

(Model.)

3 Sheets—Sheet 1.

A. D. PENTZ.
SEWING MACHINE.

No. 330,419.

Patented Nov. 17, 1885.

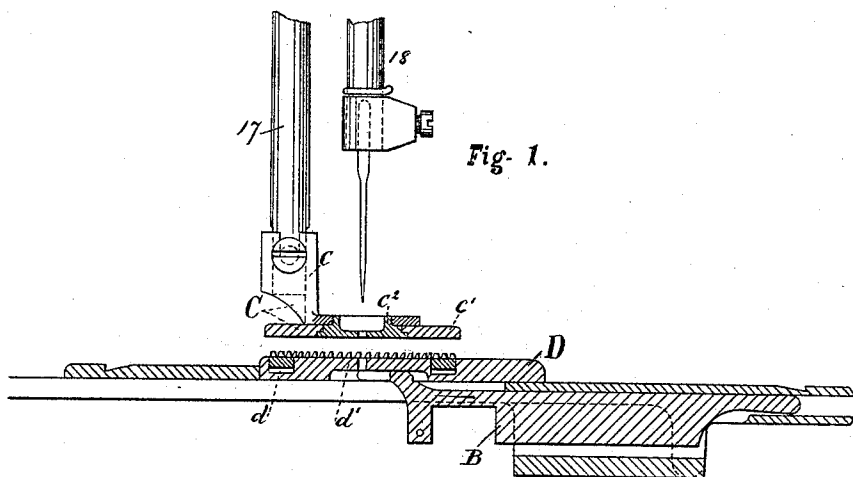


Fig. 1.

Fig. 3.

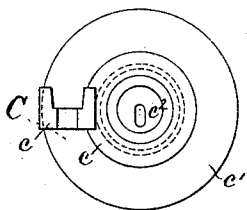


Fig. 2.

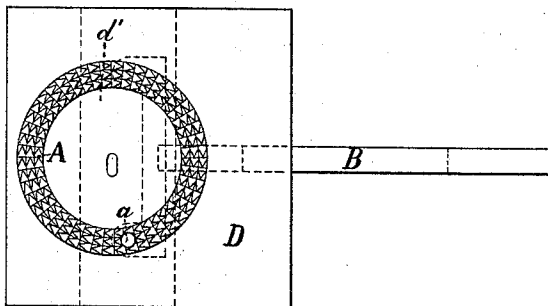
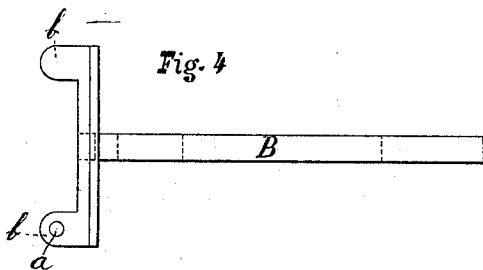


Fig. 4



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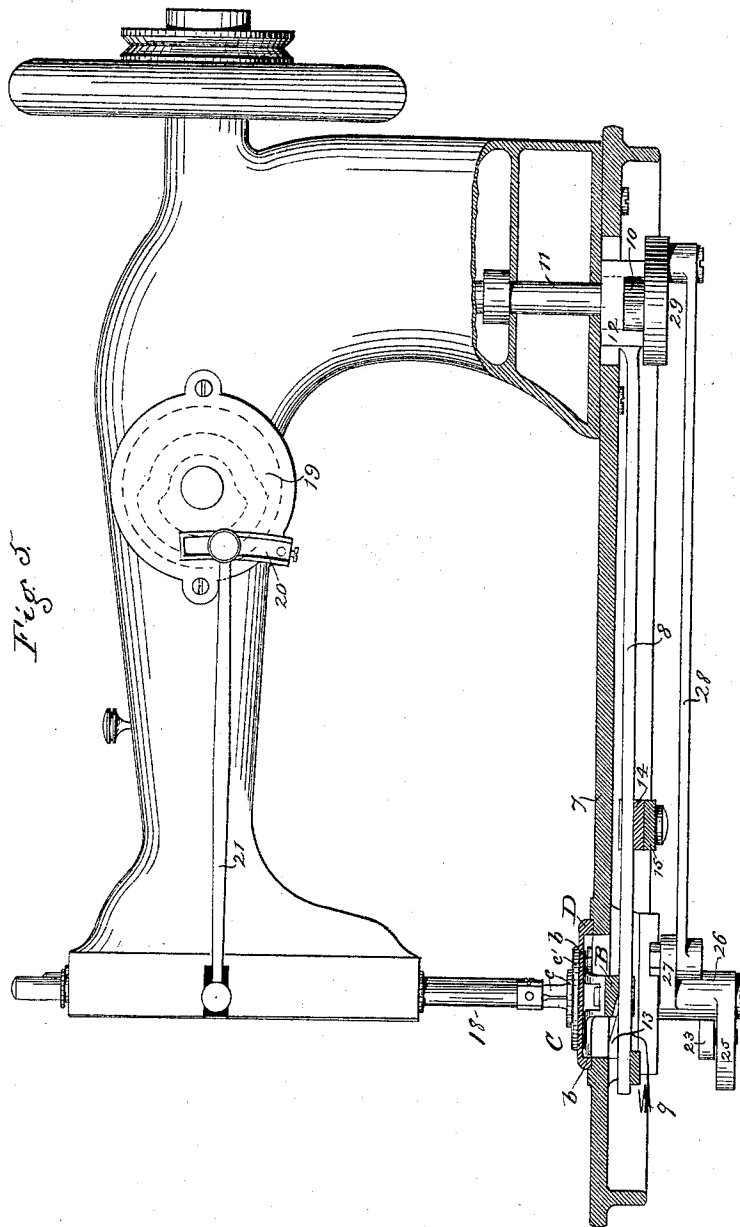
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Witnesses:

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William Calver.

Inventor:

Albert D. Pentz,
by *Henry Calver*
Atty.

(Model.)

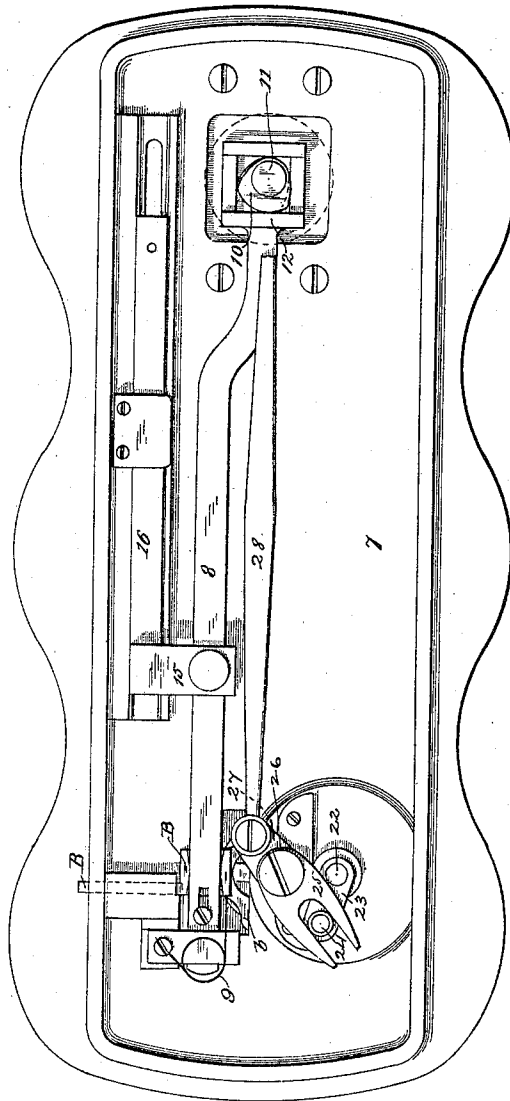
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Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT D. PENTZ, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER
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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 330,419, dated November 17, 1885.

Application filed February 7, 1884. Serial No. 120,037. (Model.)

To all whom it may concern:

Be it known that I, ALBERT D. PENTZ, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a simple and effective feeding mechanism by which fabrics may be moved in a circular path to work eyelets therein. This object is accomplished by pivotally connecting a feeding-ring or annular feed-dog having a roughened or serrated feeding-surface to a feed-bar in such a manner that it may partake of the vertical movements of the latter, to engage the work and to be disengaged therefrom, and may have short oscillating or reciprocating rotary feeding movements to move the work in a circular path.

The feed-bar is or may be operated by any well-known mechanism which, as is usual, is capable of being adjusted to vary the throw of the feed-bar, and thus the feeding movements of the feeding-ring may be varied at pleasure.

In connection with my oscillating and vertically-reciprocating feeding-ring I prefer to use a presser-foot having an annular portion adapted to rotate on its support, so as to move coincidentally with the feeding-ring when the latter is in operation.

In the drawings, Figure 1 is a cross-section, in the plane in which the needle operates, of a portion of a sewing-machine embodying my invention. Fig. 2 is a detail plan view showing the feeding-ring, the work-plate, and the feed-bar. Fig. 3 is a detail plan view of the presser-foot. Fig. 4 is a similar view of the feed-bar. Fig. 5 is a sectional elevation of sewing-machine embodying my invention, and Fig. 6 is a bottom view of the same.

A denotes a roughened-surfaced feeding-ring or annular feed-dog, which rests in an annular groove or recess, *d*, of the work-plate D, the latter being attached to the bed-plate of the machine. B is the feed-bar, which is adapted to reciprocate laterally of the machine in the usual manner, but which is bifurcated or provided with arms *b*, extending beneath the feeding-ring A, one of said arms

having a pivotal connection with said ring by means of a pin, *a*. Thus as said feed-bar is moved back and forth a short oscillating or reciprocating rotary movement is imparted to said ring, this movement being greater or less, according to the throw of the feed-bar. The feed-bar B may be raised and lowered by any suitable mechanism to engage the feeding-ring A with or to disengage it from the work, as is usual with ordinary "four-motioned" or "drop" feeds.

In the present instance I have shown my invention as being applied to a Singer machine in which the feed-bar is moved back and forth, and is raised and lowered by a vibrating and longitudinally-reciprocating feed-lever, 8, and a co-operating-spring, 9. The movements of the feed-lever are imparted thereto in a well-known manner by a double cam, 10, on the vertical shaft 11 said cam working in a double or offset yoke, 12 on the rear end of the feed-lever, and the latter being provided at its forward end with a wedge or incline, 13, for lifting the feed-bar as the feed-lever moves endwise in the proper direction. The feed-lever is pivoted in a fulcrum-block, 14, swiveled to an arm, 15, of the feed-regulating slide 16, by which the position of said fulcrum-block may be changed to vary the throw of the feed-bar, as is usual in machines in which this well-known feed-operating mechanism is employed.

To co-operate with my four-motioned feeding-ring, I prefer to use a presser-foot, C, consisting of a ring, *c'*, adapted to rotate on a flanged button, *c''*, secured to the horizontal part of the stock or bracket *c*, the latter being attached to the presser-bar 17 in the usual manner.

From the foregoing it will be apparent that when the machine is in operation and the feed-bar is lifted the latter will raise the feeding-ring into contact with the work held between the presser-foot and the work-plate. As the feed-bar is moved forward, the feeding-ring will receive a short circular feeding movement by reason of its pivotal connection, by pin *a*, with one of the arms *b* of the feed-bar. At the end of the feeding movement the feed-bar will fall, permitting the feeding-ring to become disengaged from the work, and

at the backward movement of the feed-bar the feeding-ring will be returned to its first position. By continuing these operations the work will be moved in a complete circle, as is necessary in working eyelets. The presser-foot has the usual yielding contact with the work, and when the rotary ring *c'* is employed the latter will move with the feeding-ring and work during the feeding movement, thus lessening friction and facilitating the operation of the feeding-ring.

It is obvious that the friction of the feeding-ring may be still further lessened by partly cutting away the metal at the point of its inner and outer contact with the work-plate, or by entirely removing that part of the work-plate which is outside of said ring, leaving the circular portion of button *d'*, which will be sufficient to serve as a circular guide or pivot for the feeding-ring.

To illustrate the operation of my invention, I have herein shown it as applied to a Singer sewing-machine in which the needle-bar 18 has horizontal reciprocating movements to make overseaming or button-hole stitches, said needle-bar receiving its horizontal movements from a grooved cam, 19, geared to the main shaft of the machine, as is shown in Patent No. 318,801, said grooved cam operating a lever, 20, connected by a pitman, 21, with a swinging frame (such as is shown in Patent No. 272,126) in which the needle-bar reciprocates vertically.

In the machine herein illustrated the shuttle (not shown) oscillates horizontally in a circular race, and is operated by a short vertical shaft, 22, having an arm, 23, provided with a pin or roller, 24, engaged by a slotted arm, 25, of a rock-shaft, 26, another arm, 27, of said rock-shaft being connected by a pitman, 28, with the shuttle-operating crank 29 on a vertical shaft, 11. Instead, however, of using my invention with a machine having a horizontally-moving needle, as herein shown, it is obvious that my feeding-ring may be employed in connection with mechanism for imparting horizontal movements thereto and to the work plate or guide by which it is carried, and in which it has its circular or feeding movement, and in such cases my invention may be used in connection with machines in which the needle-bars have no horizontal movements.

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

1. The combination, with a work-plate and a presser-foot, of a feeding-ring or annular feed-dog adapted to oscillate and to move vertically in said work-plate, and a horizontally and vertically reciprocating feed-bar pivotally connected with said feeding-ring, substantially as set forth.

2. The combination, with the presser-foot and work-plate, of a feeding-ring adapted to operate in the latter, a bifurcated feed-bar, one of the arms of which is pivotally connected with said feeding-ring, and mechanism for operating said feed-bar, substantially as set forth.

3. The combination, with the stitch-forming mechanism of a sewing-machine, comprising a horizontally-reciprocating needle-bar, of a work-plate, a feeding-ring adapted to oscillate and to move vertically therein, and a presser-foot, substantially as set forth.

4. The combination, with a work-plate, of a feeding-ring adapted to oscillate and to move vertically therein, a feed-bar pivotally connected with said feeding-ring, and a presser-foot having an annular rotary portion, substantially as set forth.

5. The combination, with a work-plate, feeding-ring, and mechanism for operating the latter, of a presser-foot consisting of a ring, a flanged button on which said ring is adapted to rotate, and a stock having a horizontal portion to which said button is secured, substantially as set forth.

6. The combination, with the work-plate, the vertically reciprocating and oscillating feeding-ring, and the feed-bar to which said ring is pivotally connected, of a presser-foot having an annular rotary portion arranged concentrically with said feeding-ring, substantially as set forth.

7. The combination, with a vertically-reciprocating and horizontally-oscillating feeding-ring, of an opposing surface between which and the said ring the work to be moved may be held and intermittently rotated by the feeding action of the said ring, substantially as set forth.

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Witnesses:

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