

No. 768,328.

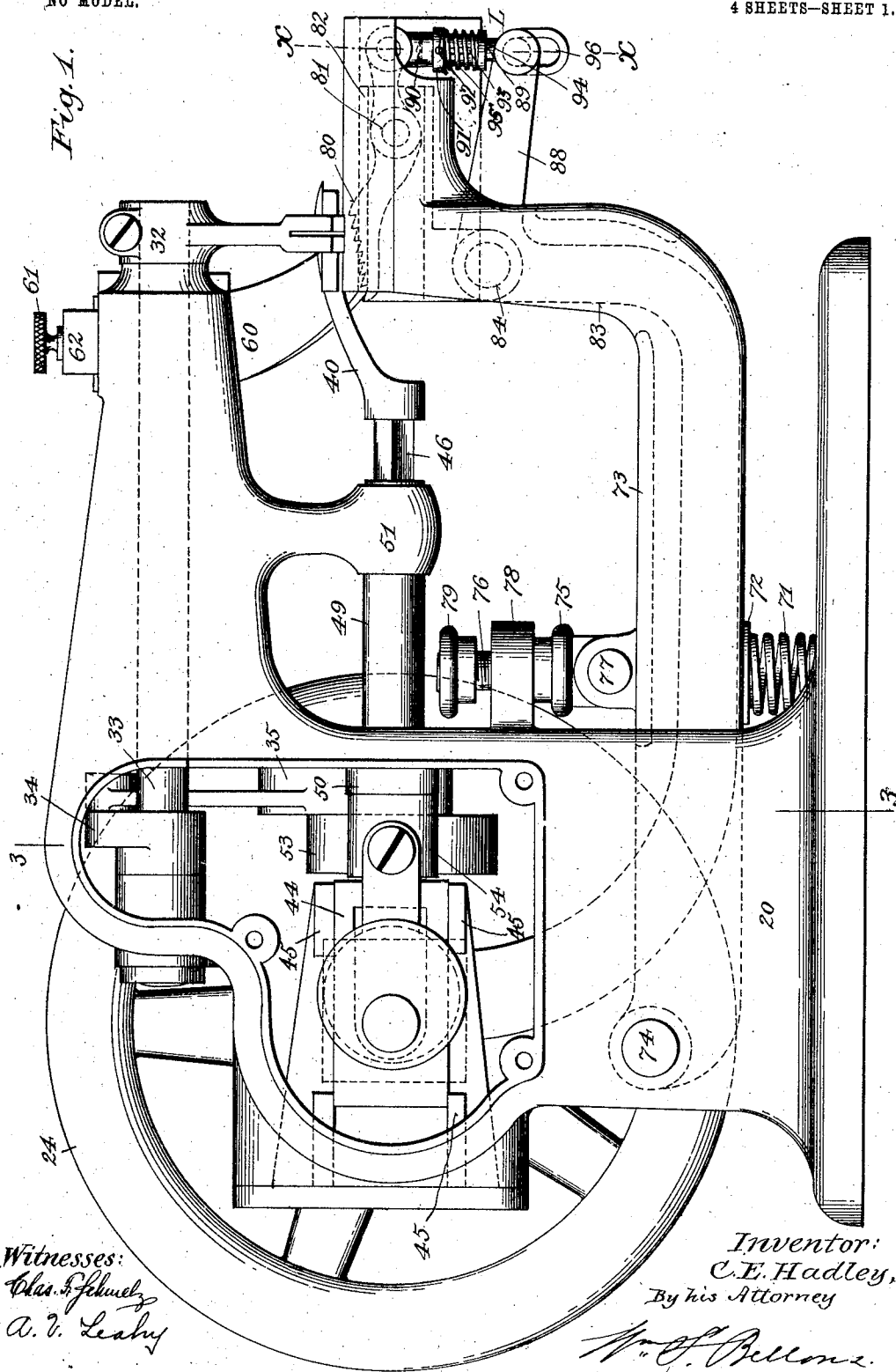
PATENTED AUG. 23, 1904.

C. E. HADLEY.
FEEDING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED OCT. 22, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:
Chas. F. Schuchert
A. V. Leahy

Inventor:
C. E. Hadley,
By his Attorney

W. H. Bellows

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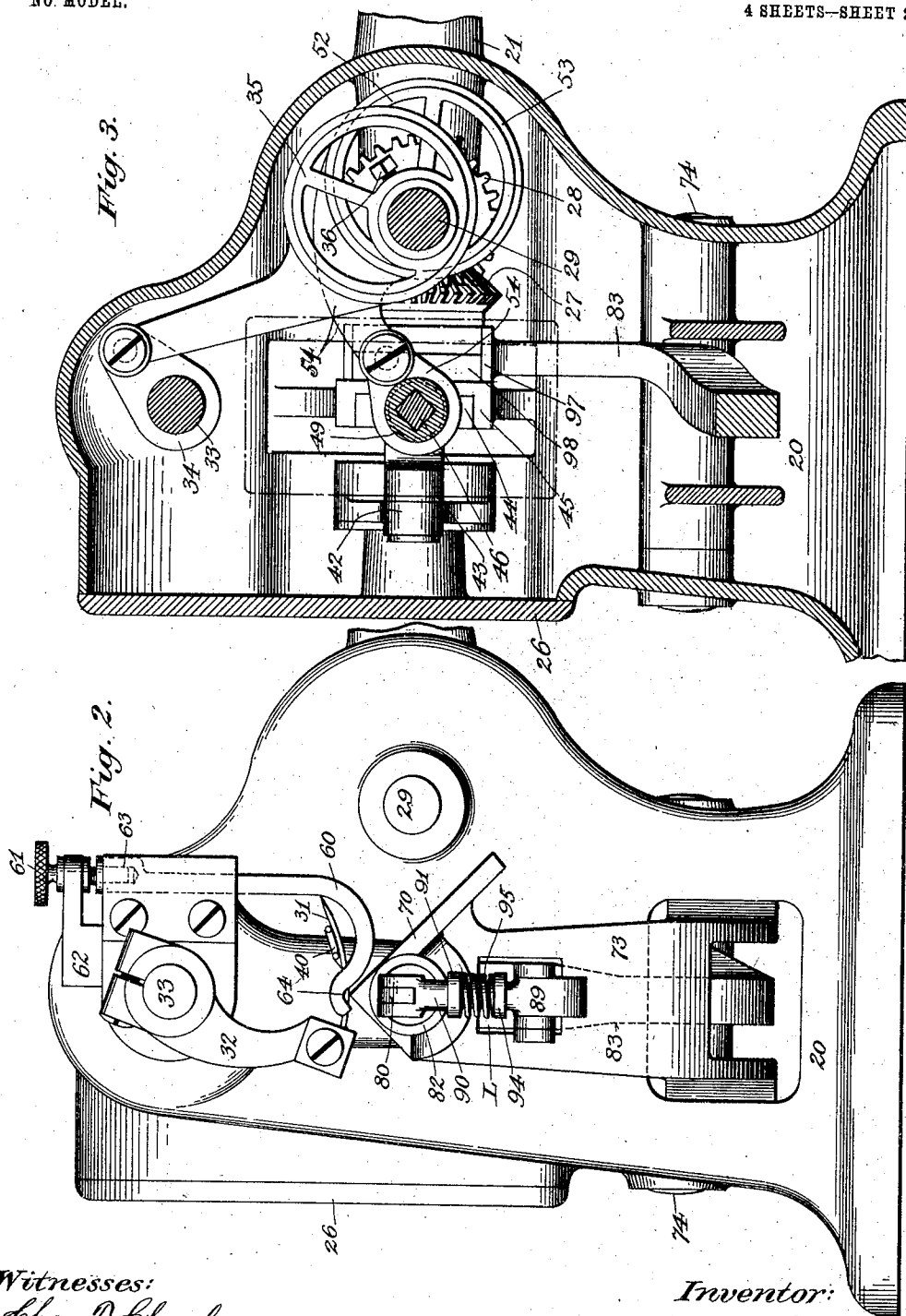
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4 SHEETS--SHEET 2.



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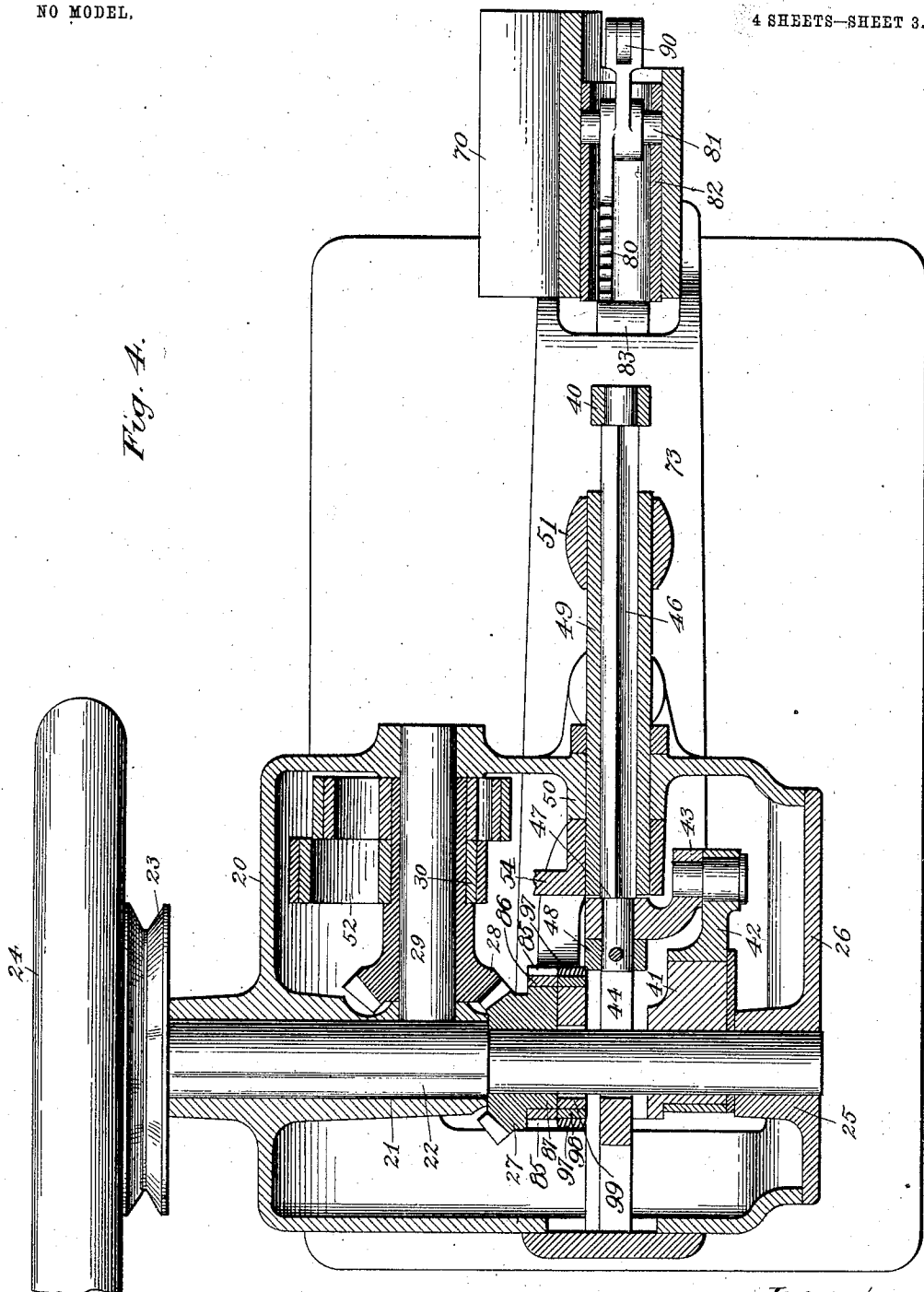
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4 SHEETS—SHEET 3.

Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 5.

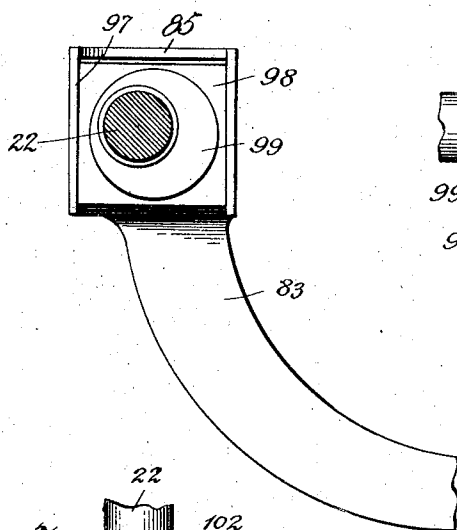


Fig. 6.

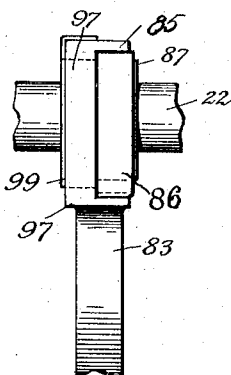


Fig. 7.

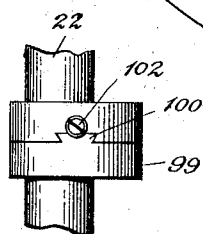


Fig. 9.

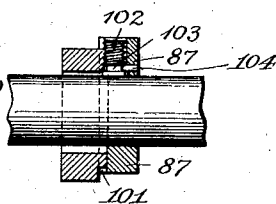


Fig. 8.

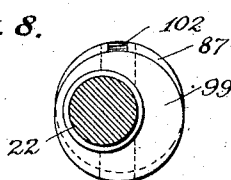


Fig. 11.

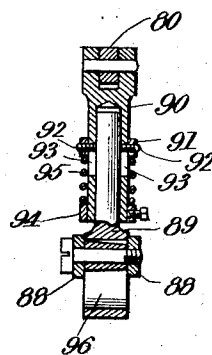
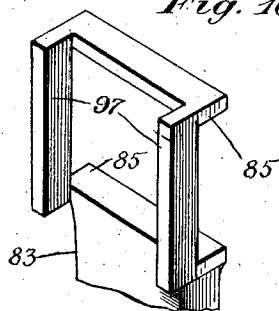


Fig. 10.



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UNITED STATES PATENT OFFICE.

CHARLES E. HADLEY, OF CHICOPEE, MASSACHUSETTS.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 768,328, dated August 23, 1904.

Application filed October 22, 1902. Serial No. 128,242. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HADLEY, a citizen of the United States of America, and a resident of Chicopee, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates to sewing-machines, and more particularly to that class thereof employed for chain-stitching and overseam blindstitching; and my invention has for its object certain improvements in the mechanism whereby the functions of the several co-operating parts may be carried out, such parts being adapted and organized for adjustment relatively to but independent of each other to produce the best results.

More specifically, my invention comprises a novel organization of the feed mechanism comprising an actuating-lever operable longitudinally and vertically by independent devices in such a manner that while the vertical movement of the feed-dog may remain constant, yet the longitudinal movement of said dog may be regulated or adjusted as required to regulate the length of the stitch.

In connection with the vertical movement of the feed-dog my invention comprises means whereby the arc of said vertical movement may be varied in accordance with the thickness of the material to be operated upon.

In the accompanying drawings, in which similar characters denote similar parts, Figure 1 is a side view of a sewing-machine constructed in accordance with my invention, the side plate or cover being removed to disclose the interior of the frame. Fig. 2 is an end view of the machine. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 represents a central horizontal section of the machine, and Fig. 5 is a detail view of the connection between the drive-shaft and the lever for actuating the feed-dog. Fig. 6 is an edge elevation thereof. Fig. 7 is a plan view to show the means for adjusting the drive-cams for the dog-actuating lever. Fig. 8 is a side elevation thereof. Fig. 9 is a cross-sectional view of Fig. 8. Fig. 10 is a detail perspective view of the rear end of the dog-actuating

lever. Fig. 11 is a longitudinal section of the link connecting the feed-dog and the actuating-lever, taken on the line *xx* of Fig. 1.

Before proceeding to describe the novel feed mechanism in detail a description will be given briefly of the organized machine in which such mechanism is comprised in an operative way and with which character of machine said feed devices are exceptionally well adapted for cooperation.

20 represents a frame having a bearing 21 for the driving-shaft 22, which is provided with the usual band-wheel 23 and fly-wheel 24, said shaft having its opposite ends journaled at 25 in the cover or front plate 26. Said shaft has thereon a bevel-gear 27, meshing a bevel-gear 28 on a right-angularly-arranged spindle 29, on which is a sleeve 30, constituting an eccentric driving member.

The needle 31 is carried by an arm 32, adjustably secured to the needle-bar 33, which is constituted by a shaft journaled in the frame and has its oscillatory movement imparted thereto by the connection with its crank-arm 34 of the eccentric 35 on the aforementioned sleeve 30.

40 indicates the looper, which has an oscillatory and a reciprocatory movement imparted thereto, the reciprocatory movement being imparted by an eccentric 41 on shaft 22, its strap 42 being connected to an arm 43. Passing through the arm 43 and rotatably mounted therein is a looper-bar 46, shouldered at 47 and having a collar 48 at opposite sides of the arm 43, so that as the arm is reciprocated by the eccentric the looper-bar will be moved endwise. The rear end of the looper-bar 46 is slotted to receive the drive-shaft 22 and form a slide 44, which works in ways 45, provided upon the frame of the machine. The looper-bar is square in cross-section and plays in a sleeve 49, journaled in the bearing 50 and a hanger 51 of the frame 20. The oscillatory movement is imparted to the sleeve 49 by the eccentric 52, the strap of which is connected to the arm 54.

The novel feed mechanism will be now particularly described, it being stated that the same comprises an actuating-lever movable longitudinally and also vertically, so as to be

coöperative with the presser-foot maintained stationary in juxtaposition thereto. The work-table is also movable vertically and is so organized that the extent of its movement may be regulated for any thickness of material to be operated upon.

Referring first to the presser-foot 60, (see Fig. 2,) it has been stated that this presser-foot is normally stationary during the operation of stitching. On the other hand, means are provided for varying the position of said presser-foot relatively to the needle, these means consisting, substantially, of an adjustable screw 61, rotatably held in a block or bracket 62, which may be secured to the head or frame of the machine in any convenient manner. The screw 61 is in engagement with a correspondingly-threaded aperture 63 in the upper portion of the presser-foot 60, so that the actual working surface 64 of said foot may be closely regulated relatively to the needle 31, and consequently a blindstitch or an overseam may be performed on the machine as required.

Organized for coöperation with the presser-foot 60 is a working table, denoted herein by 70 and preferably angular in cross-section, so as to form a bend in the material to be operated upon and to afford to the needle an opportunity of performing its work properly. The table has, as above stated, a vertical movement, the upward movement (toward the presser-foot) being caused, preferably, by resilient means, shown herein as a spring 71, interposed between the base of the frame and the plate 72, secured to the under side of the bed or bar 73. This bar is shown as having an oscillatory movement around a fixed axis 74 in the frame, and the upward movement thereof may be limited—as, for instance, by a nut 75 in screw-threaded engagement with a stud 76, pivoted at 77 to the bar 73 and passing through an ear 78, forming a part of the frame—while a stop-nut 79 may be employed above the ear 78 to limit the downward movement of the bed or table 73 as the latter is depressed by any convenient means to receive the work to be operated upon.

The feed-dog 80 is preferably pivoted intermediate its ends, as at 81, so as to have a vertically-oscillatory movement of predetermined amount, while at the same time a longitudinal movement may be imparted to said feed-dog at the proper time. To this end the feed-dog 80 is pivotally supported in a slide 82, supported in the table 70, to which a longitudinal movement may be imparted by an actuating-lever 83, pivotally supported on said slide, as at 84. The upper end of the actuating-lever 83 may be provided with a pair of horizontally-disposed ribs 85, adapted to receive between them a block 86, which may serve as a wearing member for an eccentric 87, mounted upon the primary driving mem-

ber 22 and preferably forming a part of the bevel-gear 27, above referred to.

Means are provided for imparting a vertical movement to the feed-dog 80, this movement being also accomplished by the lever 83, having an extension 88, connected with the feed-dog 80, preferably in a manner indicated in Figs. 1 and 11, and comprising a link L, formed in two parts 89 and 90, respectively, the former of which telescopes into the latter, and the part 89 carries a collar 91, secured thereto by screws 92, passing through a slot 93 in the member 90. (See Fig. 11.) The member 90 of the link L is also provided with a collar 94, and a spring, such as 95, may be interposed between the collars 91 and 94, thus forming a yielding connection between the lever 83 and the dog 80.

Means are provided whereby the arc of vertical movement of the feed-dog 80 may be varied without in any way influencing the amount of such movement, and for this reason I preferably provide the link-section 89 with a slot 96 to permit adjustment of the link L relatively to the arm 88 of the lever 83, as will be readily understood, it of course being understood that a set-screw is employed to adjustably connect the arm to the link. The vertical movement of the dog 80 is in this case effected by the movement of the arm 88 around the pin 84 as a fulcrum, the lever 83 being provided at its rear end with a pair of projecting faces 97, adapted to receive between them a block 98, to which a reciprocatory movement in said ways may be imparted by an eccentric 99, operatively connected with the primary driving member 22, but being organized to vary the throw thereof substantially in the manner as shown in Figs. 7 to 9, inclusive. Here the eccentric 99 is shown as having a lateral projection 100, fitting into a correspondingly-formed groove 101 in the eccentric 87, so that the eccentric 99 may have a sliding movement relatively to the latter, such movement being regulated by a screw 102 in screw-threaded engagement with the eccentric 99, but being rotatable without any endwise movement in the eccentric 87. It is of course evident that the particular construction for effecting this adjustment may be varied as desired, the screw 102 being in the present instance provided with an annular groove 103, the walls of which engage a pin 104, firmly held in the eccentric 87.

From this description it will be seen that while the timing of the respective operations will not be affected in any way the eccentricity of the eccentric 99 relatively to the primary driving member 22 may be increased or decreased, thus varying the longitudinal travel of the feed-dog without affecting the rise or fall thereof.

Many changes may be made in the particular methods of effecting the various adjust-

ments without departing from the spirit of my invention, and for this reason I wish it distinctly understood that I do not confine myself to the use of the specific construction of these several elements as hereinbefore described.

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

1. The combination with a table, a longitudinally-movable slide carried thereby and a feed-dog pivoted to the slide, of an endwise bodily movable actuating-lever fulcrumed upon the slide and having a connection with the feed-dog to oscillate the same, and means for imparting reciprocatory and oscillatory movements to the lever.

2. The combination with a table, a longitudinally-movable slide carried thereby and a feed-dog pivoted to the slide, of an endwise bodily movable actuating-lever fulcrumed upon the slide, and a yielding connection between said lever and feed-dog to oscillate the latter, and means for imparting reciprocatory and oscillatory movements to the lever.

3. The combination with a table, a longitudinally-movable slide carried thereby and a feed-dog pivoted to the slide, of an endwise bodily movable actuating-lever fulcrumed upon the slide, means for operating the lever, means for adjusting the endwise movement of the lever to vary the longitudinal movement of the feed-pawl, and means connecting the lever and pawl for varying the arc of the pivotal movement of the latter.

4. The combination with a table, a slide carried thereby and a feed-dog pivoted to the slide, of an endwise bodily movable actuating-lever fulcrumed upon the slide, a link connection between one end of the lever and the dog, a drive-shaft, a cam embodying a member fixed upon the shaft and a slidable member carried by and adjustable in an endwise direction across the fixed member, and a strap connection between the cam members and the lever.

5. The combination with a table, a slide carried thereby, and a feed-dog pivoted to the slide, of an endwise bodily movable actuating-lever fulcrumed upon the slide, a link connection between one end of the lever and the dog, a drive-shaft, a cam embodying a member fixed upon the shaft and provided with a lateral groove, and a slidable member having a projection engaging the groove, an adjusting-screw upon the fixed member and engaging a screw-threaded part of the projection on the slidable member, and a strap connection between the cam members and the lever.

6. The combination of a table, a slide carried thereby, a feed-dog pivoted to the slide, an endwise, bodily-movable, actuating-lever fulcrumed upon the slide, a telescopic, spring-pressed connection between the lever and the dog, and means for reciprocating and oscillating the lever.

7. The combination of a table, a slide carried thereby, a feed-dog pivoted to the slide, an endwise, bodily-movable, actuating-lever fulcrumed upon the slide, means for reciprocating and oscillating the lever, telescoped links pivotally connected to the lever and the dog respectively, annular shoulders upon the links, and a helical spring embracing one of the links and bearing in opposite directions against the shoulders.

8. The combination of a table, a slide carried thereby, a feed-dog pivoted to the slide, an endwise, bodily-movable, actuating-lever fulcrumed upon the slide, means for reciprocating and oscillating the lever, and a link pivotally connected to the dog and having an endwise-adjustable connection with the lever.

Signed by me at New York, N. Y., in presence of two subscribing witnesses.

CHARLES E. HADLEY.

Witnesses:

MERRITT W. BURWELL,
A. CHAPIN.