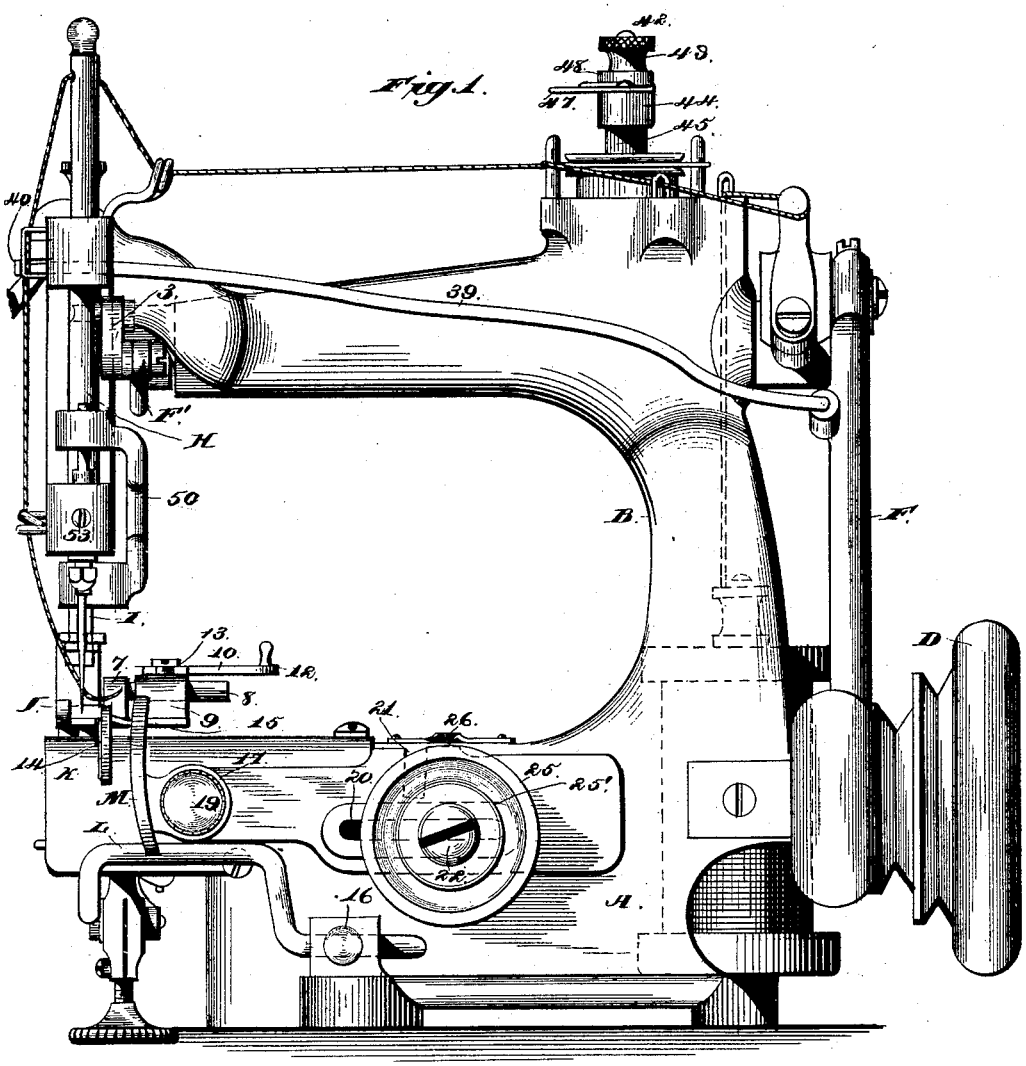
(No Model.). 5 Sheets—Sheet 1.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

No. 345,802. Patented July 20, 1886.

Fig. 1.



Witnesses:
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Edward L. Wills.

Inventor:
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by Munn & Co
Atty.

(No Model.)

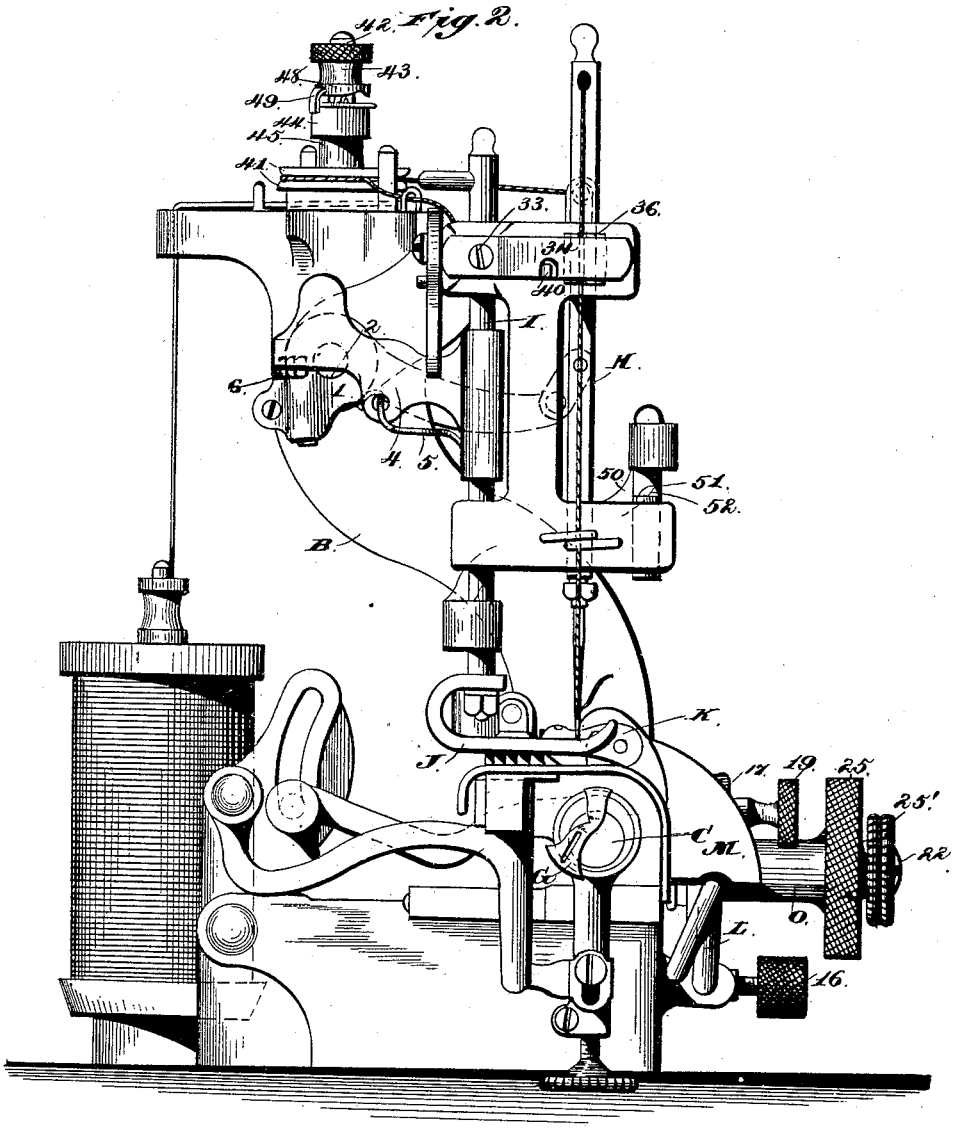
5 Sheets—Sheet 2.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

No. 345,802. Patented July 20, 1886.

Fig. 2.



Witnesses:
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(No Model.) 5 Sheets—Sheet 3.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

No. 345,802. Patented July 20, 1886.

Fig. 3.

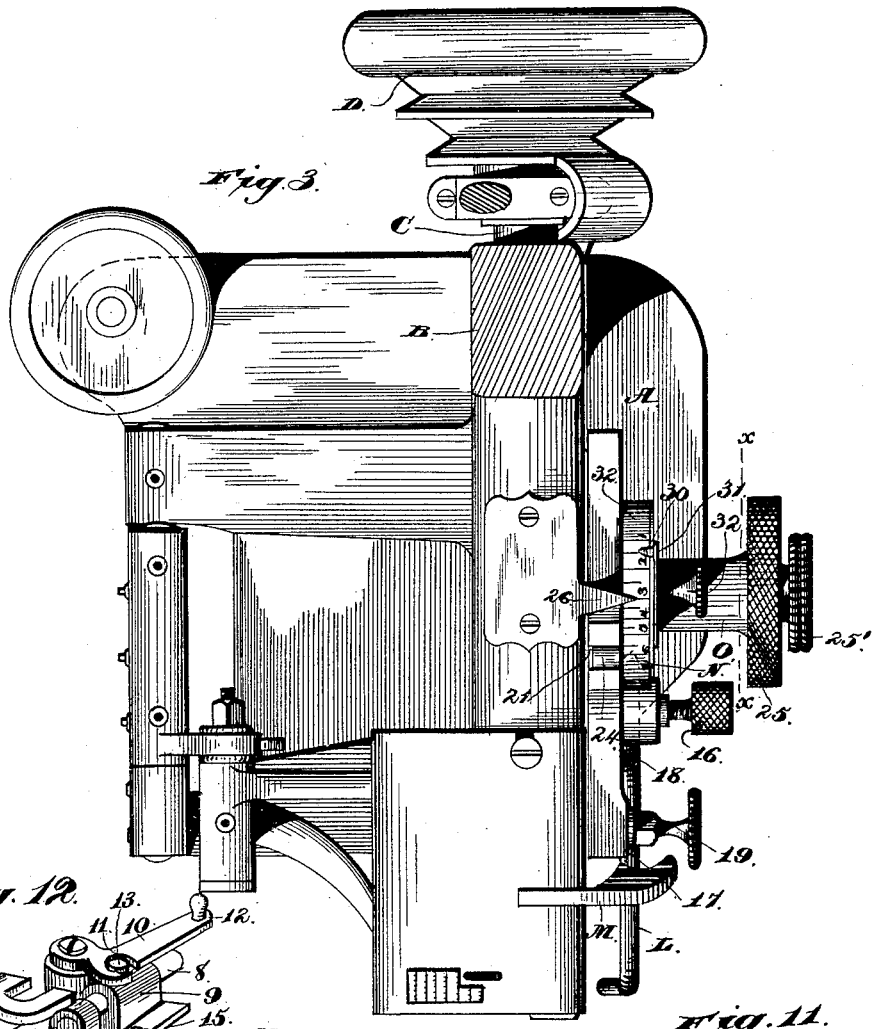


Fig. 12.

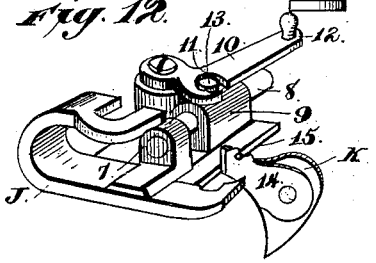
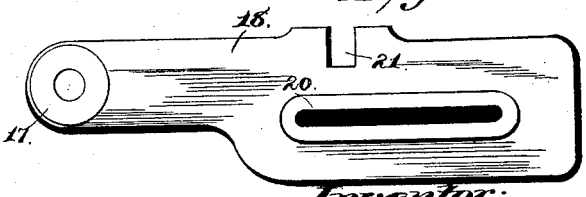


Fig. 11.



Witnesses:
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(No Model.) 5 Sheets—Sheet 4.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

No. 345,802. Patented July 20, 1886.

Fig. 4.

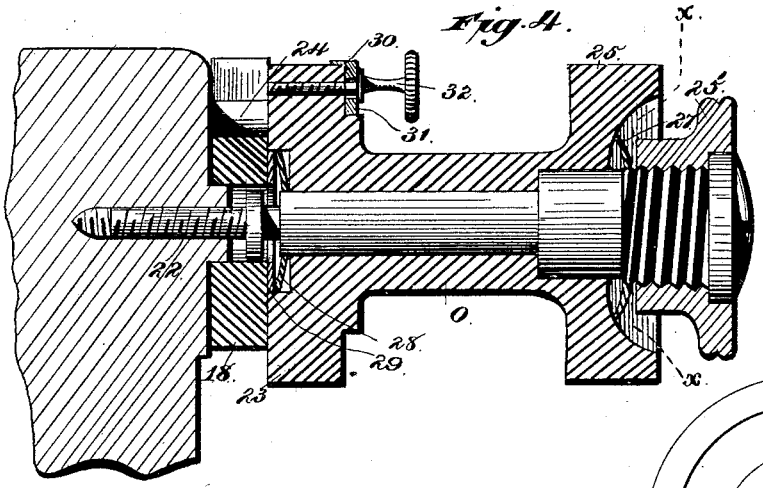


Fig. 5.

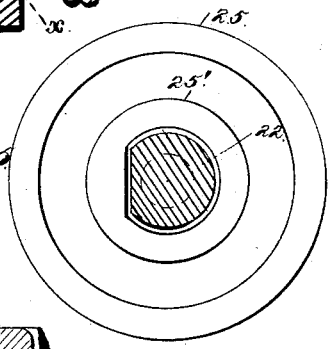


Fig. 6.

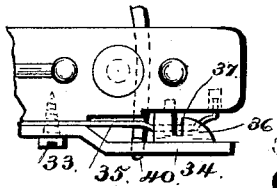
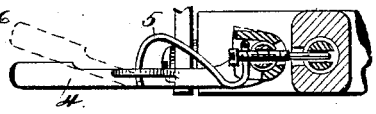


Fig. 8.



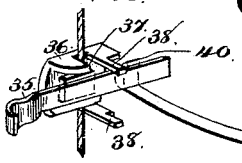


Fig. 7.

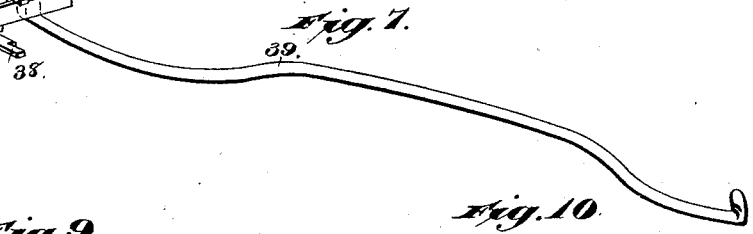


Fig. 9.

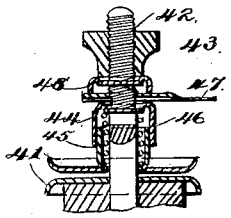
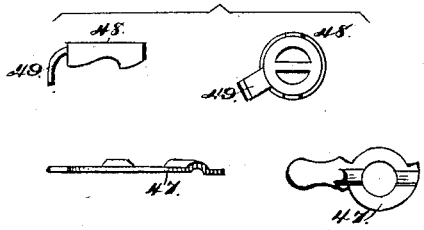


Fig. 10.



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(No Model.) 5 Sheets—Sheet 5.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

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Fig. 13.

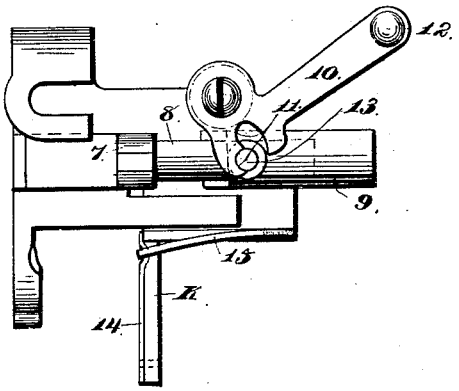


Fig. 14.

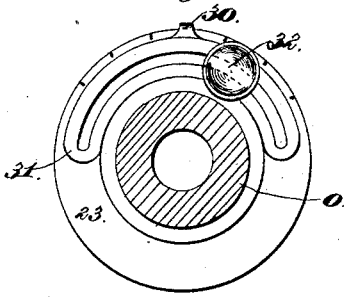


Fig. 15.

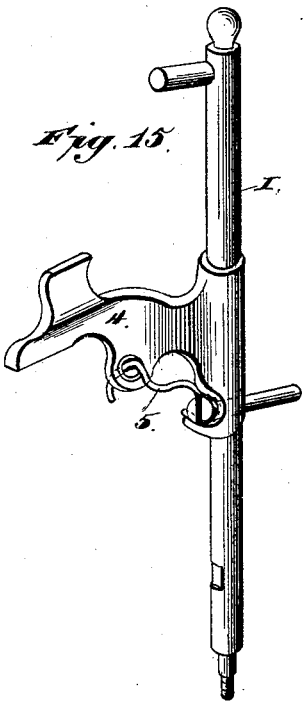
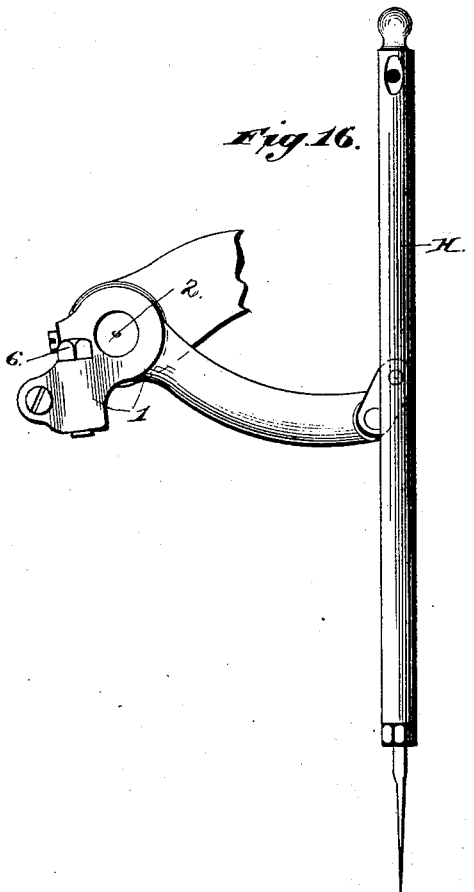


Fig. 16.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES H. PALMER, OF NEW YORK, N. Y.

STRAW-BRAID-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,802, dated July 20, 1886.

Application filed January 29, 1886. Serial No. 190,197. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PALMER, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Straw-Braid-Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in machines for sewing overlapping strips of straw braid together to form a straw hat or like article; and the object of my invention is to simplify the construction of the machine and to render it more more certain and effective in use.

To this end my invention consists in improvements in various parts of the machine, among others in the improved means for raising the presser bar and foot from the throat-plate when forming the button or tip of the hat; in the improved construction of the work-guide and manner of attaching it to the presser-foot, by which it may be readily removed, changed, or replaced; in the construction of the separator or parting-strip, which bears constantly on the throat-plate to close any space between the throat-plate and work-guide; in the construction of the braid or plait guide, by which two adjustable guides are formed, one for each edge of the braid; in the connection of the adjustable pivoted braid-guide with a gage or scale of peculiar construction; in improved means for changing and regulating the tension, and in the peculiar tension devices themselves; in the improved arrangement for steadying the movement of the presser bar and foot, and in various other improvements in details of construction more fully hereinafter described, and set forth in the claims.

The accompanying drawings show the operative parts of a sewing-machine constructed according to my invention, and in such drawings Figure 1 is a side elevation of such a sewing-machine. Fig. 2 is a front elevation. Fig. 3 is a plan view, the goose-neck and pitman being shown in section. Fig. 4 is a sectional view of the braid-guide devices for adjusting. Fig. 5 is a cross-section on line *x x* of Fig. 4. Fig. 6 is a plan view of the thread gripping and releasing devices. Fig. 7 is a perspective view of the tension pad, spring, and rod. Fig. 8 is a section through the presser-bar, showing a device for lifting the presser-bar from the throat-plate. Fig. 9 is a cross-section of the washer tension. Fig. 10 represents details of the same. Fig. 11 is a detail view of the sliding arm which actuates the braid-guide. Fig. 12 is a detail perspective view of the presser-foot, work-guide, and parting-strip or separator. Fig. 13 is a detail plan view of the presser-foot, work-guide, and parting-strip or separator. Fig. 14 is a transverse vertical section on the line *x x*, Fig. 3. Fig. 15 is a detail perspective view of the presser-bar and its swinging arm. Fig. 16 is a detail perspective view of the needle-bar and its operating-connections.

The machine belongs to that type of sewing-machines which sews overlapping rows or plaits of straw by means of a straight reciprocating needle, in connection with which operates a rotary looping-hook carried in a driving-shaft below the throat-plate.

The bed-plate A of the machine is cast with the goose-neck B, and is of the usual or any desired form. In the frame is journaled the driving-shaft C, carrying on one end the grooved pulley D, to which power is transmitted by a band from the balance-wheel, or by any suitable means. The driving-shaft is encircled by an eccentric, which shaft through a pitman, F, operates the needle-bar, and said driving-shaft also operates the feed-motion through an eccentric-sleeve near its forward end. The feeding device itself may be any suitable "four-motion" feed which will give a compound rectangular movement to the feed-surface; but I prefer to use the feed-motion described in my application for Letters Patent filed in the United States Patent Office January 7, 1886, Serial No. 187,861. The driving-shaft C also carries upon its extreme forward end the revolving looper G.

H represents the needle-bar, which reciprocates vertically above the work or throat plate. It is connected by an arm, 1, to a rock-shaft, 2, which passes through the horizontal part of the goose-neck, and is connected by crank 3 with a pitman, F'.

I represents the presser-bar, which slides vertically for a limited distance in a depending arm of the frame, and has the presser-foot

J secured to its lower end. I have devised a simple means of intermittently relieving the pressure of the presser-foot on the material when the button or tip of the hat-crown is being formed, at which time material must be turned in a very small circle, with which the pressure of the foot interferes. This consists of a swinging arm, 4, hinged directly upon the presser-bar, so as to move horizontally, and which is held back against the end of the goose-neck by a small spring, 5. This arm is struck at the moment when the feed-surface is passing below the plate by a stud, 6, on the arm 1, (which, as before stated, is secured to the rock-shaft 2,) the effect being to slightly raise the presser-bar and presser-foot from the braid while the needle is in the braid. In ordinary use, however, or after the tip has been formed, the arm 4 would be swung forward, so that the movement of the arm 1 cannot affect it. The spring 5 is bent into an angle, so that it may be snapped into place by moving the arm either out or in, its purpose of holding the arm against the end of the goose-neck being accomplished only when the arm is swung inward. When the arm is swung outward, it passes over the angle in the spring, which then produces no effect upon it.

The presser-foot J, which is secured in the usual manner to the lower end of the presser-bar, carries the work-guide K, which is of novel construction. In machines of this class it is often necessary to remove the work-guide and replace it with another, or to move it out of the way for various reasons. It is usually necessary to remove and replace one or more screws before the change can be effected, which takes time, and is a constant source of annoyance. In this case the presser-foot is provided with a standard, 7, having a horizontal guide-pin, 8. On this pin slides the barrel 9, which is attached to or made integral with the work-guide plate K, which extends out parallel to the presser-foot and rests upon the braid near the needle slot. The barrel 9 is moved upon the guide-pin 8 by pivoted lever 10 on the presser-foot, having a peculiarly-shaped slot, 11, and a handle, 12. The slot 11 receives a stud, 13, on the sliding barrel, and the shape of the slot is such that when, by turning the lever to its full extent the barrel is moved out toward the end of the pin, it may be slipped off such pin and a new work-guide put on, but it will hold the barrel and guide in place on the pin at any other point; hence the work-guide may be moved back and forth on the pin to accommodate the width of the braid at the will of the operator.

Pivoted to the side of the work-guide is a thin plate, 14, which is kept constantly pressed down by a light spring, 15, so that it bears upon the braid. The purpose of this is to close the space between the work-guide and the incoming braid, which runs underneath said work-guide, caused by the rising of the presser-foot, and thus prevent the previously-sewed braid from being crowded under the guide. This avoids the use of the parting-strip or separating-plate ordinarily used, which is always in the way in sewing rough-edged braids.

The braid-guide, which gives direction to the material before it reaches the work-guide and presser-foot, is illustrated in Figs. 3 and 4. It consists of two independent devices, L M, which are used in connection with an indicating-gage, N. The part L is a bent wire pin having one end turned at a right angle, to bear upon the outer edge of the braid, and is longitudinally and laterally adjustable and secured by means of a set-screw, 16, in the frame of the machine. The part M, which guides the inner edge of the braid, is a curved plate, shaped on one edge to conform to the curved throat-plate. It is pivoted upon a projection, 17, of a slotted and sliding bar, 18, and is set by a screw, 19, so that in addition to its ordinary adjustment by means of the sliding bar 18, it can, after the screw 19 is loosened, be thrown over backward, turning on the projection 17, so as to be quite out of the way, thus avoiding the removal of the gage from the machine, which has heretofore been necessary in the various shaping of hats. The longitudinal movement of the sliding bar 18 is accomplished by means shown in Fig. 4. The said bar is provided on its inner side with a longitudinal groove, (shown in detail plan view, Fig. 11,) and with horizontal and vertical slots 20 and 21. The plate is connected to the frame of the machine by a screw-pin, 22, (see cross-section, Fig. 4,) which passes through the horizontal slot 20. Upon this pin is mounted a spool-shaped sleeve, O, the inner head of the spool 23 having a stud, 24, which enters the vertical slot 21, and the outer head having a milled edge. By turning the head 25 the stud 24, moving in the vertical slot 21, will cause the bar 18 to slide horizontally, its horizontal slot working over the pin 22. The disk or head 23 has a gage or scale cut on its edge, which may be made to register with a pointer, 26, on the frame of the machine. The head of the pin 22 is countersunk in a nut, 25′, having a female thread and a milled edge, which may be turned up against the spring-washer 27, which is interposed between nut 25′ and the spool-shaped sleeve to regulate its freedom of movement and to lock it in position. A spring and flat washer, 28 and 29, are interposed upon the pin between the bearing-faces, as shown in Fig. 4. The pin 22 is flattened, as shown in Fig. 5, in order to fit the washer 27 and prevent the latter from turning. An auxiliary pointer, 30, is a part of a segmental slotted disk, 31, (see Fig. 14,) arranged to slide upon the face of the head 23, and to be set by a screw, 32, at any desired point to aid the operator in reading the gage when properly set to verify the position of pointer 26. This arrangement provides for a perfectly-accurate adjustment of the braid-guide and in connec-

tion with the adjustable guide-pin L for the perfect guiding of the incoming braid.

The thread-check device is illustrated in Figs. 6 and 7 in a detail perspective view, and also in Fig. 1 in its relation to the machine. To a lug on the front of the upper guide for the needle-bar and presser-bar are secured by a single screw, 33, the guard 34 and the leaf-spring 35, the end of the spring being turned at an angle to enter a recess in the frame to prevent the liability of injury. The spring presses outward against a peculiar friction-pad, 36, having a slot, 37, and two pins, 38, which enter holes in the frame, and is kept in place by the guard 34. The thread passes down through the slot 37, and is held taut by the free outward pressure of the spring. This pressure is relieved at the proper time by the action of a rod, 39, Figs. 6 and 7. This rod is hinged to the connecting-rod F, where it is secured by a screw, but permitted to turn easily. The forward end of the rod 39 passes through a hole in the frame, forming at that point a tension-block, and is provided with a hook, 40, extending outside of the spring 35. By hinging the rod 39 to the connecting-rod F below the horizontal line the push and pull motion is imparted by the rise and fall of the connecting-rod F, the push movement carrying the hook outward, so as to cause the spring to bind the thread against the pad on the upward movement of the needle-bar, and the pull movement drawing the spring inward and relieving the thread at the time the needle is at its lowest point and the stitch is being formed.

I have devised an improved construction for the adjustable washer-tension located at the rear of the horizontal part of the goose-neck, which is shown in Figs. 9 and 10. The object of this improvement is to enable the operator to increase the tension temporarily while the tip is being formed, without the necessity of disturbing the adjustment.

The washers 41 are mounted on a vertical pin, 42, which is threaded at its upper end for the milled nut 43. Mounted on the pin above the upper washer are two cups, 44 and 45, which inclose a spring, 46, surrounding the pin and bearing on the bottom of cup 44. The pin 42 is split vertically, and the cups are therefore provided with a slot and tongue, by means of which they are slipped over it. Between the upper cup and the adjusting-nut are mounted a lever, 47, and a disk, 48, the latter having a tongue and slots, (both shown in plan and elevation in Fig. 10,) the disk having an inclined and recessed edge, and a stop, 49, while the lever is formed with a beaded or raised portion. The adjusting-nut bears firmly against the disk 48, and hence if the lever is turned so as to act on the inclined disk it will press down the upper cup and spring and press the washer closer together, thus increasing the tension, while the adjusting-nut is not disturbed.

A device is also provided for steadying the movement of the presser bar and foot. It consists of a curved arm, 50, Figs. 1 and 2, which is firmly attached to the presser-bar just above the foot, and which passes across and behind the needle-bar to a point where it engages with a flat steady-pin, 51, on the frame by means of a slot, 52. The arm 50 consequently travels with the presser-bar, and as it extends so far to one side it completely prevents any turning of the foot, since the pressure on the foot is about central between the presser-bar and steady-pin. The steady-pin has a cylindrical lower end, so that it may be turned in the frame to take up any lost motion. It is held by a set-screw, 53.

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

1. In a sewing-machine, the combination, with the presser-bar, and with the arm connected to and operating the needle-bar, of a swinging arm hinged to the presser-bar and adapted to be thrown into and out of connection with the arm which operates the needle-bar, whereby when in connection the presser-bar is positively lifted, substantially as described.

2. In a sewing-machine, the combination, with the presser-bar, and with the arm connected to and operating the needle-bar, of a swinging arm hinged upon the presser-bar, and a spring for holding said swinging arm when swung inward so as to be operated by the rock-shaft, substantially as described.

3. The combination, with the presser-foot having a horizontal guide-pin, of a work-guide having a sliding barrel mounted on such pin and a lever having an open slot embracing a stud on the barrel for adjusting and retaining the latter on the pin, and yet permitting the barrel to be readily removed therefrom, substantially as described.

4. The combination, with the vertically-moving presser-bar and presser-foot, the throat-plate, and the work-guide, of a plate pivoted to the work-guide and a spring for pressing such plate constantly downward against the material being sewed, substantially as and for the purposes set forth.

5. In a sewing-machine, the combination, with the main frame and braid-guide, of the braid-guiding pin L, journaled in said frame, and capable of turning axially and sliding longitudinally in said frame, and the set-screw 16, substantially as described.

6. In a sewing-machine, a braid-guiding pin, L, sliding in the main frame of the machine, and also adapted to turn axially therein, substantially as described.

7. In a sewing-machine, the braid-guide proper, M, having a combined sliding and pivotal movement, in combination with means for regulating both movements, substantially as described.

8. In a sewing-machine, the braid-guide piv-

oted to a sliding plate, in combination with a revolving disk connected to said sliding plate, and having a gage or scale on its periphery, substantially as described.

9. In a sewing-machine, the combination, with the main frame, of the sliding plate 18, carrying the braid-guide, the pin 22, connecting said plate to the main frame, the sleeve O, mounted on the pin 22, having a gage or scale, and connected to the plate 18, and a pointer on the frame of the machine adjacent to the scale, substantially as described.

10. In a sewing-machine, the combination, with the main frame, of the sliding plate 18, carrying the braid-guide, the pin 22, connecting said plate to the main frame, the sleeve O, mounted on the pin 22, having a gage or scale and connected to the plate 18, a pointer on the frame of the machine adjacent to the scale, and an auxiliary pointer adjustably mounted on sleeve O, substantially as described.

11. In a sewing-machine, the combination of the sliding bar 18, carrying the braid-guide, the pin 22, sleeve O, nut 25', having a recessed head and mounted on the pin 22 independently of the sleeve, spring-washers 27 and 28, and flat washer 29, substantially as described.

12. In a sewing-machine, the combination, to form a tension device, of a friction-pad secured to the frame and slotted to receive the thread, a spring for pressing the thread outward against the pad, and a rod connected to the pitman-rod situated at the rear end of the machine, and means to pull the spring inward to release the thread at the time the needle is at its lowest point, substantially as described.

13. In a sewing-machine, the combination, with the pitman-rod F, of the pivoted rod 39, secured to said pitman at a point below the horizontal plane at which it passes through the tension-block, as shown, and having a hook at its front end, whereby at the downward vertical movement of the pitman-rod, giving a downward movement to the needle-bar, the spring 35 is drawn away from the friction-pad 36, thereby releasing the thread at the moment of time the needle is at its lowest point and the stitch is being formed, substantially as described.

14. The combination of the split pin 42, the tension-washers 41, the cups 44 45, the spring 46, the beaded lever 47, nut 43, and the slotted disk 48, substantially as and for the purposes set forth.

15. The combination, with the presser-bar, of an arm fixed thereon and extended to and sliding on a steady-pin on the frame beyond the needle-bar, said guide or steady-pin having a flattened end and a round shank, and being held in the frame by a set-screw and capable of being turned to the right or left to compensate for wear in the slot in the end of the arm, substantially as described.

16. In combination with the braid-guide scale and stationary pointer, an auxiliary pointer carried by a segmental slotted disk and means for adjusting said disk upon the braid-guide scale, substantially as described.

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

CHARLES H. PALMER.

Witnesses:

JAMES A. MCDOWELL,

JOHN H. LUCKEN.