(No Model.) 2 Sheets—Sheet 1.

L. ONDERDONK.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 547,676. Patented Oct. 8, 1895.

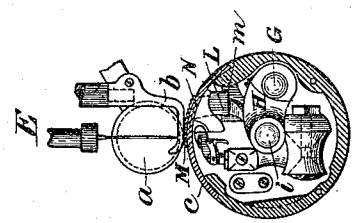

FIG. 2.

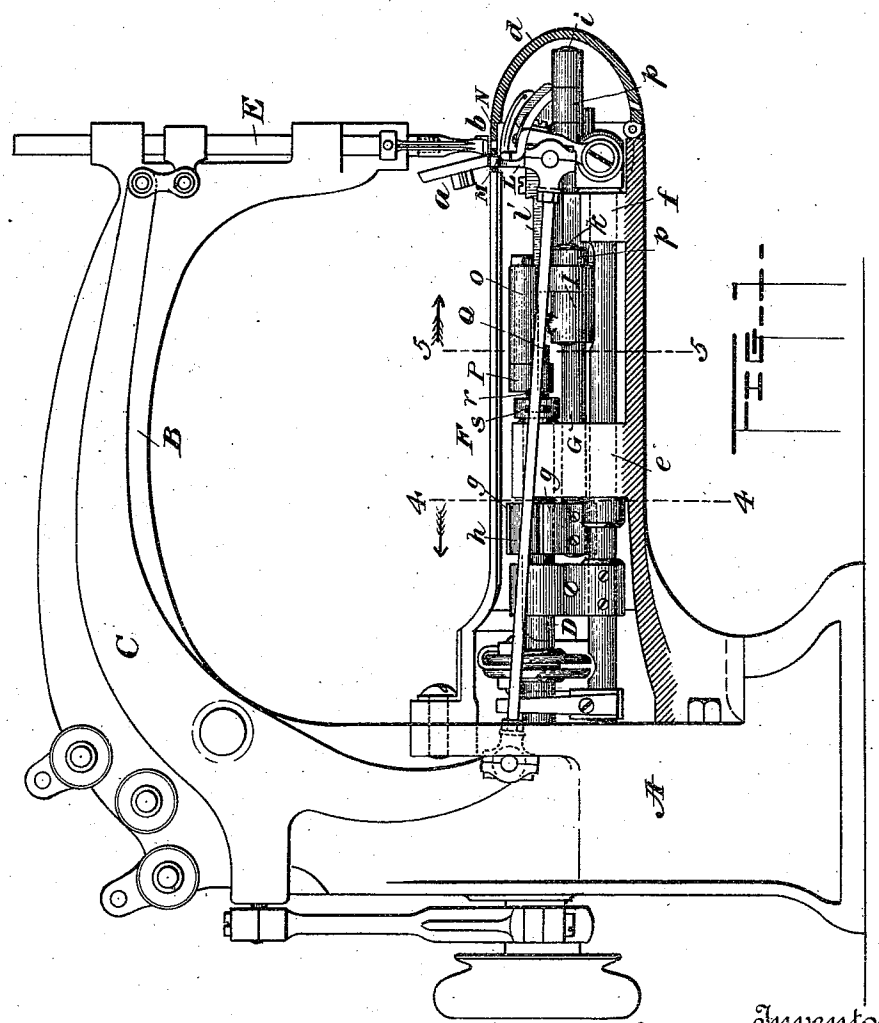

FIG. 1.

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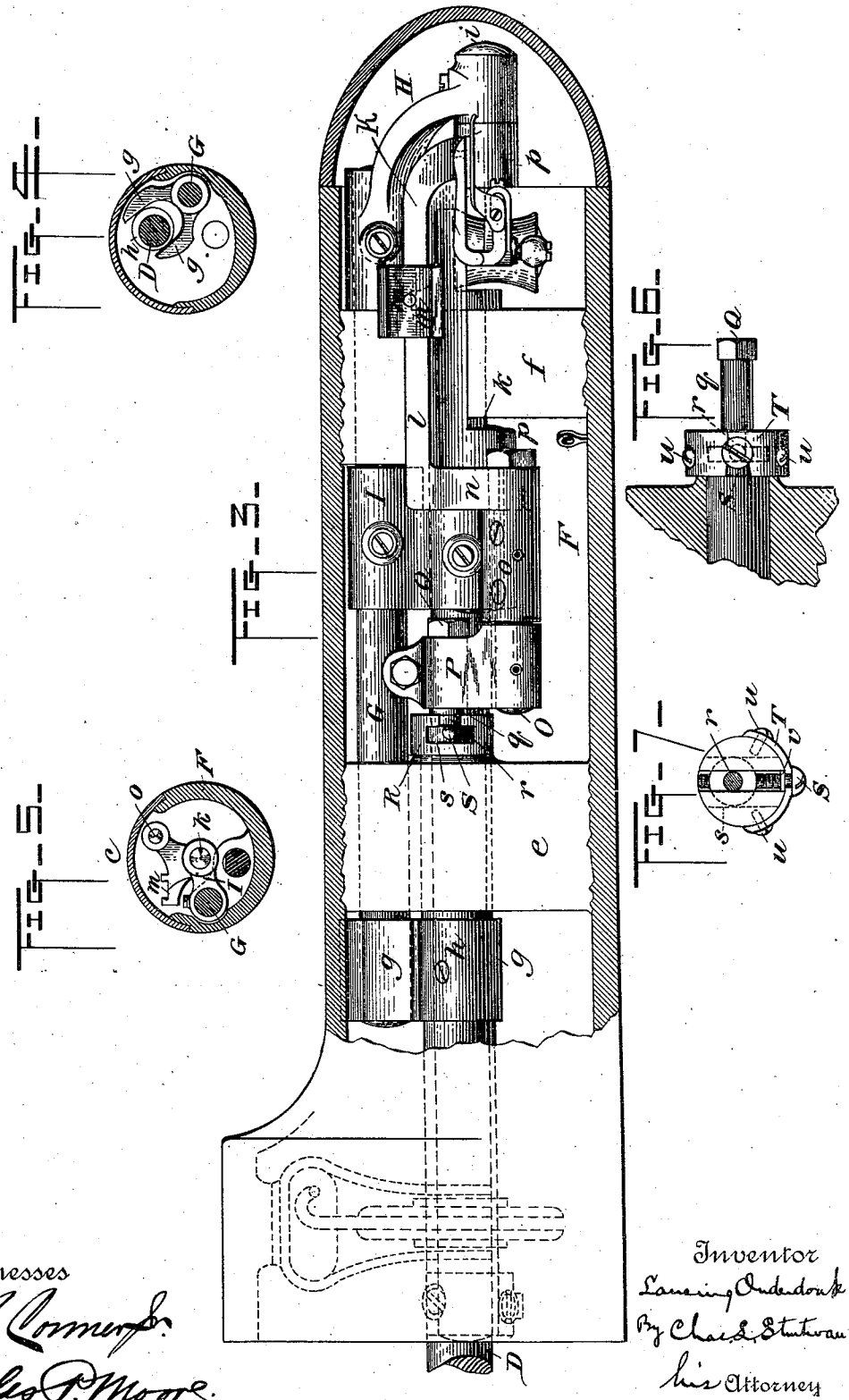

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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 547,676, dated October 8, 1895.

Application filed December 9, 1892. Renewed March 20, 1895. Serial No. 542,548. (No model.)

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Feeding Devices for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in sewing-machines; and its object is to provide a feeding mechanism for use upon what are known to the trade as "cylinder-machines"—that is, machines having a horn or cylinder over which the goods are placed to be sewed instead of the ordinary flat bed-plate. Such machines are useful in the manufacture of boots and shoes for sewing the vamps with rows of stitches along the edge.

The present invention relates to a machine of the general type known as "Union Special Machines," and in certain respects is an improvement upon the construction of feeding mechanism shown in the patent to Muther and Dearborn, June 3, 1894, No. 299,568, and in a general way consists in the manner of constructing the parts for use upon a sewing-machine having a cylinder, whereby they may all be located within the cylinder and occupy a comparatively small space.

My invention therefore consists in the matters hereinafter described, and referred to in the appended claims.

My invention is illustrated in the accompanying drayings, in which—

Figure 1 is a side elevation of so much of a sewing-machine as is necessary for an understanding of my invention, part of the cylindrical casing being removed. Fig. 2 is an end view with the cap removed. Fig. 3 is a plan view showing the operating parts within the cylindrical casing, the top plate of the casing being broken away. Fig. 4 is a section on line 4 4, Fig. 1, looking in the direction indicated by the arrows, showing merely the means for rocking the feed-shaft. Fig. 5 is a section on line 5 5 of Fig. 1, looking in the direction indicated by the arrows. Fig. 6 is a plan view of the adjustable eccentric connection between the main shaft and the rocking frame; and Fig. 7 is a vertical section of the same, showing details whereby the adjustment is effected.

In the drawings, A represents the standard adapted to be attached to a bench table.

B is the overhanging frame or goose-neck; C, the needle-arm, and D the main shaft of the machine.

E is the needle-bar carrying two needles, as herein shown. A roller presser-foot *a* is used and a guide-foot *b* for preventing deflection of the needles.

The above-mentioned parts all operate in the usual well-known manner, and hence do not need to be specifically described.

F is a cylindrical casing, designed in the present case to be the bed-plate of the machine, upon which the work to be sewed is placed, said casing serving to inclose the operating parts of the machine and having an upper removable covering *c* and a hinged end cap *d*, whereby access can be had to the parts. The present invention has reference particularly to an improved feeding mechanism so constructed as to be capable of inclosure within said cylinder.

G represents a shaft running nearly the whole length of the cylinder and having bearings in the standards *e f* on the inside of said cylinder. This shaft has fixed to it two arms *g*, forming a fork, between the prongs of which fork a cam *h* on the main shaft revolves, thereby oscillating said shaft G. At its outer end the shaft G is provided with a curved arm H, fixed to it and forming an extension thereof beyond the cylinder proper. At its outer end this curved arm is provided with an opening, within which is placed a stud, shaft, or pin *i*, to which said curved arm is rigidly attached. At a point near the center of the cylinder the shaft G is provided with a laterally-extending lug or standard I, rigidly attached to it, so that it, together with the curved arm H, rocks with the shaft G. This lug I is provided also with a stud, shaft, or pin *k*, so arranged as to be approximately in line with the stud or pin *i*. Loosely mounted on the studs or pins *i* and *k* is the rocking crank-frame K, and I prefer to extend the lugs or cranks H I inwardly, so that the longitudinal axis of the crank-frame pivots will about coincide with the longitudi-

nal axis of the cylinder, so that a feed-dog mounted on said frame will be raised up and down by the movement of the shaft G, and at the same time when a forward and backward movement is given to said dog it will swing on the pivot of the frame as a fulcrum, and this being on the central axis of the cylinder, the line of movement of the feed-dog will be at a curved path corresponding to the curve of the periphery of the cylinder, the advantage of which will be perfectly apparent to any one skilled in the art. This consists of three parts, the forward longitudinal arm *l*, to which is removably secured in the dove-tailed groove *m* the shank L of the feed-dog M, curved to conform to the shape of the cylinder and extending up through an opening in the throat-plate N, the short connecting part *n*, and the rearwardly-extending longitudinal arm *o*. This crank-frame is preferably made all in one piece. While I have shown the part *l* of the crank-frame as provided with lugs *p p*, having openings fitting over the studs or pins *i k*, it will be understood that the studs or pins may be secured to the arm *l* and pass loosely through the openings on the lug I and curved arm H. The outwardly-extending part *o* of the frame is provided with an opening, in which is secured the stud or shaft O. Upon one end of this shaft is mounted, so as to swing thereon, one end of the crank P, which has a split bearing at its opposite end encircling a sleeve *q*, surrounding the axial stud, pin, or shaft *r*, such sleeve being held from longitudinal displacement by the nut Q on the threaded end of the shaft or pin *r*. This shaft or pin *r* is herein shown as provided at its inner end with a circular enlargement or head, which is fitted in a slot *s*, formed in a crank-disk R, attached to the end of the main shaft. This slot is formed with a contracted front opening, so that the head of the stud *r* is prevented from longitudinal displacement. To permit of adjustment of the stud *r* in the slot and thereby vary the throw of the crank P, I have provided a screw S, which passes through the head of the stud *r*. The screw is secured to the crank-disk by means of the clamping-plate T, having a slot which fits the screw beneath the head thereof, said clamping-plate being secured to the periphery of the crank-disk by screws *u*, as shown. To accomplish the adjustment of the stud *r* without changing the position of the screw S with respect to the crank-disk, I have provided said screw with a collar *v* just below the clamping-plate T, so that longitudinal movement of the screw S is prevented by the head and collar, respectively, so that in the turning of the screw the head on the stud *r* will be moved up or down, thus changing the point of connection of the crank-disk on the main shaft with the crank P, thereby altering the throw of said crank and varying the amount of forward and backward movement of the rocking frame and feed-dog. It will readily be understood, therefore, that by reason of the rocking connection of the feed-dog carrying-frame with the shaft G and the crank connection of said frame with the main shaft the vertical and forward and backward movements of the feed-dog are effected, and also that by the adjustment of the head of the stud or bolt *r* in the slot of the crank-disk the amount of throw of the rocking frame is varied, and thereby the length of stitch regulated.

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

1. A sewing machine comprising a main shaft, a cylindrical casing into which the main shaft extends, a second shaft extending lengthwise of the casing and parallel with the main shaft, but the forward end in advance of the forward end of the main shaft, connections between the main shaft and said second shaft for operating the latter, a rocking frame pivotally connected to the second shaft, its pivot points being in substantially the same horizontal plane therewith, whereby in the movement of the second shaft the frame is rocked up and down, a transversely arranged feed dog carried by the rocking frame, said rocking frame having a longitudinal rearwardly extending part in close proximity to the forward end of the main shaft, and a direct crank connection between the forward end of the main shaft and said rearwardly extending part of the rocking frame for giving the forward and backward movement to the feed, substantially as described.

2. The combination with the main shaft, of a rock shaft with connections between the same for operating the latter, a laterally extending crank secured to the rock shaft and provided with a stud, a second laterally extending crank on the end of the rock shaft and having also a stud in line with the stud on the first crank, a crank frame pivotally supported on said studs in substantially the same horizontal plane as the rock shaft, whereby in the movement of the rock shaft the crank frame is raised and lowered a feed dog carried by one arm of said crank frame, the other arm having an adjustable eccentric connection with the main shaft and independent of the rock shaft, substantially as described.

3. A sewing machine comprising a cylindrical casing, a main shaft extending lengthwise of and within the same, a rock shaft parallel with the main shaft with connections between the same for operating said rock shaft, a crank secured to the rock shaft and provided with a stud, a second crank on the end of the rock shaft and having also a stud, said crank being curved to conform to the shape of the casing and to bring its stud in line with the stud on the first crank said studs being in substantially the same horizontal plane as the rock shaft, a crank frame pivotally supported on said studs, one arm of which is arranged longitudinally and carries

the feed dog, the other arm having an adjustable eccentric connection with the main shaft, said parts being all located within the casing; substantially as described.

4. The combination with the main shaft, of a rock shaft with connections between the two for rocking the latter, a lateral extension fixed on said rock shaft, a second curved extension secured thereon, a rocking crank frame pivotally connected to said extensions, and having a longitudinal bar carrying the feed dog, a stud fixed to the crank frame, a crank sleeved on said stud, and an adjustable eccentric connection between said crank and the main shaft substantially as described.

5. A sewing machine comprising a cylindrical casing, a main shaft extending lengthwise of and within the same, and provided on its inner end with a slotted disk, a rock shaft parallel with the main shaft and carrying two cranks, a rocking frame carrying a feed dog connected with said cranks, a stud secured to one arm of said rocking frame, a crank sleeved on said stud and encircling at its opposite end a stud which is in adjustable connection with the slotted disk, all the parts being located within said casing; substantially as described.

6. A sewing machine comprising a main shaft, a rock shaft with connections between the two for operating the latter, a crank I secured to said rock shaft, a curved crank H also attached thereto, a rocking crank frame K having lugs *p*, *p*, adapted to be pivoted to the cranks H, I, and deriving vertical movement therefrom and having also a longitudinal bar carrying the feed dog and having the parts *n* and *o*, and an adjustable eccentric connection located between the part *o* of the crank frame and the main shaft and independent of the rock shaft; substantially as described.

7. A sewing machine comprising a main shaft having on the inner end a slotted disk, a rock shaft with connections between the two for operating the latter, a crank I secured to said shaft, a curved crank H also attached thereto, a rocking frame K having lugs *p*, *p*, adapted to be pivoted to the cranks H, I, having also a longitudinal feed bar carrying the feed dog and having the parts *n*, *o*, a stud secured within said part *o*, a crank P journaled at one end on the stud O and having at its opposite end a split bearing, a stud *r* fitting at one end in the slot of the disk on the main shaft and having a sleeve *q* fitting within the split bearing on the end of the crank; substantially as described.

8. The combination with the main shaft having on one end a slotted disk, a stud fitting at one end in said slot, a screw passing through said stud within the slot and provided with a collar and a clamping plate embracing the screw between the collar and the head thereof, whereby longitudinal displacement of the screw is prevented, a crank encircling the stud and secured at its opposite end to a rocking frame carrying a feed dog, means for rocking the frame and giving it vertical movement, substantially as described.

9. A sewing machine comprising a cylindrical casing, a main shaft extending lengthwise of and lying within the same, a rock shaft extending parallel with the main shaft with operating connections between the two, a lateral crank secured to the rock shaft, a second crank on the end of said shaft curved to conform to the shape of the cylinder, a rocking crank frame pivoted to said cranks and having a longitudinal arm, a curved feed dog secured on said arm and extending at right angles to said arm, and a connection between the crank frame and the main shaft for regulating the length of throw of the feed dog, all of said parts being located within the casing, and complemental stitch forming mechanism; substantially as described.

10. A sewing machine comprising a main shaft, a cylindrical casing, a second shaft in operative connection with the main shaft and located within the casing, a frame secured to and rocked by said shaft and eccentrically connected with the main shaft and having a longitudinally extending bar, and a transversely extending curved feed bar attached thereto; substantially as described.

11. A sewing machine comprising a main shaft, a rock shaft arranged parallel therewith operated thereby, a cylindrical casing within which said shafts are supported, a rocking feed dog operated from the rock shaft, the pivotal point thereof being in substantially the same horizontal plane as the second shaft and approximating the longitudinal axis of the cylinder whereby in the oscillation of said second shaft the feed dog is raised and lowered and swings back and forth in a plane curved to conform to the plane of the cylinder; substantially as described.

12. In a sewing machine having a curved bed plate, a main shaft, a rock shaft extending throughout the length of the bed plate with means for operating said rock shaft from the main shaft, lugs extending laterally from said rock shaft, a feed dog carrying frame pivoted to said lugs, the longitudinal axis of said pivot being coincident with that of the curved bed plate, and means connecting the main shaft with the feed dog carrying frame for giving lateral movement thereto, whereby in the oscillation of the rock shaft, the frame moves vertically on its pivot point, the latter acting as a fulcrum on which it also swings laterally, thus causing the feed dog to move in a curved line always; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LANSING ONDERDONK.

Witnesses:
MICHAEL J. CREED,
JOSEPH A. DART.