No. 648,364. Patented Apr. 24, 1900.

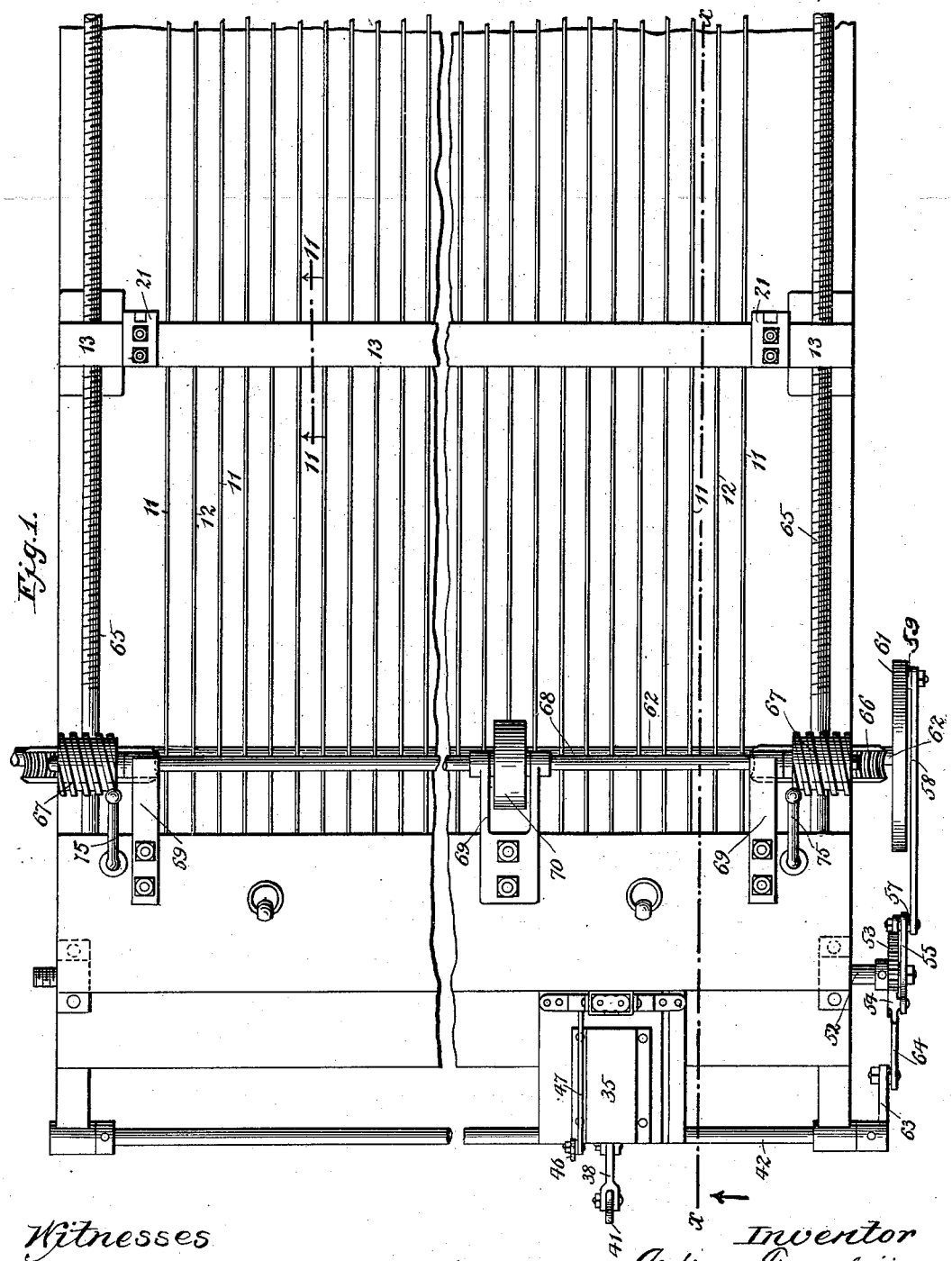
A. TRAVAGLINI.

MACHINE FOR MAKING MATTING.

(Application filed May 2, 1899.)

(No Model.) 8 Sheets—Sheet 1.

Fig. 1.



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8 Sheets—Sheet 2.

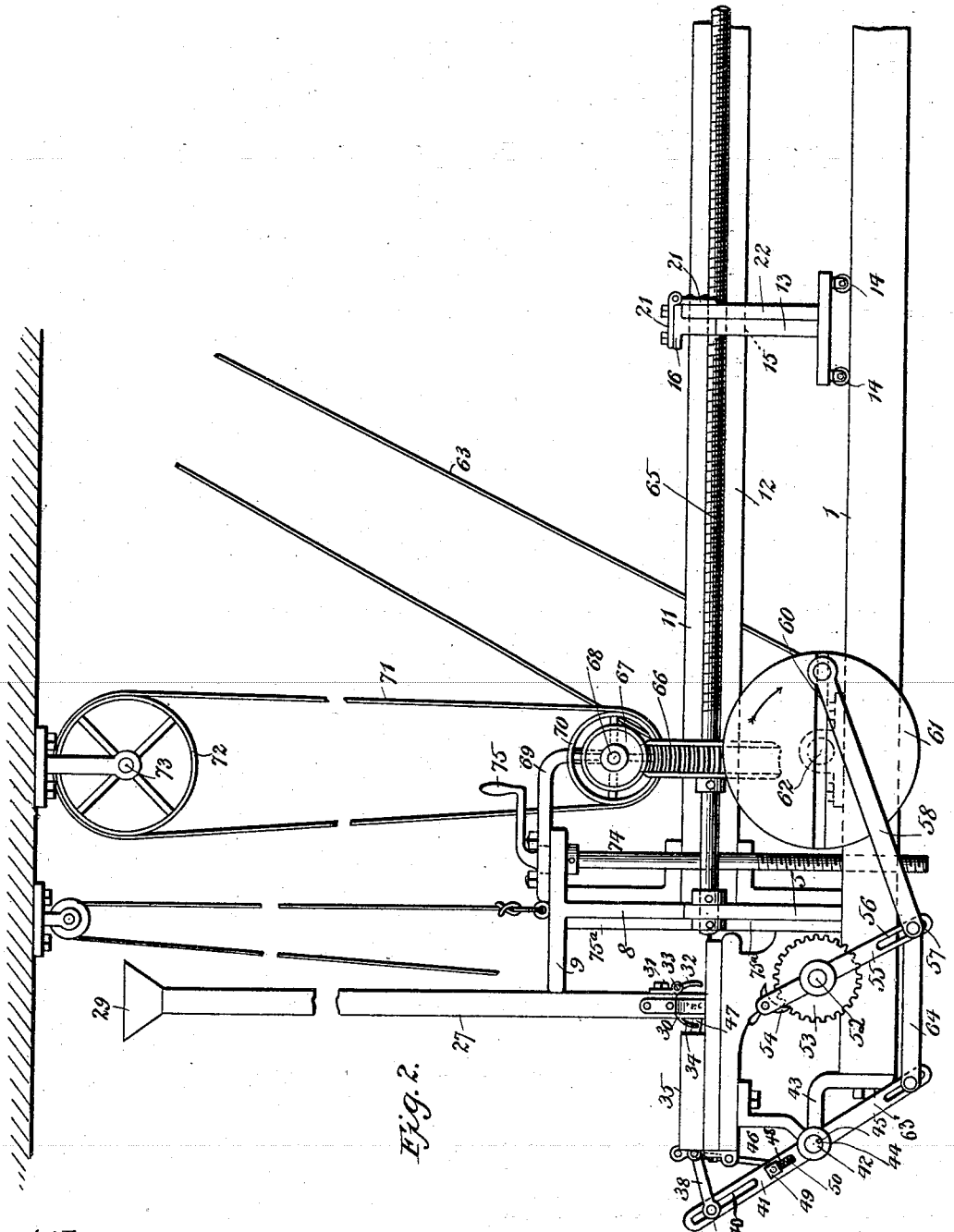

Fig. 2.

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8 Sheets—Sheet 3.

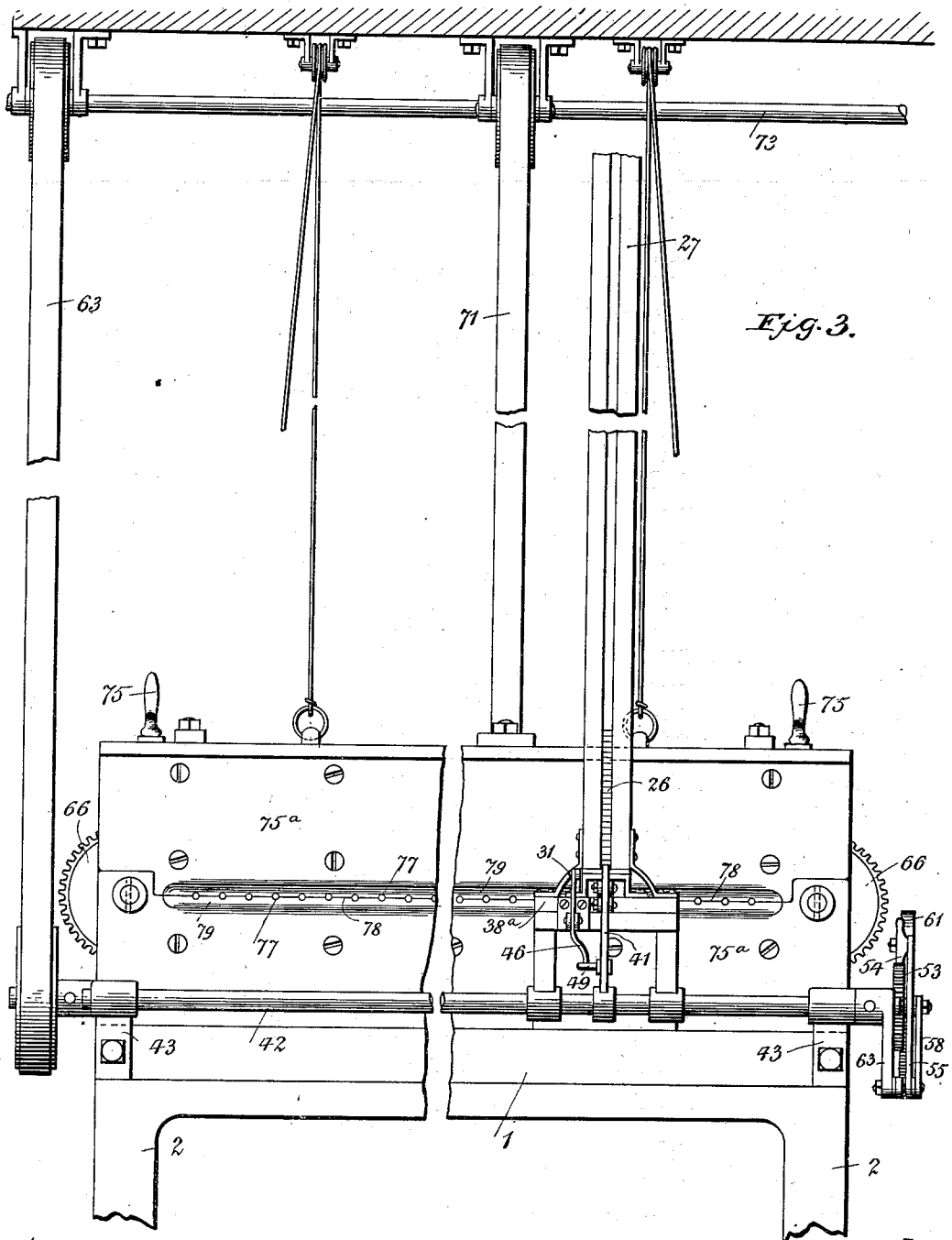

Fig. 3.

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(No Model.) 8 Sheets—Sheet 4.

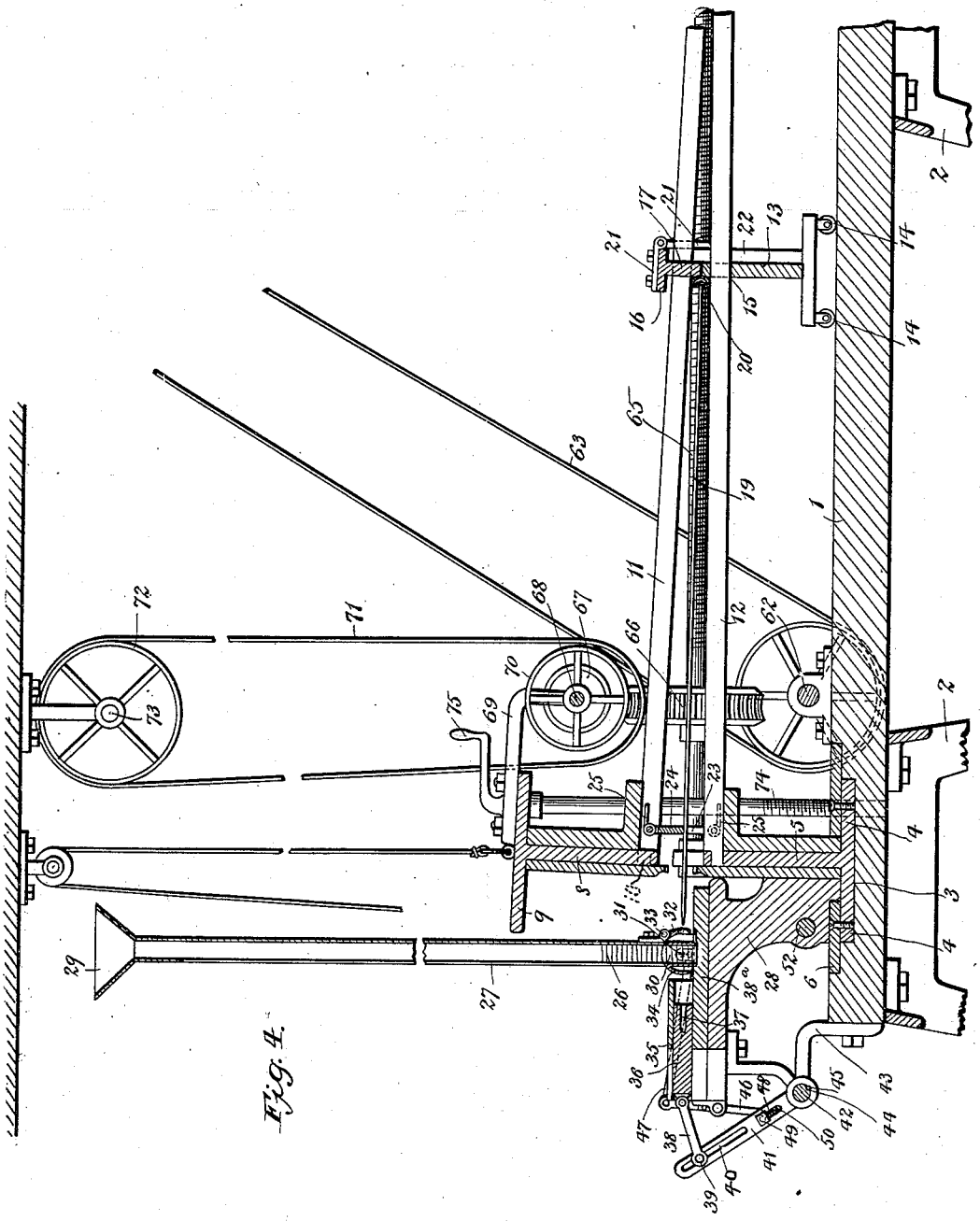

Fig. 4.

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(No Model.) (Application filed May 2, 1899.) 8 Sheets—Sheet 5.

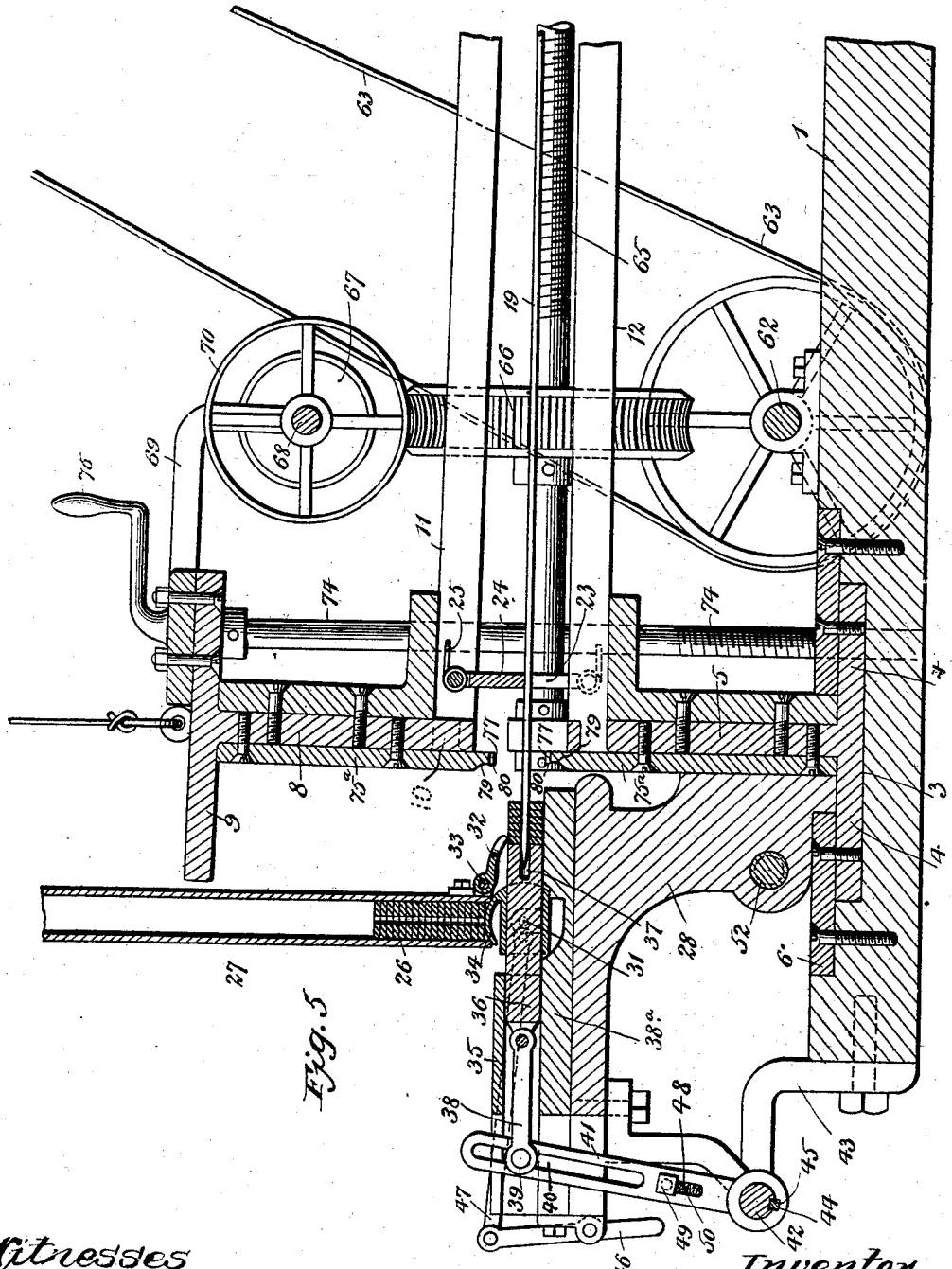

Fig. 5

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(No Model.) (Application filed May 2, 1899.)

8 Sheets—Sheet 6.

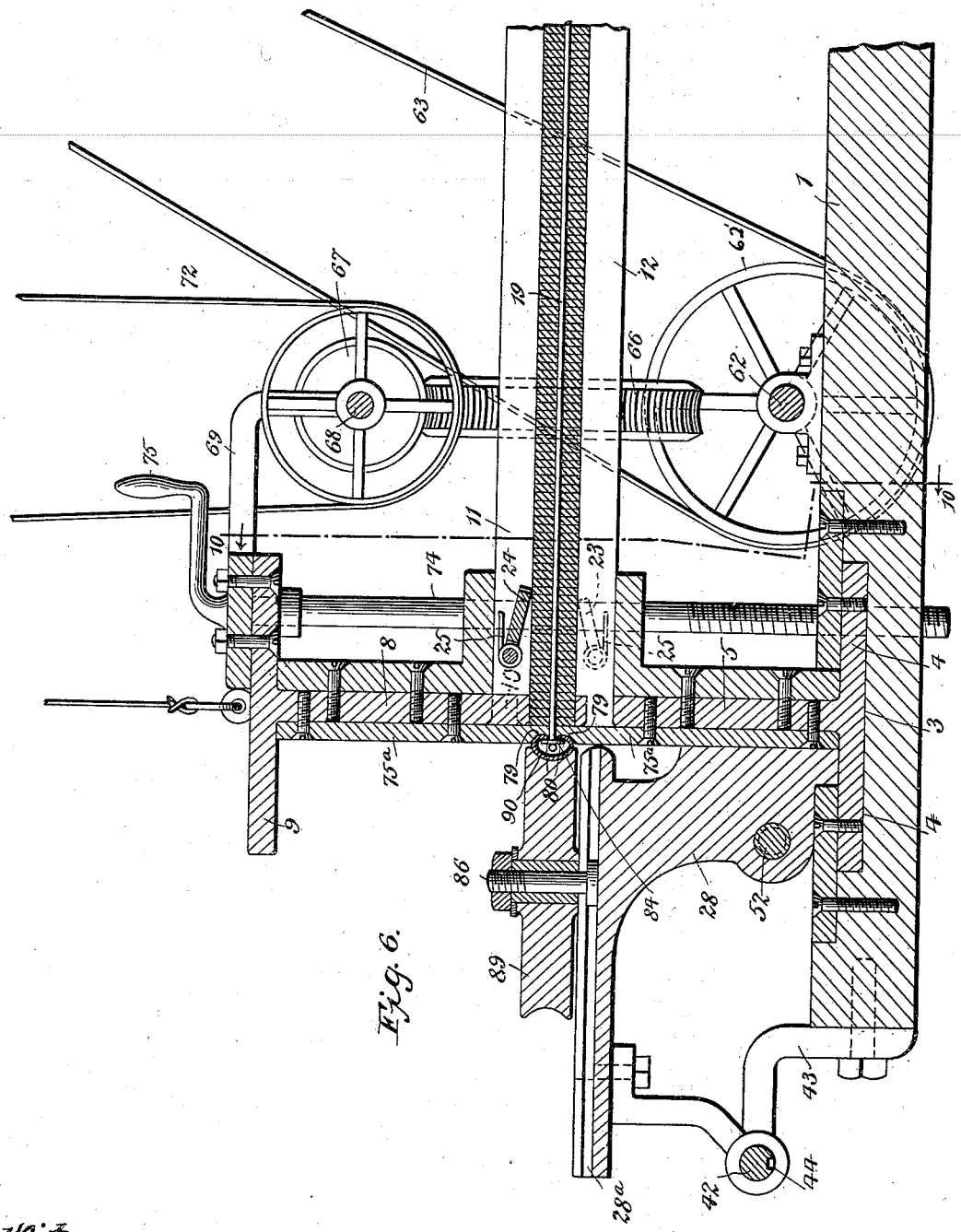

Fig. 6.

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(No Model.) (Application filed May 2, 1899.)

8 Sheets—Sheet 7.

Fig. 8.

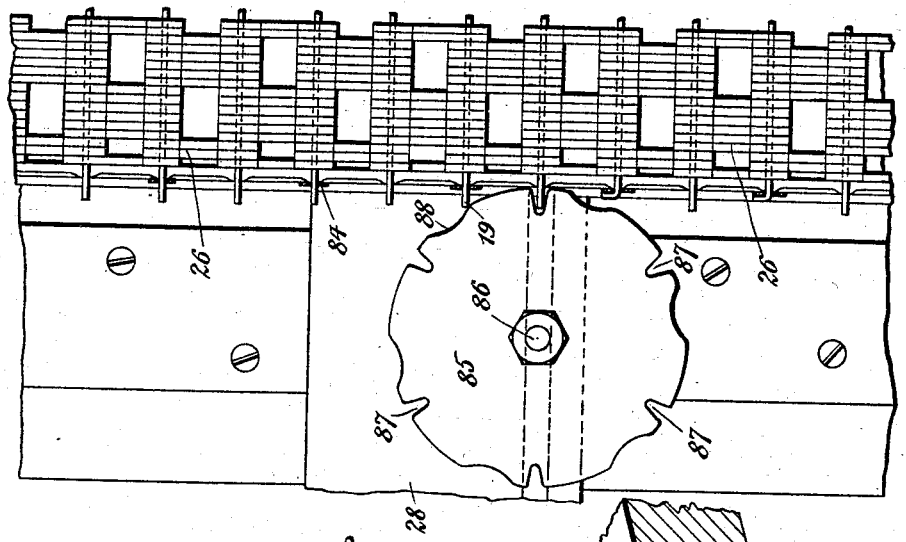

Fig. 7.

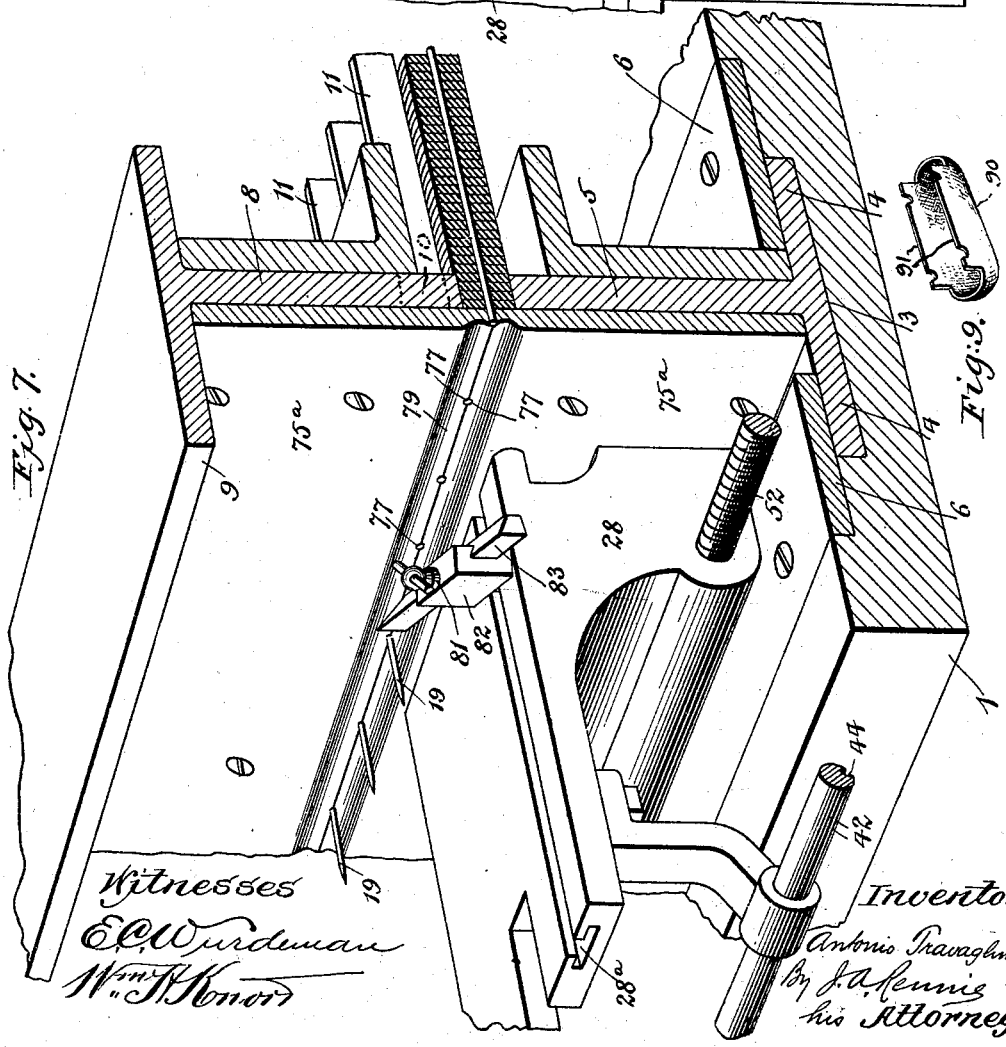

Fig. 9.

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(No Model.) 8 Sheets—Sheet 8.

Fig. 11.

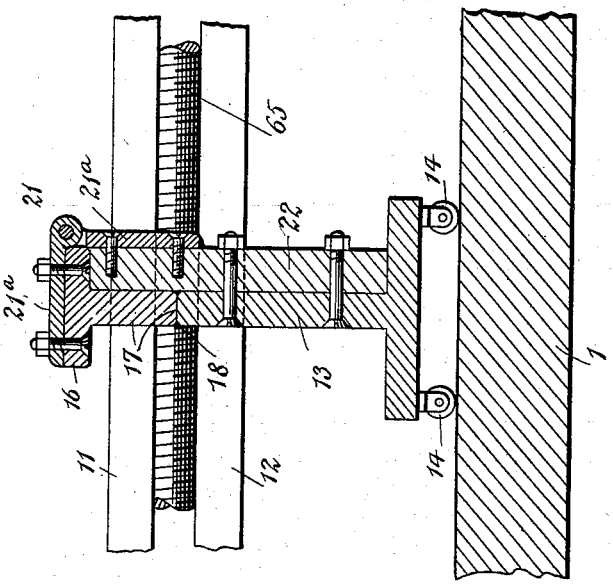
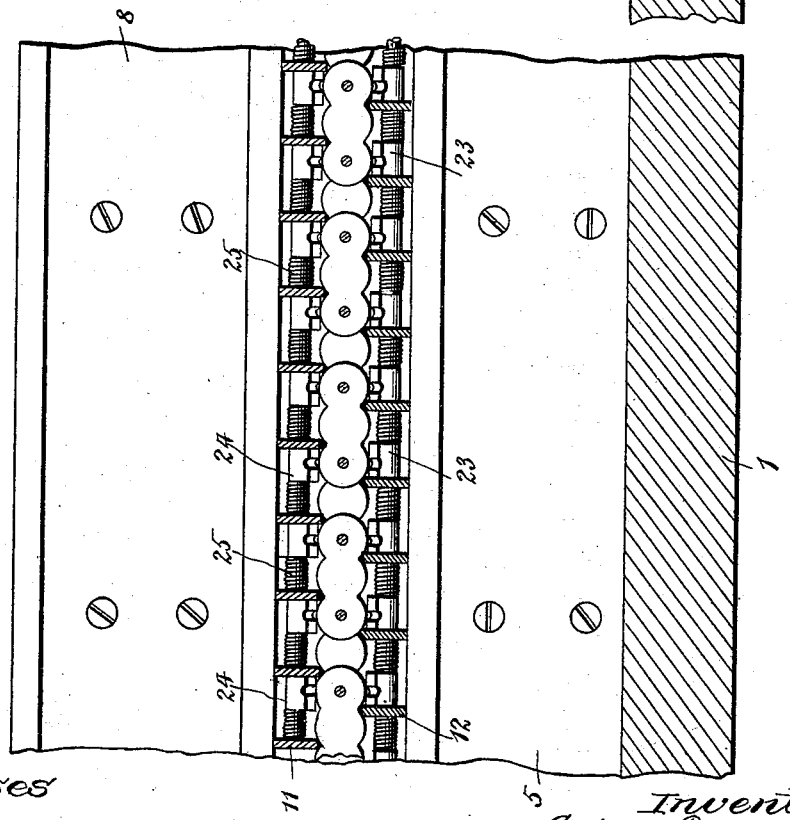


Fig. 10.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING MATTING.

SPECIFICATION forming part of Letters Patent No. 648,364, dated April 24, 1900.

Application filed May 2, 1899. Serial No. 715,382. (No model.)

To all whom it may concern:

Be it known that I, ANTONIO TRAVAGLINI, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Machines for Assembling or Stringing Strips or Small Sections upon Wires or Similar Fastening Devices, of which the following is a specification.

My invention relates to an improved construction of machine designed for assembling or stringing upon wires or similar fastening devices a plurality of juxtaposed strips or sections during the formation of a mat or matting, said strips being perforated and so arranged with relation to each other that when in position on the wires or fastening devices the strips in the first row and every other or alternate row will lie in perfect alinement, while the strips in the second row and every other or alternate row will lie in similar alinement, but in a different plane.

One object of my invention is to produce a machine of this character which will rapidly assemble the pieces or sections referred to, so that they may be quickly placed upon the wires or fastening devices in the manner described, said machine being so constructed as to produce mats of various lengths and widths.

A further object of my invention is to provide means whereby the said pieces when properly assembled are forced or compressed, so as to give greater solidity to the matting, as also means for cutting the protruding ends of the wires or fastening devices to a uniform and proper length.

A further object of my invention is to provide means whereby the ends of the wires may be bent over and upon the outermost strips composing the matting, and thus securing said strips against displacement.

The further object of my invention is to provide means whereby suitable cap or end pieces are rapidly placed along the edge of the matting in such manner as to cover the bent ends of the wires.

My invention consists of a machine adapted to receive a row of wires or similar fastening devices, an assembling device whereby the strips or sections are placed thereon and thereafter compressed, means for cutting the wires, and means for bending said wires upon the outermost strips or sections and for placing cap or end pieces thereover, whereby said wires are concealed from view.

My invention further consists of the novel features of construction and arrangement of parts, all of which will be hereinafter fully described, and particularly pointed out in the appended claim.

In order to more fully comprehend the nature of my invention and the manner in which the same is carried into effect, reference must be had to the accompanying drawings, which form part of this specification.

Figure 1 represents a plan view of the machine constructed in accordance with my invention. Fig. 2 represents a side elevation thereof. Fig. 3 represents a front elevation. Fig. 4 represents a section taken on the line *x x* of Fig. 1. Fig. 5 represents an enlarged detail sectional view showing the operative parts in the position they will assume after having forced a number of pieces on the wires or fastening devices. Fig. 6 represents a similar view showing the wires or fastening devices completely supplied with pieces or sections, the supply-chute and plunger having been removed and showing an end or cap piece applied to the ends of the wires or fastening devices. Fig. 7 represents a detail perspective view of a portion of the front end of the machine, showing the means for severing the protruding ends of the wires or fastening devices. Fig. 8 represents a detail plan view of the same, showing the cutter for severing the protruding ends of the wires removed, and in its stead the means for bending the wires over and upon the outermost pieces or sections of the matting are shown. Fig. 9 represents an inverted perspective view of one of the cap or end pieces as it appears before having been fastened to the matting. Fig. 10 represents a section taken on the line 10 10 of Fig. 6 looking in the direction of the arrows, said section showing a small portion of the machine. Fig. 11 represents a section taken on the line 11 11, Fig. 1, looking in the direction of the arrows.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

In said drawings, 1 designates the base-plate of the machine, upon which the opera-

tive parts are sustained, said base-plate being supported upon suitable legs 2.

The base-plate 1 is channeled or grooved, as shown at 3, to receive therein the laterally-projecting flanges 4 of a beam 5, which is retained in position thereon by means of plates 6, which fit in extensions 7 of the grooves 3, said plates being screwed to the flanges 4 and to the base-plate 1, as clearly shown in Fig. 6.

Immediately above the beam 5 and in vertical alinement therewith is a similar beam 8, the upper end of which is also provided with laterally-projecting flanges 9, while the lower end is provided with a series of slots 10, adapted to receive therein the ends of a plurality of bars 11, which extend rearwardly for any desired distance.

As will be observed by reference to Figs. 2, 4, 5, and 6, the bars 11 correspond with a plurality of bars 12, similarly secured in the upper end of the beam 5, and which also extend rearwardly to a distance corresponding with that of the bars 11, the whole arrangement being such that each of the upper bars will lie within the spaces between the lower bars 12.

13 designates a frame supported on rollers 14, which rest upon the base-plate 1, said frame being provided with open slots 15 to receive therein the bars 12 in such manner that the said frame may be moved backward and forward.

16 designates a beam which is arranged above the frame 13 and in vertical alinement therewith, said beam being provided with open slots 17, adapted to receive therein the ends of the bars 11, as clearly shown in the drawings, and it will be observed that the vertical portions of the frame 13 and beam 16 abut each other at a point between the bars 11 and 12, and thus form a wall 18, against which the wires 19 rest, being first provided, however, with caps or end pieces 20.

21 designates hinges secured to the ends of the beam 16, the members 21^a of which are secured, respectively, to standards 22, mounted upon the frame 13, and to the beam 16, which construction permits of the forward ends of the upper bars 11 being raised, so as to freely admit of the insertion of the wires 19. The forward ends of these wires are supported upon a series of gates 23, disposed between each of the bars 12 and pivotally supported, as shown. Another series of similarly-pivoted gates 24 is likewise provided between the bars 11, the same extending beyond the lower edges of said bars and in vertical alinement with the gates 23, both series of gates being held normally closed, as best seen in Fig. 4, by means of springs 25. The wires are thus held in proper position to receive thereon the leather pieces or sections 26, which I shall now proceed to describe.

27 designates a chute which is supported upon a traveling carriage 28, which in turn is supported upon the bed-plate 1 and is adapted to travel thereon in front of the wires or fastening devices 19. This chute is adapted to receive the pieces or sections 26, which are fed thereto through a hopper 29.

At the lower end of the chute 27 a bucket 30 is provided, which forms a continuation of said chute, the same being supported by pivots 31, upon which it is swung, by mechanism to be described, so that the pieces or sections contained in said bucket are brought into position to be placed upon the wires or fastening devices 19, said pieces having been previously provided with perforations to receive the said wires.

32 designates a plate pivotally held in brackets 33 and disposed in front of the wires 19 and behind the buckets 30, the object of said plate being to keep the pieces or sections 26 within said bucket 30 when it has assumed a horizontal position. A baffle-plate 34 is arranged along the upper outer edge of the bucket 30, so that when in the position just mentioned said baffle-plate will be moved to close the lower end of the chute 27, and thus prevent the strips or sections contained above it from falling out, as would otherwise be the case.

The carriage 28 is provided with a guide-way 35, adapted to receive therein a plunger 36, which is moved back and forth by mechanism to be described and forces the pieces or sections 26, that are contained in the bucket 30 after the latter has been moved to assume a horizontal position, upon the wires or fastening devices 19, it being observed that the forward end of said plunger is formed with an open slot 37, wherein the ends of said wires or fastening devices enter as said plunger advances.

The rear end of the plunger 36 is pivotally connected to a link 38, which in turn is pivoted to a block 39, adjustably held in a slot 40, formed in the outer free end of an arm or lever 41, which latter is loosely mounted on a shaft 42, which is rotatively supported in brackets 43, located at each end of the bed-plate 1, and said shaft is grooved longitudinally, as at 44, and the arm or lever 41 is provided with a feather 45, which moves in said groove, so that said arm, while being rocked to move the plunger 36 back and forth, will also move along the shaft 42 as the carriage 28 is operated back and forth.

46 designates an arm pivotally secured to the carriage 28, the upper end of which is linked to a rod 47, the forward end of said rod being pivoted to the bucket 30, at one end thereof, and the lower end of the arm 46 lies adjacent to and is engaged by a stud or block 49, projecting from the arm or lever 41. This stud or block 49 moves in a slot 48 in the arm or lever 41 and is normally held against the upper wall of said slot by means of a spring 50, so that when the arm or lever 41 is moved forward said stud will bear against the lower end of the arm 46, causing the bucket 30, through the rod 47, to be turned to assume a horizontal position, after which the spring 50,

through the continued movement of the arm or lever 41, will yield and allow the stud 49 to pass under the lower end of the arm 46 to the opposite side thereof, leaving the bucket 30, which is open at both ends, in position to receive the plunger 36. A reverse movement will of course cause the stud 49 to bring the bucket 30 back again to its vertical or normal position, after which the said stud will pass below the lower end of the arm 46 to the front thereof, ready to again supply the rods or fastening devices 19 with more pieces or sections 26.

52 designates a screw which extends along the front of the machine, being suitably supported in journals on the bed-plate 1, said screw passing through and engaging a threaded opening in the carriage 28 and being provided at its one end with a gear-wheel 53, the teeth of which are engaged by a dog or pawl 54, carried at one end of an arm or lever 55, which is loosely mounted upon the screw. The opposite end of said arm 55 is slotted at 56 to receive an adjustable block 57, to which is pivoted one end of a rod 58, the other end of said rod being pivoted to a similar block 59, adjustably secured in a slot 60, formed in the face of wheel 61, which latter is mounted on and secured to the driving-shaft 62. Thus when the parts are adjusted and the shaft 62 is given rotation through the pulley 62′ and belt 63 the rod 58 will move the arm 55 so that its attached dog 54, during one half the rotation of the wheel 61, will move backward until such time as it begins to complete the other half of its rotation, when the dog 54 will be moved forward and cause the gear-wheel 53 and screw to rotate, so as to move the carriage 28 the proper distance to bring the chute 27 in position to supply the wires or fastening devices 19 successively with the pieces or sections 26. Simultaneously with the above operation the bucket 30 is turned to bring it into a horizontal position, as before described, and the plunger 36 is moved forward and backward by means of an arm 63′, which is secured to one end of the shaft 42 and to which is pivoted a rod 64, which in turn is pivoted to the block 57 on the arm 55. The carriage 28 and its adjuncts described are thus moved along to supply the wires or fastening devices with the proper number of pieces or sections, and when said carriage has traversed the desired and predetermined distance the pawl or dog 54 will be tripped to cause its opposite tooth to engage with the teeth of the gear-wheel 53, thereby imparting motion thereto and causing the carriage 28 to travel back and coincidently supply the wires or fastening devices with more pieces or sections 26. After the carriage 28 is returned the dog or pawl 54 is again tripped to reverse the movement of said carriage, as will be understood. The wires or fastening devices 19 having been supplied with the exact quantity of pieces or sections 26, it will be desirable to subject the same to a pressure whereby said pieces or sections are compressed, so as to give greater solidity to the mat, and the mechanism for accomplishing this end I shall now describe.

65 designates screws which are suitably supported at each end in the beam 5 and arranged adjacent to and parallel with the outermost bars 11, the outer free ends of said screws being adapted to engage threaded openings in the frame 13 and being provided with worm-gears 66, the teeth of which are at times engaged by the teeth of worms 67, mounted upon each end of a counter-shaft 68, the latter being supported in brackets 69, secured to the beam 8, as clearly shown. The counter-shaft 68, at about its center, is provided with a pulley 70, which at times is engaged by a belt 71, driven by a pulley 72, secured to the main driving-shaft 73, and it will be observed by reference to Figs. 4 and 5 of the drawings that the said belt 71 is not in engagement with the pulley 70, nor are the teeth of the worms 67 in engagement with those of the worm-gears 66, owing to the beam 8 and its adjuncts being slightly elevated to admit of the pieces or sections 26 being properly strung upon the wires or fastening devices 19.

Screws 74 are provided at each end of the beam 8, which pass through openings therein and through openings in the beam 5, their lower threaded ends engaging threaded openings in the base-plate 1 and their upper ends being provided with crank-handles 75, by turning which the said beam 8 and its adjuncts may be raised or lowered when desired or necessary. The operation of lowering the beam 8 will bring the bars 11 down upon the upper edges of the pieces or sections 26, and at the same moment the pulley 70 will engage with the belt 71, and the teeth in the worms 67 will engage with those of the worm-gears 66, thus rotating the screws 65 and causing the frame 13 to move forward. This forward movement of the frame 13 will move the wires or fastening devices forward in the perforations in the pieces 26, the outermost row of which will bear against the plates 75^a, attached to the front face of the beams 5 and 8, respectively.

The abutting edges of the plates 75^a are provided with a plurality of the depressions 77, those in the lower plate being adapted to receive the outer ends of the wires, so as to keep them in perfect alinement, that they may readily receive the pieces or sections 26 when the parts have been adjusted to elevate the forward end of the beam 8 and its adjuncts.

It will be observed that the plates 75^a, from a point near their abutting edges, are channeled or grooved inwardly and longitudinally, as at 79, to a point near the extreme edges thereof, at which point the grooves or channels curve outwardly again, so as to form beads or projections 80, which extend along the entire length of said channels or grooves, so that when the parts have been operated to lower the beam 8 and its adjuncts the recesses in

the upper plate will register with those in the lower plate, and thus serve to retain the said wires, as well as to provide a wall or an abutment against which the outermost strips will bear while the same are being compressed, as previously described.

The carriage 28 is provided with a groove 28ª, which is formed in the table thereof and extends in a direction at right angles to the plates 75ª, said grooves being adapted to receive therein the head of a stud or screw 81, upon the shank of which is secured a block 82, adapted to receive and hold a chisel or knife 83, the position of which latter is such that the cutting edge thereof will enter the groove or channel 79 and sever the protruding ends of the wires as the carriage 28 is moved forward in the manner previously described. It will be observed that during this operation the chute 27 will be removed from the carriage and the plunger 36 thrown out of operation by unfastening the link 38 and removing a plate 38ª, which is in position on the table of the carriage 28. The protruding ends of said wires having been severed, as just described, the mechanism for compressing the mat is again brought into operation, so that a further slight compression may result in order that the wires or fastening devices may protrude only far enough beyond the edges of the plate 75ª to be bent over and upon washers 84, each of which is perforated in such manner as to receive two of the wires or fastening devices 19, and the ends of the wires or fastening devices 19 thus protruding are bent by means of a wheel 85, which is carried upon a stud 86, the head of which is adapted to fit in the slot 28ª of the carriage 28 after the cutter and its adjuncts have been removed. As will be observed, the periphery of the wheel is provided with radially-disposed open slots 87, which are distanced so as to receive every alternate wire when the carriage is moved back and forth, and immediately adjacent to each of said slots 87 the periphery of the wheel is formed with depressions 88, which contact with the second and every alternate wire and bend it over upon the washer, as clearly shown in Fig. 8. Thus as the carriage is moved in one direction every alternate wire will be bent, and when said carriage has reached the limit of its movement the wheel 85 is removed and turned upside down, so that in the return movement of the carriage the wires or fastening devices which have remained intact will be bent in a similar manner to that just described. The final operation, which is that of placing upon the edge of the mat the cap or end pieces 90, which cover the bent ends of the wires, is thus performed. The wheel 85 having been removed from the stud 86 will be replaced by another wheel 89, whose periphery is provided with a plurality of depressions adapted to receive therein the end or cap pieces 90, (shown in detail in Fig. 9,) the wings 91 of which being adapted to fold under the washers 84, whereby said caps are held against displacement. It will be seen upon reference to Figs. 6 and 7 that by reason of the bead 80 of the plates 75ª the washers will be held away from the inwardly curved or channeled portion of said plates, so that as the carriage is moved and the wheel caused to rotate the caps or end pieces will be successively brought into position to engage said washers, the spaces between which and the channels or grooves being such as to readily admit of the wings of the caps or end pieces passing under the washers.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

A machine for the purposes described, having means adapted to receive a row of wires or similar fastening devices, an assembling device wherein are held a number of strips or sections, means for moving said strips along the line in front of said fastening devices, and for stringing thereon a predetermined number of said strips, and for afterward compressing the same, means for cutting the protruding ends of the wires after they have been fully supplied with strips, and means for bending said wires over and upon the outermost strips or sections, and for placing caps or end pieces thereover, whereby said wires are concealed from view.

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