

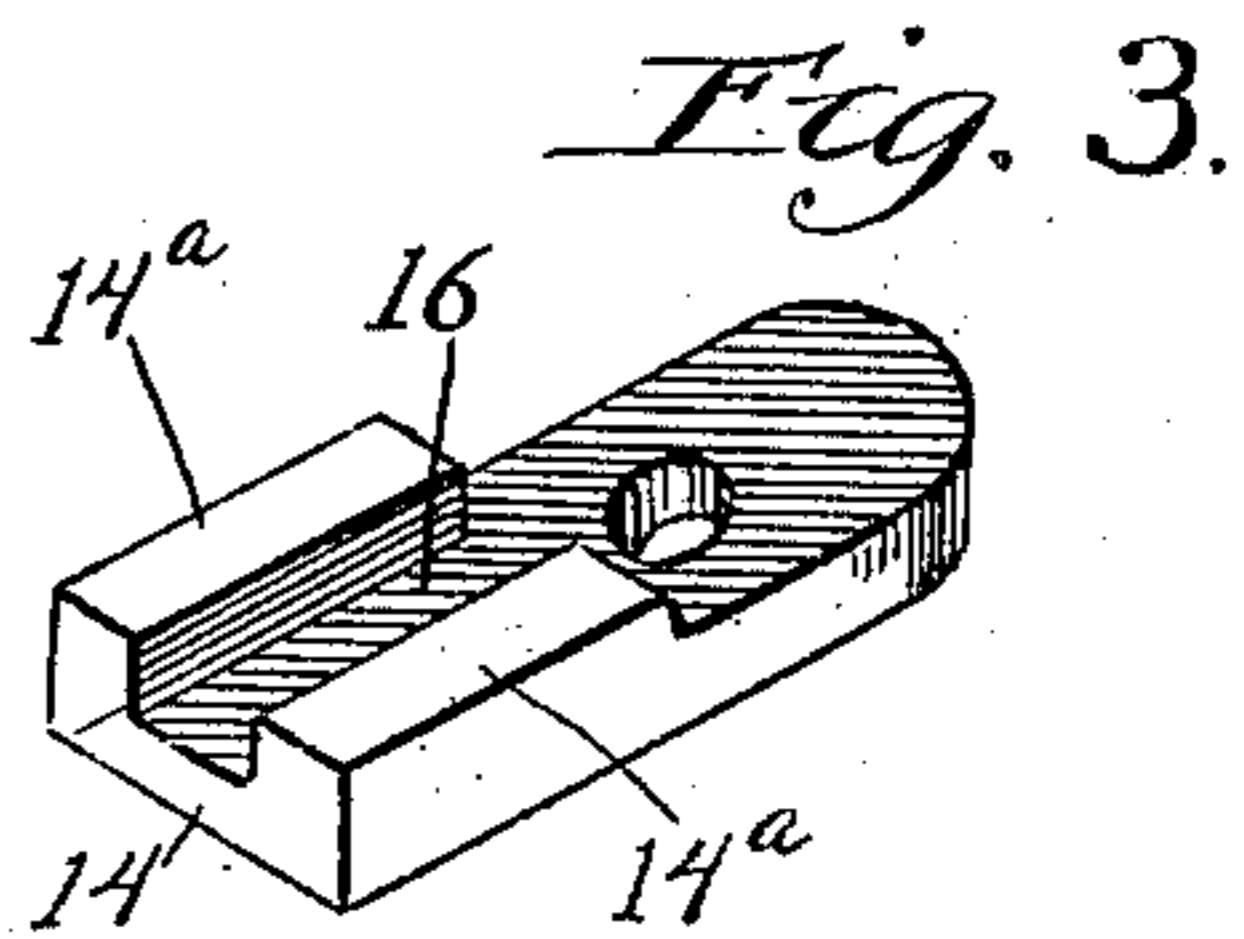
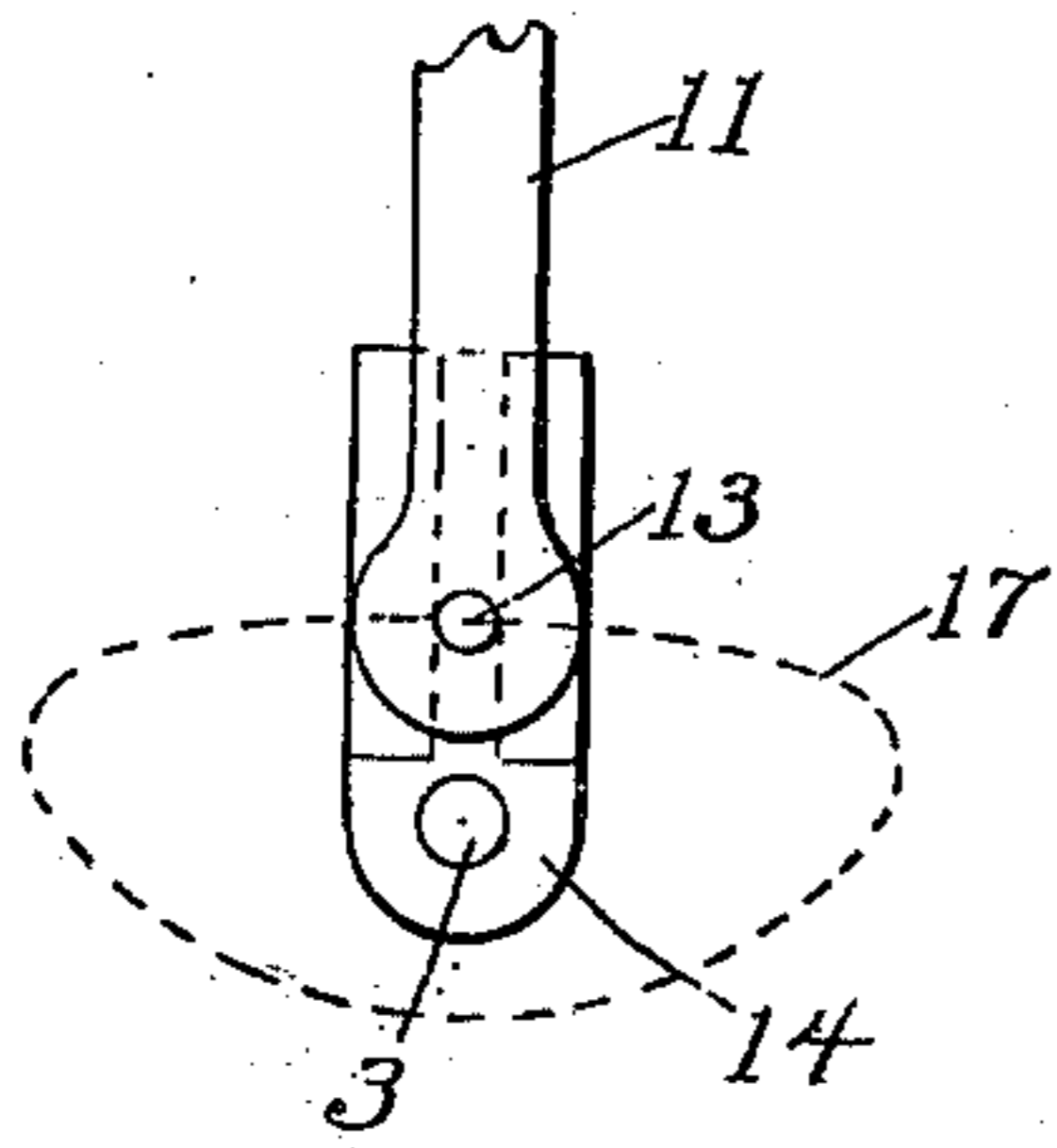
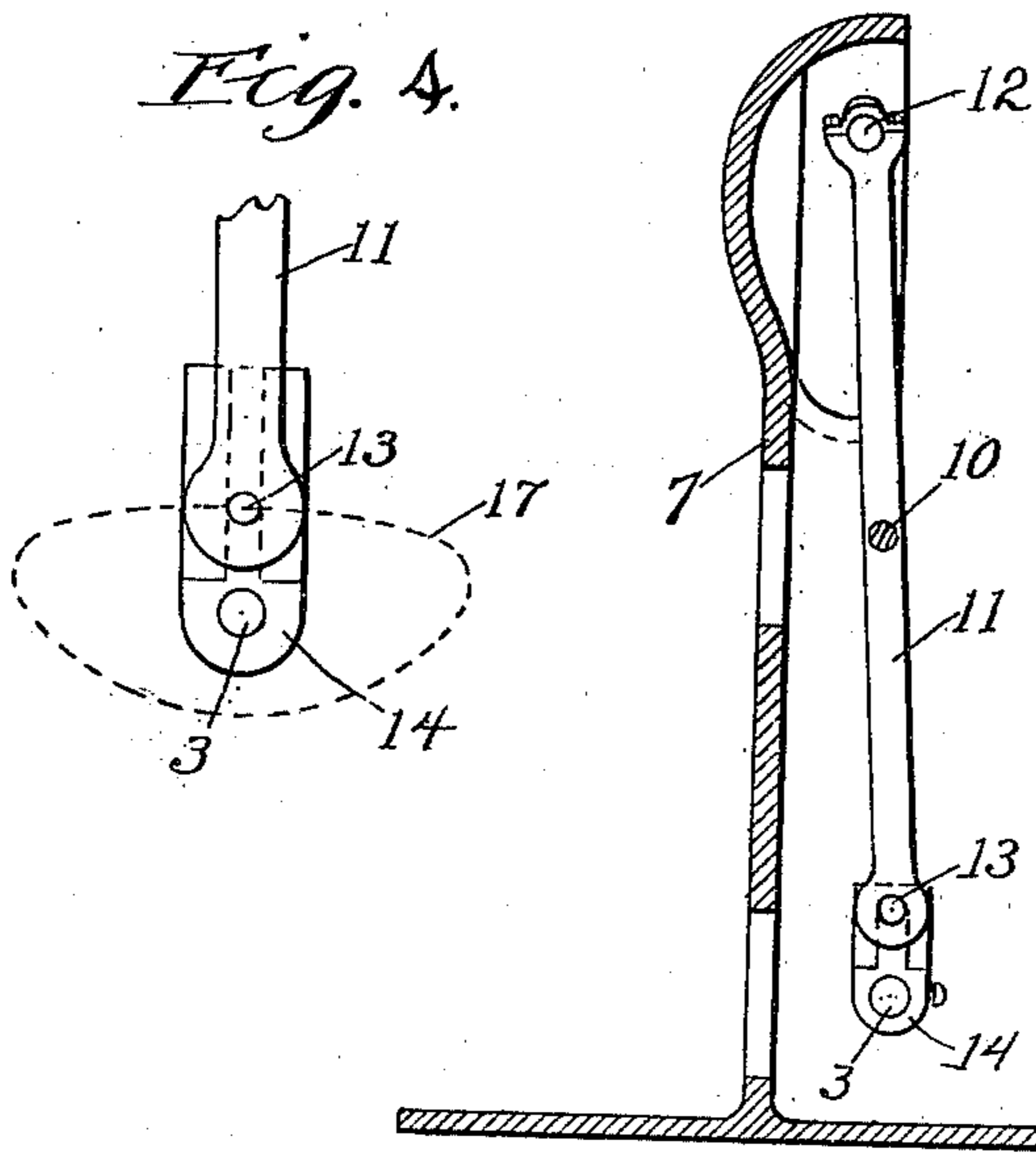
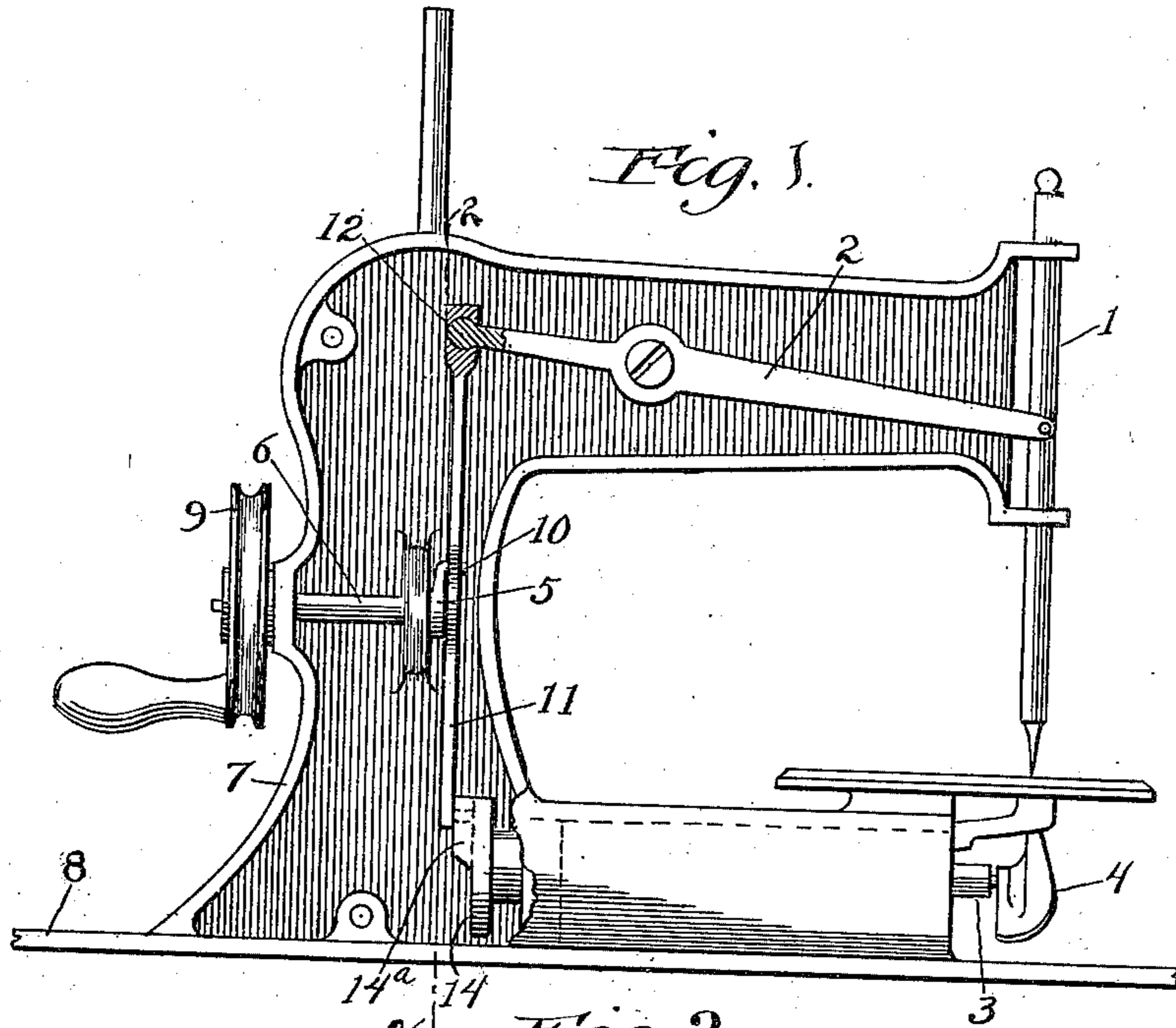
No. 662,832.

Patented Nov. 27, 1900.

A. SPEAR.
LOOPER MECHANISM FOR SEWING MACHINES.

(Application filed Oct. 16, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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LOOPER MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 662,832, dated November 27, 1900.

Application filed October 16, 1899. Serial No. 733,738. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR SPEAR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact specification.

My invention relates more particularly to sewing-machines in which there is usually employed a hook or some other form of looper which passes through the loop as it is cast out by the needle and forms the stitch, and of this class of machines my invention has more especial reference to that species in which both the needle-bar and the hook-shaft or looper are given the desired movements from a single crank-shaft. In machines of this character it has been difficult to form the loop or stitch in such a manner as to prevent puckering of the goods, but more especially to produce an open or loose chain-stitch which will be capable of considerable stretch, so as to be suitable for elastic goods of which underwear and other garments are made, and this difficulty has been due mainly to the fact that the hook or looper lets go the loop too soon with reference to the upward movement of the needle, thereby permitting the needle to pull the thread against the under side of the goods, and thus produce the objectionable tight stitch.

The primary object of my invention, therefore, is to provide an improved movement for sewing-machines of the described character which will produce a fast and slow rotation to the hook or looper, so that it may be caused to pass through the loop with the requisite rapidity, but to dwell in its rapid movement just before the needle reaches the end of its upward movement, so as to retain the loop until the needle and feed have about finished their pull on the thread.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical longitudinal sectional view of a sewing-machine head provided with my improvements. Fig. 2 is a transverse sectional view taken on the line 2 2, Fig. 1. Fig. 3 is a perspective view of the crank which operates the looper-shaft, and Fig. 4 is a detail view illustrating the irregular curvilinear travel of the lower end of the longitudinally and transversely moving lever.

1 represents the needle-bar, which has operative connection in any suitable way to a pivoted lever 2, and 3 represents the hook or looper shaft, which is connected in the usual or any suitable manner to the hook or looper 4. The lever 2 is oscillated in a vertical plane and the shaft 3 rotated by a common crank 5, secured to a suitable crank-shaft 6, mounted in the head 7 of the machine at a point considerably above the base 8 and having a wheel 9, whereby the machine may be operated by either hand or foot power. The crank 5 carries a wrist or crank pin 10, which is journaled in a vertical lever 11 at about the mid-length of the latter and which imparts to said lever both a rising-and-falling or longitudinal and a transverse or oscillatory movement. The upper end of this lever 11 is connected to the end of the lever 2 by a ball-and-socket shaft 12 or any other suitable connection, thus permitting the upper end of the lever 11 to rise and fall with the crank 5 and impart the desired vertical oscillation to the needle-bar lever 2, while at the same time serving as a fulcrum for the lever 11 and causing its lower end to oscillate or vibrate from side to side as the crank 5 revolves. The lower end of the lever 11 is provided with a stud 13, which fits into a slot or way formed on a crank 14, secured to the shaft 3 by set-screw 15 or other suitable device, whereby the crank 14 may be set or timed with reference to the movement of the hook 4 and the needle-bar. The slot or way in the crank 14 may be formed in any suitable manner. In the accompanying drawings I have shown the face of the crank 14 as provided with two parallel flanges 14^a, which constitute a way or slot 16. By this means it will be seen that as the crank 5 revolves the lever 11 will be vibrated both longitudinally and transversely, and this transverse

movement will impart a rotary movement to the shaft 3, and by virtue of this combination of movements the stud 13 will be carried in the curvilinear orbit 17, (shown in dotted lines in Fig. 4,) composed of a complex curve less convex on its upper side than on its lower side and abruptly curved at its ends, and as a consequence the hook 4 will dwell or slow up at two points during a single rotation, such points being where the stud 13 passes around the abrupt curves, for at such points the stud 13 is necessarily farthest from the center of the shaft 3. The parts may be so timed and adjusted that the slow movement of the hook 4 will occur just shortly before it casts off the loop, thus preventing the thread being drawn taut against the under side of the fabric. It will also be seen that by the described means I produce a simple, efficient, and inexpensive sewing-machine capable of having the band-wheel located away from the base and also below the needle-bar lever 2, which latter in consequence may be a simple oscillating lever.

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

1. In a sewing-machine the combination of a needle-bar, a lever for operating said bar, a lever connected at one end to said first lever, a looper or hook, a shaft for operating said hook or looper, a slotted crank on said

shaft a stud on the other end of said second lever engaging in said slot for imparting a fast and slow rotation to said shaft, and an operating-crank having a wrist-pin engaging said second lever at a point between its points of connection with said first lever and slotted crank, substantially as set forth.

2. In a sewing-machine the combination of a needle-bar, a looper-shaft, a vertical lever operatively connected to said needle-bar and having its upper end confined to an upright rectilinear movement and its lower end provided with sliding crank connection with said looper-shaft, and an operating-crank connected with said lever at an intermediate point, substantially as set forth.

3. In a sewing-machine the combination of a needle-bar, a looper-shaft, a pivoted lever operatively connected to said needle-bar, a vertical lever having its upper end jointed to said pivoted lever and such jointed end being confined to an upright rectilinear movement and its lower end provided with sliding crank connection with said looper-shaft, and an operating-crank connected with said vertical lever at an intermediate point, substantially as set forth.

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