stud, a roll carried by said spindle, said feed-roll and the roll carried by the spindle adapted to have a strip fed therebetween, said strip thence being fed between the feed-roll and the label-carrying drum, and cutting mechanism adapted to coact with the drum in order to effect the cutting of the label, the roll carried by the arm adapted to be swung into contact with the feed-roll, and the unclamping of said arm permitting the point of contact of the roll connected thereto with the feed-roll to be changed, in order to make the distance of the point of action of the cutting mechanism from the point between the rolls where the strip is started an exact multiple of the length of one of the labels.

34. In a label-attaching machine, the combination, of a label or foil carrying device, said device constructed to hold a label strip or foil thereto, and to expel the same therefrom at the proper time, a paste-roll, and an uneven surface adapted to act on the paste-roll so as to cause said paste-roll to act on the label strip or foil carried by the device only at the initial and terminal ends of said label strip or foil.

35. In a label-attaching machine, the combination, of a label or foil carrying drum, said drum constructed to hold a label strip or foil thereto and to expel the same therefrom at the proper time, an annular plate mounted on the axis of the label or foil drum, said plate provided peripherally with a double cut-away portion, a paste-roll adjacent to the label-drum, and a wheel mounted on the axis of the paste-roll, and adapted to contact with the annular plate on the axis of the drum, and to ride in the double cut-away portion of said annular plate, the paste-roll being adapted at this time to contact with the rear and initial ends of the label or foil, in order to apply paste thereto.

36. In a label-attaching machine, the combination, of a paste-roll, a distributing-roll constructed to be thrown into or out of contact with the paste-roll, and when thrown in contact therewith to distribute the paste evenly therearound, of a spring acting on the distributing-roll to hold it yieldingly in contact with the paste-roll, when said distributing-roll is adjusted in one direction, and adapted for holding the distributing-roll out of contact with the paste-roll, when said distributing-roll is adjusted in the opposite direction.

37. In a label-attaching machine, the combination, of a paste-roll, an arm extending from the axis of the paste-roll, a pivot-pin journaled in said arm, a journal-box pivotally mounted on said pin, a spindle carried by the journal-box, and a distributing-roll carried by the spindle.

38. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a label or foil carrying device, a pasting device adapted to apply paste to the label or foil, a brush adapted to act on the unpasted side of the label or foil to smooth the same onto the bottle or receptacle, as said label or

foil is fed from the label-carrying device onto the bottle or receptacle, and a guard to prevent the brush from contacting with the pasted side of the label or foil, while said brush is passing the label-carrying device.

39. In a label-attaching machine, the combination of a bottle or receptacle carrying table, a label or foil carrying device, a pasting device adapted to apply paste to the label or foil, a brush adapted to act on the unpasted side of the label or foil in order to smooth it onto the bottle or receptacle, as said label or foil is fed from the label-carrying device onto the bottle or receptacle, a pivoted guard adapted to be acted upon by the brush in order to swing said guard to a position to prevent the brush from contacting with the pasted side of the label or foil while said brush is passing the label-carrying device, and means for returning the guard to a normal position after the brush ceases to act thereon.

40. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a label or foil carrying device, a pasting device adapted to apply paste to the label or foil, a brush adapted to act on the unpasted side of the label or foil in order to smooth it onto the bottle or receptacle as said label or foil is fed from the label-carrying device onto the bottle or receptacle, a pivoted guard adapted to be acted upon by the brush in order to swing said guard to a position to prevent the brush from contacting with the pasted side of the label or foil while said brush is passing the label-carrying device, a revoluble plate provided with a cut-away portion or recess into which the paste-roll is adapted to ride, an arm carried by the paste-roll, said arm provided with an elongated slot, a spring-arm passing through said elongated slot, the free end of the spring-arm being adapted to act upon a shoulder extending from the guard, when the paste-roll rides into the cut-away or recessed portion of the plate, and when the brush passes the guard, in order to return said guard to a normal position.

41. In a label-attaching machine, the combination, of a bottle or receptacle carrying table provided with a projecting lug, a revoluble cam, a lever adapted to be acted upon by the cam, and a spring-pawl adapted to engage the lug of the table in order to stop the table, and when acted upon by the lever adapted to be released from engagement with the lug.

42. In a label-attaching machine, the combination, of a bottle or receptacle carrying table provided with a projecting lug, a revoluble cam, a lever adapted to be acted upon by the cam, an angular spring-pawl adapted to engage the lug of the table in order to stop the table, and when acted upon by the lever adapted to be released from engagement with the lug, and a stop against which one member of the angular pawl is adapted to bear, when the other member of said angular pawl is engaging the lug of the table.

43. In a label-attaching machine, the combination, of a label-carrying device, a rotatable plate carrying separate rolls of labels or foil, said plate adapted to be rotated so as to bring either of the rolls of labels or foil into position for the labels or foil to be carried thereoff onto the label-carrying device, and means for releasably locking the plate at the operative position of either of the rolls of labels or foil.

44. In a label-attaching machine, the combination, of a label-carrying device a rotatable plate carrying separate rolls of labels or foil and provided with a depending journal-pin, said pin provided at diametrically opposite points with recesses, a journal-box in which said pin is revoluble, and a spring-actuated pin adapted to engage either recess of the journal-pin, the recesses of the journal-pin being so disposed that the spring-actuated pin will releasably lock the plate at positions in which either of the rolls of labels or foil will be in operative position, for the labels or foil to be carried thereoff onto the label-carrying device.

45. In a label-attaching machine, the combination with a bottle or receptacle carrying device of a rotatable contact-roll 122 adapted to act on a bottle or receptacle, for the purpose of pressing a label or foil to the bottle or receptacle, said roll constructed so as to adjust itself to the varying lengths of bottles or receptacles below the necks of said bottles or receptacles, and also to adjust itself to such surface irregularities of the bottles or receptacles which are irregular in the direction of the axes of the bottles or receptacles.

46. In a label-attaching machine, the combination, with a bottle or receptacle carrying device, of an inflatable rotatable smoothing device arranged adjacent to the bottle or receptacle carrying device and adapted for smoothing a foil or label which has been applied to the exterior surface of the bottle or receptacle.

47. In a label-attaching machine, a flexible smoothing device adapted for smoothing a foil or label which has been applied to the neck of a bottle, said smoothing device provided with a bead therearound, said bead adapted to engage under the shoulder at the upper end of the neck of the bottle.

48. In a label-attaching machine, a hollow flexible smoothing device adapted for smoothing a foil or label which has been applied to the neck of a bottle, said smoothing device consisting of an inner flexible portion and an outer soft covering, the latter having a bead therearound, said bead adapted to engage under the shoulder at the upper end of the neck of the bottle.

49. In a label-attaching machine, the combination, of a spindle, a sleeve surrounding the spindle, a collar engaging the upper por-

tion of the spindle, a collar engaging the lower portion of the spindle, and a hollow flexible smoothing device having the bordering edges of its openings clamped between the collars and the opposite ends of the sleeve.

50. In a label-attaching machine, the combination, of a tubular standard, arms projecting therefrom, a smoothing device having its axis journaled in the arms, a shaft extending longitudinally in the tubular standard, means for rotating said shaft, and a gearing between the shaft and the axis of the smoothing device.

51. In a label-attaching machine, the combination, of a brush, a swinging smoothing device, an arm extending from the bearing of the smoothing device, a roller carried by said arm, a revoluble cam-surface on which the roller revolves, said cam-surface adapting the roller at certain periods to ride in depressions in the cam-surface, in order to permit the smoothing device to be brought into operative position, and a spring acting on the swinging smoothing device in order to tension the smoothing device and to admit of the roller carried by the arm following the cam-surface, and also permitting the smoothing device to be carried away from the brush.

52. In a label-attaching machine, the combination, of a tubular standard, a swinging sleeve mounted thereon, arms projecting from the swinging sleeve, a smoothing device having its axis journaled in the arms, a shaft extending longitudinally in the tubular standard, means for rotating the shaft, and a gearing between the shaft and the axis of the smoothing device.

53. In a label-attaching machine, the combination, of a bottle or receptacle carrying table, a brush carried by the table, a fixed station, means for stopping the table at the station, a smoothing device at the station, and means for causing the smoothing device and the brush to work together at the station.

54. In a label-attaching machine, the combination of a wheel, means for continually rotating said wheel, a tubular column supported on the wheel and adapted to be rotated by frictional contact therewith, a fixed column passing through the tubular standard, a cam mounted at the upper end of the tubular standard so as to bear frictionally thereon, a pin for securing the cam to the fixed column, a screw passing through the cam and entering said fixed column, and bottle or receptacle centering mechanism actuated by the cam.

55. In a label-attaching machine, the combination, of a table, a seat mounted thereon and having a contact-surface therearound, means for rotating the seat, a brush-spindle, mechanism between the brush-spindle and the contact-surface of the brush-spindle for rotating said seat, and a cam constructed to act so as to throw the mechanism between the brush-spindle and the seat into and out of operative position.

56. In a label-attaching machine, the combination, of a label-carrying device, a mutilated gear-wheel, means for rotating said wheel, mechanism between said wheel and the label-carrying device, and operated by the wheel to cause an operation of the label-carrying device and means for returning the mutilated gear-wheel to its starting position, after a prime propulsion of said mutilated gear-wheel has ceased.

57. In a label-attaching machine, the combination of a bottle or receptacle carrying device, means for rotating the bottles or receptacles thereon, a spindle or axis, a sectional roll mounted thereon, said roll adapted for affixing labels or tin-foil to a bottle or receptacle, and each section of the roll having independent rotation on the shaft or axis, whereby the speed of rotation of each roll will conform to the speed of rotation of that portion of the bottle or receptacle with which it is in contact.

58. In a label-attaching machine, the combination, of a label-carrying drum adapted to feed a label-strip, rolls adjacent to the drum, cutting mechanism adapted to coact with the drum in order to effect the cutting of the label, and means for adjusting the contact-point of the rolls so as to increase or decrease the distance of said contact-point from the cutting-point.

59. In a label-attaching machine, the combination, of a movable bottle or receptacle carrying device, a gear-wheel carried thereby, fixed stations, and a fixed rack located between the stations and in the path of movement of the gear-wheel, said teeth adapted to engage the gear-wheel in order to impart rotation to a bottle or receptacle between the stations.

60. In a label-attaching machine, the combination, of a movable bottle or receptacle carrying device, a gear-wheel carried thereby, fixed stations, and a fixed rack located between the stations and in the path of movement of the gear-wheel, said rack provided with removable teeth said teeth adapted to engage the teeth of the gear-wheel in order to impart rotation to a bottle or receptacle between the stations.

61. In a label-attaching machine, the combination, of a movable bottle or receptacle carrying device, fixed stations, means for affixing labels at the respective stations, and means for revolving the bottles or receptacles between the stations the proper distance so that the centers of the affixed labels will be in the same vertical plane or approximately the same vertical plane.

62. In a label-attaching machine, the combination, of a bottle or receptacle carrying device, label-feeding mechanism, and a moistening-roll adapted to act against the outer side of the label.

63. In a label-attaching machine, the combination, of a bottle or receptacle carrying device provided with a projection, a spring-pawl adapted to engage the projection of the carrying device, in order to stop said device and to cushion said device in stopping, and means for actuating the spring-pawl.

64. In a label-attaching machine, the combination of a bottle or receptacle carrying device, a brush carried by said device, and a contact-roll 122 also carried by the device, said brush and contact-roll, during the movement of the bottle or receptacle carrying device, being in holding contact with label or foil applied to the surface of the bottle or receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIS S. SHERMAN.

Witnesses:
A. L. MORSELL,
ANNA V. FAUST.