(No Model.) 2 Sheets—Sheet 1.

J. F. HARDY.

FEED MECHANISM FOR SEWING MACHINES.

No. 550,930. Patented Dec. 3, 1895.

FIG. 1.

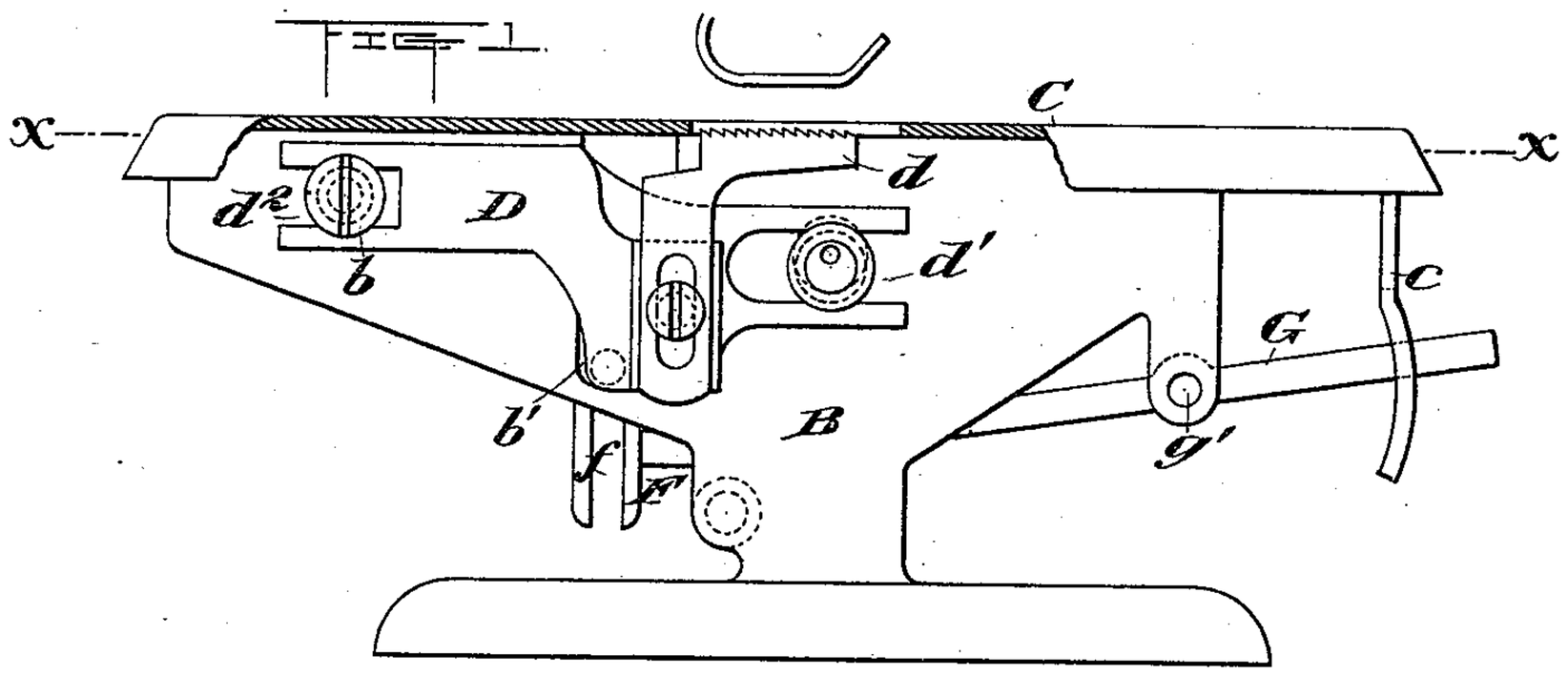


FIG. 2.

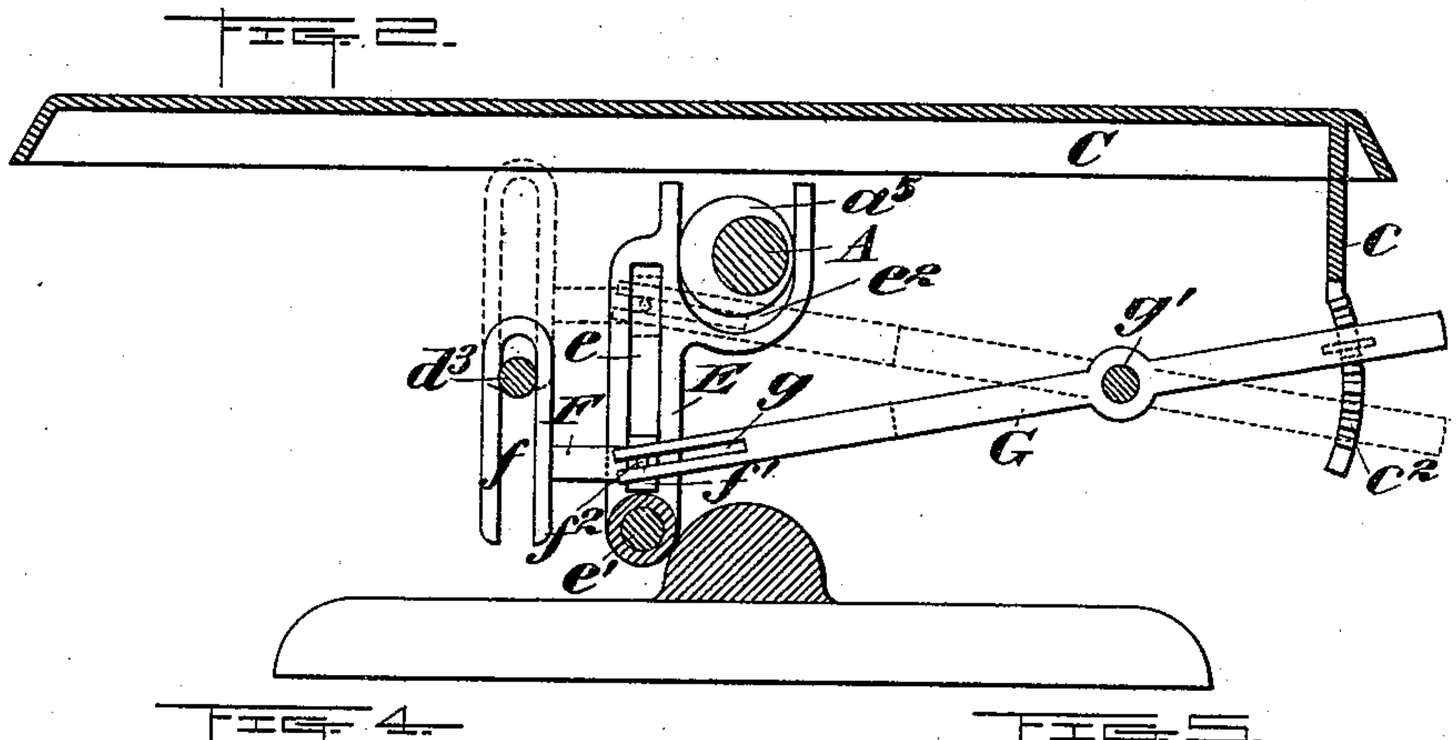


FIG. 4.

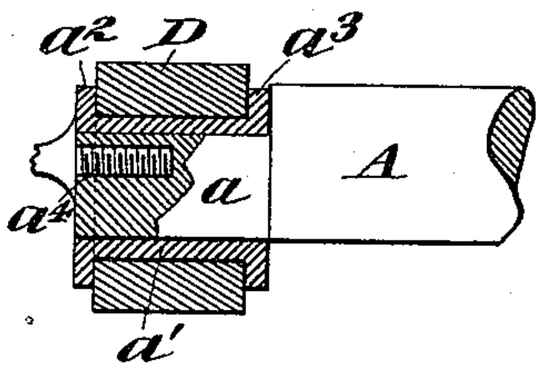


FIG. 5.

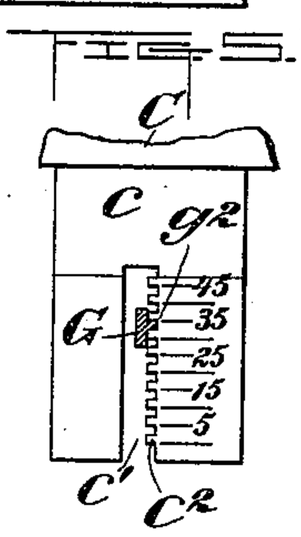
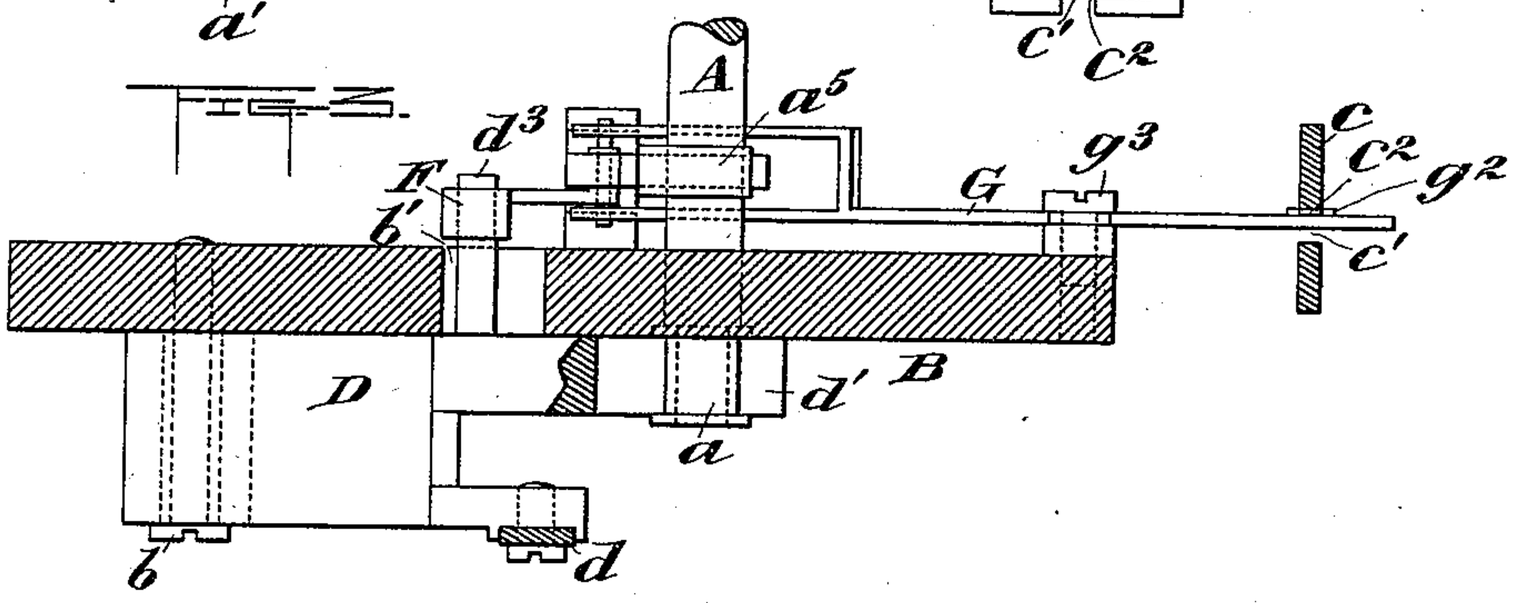


FIG. 3.



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(No Model.) 2 Sheets—Sheet 2.

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FEED MECHANISM FOR SEWING MACHINES.

No. 550,930. Patented Dec. 3, 1895.

FIG. 6.

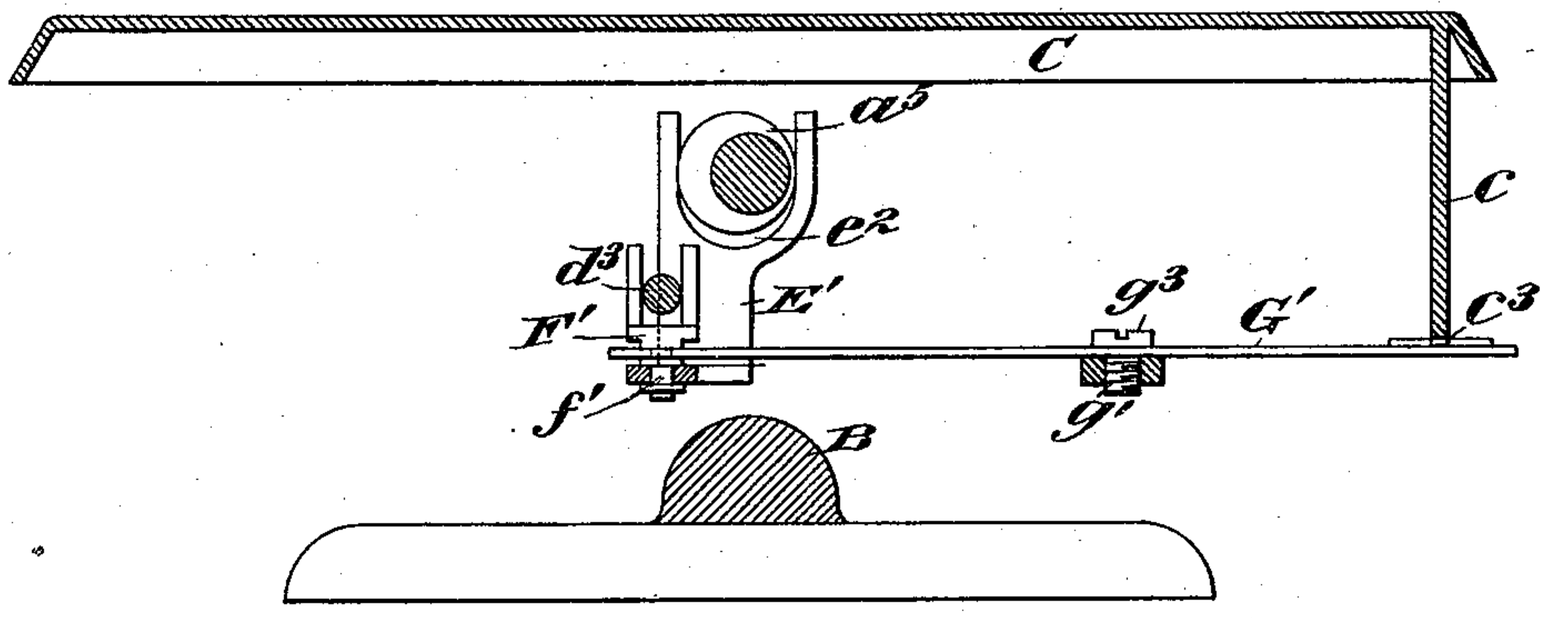
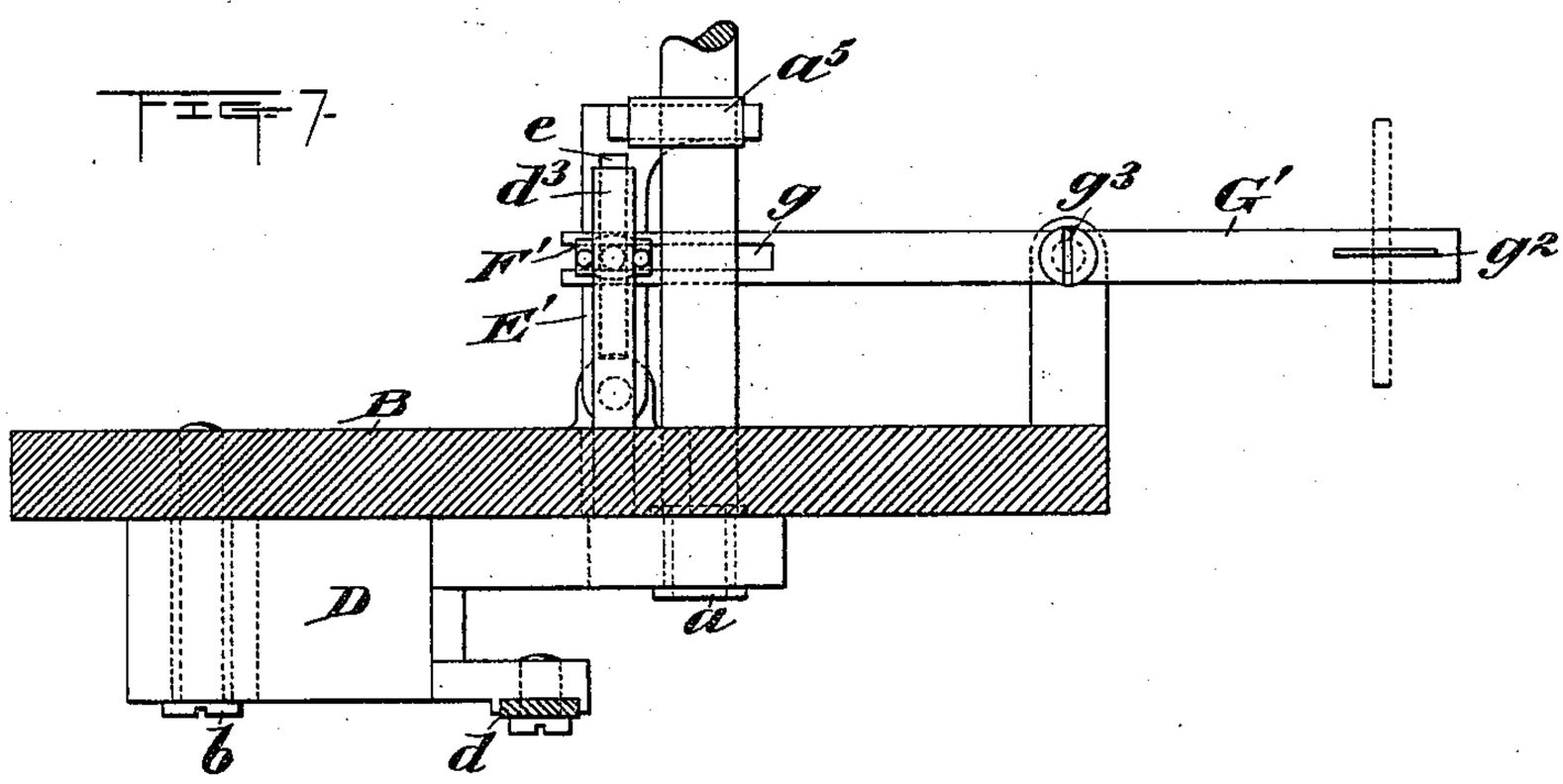


FIG. 7.



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UNITED STATES PATENT OFFICE.

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FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 550,930, dated December 3, 1895.

Application filed March 19, 1895. Serial No. 542,302. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HARDY, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Feed Mechanisms for Sewing-Machines, of which the following is a specification.

My invention relates to an improvement in feed mechanisms for sewing-machines, with the object in view of providing a simple and effective means for regulating the length of stitch at pleasure, either while the machine is running or at rest.

The particular style of machine which I have chosen to illustrate my structure and operation of the stitch-regulating mechanism is what is known in the art as the "single-thread" or "Willcox & Gibbs" type; but I have introduced into the drawings only such parts as are necessary to illustrate the operation of the feed itself.

In the accompanying drawings, Figure 1 is a view of the machine-table in end elevation, showing the feed-dog and the operative parts in immediate connection therewith as in use. Fig. 2 is a view of the same in vertical section from front to rear, taken through the table and the feed-operating parts at a point back from the end beyond the table-support. Fig. 3 is a horizontal section through line x x of Fig. 1. Fig. 4 is an enlarged view in detail, partly in section, showing the connection of the feed-dog support with the drive-shaft. Fig. 5 is an enlarged view in detail showing in front elevation the depending plate for holding the stitch-regulating lever in the desired adjustment. Fig. 6 is a vertical section corresponding to that of Fig. 2, showing a modified structure and arrangement of the stitch-regulating lever and mechanism for transmitting the longitudinal movement to the feed-dog; and Fig. 7 is a horizontal section corresponding to that of Fig. 3 of said modified structure and arrangement of parts.

The drive-shaft extending horizontally from a suitable power-applying device of any well-known or approved form is denoted by A. It is supported near its end in a standard or end support B, to which the table C is secured, as is common. The end of the drive-shaft A, which projects through the support B, is provided with an eccentric a, fixed thereon for imparting to the feed-dog support D, and hence to the feed-dog d, fixed to the support D, its reciprocating vertical movement. The feed-dog support D has its end forked, forming a recess d' for the reception of the eccentric a, and its opposite end is provided with an open slot d^2 for embracing the shank of a stud-pin or screw b, engaged in the support B. The eccentric a referred to is preferably formed by reducing the end of the shaft A, and it is provided with a wearing-sleeve a', which has end rims a^2 and a^3 for holding the forked end of the dog D in position thereon. The wearing-sleeve a' may be secured in position by means of a screw a^4, engaged in the end of the eccentric a. It is to the means for imparting to the feed-dog support D its longitudinal reciprocating movement that my present invention particularly relates, and this I accomplish as follows:

The dog-support D is provided with a stud-pin d^3, which extends laterally from it through an opening b' in the support B. A vibrating arm E is provided with an elongated slot e and is pivoted, as at e', Fig. 2, to swing in a vertical plane forward and backward. The arm E is provided with recesses e^2 in its free end for the reception of a cam a^5 on the shaft A.

A connecting arm or link F is provided at one end with an elongated recess f, adapted to receive the pin d^3 on the feed-dog support D, and at its opposite end it is provided with a head-piece f', adapted to engage and slide along within the elongated slot e in the vibrating arm E. The said head-piece or slide f' is provided with a projecting stud or pin f^2, engaged within elongated slots g in the bifurcated end of an operating-lever G, pivoted, in the present instance, at g' on a lug which depends from the support B, its operating end extending forwardly through a slot c' in a plate c, depending from the front of the table C. The wall along one edge of the slot c' is provided with notches c^2 for retaining a nose or rib g^2 on the side of the operating-lever G, the latter being preferably made of spring metal and having a tendency to spring toward the notches c^2. The notches c^2 are at predetermined intervals, and a scale corresponding to the notches is, in the present instance, provided with numbers which indicate the number of stitches to the inch which will be

formed when the stitch-regulating lever is in the notch corresponding to that number.

In operation the cam a^5 and the eccentric a having been so adjusted upon the shaft A as to produce the desired longitudinal movement of the feed-dog at the proper periods of time with respect to its vertical reciprocating movement the length of the longitudinal movement of said feed-dog may be varied by operating the lever G to move the link or arm F farther away from or nearer to the pivotal point e' of the vibrating arm E. Thus when the link F occupies the position shown in Fig. 2 the effect of the vibratory movement of the arm E under the rotary movement of the cam a^5 will be comparatively slight, and hence it will impart to the pin d^3, and hence to the dog-support D and dog d, a comparatively short longitudinal movement; but on the other hand, when the arm F is moved by the lever G into the position shown in dotted lines in Fig. 2, the vibratory movement of the arm B will be very much greater, and hence the longitudinal movement of the dog-support D and dog d will be correspondingly increased.

The modified structure represented in Figs. 6 and 7 operates in principle quite like that already described, the principal difference between the two being that the operating-lever represented in Figs. 6 and 7 by G′ moves in a horizontal plane, as does also the vibrating arm E′, corresponding to the vibrating arm E already described. The vibrating arm E′ has its end in which the recess e^2 for receiving the cam a^5 is located turned upwardly at right angles to its body portion, and the connecting link or arm F′, corresponding to the link F already described, in this instance extends upwardly from its head-piece f' to engage the stud-pin d^3, fixed to the dog-support D. In this instance the operating-lever G′ engages a series of notches c^3 along the lower edge of the depending plate c, and a scale, quite similar to that shown in Fig. 5, may be arranged horizontally along the foot of said plate.

I have provided in each instance for taking up of any wear of the operating-levers G or G′ at their pivotal supports by making the pivot a screw. (Represented by g^3.)

What I claim is—

1. In combination, a suitable standard, a rotary shaft, a feed dog and its support, an eccentric on the said shaft forming a support for and imparting a vertical motion to the feed dog support, a cam carried by said rotary shaft, a slotted vibrating arm pivoted to the standard and engaged with said cam, a link engaged with said slotted arm and connected with the feed dog support and an operating lever for moving the said link along the said slotted vibrating arm to vary the throw of the feed dog, substantially as set forth.

2. In combination, a suitable standard, a rotary shaft, a feed dog and its support, an eccentric on the shaft forming a support for and imparting a vertical motion to the feed dog support, a cam carried by said rotary shaft, a slotted vibrating arm pivoted to the standard and engaged with said cam, a link engaged with said slotted arm and connected with the feed dog support, an operating lever for moving the said link along the said vibrating arm to vary the throw of the feed dog, a scale in proximity to the said operating lever, and means for positively retaining the said operating lever at different points along the scale, substantially as set forth.

3. In combination, a suitable standard, a rotary shaft, a feed dog and its support, a pin extending laterally from said dog support, an eccentric on the shaft forming a support for and imparting a vertical motion to the feed dog support, a cam carried by said rotary shaft, a slotted vibrating arm pivoted to the standard and engaged with the said cam, a link engaged with said slotted arm, said link having an elongated slot engaging the laterally extended pin, and an operating lever for moving the said link along the slotted vibrating arm to vary the throw of the feed dog, substantially as set forth.

JAMES F. HARDY.

Witnesses:
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