(No Model.) 3 Sheets—Sheet 1.

C. H. PALMER.

STRAW BRAID SEWING MACHINE.

No. 345,801. Patented July 20, 1886.

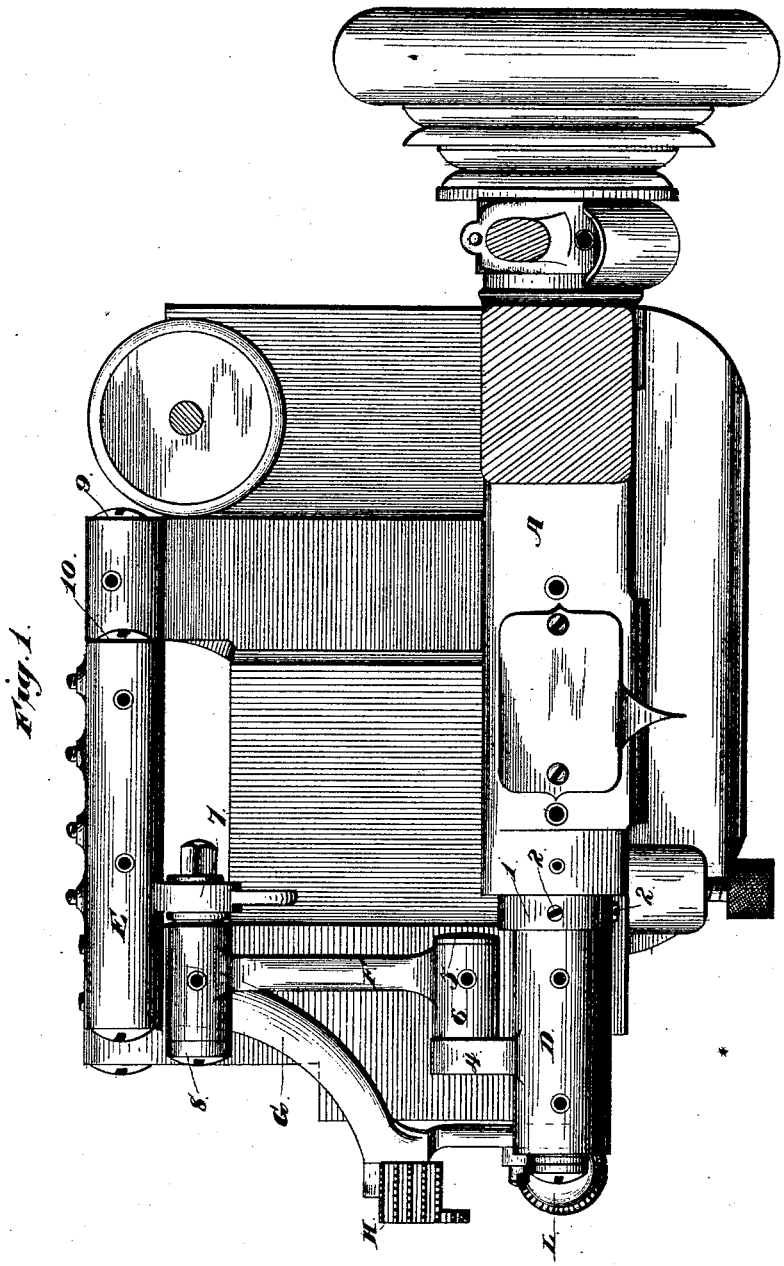

Fig. 1.

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By

Inventor:
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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

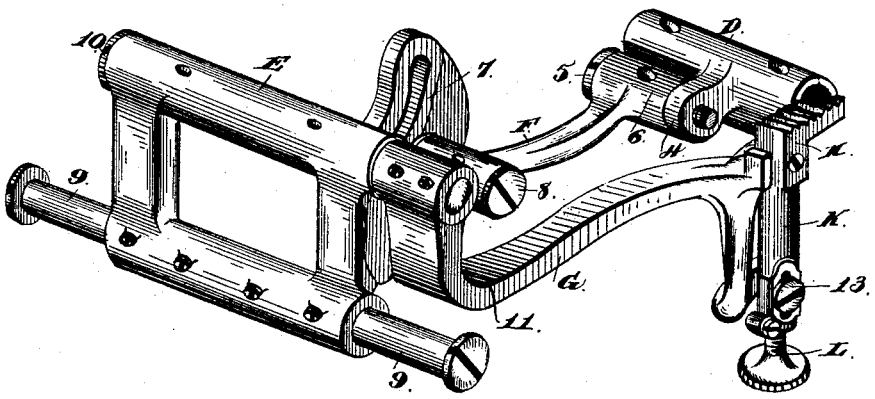


Fig. 3.

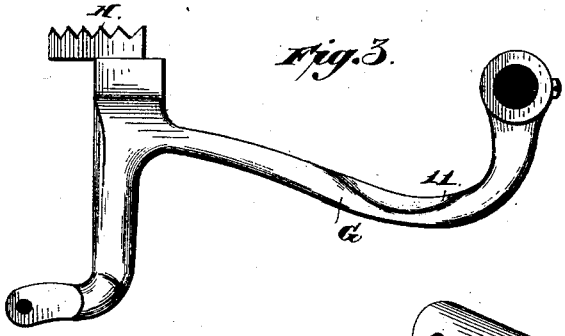


Fig. 4.

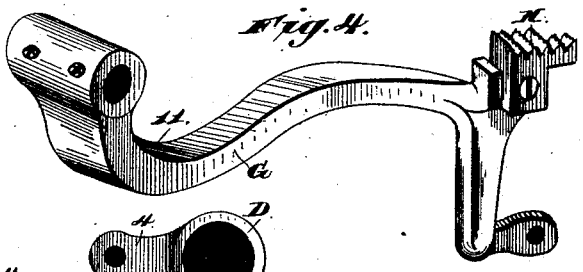


Fig. 5.

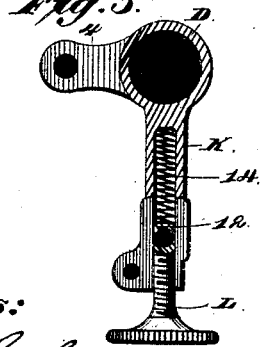
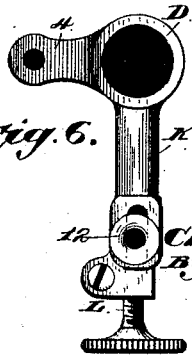


Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

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STRAW BRAID SEWING MACHINE.

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Fig. 7.

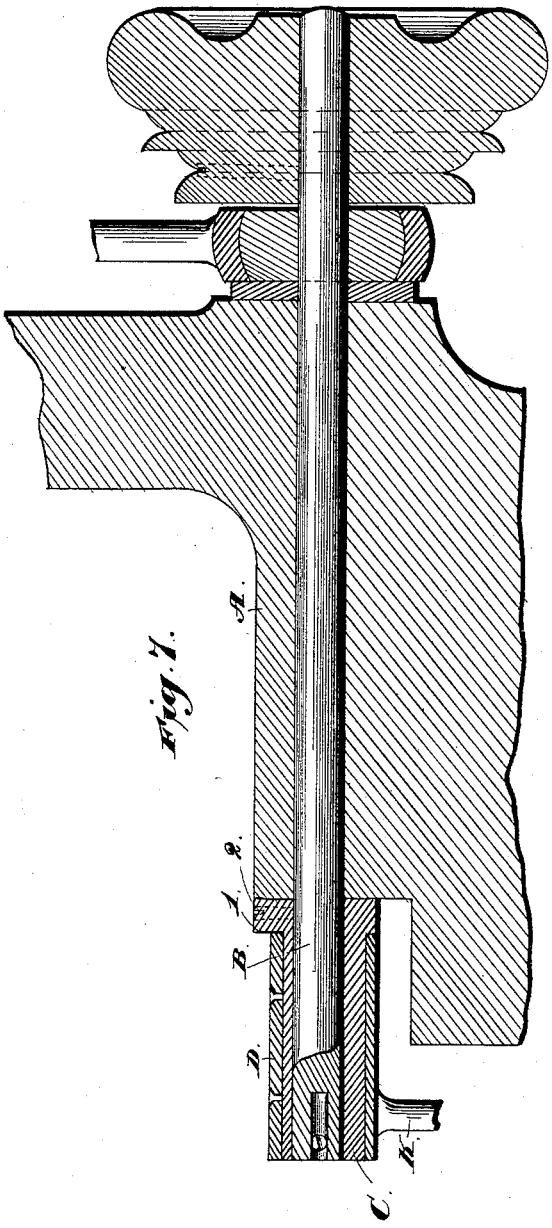
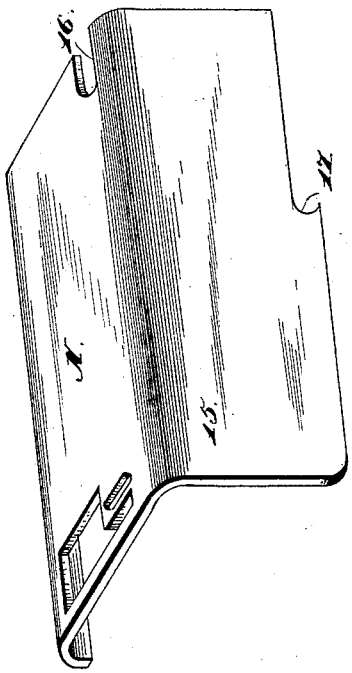


Fig. 8.



Witnesses:
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Edward L. Mills

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Inventor:
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Munn & Co
Atty.

UNITED STATES PATENT OFFICE.

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

STRAW-BRAID-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,801, dated July 20, 1886.

Application filed January 7, 1886. Serial No. 187,861. (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.

This invention relates to machines for sewing continuous plaits or braids of straw in circular or elliptical overlapping coils, so as to form a straw hat or like article, and more particularly to the devices which actuate the feed-surface plate, so as to produce the regular and uniform movement of the braid beneath the presser-foot. For this purpose I employ what is known as a "four-motion feed," wherein the feed-surface has a line of movement substantially rectangular—that is, a horizontal movement below the presser-foot in feeding the braid, a vertical descent below the work-plate, a reverse horizontal movement, and a reverse vertical movement to the point where it engages again with the braid.

One of the objects of my invention is to reduce the number of parts ordinarily required to give the compound motion to the feed-surface, and thereby to improve the construction in the direction of simplicity, and in consequence make it not only cheaper to manufacture, but more durable in use, because there are fewer parts and less liability of breakage.

Another object of my invention is to actuate the feed mechanism by a single eccentric, which extends nearly or quite from the shaft-bearing to the end of the shaft, or to a point nearly in line with the needle-bar and feed-surface, so that the sleeve surrounding the eccentric has a very long bearing thereon, which tends to produce a steady and uniform movement of the feed, and to prevent any side-play or twist or lost motion of any kind. This construction of the eccentric makes it desirable to furnish some additional protection to the bearing-surfaces of the eccentric and sleeve; and another object of my invention is to accomplish this by a closely-fitting extension of the work-plate, which completely covers those parts and prevents chips of straw and other foreign substances from entering.

Another object of my invention is to improve the construction and manner of connecting the arm which directly actuates the feed-surface. The elongation of the eccentric before referred to enables this arm to be connected to the eccentric near its forward end, so that the feed-surface plate may be directly attached to the arm, instead of to a connection thereof, while this construction also affords an opportunity for the employment of a very simple and compact device for adjusting the position of the feed-surface relatively to the presser-foot.

The mechanism by which these objects are attained is fully hereinafter described, so that any person skilled in the art will be enabled thereby to make and use my invention. It is also illustrated in the accompanying drawings, in which—

Figure 1 is a view of a part of a sewing-machine, showing the feed mechanism in plan. Fig. 2 is a perspective view of the whole of the feed mechanism disconnected from the driving-shaft. Fig. 3 is a side elevation of the arm which carries the feed-surface plate. Fig. 4 is a perspective view of the same arm, but taken from the opposite side. Fig. 5 is a sectional view of the hollow standard which receives the screw for regulating the feed-surface. Fig. 6 is an elevation of the same parts. Fig. 7 is a longitudinal section through that part of the frame which constitutes the shaft-bearing. Fig. 8 is a perspective view of the work-plate.

The feed mechanism, which is operated by a single eccentric on the driving-shaft, consists, essentially, of a hinged rocking shaft on the main frame, termed the "feed-rocker," a connecting-rod extending from the rocker, to which it is adjustably connected, to a sleeve surrounding the eccentric, through which motion is transmitted to the rocker, and a feed-surface carrier attached to the feed-rocker at one end and to the sleeve surrounding the eccentric at the other, independently of the connecting-rod before mentioned, and carrying the feed-surface plate.

Referring to Fig. 7 of the drawings, A represents the frame-work of the machine, through which is bored a long bearing for the driving-shaft B. The shaft B is thus supported for

about half its extent, as shown in the figure, and the ends project from the frame-work about an equal distance. Upon the rear end of the driving-shaft is secured the grooved pulley, adapted to be connected by a belt with the fly-wheel, and the eccentric which operates the needle-bar. Upon the forward end of the shaft B is snugly fitted the eccentric C, having a flange, 1, which bears firmly against the end of the shaft-bearing, and through which pass set-screws 2, which secure the eccentric to the shaft. The eccentric extends from the shaft-bearing to the extreme forward end of the shaft, where the looper is attached. This construction of the eccentric affords a long parallel bearing for a cylindrical sleeve, D, Figs. 1, 2, and 7, which is fitted upon it, the rear end of the sleeve bearing against the flange of the eccentric, Fig. 7. The sleeve D is the means for transmitting the eccentric motion to the feed mechanism through proper connections, and it will be noticed that the long bearing-surface between the eccentric and sleeve prevents any twisting of the sleeve, which might otherwise occur. The wear is also distributed over a larger surface, and hence the parts will run longer without loosening and refitting than would be possible if a shorter bearing were used. Motion is transmitted from this sleeve to the feed-rocker E by means of a connecting-rod, F, Figs. 1 and 2. A projection, 4, is formed on the side of the sleeve D, which receives a screw-stud, 5. This stud has a cylindrical portion to fit the hollow boss 6 on the end of connecting-rod F, which is thereby pivoted to it. The other end of the rod F is adjustably secured to the slotted portion 7 of the feed-rocker E by means of a screw-stud, 8. The distance traveled horizontally by the feed-surface plate is regulated by the position of the stud 8 in the slot of the rocker, being decreased as the stud is raised toward the top of the slot. The feed-rocker E is a frame hinged upon a horizontal pivot, 9, Fig. 2, which pivot works freely in eyes projecting from the main frame. The upper part of the feed-rocker is tubular, and through it passes a pin, 10, which extends beyond the tubular portion. On the end of this pin is mounted the end of an arm, G, which completes the connection of the parts necessary to produce the compound movement of the feed-surface in a manner hereinafter described. This arm, which acts as the feed-surface carrier, extends down below the stud 8, being slightly bent, as shown at 11, Fig. 3, to avoid contact with the stud, and is curved forward, as clearly shown in Fig. 1, to a point below the presser-foot, where a seat is formed on it to receive the feed-surface block H, Fig. 4. It then extends downward and is connected to a standard, K, depending from the sleeve D, which surrounds the eccentric. The compound movement of the feed-surface is thus the resultant of the vertical lift of the sleeve D and its horizontal movement, both caused by the eccentric; but these movements are modified by the hinging of the connecting-rod to the feed-rocker, and by the connection of the feed-rocker with the feed-surface carrier, the result being that instead of a circular or elliptical line of motion for the feed-surface the movement is substantially rectangular, so that the feed-surface secures a good hold of the material at once, travels horizontally the proper distance and there lets go promptly at the proper time. It should be noticed in this connection that the elongation of the eccentric on the shaft permits the feed-surface carrier to be brought so far forward for connection that the feed-plate is directly attached to it, instead of to some projecting arm or slide.

I utilize the standard K, to which the feed-surface carrier is connected, as a support for the adjusting-screw which regulates the feed-surface, making an exceedingly simple and compact construction. This device is illustrated in Figs. 2, 5, and 6. The standard K, which depends from the sleeve D, is made hollow, Fig. 5, and is also slotted upon opposite sides. It is screw-threaded internally to receive the adjusting-screw L. The upper end of the screw L bears upon a sliding block, 12, Fig. 5, through which passes a transverse screw, 13, Fig. 2, which enters the end of the feed-surface arm G. A pressure-spring, 14, is inserted in the hollow standard K, above the block 12, which tends to press the block downward. It will be readily understood that by raising the adjusting-screw the end of the feed-surface carrier is elevated, and also the feed-surface, which may therefore be set accurately at any point relatively to the presser-foot. Since the end of the bearing between the eccentric and sleeve approaches to within a short distance of the needle-bar, it is desirable to thoroughly and completely cover the eccentric-sleeve, and, indeed, all the working parts of the shaft, in order to prevent the entrance of chips, of straw-dust, and other foreign substances. The sleeve itself affords a reasonably-good protection to the bearing, since it fits closely for its entire length; but I have devised a curved extension of the work-plate, which not only completely covers these parts, but gives an ornamental finish to the machine. This is shown in Fig. 8 in detail, where the work-plate N has a downward extension, 15, a curve being formed in the plate which corresponds to an arc which follows closely the curve of the sleeve. The usual openings are formed in the work-plate for the feed-surface and needle, and it is secured to the frame by screws passing through slots or recesses 16 17.

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

1. In a sewing-machine, the combination of the driving-shaft carrying an eccentric, a sleeve mounted upon said eccentric, a hinged feed-rocker connected to the sleeve, and a carrier-arm attached to the feed-rocker and con-

nected to the sleeve surrounding the eccentric, and having the feed-surface dog directly attached to it, substantially as described.

2. In a sewing-machine, the combination, with the main frame and the driving-shaft journaled therein, of an eccentric mounted on the driving-shaft and extending to one end thereof, a sleeve surrounding the eccentric, a feed-rocker hinged to the main frame, a connecting-rod between the feed-rocker and the sleeve, and a feed-surface carrier connected at one end to the feed-rocker and at the other to the said sleeve by means and for the purposes substantially as described.

3. The combination of the feed-rocker, the eccentric on the main shaft, the sleeve E, surrounding the eccentric and having a projection, with a connecting-rod hinged adjustably to the feed-rocker at one end, and at the other end to the projection of the sleeve E, substantially as described.

4. The combination of the driving-shaft and eccentric, the surrounding sleeve, the connecting-rod, the feed-rocker, and the feed-surface carrier hinged to the feed-rocker at one end, and connected at the other to a hanger depending from the sleeve on the eccentric, substantially as described.

5. The combination, with the main frame and the driving-shaft journaled therein, of an eccentric for operating the feed mechanism, mounted on the shaft and extending to the end thereof, and a removable curved work-plate having openings for the feed-surface and needle, and extending backward and downward, so as to protect the sleeve, eccentric, and driving-shaft, substantially as described.

6. The combination of the eccentric, the feed-rocker E, and connecting-arm F, the sleeve surrounding said eccentric and having the slotted standard K, the feed-surface carrier connected to the standard K, and the adjusting-screw L, substantially as described.

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

CHARLES H. PALMER.

Witnesses:
H. LANEHARTE,
W. F. ROBERTS.