(No Model.) 3 Sheets—Sheet 1.

M. MARCIL.

STRAW BRAID SEWING MACHINE.

No. 292,124. Patented Jan. 15, 1884.

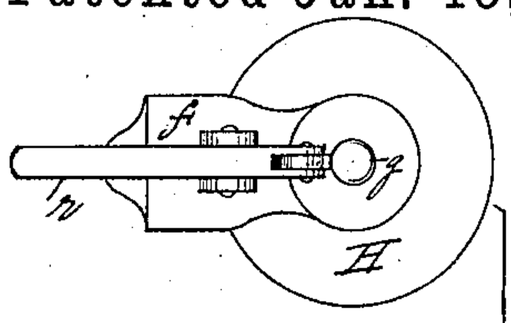

Fig. II.

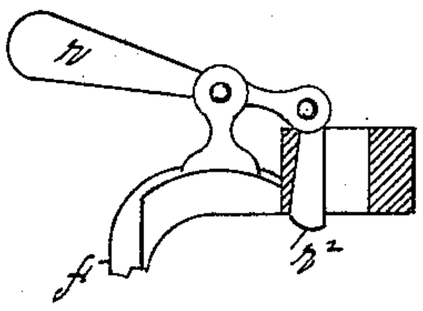

Fig. I.

Witnesses,
R. F. Hyde
Wm. H. Chaplin

Inventor
Michel Marcil
by Henry A. Chaplin
Atty

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M. MARCIL.

STRAW BRAID SEWING MACHINE.

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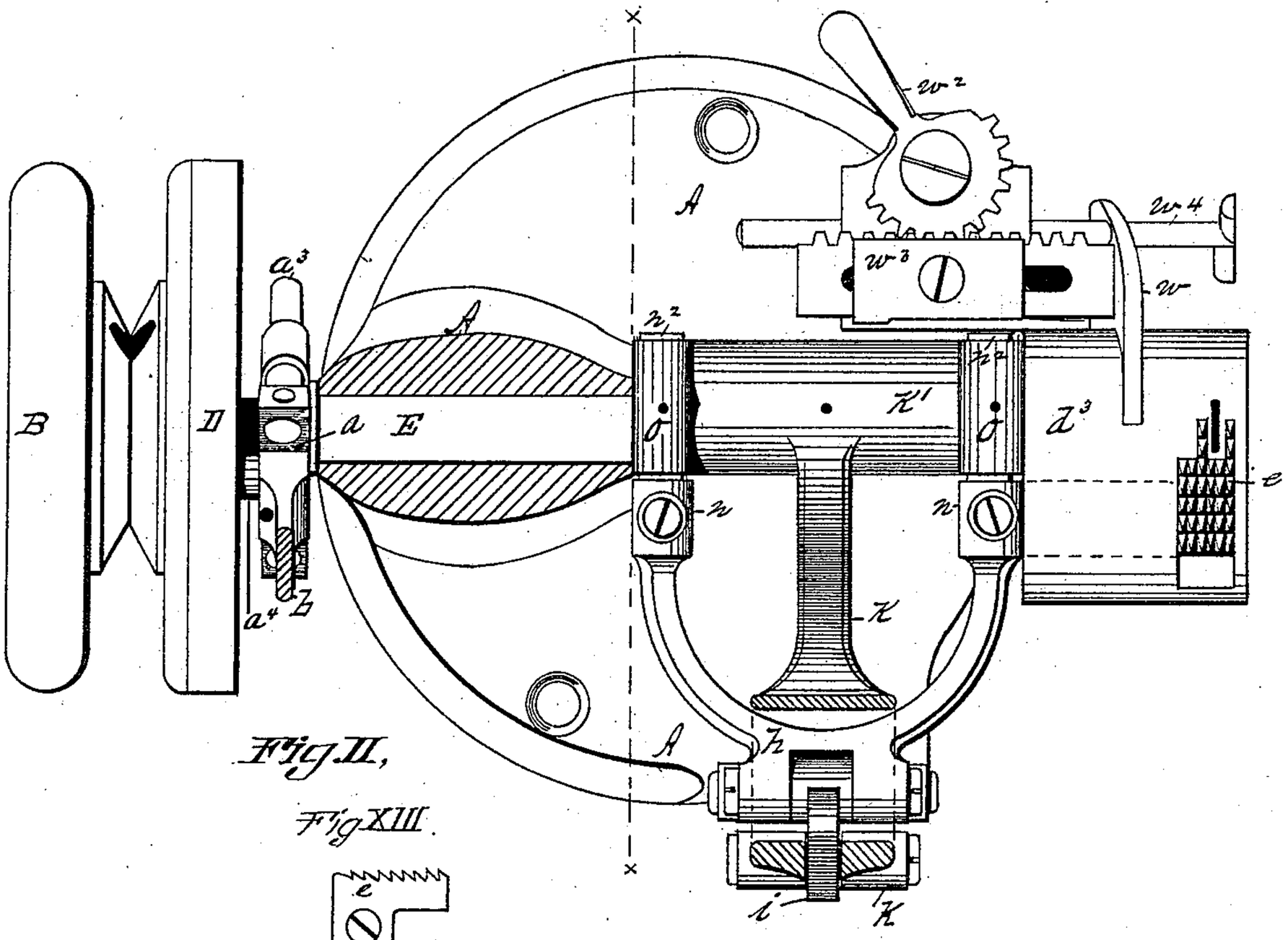


Fig. II.

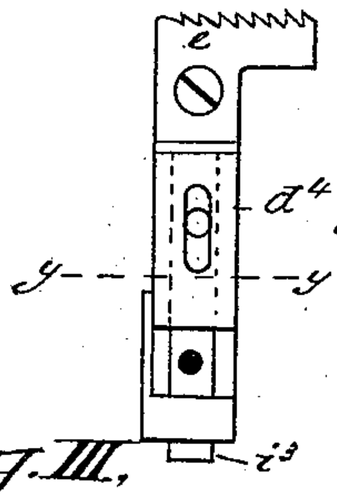


Fig XIII.

Fig XIV.

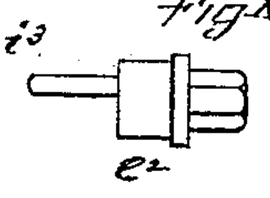
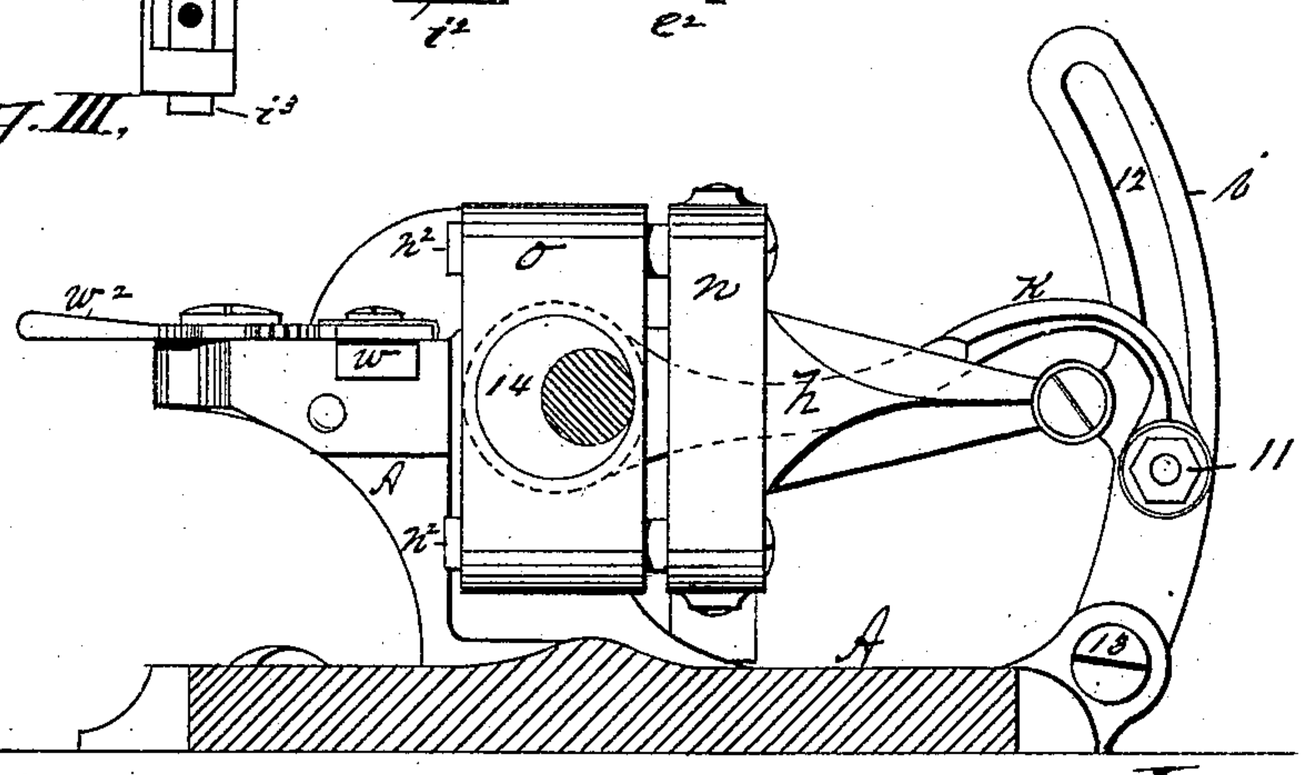


Fig XV.



Witnesses,
R. F. Hyde
Wm. H. Chapin

Inventor:
Michel Marcil.
by Henry A. Chapin
Atty

(No Model.) 3 Sheets—Sheet 3.

M. MARCIL.

STRAW BRAID SEWING MACHINE

No. 292,124. Patented Jan. 15, 1884.

Fig IX,

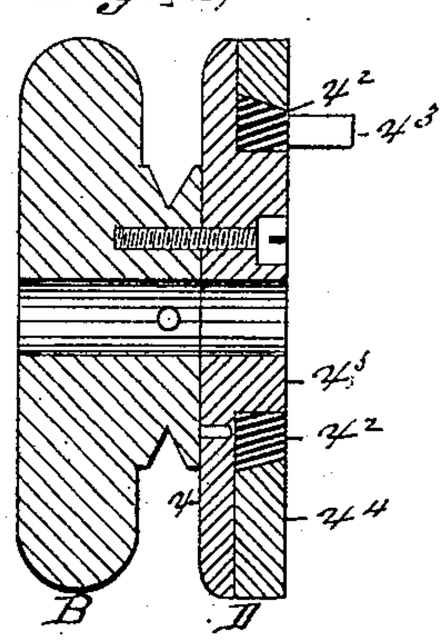


Fig X,

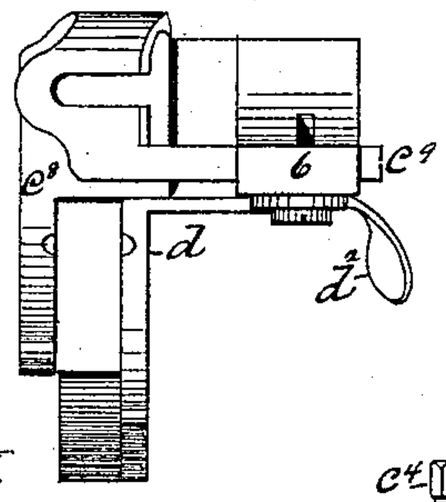


Fig XI,

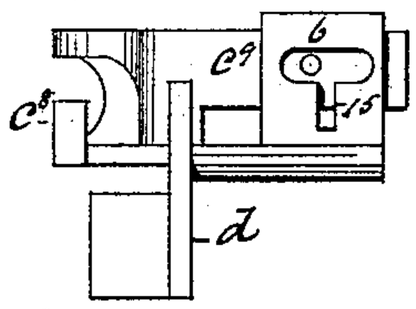


Fig XII,

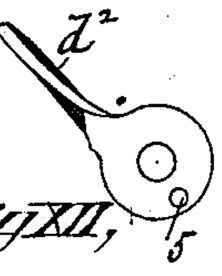
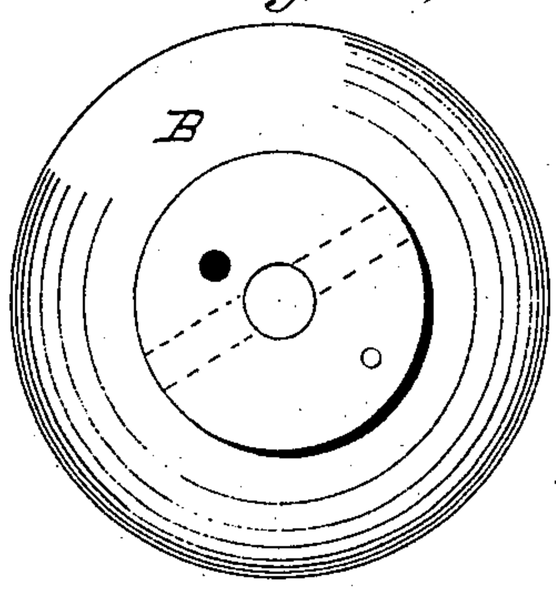


Fig VIII,



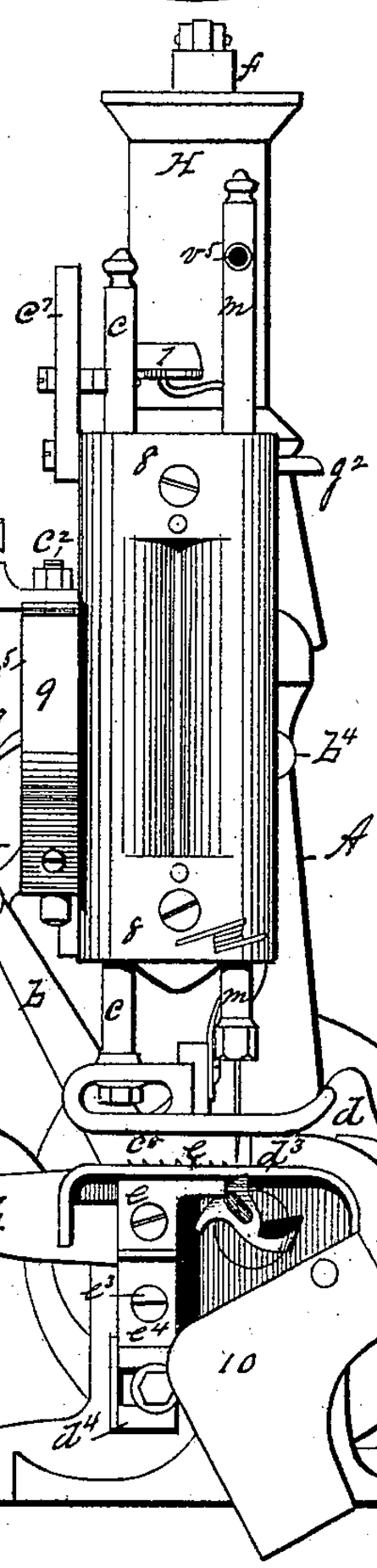


Fig VIII,

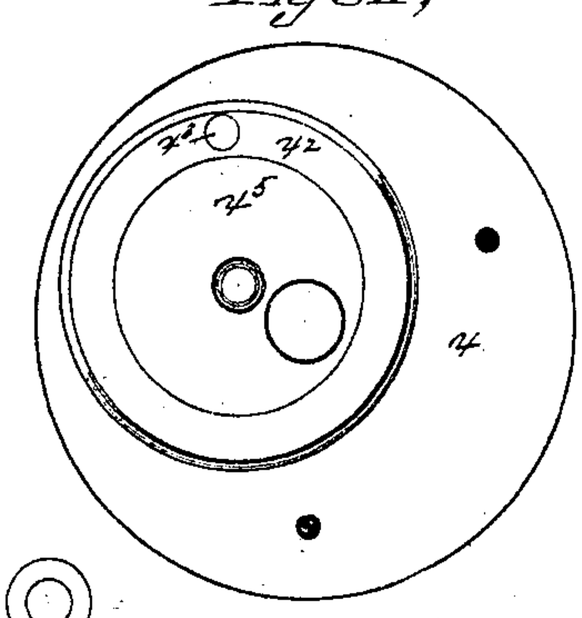


Fig VII,

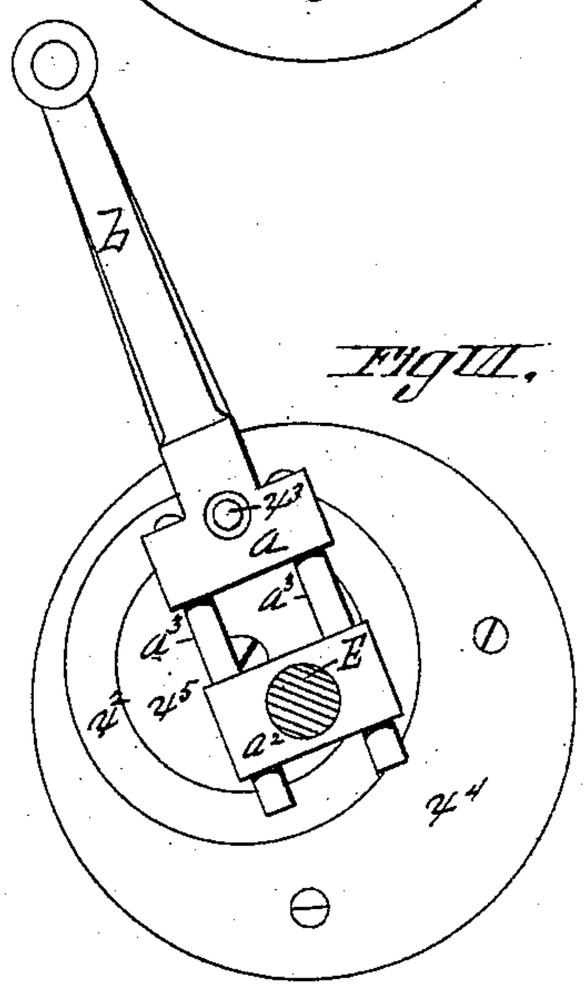


Fig XI,

Witnesses,
R. F. Hyde
Wm H Chaplin

Inventor,
Michel Marcil
by Henry A Chaplin
Atty

UNITED STATES PATENT OFFICE.

MICHEL MARCIL, OF AMHERST, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO THE HILLS COMPANY, OF SAME PLACE.

STRAW-BRAID-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 292,124, dated January 15, 1884.

Application filed May 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, MICHEL MARCIL, a citizen of the Dominion of Canada, residing at Amherst, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Straw-Braid-Sewing Machines, of which the following is a specification.

This invention relates to improvements in sewing-machines, some features of which are especially applicable to machines for sewing straw braid; and it consists in improved positive-motion feeding mechanism and means for adjusting the motion thereof, in improved edge and lap guide mechanism, and in improved devices for holding the thread-spool and for conducing to the regular and unobstructed delivery of the thread therefrom.

In the drawings forming part of this specification, Figure I is a side elevation of a sewing-machine embodying my improvements. Fig. II is a plan view, partly in section, showing the parts beneath the arm, the latter and those parts supported by it being removed. Fig. III is a section of the lower part of the machine on the line *x x*, Fig. II. Fig. IV is a plan and a side view (the latter partly in section) of the spool-supporting devices. Fig. V is a front end elevation of the machine. Figs. VI and VII are detail views, illustrating the mechanism connecting the main shaft and the rock-shaft. Fig. VIII is a side view of the driving-wheel. Fig. IX is a vertical section of the driving-wheel and of a portion of the mechanism shown in Figs. VII and VI. Figs. X and XI are plan and side views of the presser-foot and lap-guide. Figs. XII, XIII, XIV, and XV are detail views.

Like letters and numerals indicate like parts in the several figures.

The sewing devices of this machine are substantially those of the Wilcox & Gibbs machine, the ordinary looper, as shown in Fig. V, being secured to the end of the main shaft, and thereby rotated by the side of the needle.

The frame and arm of the machine are indicated by the letter A, in and on which are provided the requisite bearings, in which operate the main shaft E and the rock-shaft F. The driving-wheel B is of the usual form, having on a reduced portion thereof a band-groove, as shown. Against the end of said reduced part of wheel B is secured an eccentric-plate, *x*, having projecting from its face the eccentric x^5. On said eccentric is fitted a ring, x^2, having its outer edge beveled and provided with the stud x^3. The eccentric-ring cap x^4 is secured onto the said plate *x* and against said beveled edge of the ring x^2, whereby the latter is held upon and is free to move around the eccentric x^5, or the latter to rotate within said ring.

The above-named wheel B and the parts holding the ring x^2, which are designated as the eccentric-ring case, and lettered D, are shown in section in Fig. IX, and said devices are secured on the rear end of said main shaft E, in the position shown in Figs. I and II. A pitman-yoke box, a^2, is fitted onto shaft E, between said eccentric-ring case D and the frame A, and said box is perforated transversely to let the yoke-arms a^3 pass freely through it, as shown in Fig. VI. The pitman *b* has the yoke *a* on its lower end, in which are fixed said arms a^3, and said yoke is perforated to let the stud x^3 on ring x^2 pass through it, as shown. Thus when said parts B and D are rotated, the pitman being in connection therewith, as shown in Fig. VI, the latter is given a reciprocating motion in a line across the axis of shaft E. Said shaft E extends through frame A to the front end of the machine under the work-plate d^2, and the usual looper is secured to it, as shown in Fig. V.

A rock-shaft, F, is hung on frame A, on the rear end of which is an arm, b^2, with which the upper end of the pitman *b* is connected. The opposite end of said rock-shaft, which terminates just back of the presser-bar and needle-bar box S, has fixed thereon a double-armed piece, from which extends (looking at Fig. V) a curved arm, b^3, and in an opposite direction from the latter a second arm, having an ordinary link-connection, b^4, with the needle-bar *m*. The said needle-bar is connected to one side of shaft F and the pitman *b* to the end of arm b^2, extending from the opposite side of said shaft, and thus the needle-

bar and its connections and the pitman and its connections so balance each other that the rapid oscillating movements of shaft F produce no unsteadiness in the machine.

An auxiliary short bar, c^2, is connected to an arm, c^6, on the presser-bar c, and is supported in the box 9 on one side of the box 8, so that it may move with said bar c.

At the upper end of bar c^2 is placed a rotating arm, c^3, having the screw c^4 through it. Said arm is movable on bar c^2 from the position shown in Fig. V to that in Fig. I, and vice versa, whereby the screw c^4 is made to stand over the arm b^3 when it is desired that the presser-bar shall be actuated by the movements of the latter, and be swung off to disconnect the said bar from said arm. A spring, c^5, bears against the rear end of arm c^3 and holds it to either of said positions after it has been turned. The said screw c^4 in arm c^3 constitutes a contact-point on said arm for the arm b^3 to operate against, which is variable, for the purpose of giving more or less lift to the presser-foot. The lever c^7 is the usual one employed on sewing-machines for lifting and lowering the presser-foot.

The presser-foot c^8 and the lap-guide d are shown in detail in Figs. X, XI, and XII detached from the presser-foot bar, and wherein are shown the combined parts and construction of said foot and guide. An arm, c^9, extends rearwardly from the upper part of the presser-foot.

The lap-guide d is provided with a box, 6, which is fitted to slide on arm c^9, actuated by the lever d^2, which is pivoted on said arm and has a pin, 5, in it, which engages in a slot, 15, (see Fig. XI,) in said box, whereby, by operating said lever, the lap-guide is moved over the surface of the work-plate d^3 toward and from the needle.

The edge-guide w is supported on the end of a slotted rack-bar, to which it is fixed, (see Fig. II,) and which is arranged to slide on a suitable projecting part of frame A by operating a pinion-lever, w^2, whose teeth engage with those on said rack-bar, which is held in place by a screw, which passes through its slot and through a holding-plate, w^3. By operating lever w^2, the guide w is brought to a proper position over the work-plate d^3. The braid-guide w^4 is supported in the aforesaid projecting part of frame A under lever w^2, and stands in a line with the vertical side of the work-plate d^3, and serves the usual purpose of holding down the braid as it is drawn over the surface of the said plate to be sewed.

The four motions of the feed devices of this machine are derived directly from the main shaft E, and are all positive—that is to say, no springs are employed; and the feed mechanism is constructed and operates as follows: On that portion of the main shaft between the vertical part of the arm and the work-plate d^3 is fixed a cam or eccentric, 14, Fig. III. On each end of said eccentric is fitted a feed-frame box, o, within which said eccentric rotates freely. Between said boxes o o, on the eccentric 14, is fitted the sleeve K′ of the eccentric-rod K, and the end of the latter is connected with the slotted curved feed-lever i, which is pivoted by its lower end to the frame of the machine. A bolt, 11, passes through the end of said rod K and through the slot 12 in lever i, which provides means for adjusting the end of said rod at different distances from the pivoted end of lever i, whereby the degree of its vibratory motion is varied. A feed-frame, h, of bifurcated form, has one end pivoted to a boss on the inner edge of said lever i, and each of its separated ends or legs is provided with a yoke, n, having the arms n^2, secured thereto, and said arms pass freely through suitable perforations in the said boxes o o, as shown in Fig. III. Projecting from one of the said legs of the feed-frame h, in a direction toward the front of the machine, and under the work-plate d^3, is a bracket-shaped arm, i^2, shown partly in full and partly in dotted lines in Fig. I, and in dotted lines under the work-plate in Fig. II.

The vertical edge of arm i^2 is provided with a tongue, i^3, (See Figs. XIII and XIV,) upon which is fitted the feed-dog block d^4, having a slot therein, through which passes a retaining-screw, c^3, having a flat spring, e^4, under its head, whereby said block is held with some frictional force against said edge of arm i^2. Block d^4 is provided with a transverse slot from one edge inward near its lower end, in which operates the cam-bolt e^2, Fig. XV, and by turning the latter said block is moved up and down to vary the projection of the feed-dog e above the work-plate. The latter is secured to block d^4, as shown in Fig. V, by a screw. By the rotation of the eccentric 14 in the boxes o o, that part of frame h adjoining said boxes, together with the latter, is given a reciprocating vertical motion, whereby said feed-dog is given a like movement. The rotation of said eccentric in the sleeve K′ of the rod K imparts to the latter and to frame h, to which it is connected by the lever i, a horizontal reciprocating motion, more or less, according to the point on lever i at which rod K is fixed, to produce such a movement of the feed-dog as will determine a certain length of stitch. When frame h moves horizontally, the arms n^2 have a sliding motion in the boxes o o.

The spool-holding devices of this machine consist of the spool-stand f, which is secured to frame A in the position shown, having an overhanging arm at the top, which is bored to receive the end of the spindle g, the latter having the circular plate g^2 on its lower end, of greater diameter than the bobbin or spool-head. One side of the hole through which spindle g passes in stand f is provided with a slot to receive the wedge r^2, and the latter is pivoted to the end of the lever r, which is hung on stand f, as shown. The spool H is placed on spindle g and plate g^2, in the position shown in

Fig. 1. The end of said spindle is passed through said hole in said stand, and the end of lever r being pressed down, wedge r^2 is forced between the side of said spindle and the inclined side of said slot so strongly as to lock said spindle in the position shown, and hold the bobbin so suspended that the thread can be freely drawn off, and, passing over the edge of plate g^2, it is carried beyond the edge of the bobbin and prevented from catching on the latter, and is prevented from becoming snarled. The spindle g is detached from stand f by lifting up the end of lever r. The lower end of the stand f affords a support for the thread-guides v v^2 and the tension s.

What I claim at my invention is—

1. In combination, the needle-bar m, the presser foot-bar c, the rock-shaft F, having the pitman-arm b^2 thereon, extending in an opposite direction from the arm thereon, connecting said shaft with the needle-bar, the pitman b, provided with the yoke a, having arms a^3 thereon, the yoke-box a^2, the ring x^2, having the stud x^3 thereon, the wheel B, having the eccentric plate x thereon, and the shaft E, substantially as set forth.

2. The combination, with the driving-shaft of a sewing-machine, of an eccentric fixed on said shaft, of two perforated yoke-boxes fitted on said eccentric, of a feed-frame, substantially as described, having yoke-arms fitting the perforations in said boxes, and a feed-dog arm thereon, substantially as described, and having its outer end supported upon a vibratory lever pivoted to the base of the machine, of means, substantially as described, for giving to said feed-frame reciprocating horizontal movements, substantially as described.

3. The combination, with the driving-shaft of a sewing-machine, of an eccentric fixed on said shaft, of two perforated yoke-boxes fitted on said eccentric, of a feed-frame having yoke-arms fitting the perforations in said boxes, and a feed-dog arm thereon, substantially as described, and having its outer end supported upon a slotted vibratory lever pivoted to the base of the machine, and the eccentric-rod K, connected by one end to said eccentric, and having its opposite end adjustably connected to said slotted vibratory lever, substantially as set forth.

MICHEL MARCIL.

Witnesses:
H. A. CHAPIN,
R. F. HYDE.