

(No Model.)

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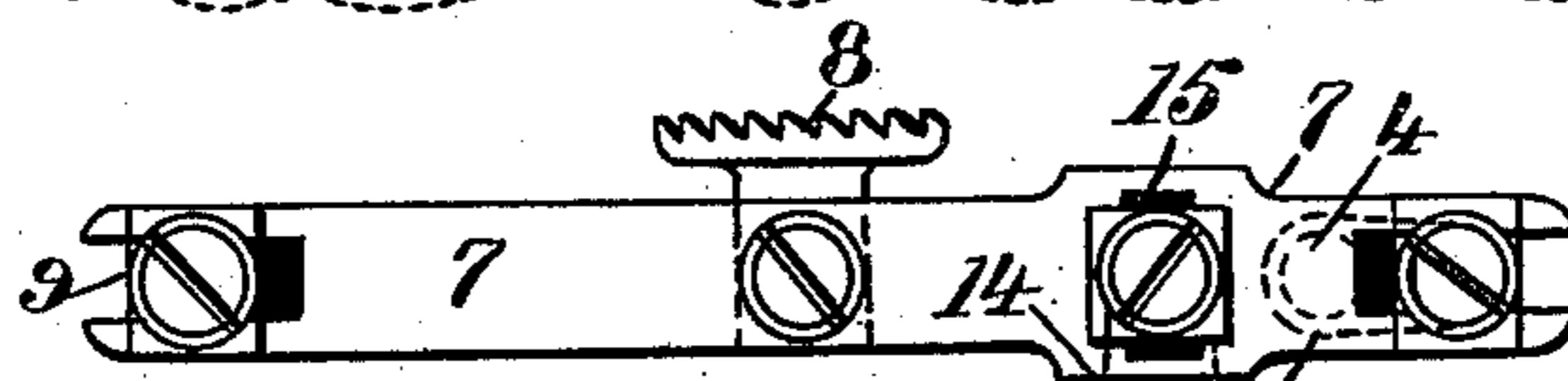
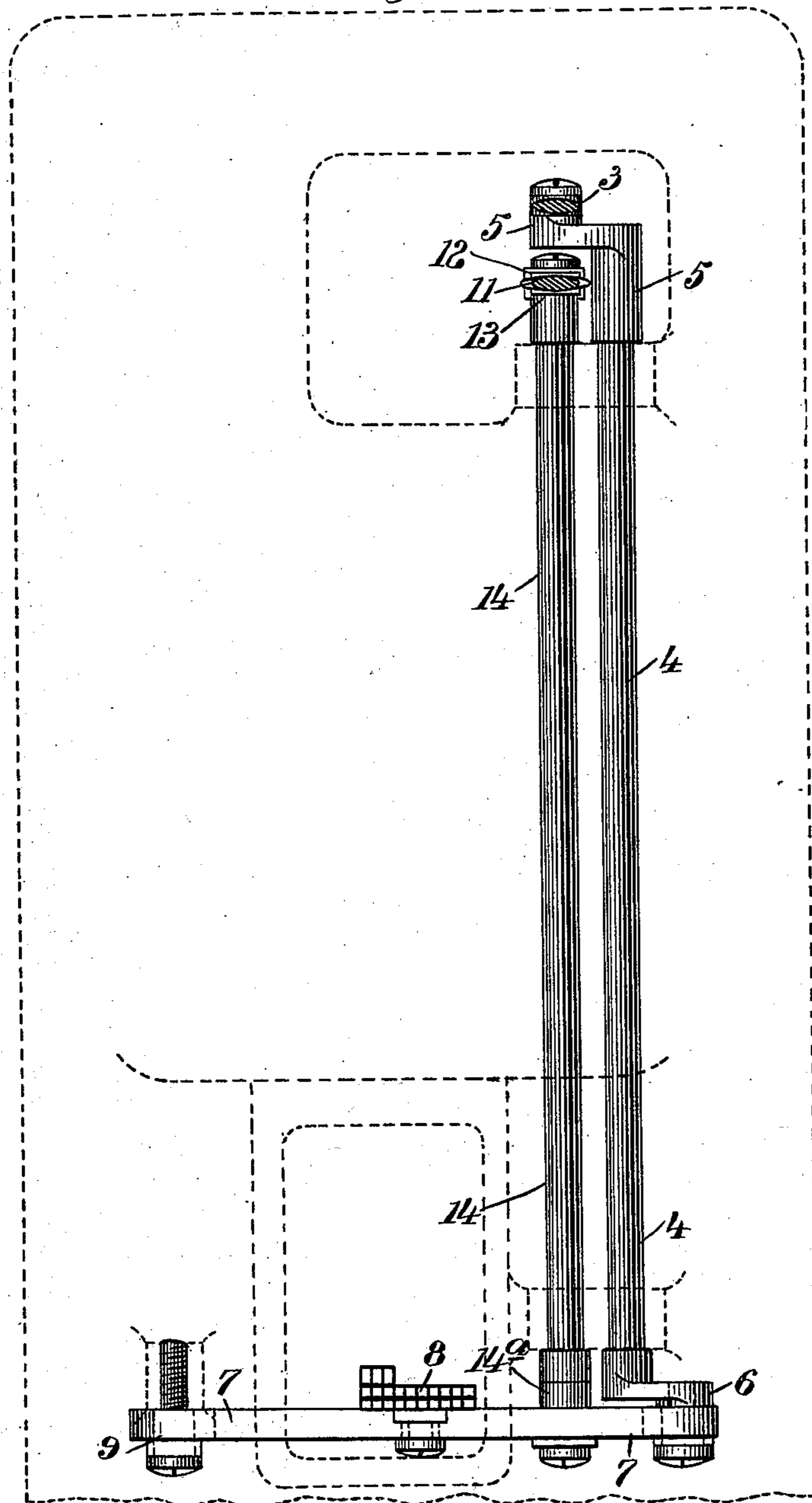
F. T. LEILICH.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 402,259.

Patented Apr. 30, 1889.

*Fig. 1.*



Witnesses.

Wm. J. Panner

A. J. Sheen

*Fig. 2.*

Inventor  
Francis T. Leilich  
by his attorney J. H. Hubbard

(No Model.)

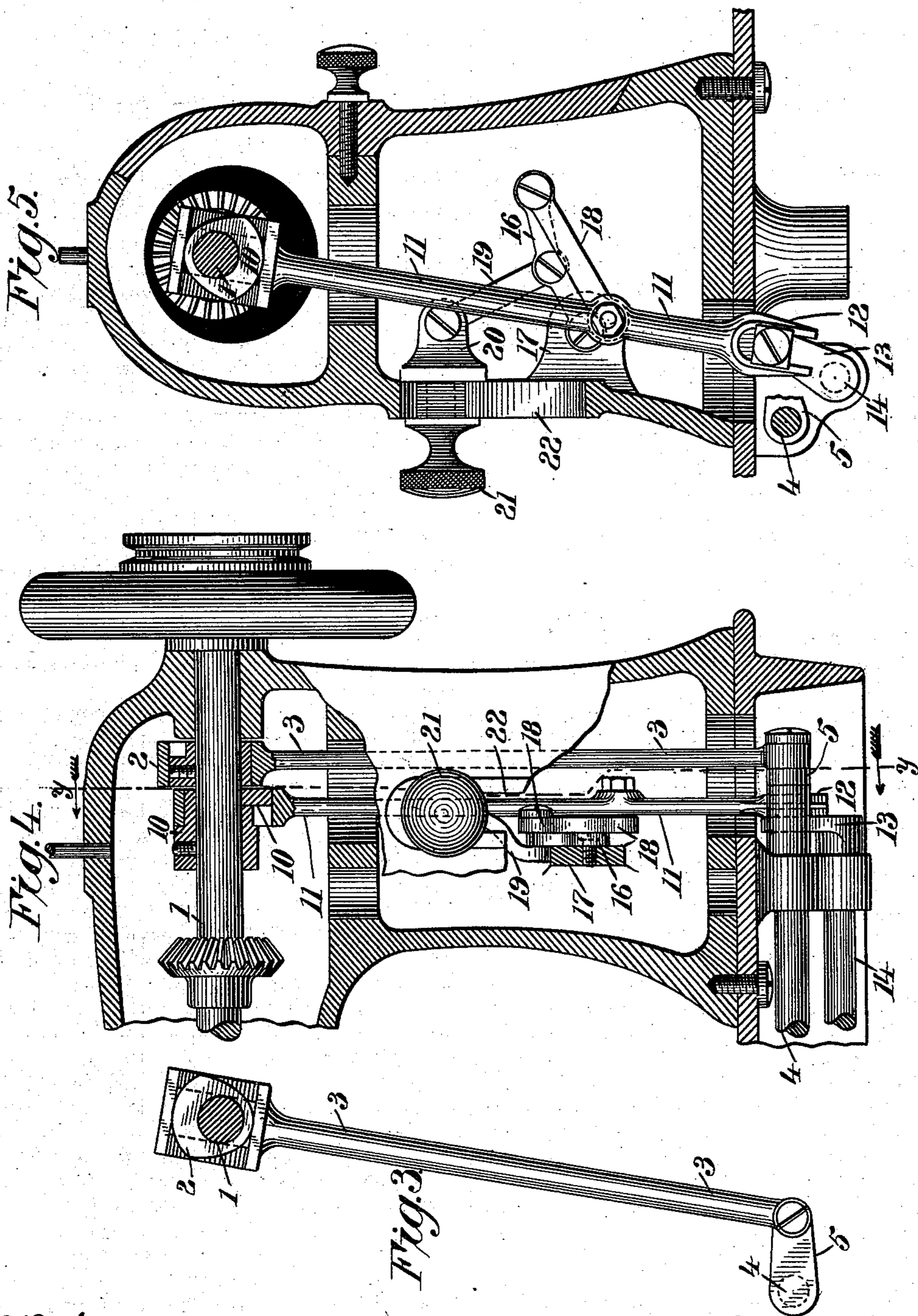
2 Sheets—Sheet 2.

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FEEDING MECHANISM FOR SEWING MACHINES.

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Witnesses  
Wm. J. Tanner  
H. J. Shelton Jr.

Inventor  
Francis T. Leilich  
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# UNITED STATES PATENT OFFICE.

FRANCIS T. LEILICH, OF BRIDGEPORT, CONNECTICUT.

## FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 402,259, dated April 30, 1889.

Application filed December 3, 1888. Serial No. 292,455. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS T. LEILICH, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Feeding Mechanism for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in feeding mechanisms for sewing-machines, and has for its object to provide a device of this description which shall be positive in all its motions and capable of being operated at high rates of speed with the minimum of wear and power.

With these ends in view my invention consists in the details of construction and combination of elements hereinafter to be fully and in detail set forth, and then recited in the claims.

In order that those skilled in the art to which my invention appertains may more fully understand how to make and use my improvement, I will describe the same in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan view of those parts of my invention which lie beneath the bed, the bed-plate being shown in dotted lines; Fig. 2, an elevation of the feed-bar and dog, the parts being projected from the same parts as shown at Fig. 1; Fig. 3, a detail of the feed-lifting connection and the cam for operating the same; Fig. 4, a longitudinal vertical section through the rear end of the arm, the feed mechanism being shown in elevation; and Fig. 5, a transverse vertical section on line *y y* of Fig. 4.

Like reference-numerals denote the same parts in all the figures.

For a more particular showing of the operation of this feeding mechanism combined with the other essential parts of a sewing-machine reference is hereby made to the pending application filed by me the 7th day of April, 1888, and bearing Serial No. 269,922.

1 is the main shaft of the machine, and 2 is a wiper-cam arranged upon said shaft.

3 is a connection hung upon said cam and adapted by means thereof to reciprocate within the arm at each turn of the main shaft.

4 is a rock-shaft hung in bearings beneath the bed and provided at its rear end with a short projecting arm, 5, which latter is pivotally attached to the connection 3. (See Figs. 3 and 4.) The forward end of the shaft is also provided with an arm, 6. This shaft serves to impart to the feed-bar 7 and the dog 8 upon said bar a positive vertical motion. The feed-bar 7 is forked at each end. (See Fig. 2.) One of its ends is supported upon a stud, 9, and its other end is engaged by the wrist of the arm 6.

10 is another wiper-cam upon the main shaft beside the cam 2. The upper end of a vertically-reciprocating connection, 11, is yoked over said cam and is operated thereby. The lower extremity of this connection is forked, as seen at 12, and embraces the wrist of a crank-arm, 13, on a rock-shaft, 14, which latter is hung in bearings beneath the bed parallel to the rock-shaft 4. The forward end of the rock-shaft 14 is provided with an upwardly-extending arm, 14<sup>a</sup>, whose wrist passes through a vertical slot, 15, cut in the feed-bar. This rock-shaft serves to impart through the crank-arm the necessary to-and-fro movement to the feed-bar for the feeding of the goods. This throw needs to be varied for different lengths of stitch, and this variation is accomplished by a regulating device which comprises a rocking arm, 16, pivoted to a bracket, 17, inside the arm, as seen at Fig. 5, and a link, 18, pivoted at both ends, which connects the outer end of this arm to the connection 11. The arm 16 is connected from about its center by means of a link, 19, with a sliding block, 20, which latter has a sliding thumb-screw, 21, upon the outside of the arm, whereby said block may be held at any point desired. The thumb-screw projects through a slot, 22, and an index is preferably arranged alongside of said slot.

It will be readily understood that the positive and constant lifting movement is im-

parted to the feed-bar by the connection 3, the rock-shaft 4, and the arms upon the latter. The feed-driving rock-shaft crank is vibrated horizontally by the forked connection 5 aforesaid, which latter is actuated by the cam on the main shaft. This feed-driving connection is pivoted to the adjustable arm having its fulcrum-point on the bracket inside the arm.

10 In order that the feed-dog may always start from the same point whatever the length of the feeding movement, I place the fulcrum-point of the adjustable arm upon a line drawn between the centers of the main shaft and the feed-driving rock-shaft, and on the same line horizontally as the center of the pivot-screw in the feed-driving connection and link when in position for commencing the feeding movement.

15 In Fig. 5 the parts are shown as having just completed the forward movement of the feed, which is adjusted to make its longest throw. The adjustable arm 16 is raised upon its center as high as is permitted by the slot in which the thumb-screw moves, and, as will be readily seen, the arc described by the end of the link 18, which is attached to the connection 11, will intersect a line drawn between the center of the main shaft and the feed-shaft, and thereby a certain amount of transverse movement is imparted to the connection.

20 In shortening the stitch the end of the arm 16 is lowered by changing the position of the thumb-screw, thereby bringing the link more nearly at right angles to the connection. By this change of center the arc described by that end of the link which is secured to the connection 11 will be less across and more nearly parallel with the line between the shaft-centers. When the connection is at its upward limit of movement and the feed is at the commencement of its forward movement, the pivotal points of the arm to the bracket and of the link to the connection, are in line, and the transverse movement of the connection is always inward from said line, more or less, according to the position of the link; but whether the transverse movement of the connection be more or less it always starts from the same point, at which time the feed-dog is at its farthest backward limit. The vertical reciprocation of the connection is by this means transformed at its lower end to a compound vibratory movement, the extent

whereof varies as the position of the fulcrum-point of the link is varied. 55

I claim—

1. The combination, with the main shaft, of the cams arranged thereon, the connections arranged within the arm and operated 60 by said cams, the two rock-shafts actuated by said connections, the feed-bar forked at each end and supported the one end upon a stud and the other on the wrist of the lifting rock-shaft crank, the slotted connection of the feed-bar with the wrist of the other rock-shaft, and the link, arm, and a slide-block held by a thumb-screw binding on the arm connected to the feed-driving connection, and whereby the throw imparted by the latter to the wrist 70 of its rock-shaft is controlled and varied, substantially as set forth.

2. In a feeding mechanism for sewing-machines, the combination, with the feed-bar and the serrated feed-dog mounted thereon, 75 said bar being slotted horizontally and vertically near one end and having its other end forked and supported upon a pin, of the feed-driving rock-shaft having a crank engaging the vertical slot in the bar, a cam-actuated 80 connection engaging said feed-driving rock-shaft, and means for varying the throw of said connection, the feed-lifting rock-shaft having a crank engaging the horizontal slot in the bar and extended beneath the bed parallel to the feed-driving rock-shaft, and a cam-actuated reciprocating connection between the main shaft and the rear end of the feed-lifting rock-shaft, substantially as set forth.

3. The combination, with the feed-bar and 90 the means for imparting thereto its vertical reciprocation, of the main shaft, the rotating cam thereon, the reciprocating connection engaged by said cam and having its lower end forked to embrace the wrist of the feed-driving shaft-crank, a link pivoted to the connection and fulcrumed at its opposite end to one extremity of an adjustable arm fulcrumed to the head, and means for adjusting and securing said arm in various positions, substantially as set forth. 100

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

FRANCIS T. LEILICH.

Witnesses:

S. H. HUBBARD,  
M. C. HINCHCLIFFE.