

(No Model.)

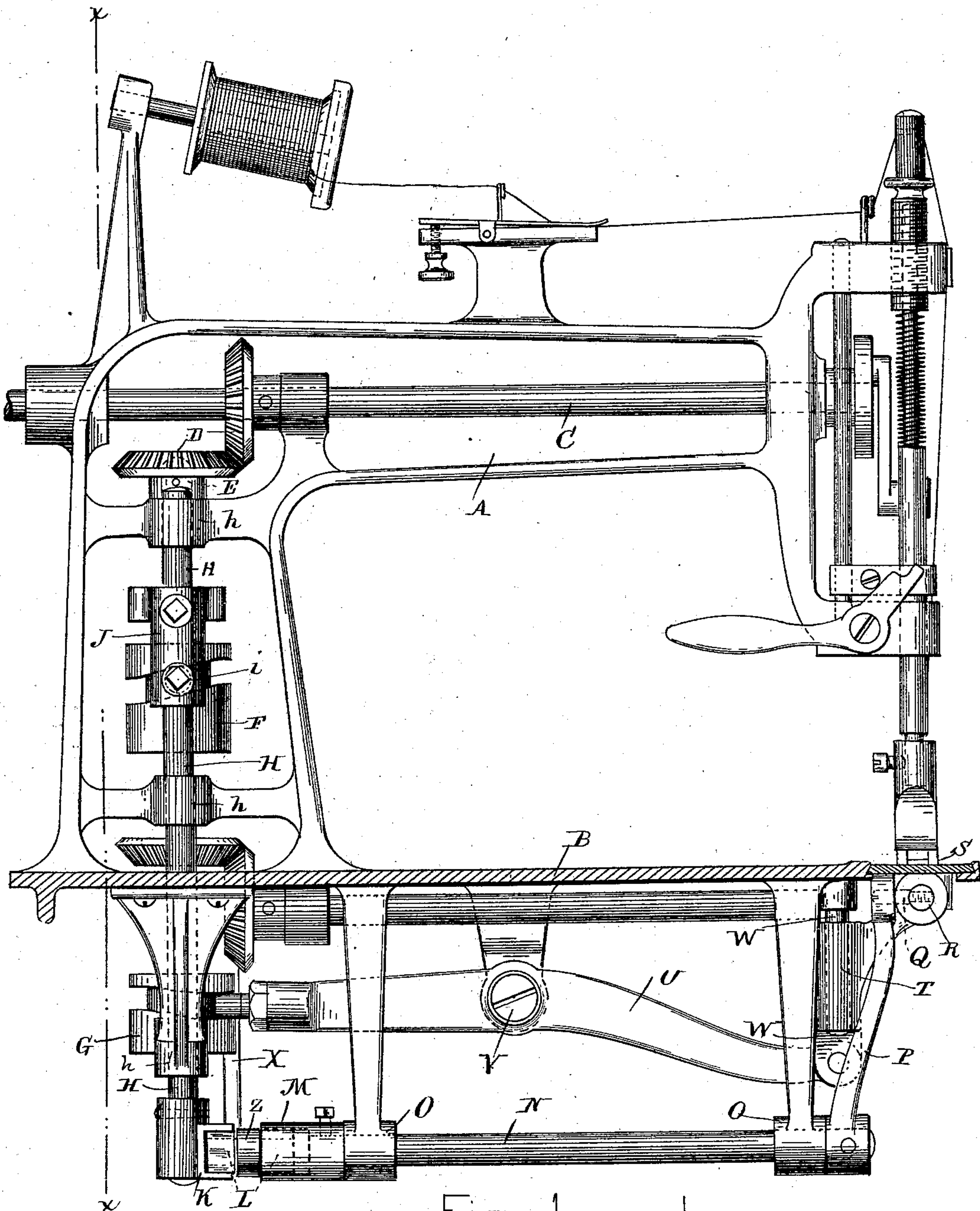
3 Sheets—Sheet 1.

E. E. ANGELL.

FEED MECHANISM FOR SEWING MACHINES.

No. 368,925.

Patented Aug. 30, 1887.



WITNESSES:

C. S. Gooding,
Edy Alexander

Fig. 1.

INVENTOR:

Edwin E. Angell,
by A. W. French,
Attorney

(No Model.)

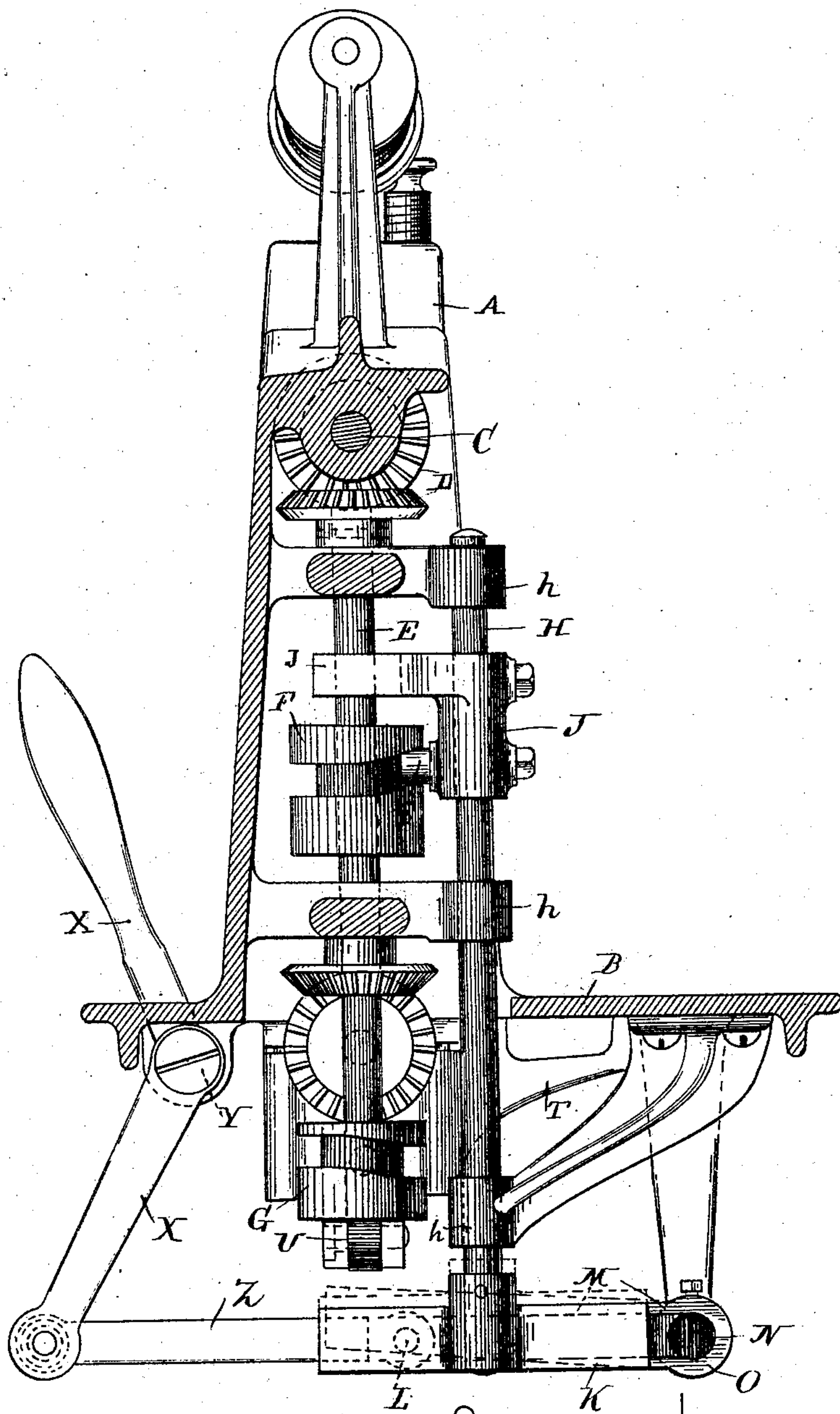
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WITNESSES:

FIG. 2.

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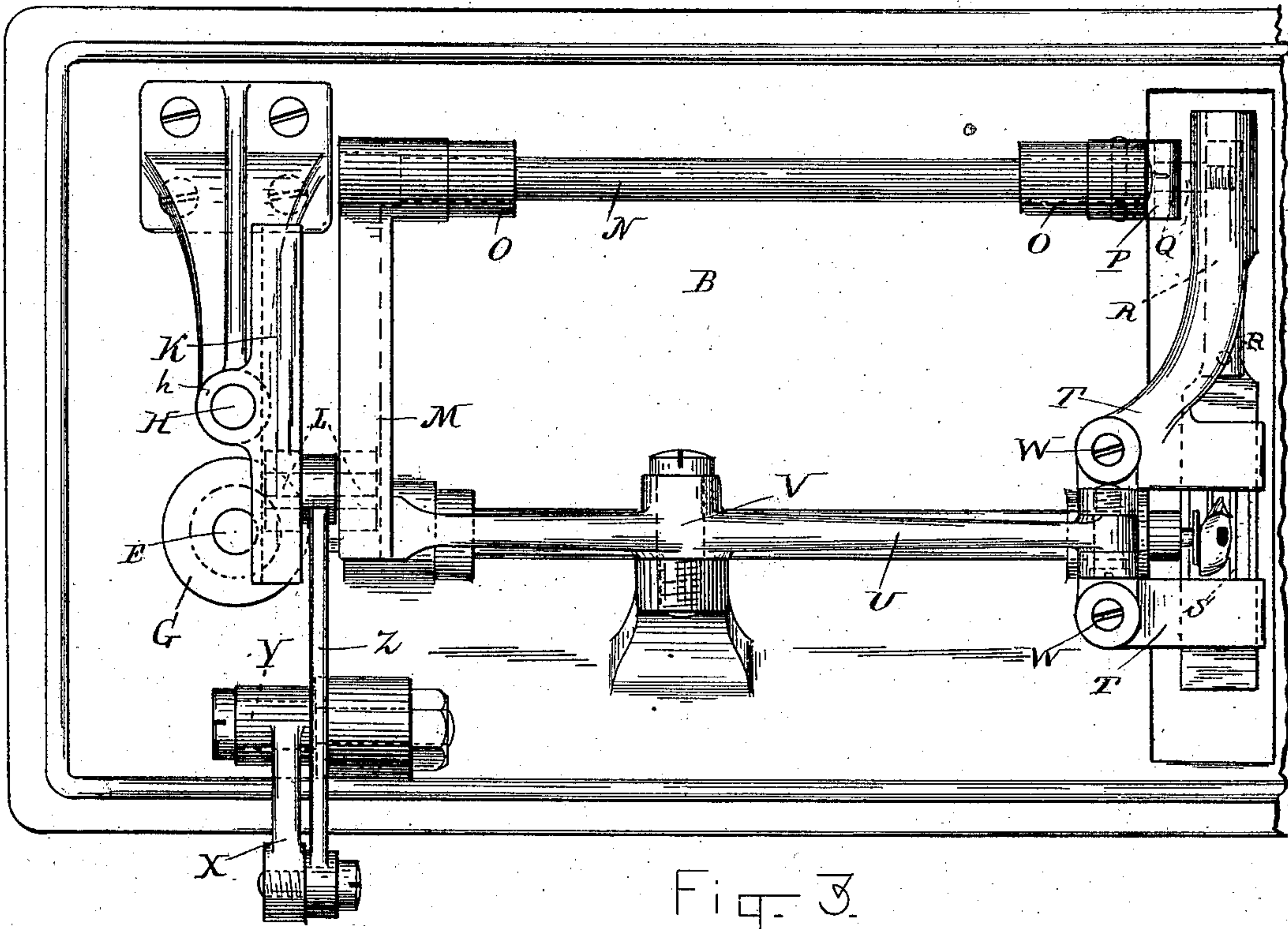


Fig. 3.

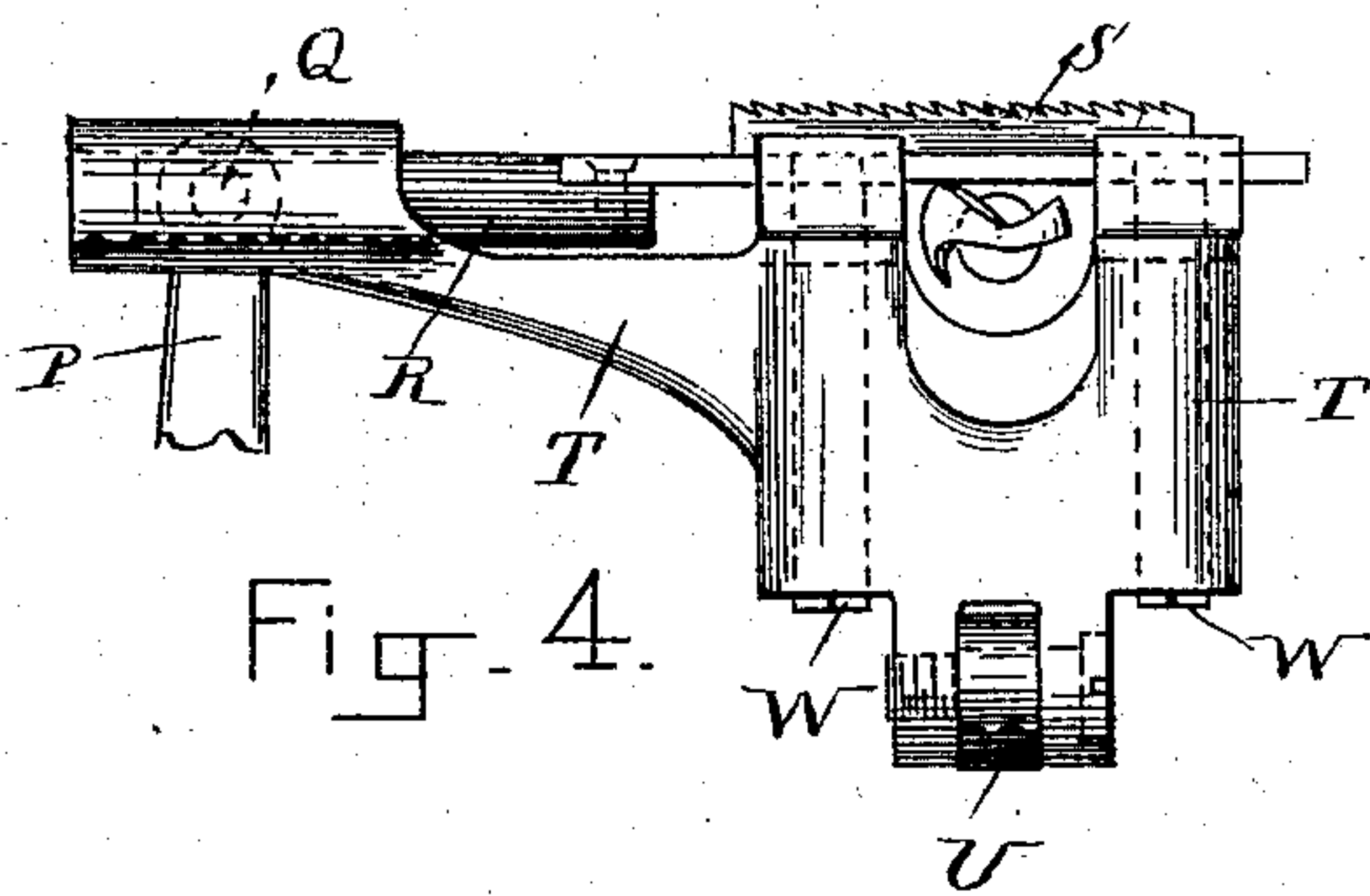


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWIN E. ANGELL, OF MALDEN, ASSIGNOR TO CHARLES B. KENDALL,
OF NEWTON, MASSACHUSETTS.

FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 368,925, dated August 30, 1887.

Application filed February 3, 1887. Serial No. 236,385. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. ANGELL, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Feed Mechanism for Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improved feeding mechanism for sewing-machines, such mechanism operating beneath the goods on the work-plate.

The features peculiar to my invention are, in brief, a rotating vertical shaft carrying two grooved cams, (shown one above and one below the bed-plate,) the upper one engaging a stud on a vertically-reciprocating rod, which rod works a rock-shaft beneath the bed-plate, and thus actuates an arm which carries the lower feed-points to give them the positive forward and back movements required. The other grooved cam on the vertical shaft receives a barrel-shaped roller on the end of a lever fulcrumed on a stud below the bed-plate, the lever at its opposite end giving vertical movement to a casting, which works on guide-pins fixed to the bed, said casting carrying with it (up and down) the feed-points, which reciprocate horizontally in ways formed in it. This casting is of peculiar construction, being perforated vertically, to rise and fall on fixed guide-pins, and slotted horizontally to receive the reciprocating feed-points and the pin which connects them with their actuating-arm.

In the drawings, Figure 1 is a rear elevation of the machine, with the bed-plate in section. Fig. 2 is a vertical section on line *x x*, Fig. 1. Fig. 3 is an under side plan of the machine, with a portion of the bed-plate broken away. Fig. 4 is an elevation, in detail, of the feed-points and the casting in which they reciprocate.

A is the arm overhanging the bed B of the machine, and C is the main shaft rotated by belt and pulley as usual.

D D are bevel-gears by which rotation is communicated to a vertical shaft, E. This shaft carries two grooved cams, F and G, which give, respectively, the forward-and-backward feed movement and the up-and-down feed-

movement, by mechanism which will be successively described.

H is a vertical rod, caused to reciprocate in bearings *h* by means of a stud, *i*, projecting into the groove of cam F. This stud *i* is preferably part of a casting, J, fixed on rod H by set-screws, and forked on its inner side to bestride the rotating shaft E, so as to prevent rotation of rod H. At its lower end the rod H has a horizontal bar, K, fixed upon it, and this bar is slotted to receive a movable stud, L, which also engages in a similar slot in the face of an arm, M, fixed on a rock-shaft, N, oscillating in bearings O below the bed B. The opposite end of rock-shaft N has fixed on it a nearly vertical arm, P, with a slot at its top to receive a pin, Q, extending horizontally from a reciprocating rod, R, to which the feed-points S are fixed.

The feed-points are given their rising and falling motions by a lever-connection from the cam G to a vertically-movable casting, T, in which said points move horizontally. The lever U is pivoted at V, and has on one end a barrel-shaped roller working in the groove of cam G, while its other end has a slot-and-pin connection with the casting T, to give said casting a vertical reciprocation on two guide-pins, W, projecting downwardly from the bottom of the bed-plate. With this construction it is obvious that while the casting T is caused to rise and fall by means of the lever U and cam G, the feed-points S (raised and lowered with it) will be reciprocated by the rock-shaft N, its arms M and P, the rod H, and cam F. I thus secure a most perfect positive four-motion feed, and by adjustment of the cams I am enabled to give these movements the desired relation to each other.

For varying the length of stitch I provide a lever, X, pivoted at Y, beneath the bed-plate, and at its lower end having a connecting-rod, Z, extending to the stud L, which is thereby made movable in the adjacent slots of the horizontal bar K and arm M. As the vertical movement of bar K is unvarying, it is evident that sliding the stud in the groove of arm N toward the rock-shaft will increase the oscillation of said shaft and lengthen the throw of its other arm, P, thereby lengthen-

ing the feed-stroke. The reverse movement of stud L by means of lever X and rod Z, will shorten the feed-stroke and the stitches.

I claim as my invention—

5 1. In a feeding mechanism for sewing-machines, the combination, with a vertical shaft and a grooved cam fixed thereto, of a vertically-reciprocating rod having a stud engaging said cam, and having also a slotted horizontal bar, 10 a rock-shaft beneath the bed-plate of the machine, having at its rear end a slotted horizontal arm and at its forward end a vertical arm, an adjustable stud or pin to connect the said bar and horizontal arm, a toothed feed 15 plate or bar connected with the said vertical arm to be reciprocated horizontally thereby, and means for reciprocating the said feed plate or bar vertically, substantially as set forth.

2. In a feed mechanism for sewing-machines, 20 a vertical rotary shaft, a grooved cam fixed thereon, and a lever pivoted beneath the bed-plate and engaging at one end in the groove of said cam, in combination with a casting or block connected to the opposite end of said 25 lever, suitable guides on which said block reciprocates vertically, and a toothed feed-plate reciprocated horizontally in said block by other mechanism, substantially as set forth.

3. In a sewing-machine, the combination, with the bed-plate having the guide-pins W, 30 of the block T, having vertical perforations to receive the said pins, and a horizontally perforated or recessed arm, a rod or bar, R, means to reciprocate the same horizontally in the said arm, the feed-points or feed-dog S, 35 carried by the said rod, and means for reciprocating the said block T vertically, substantially as set forth.

4. In a sewing-machine feeding mechanism, the combination, with a vertically-reciprocating rod, H, having a slotted or grooved horizontal bar, K, of the rock-shaft N, having the horizontally slotted or grooved arm M, adjacent to the said bar, the adjustable stud L, connecting the said bar and arm, the regulating- 45 lever X, and the connecting-rod Z, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 28th day of January, A. D. 1887. 50

EDWIN E. ANGELL.

Witnesses:

A. H. SPENCER,
J. C. KENNEDY.