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PATENTED FEB. 26, 1907.

F. JACOB & J. BOPPEL.  
SEWING APPARATUS.  
APPLICATION FILED DEC. 8, 1905.

2 SHEETS—SHEET 1.

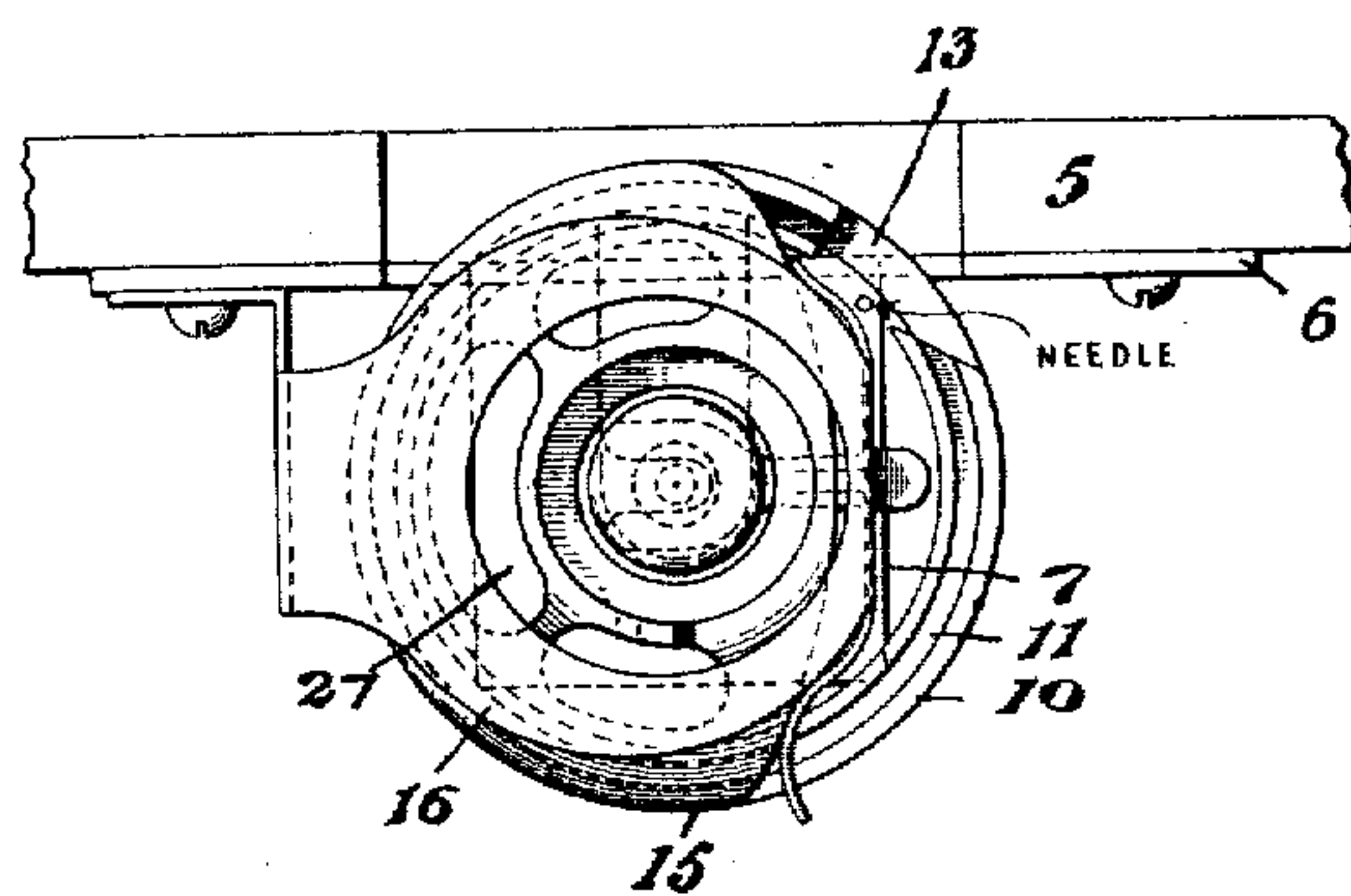


Fig. 1.

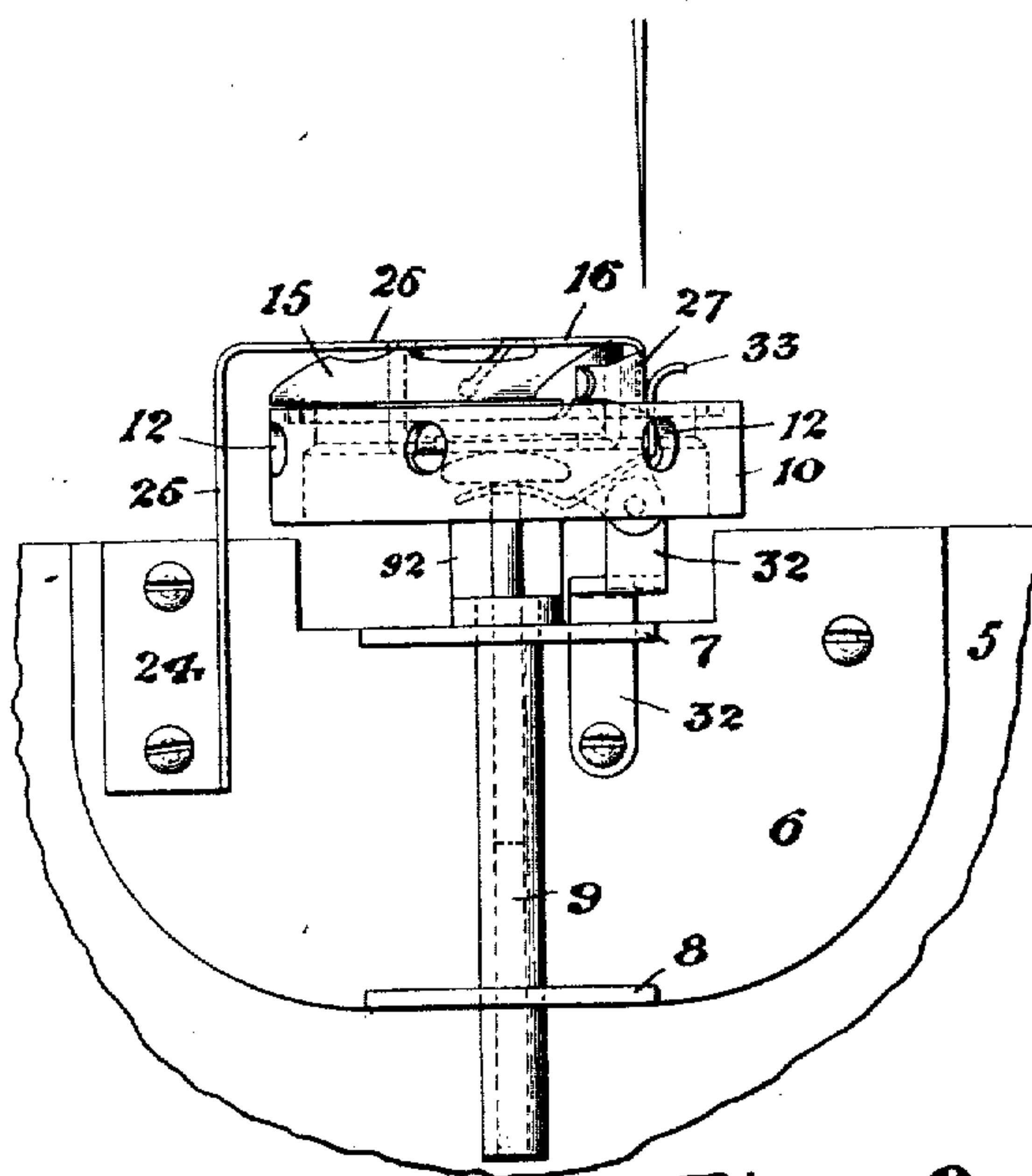


Fig. 2.

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INVENTORS

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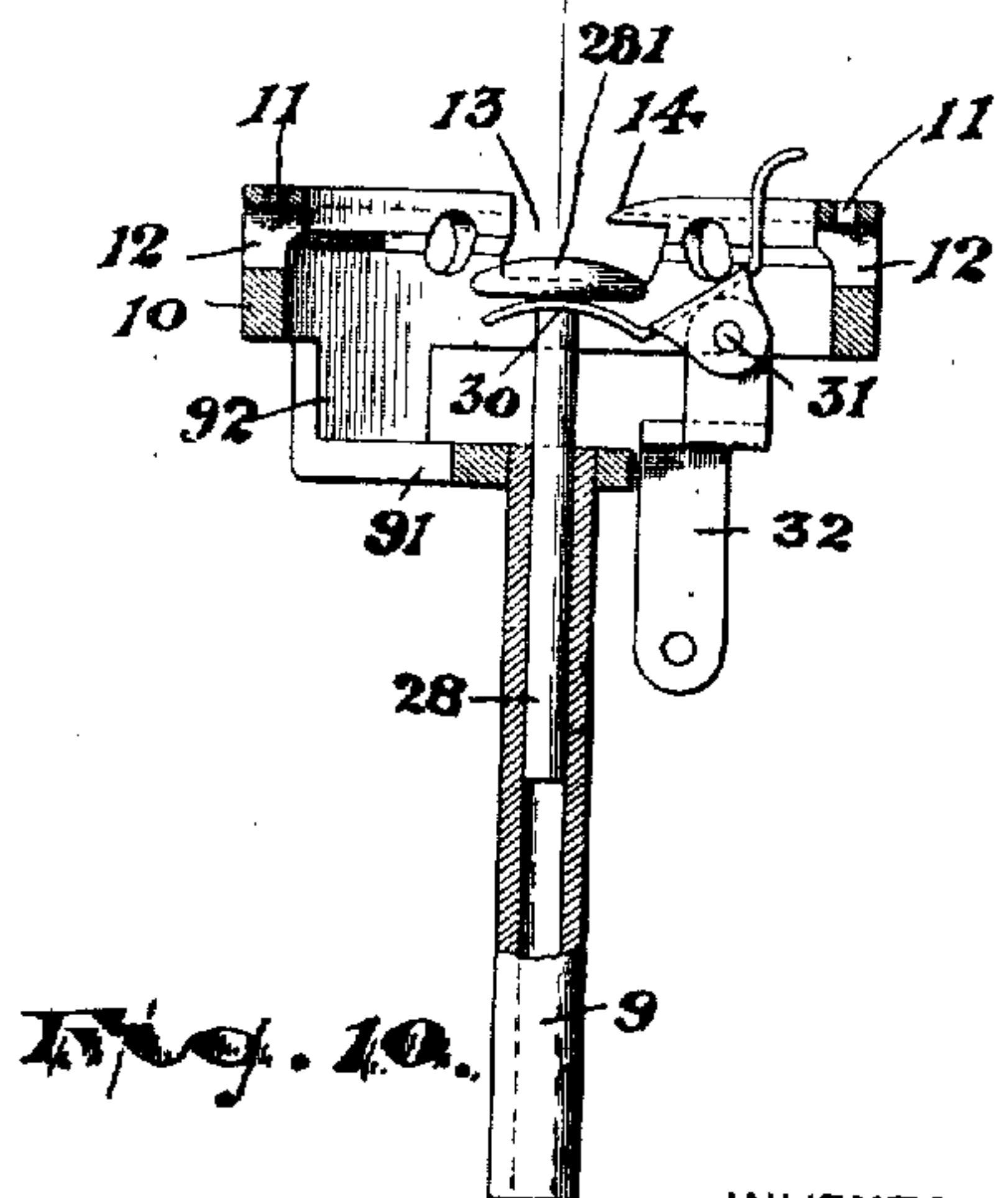
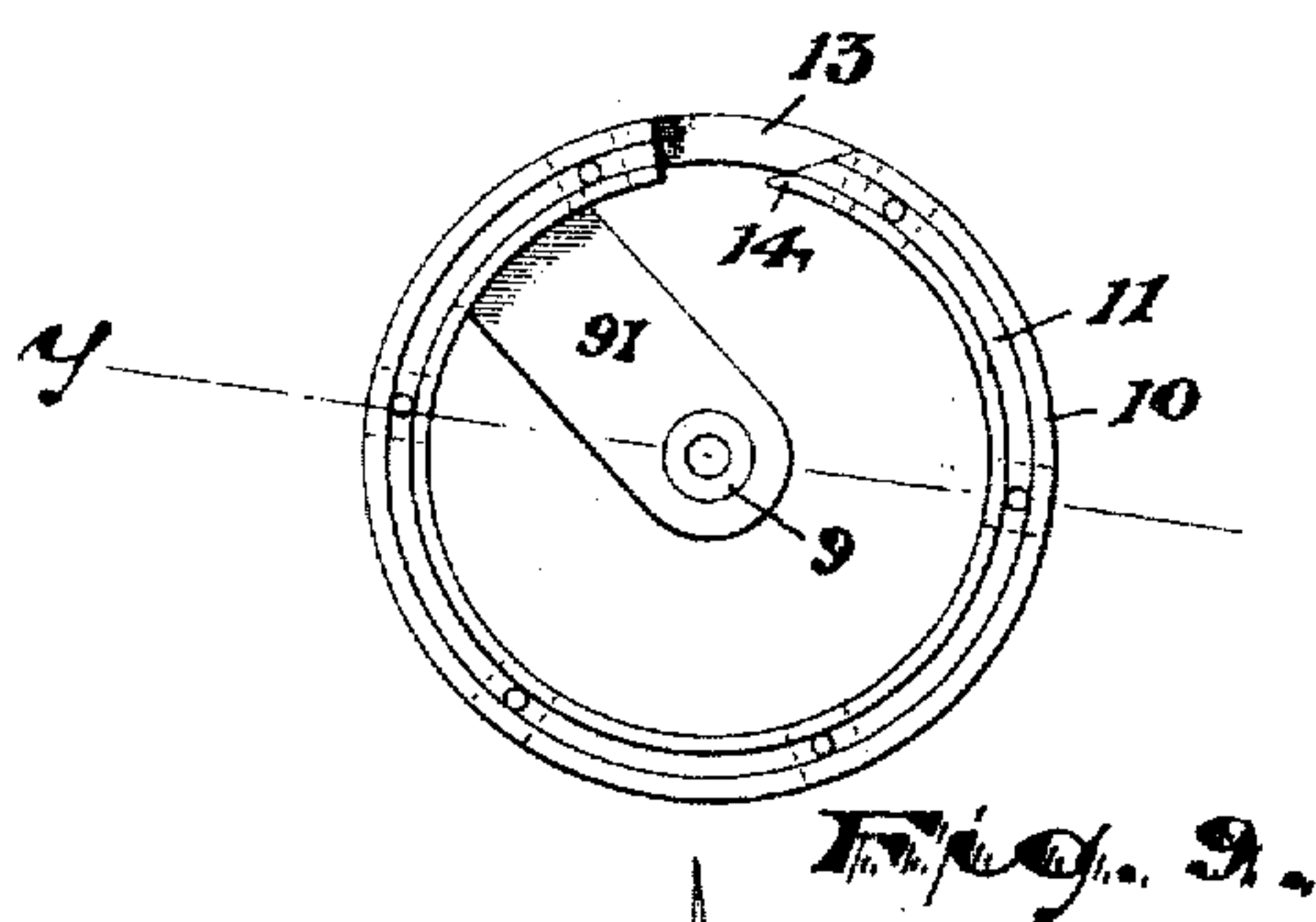
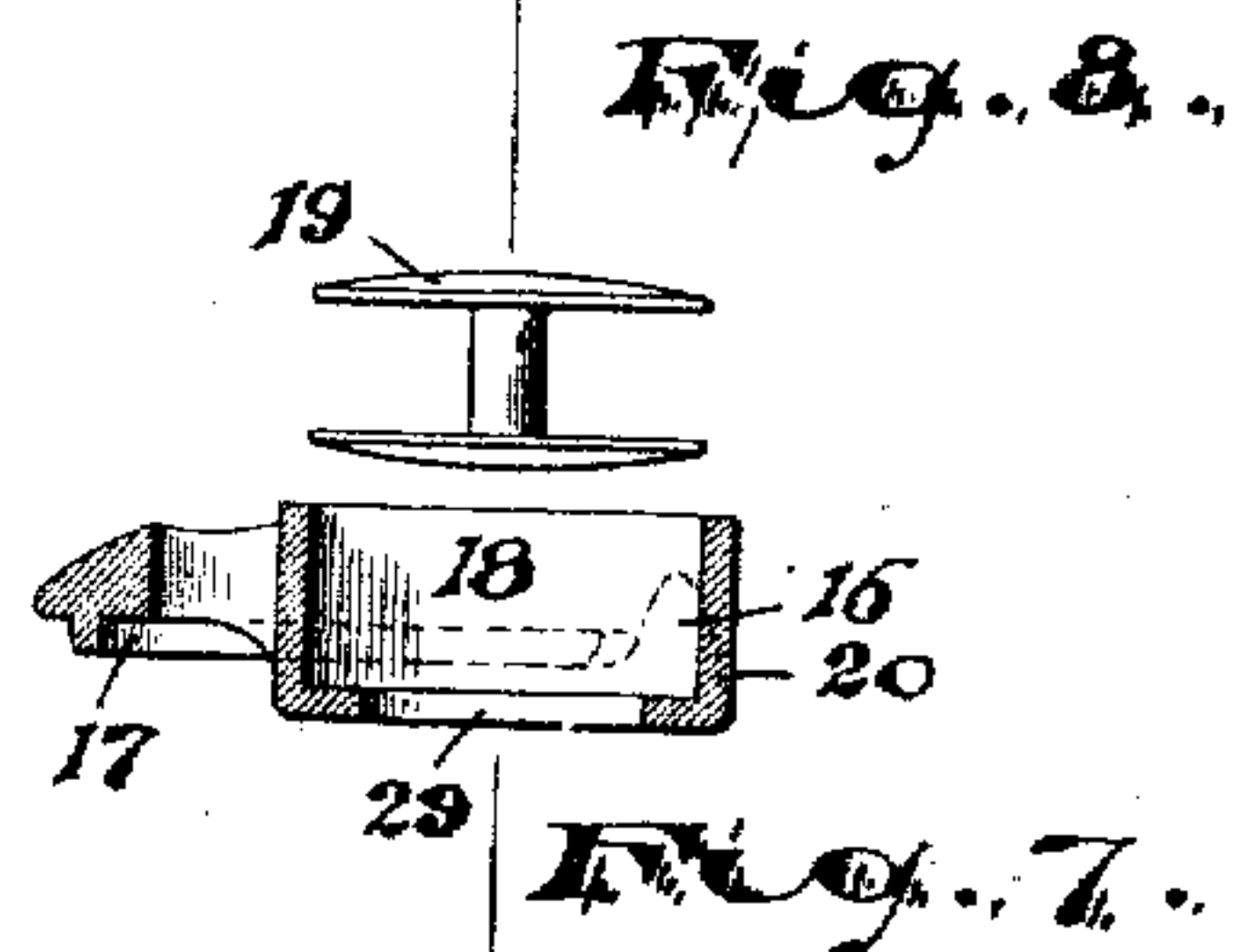
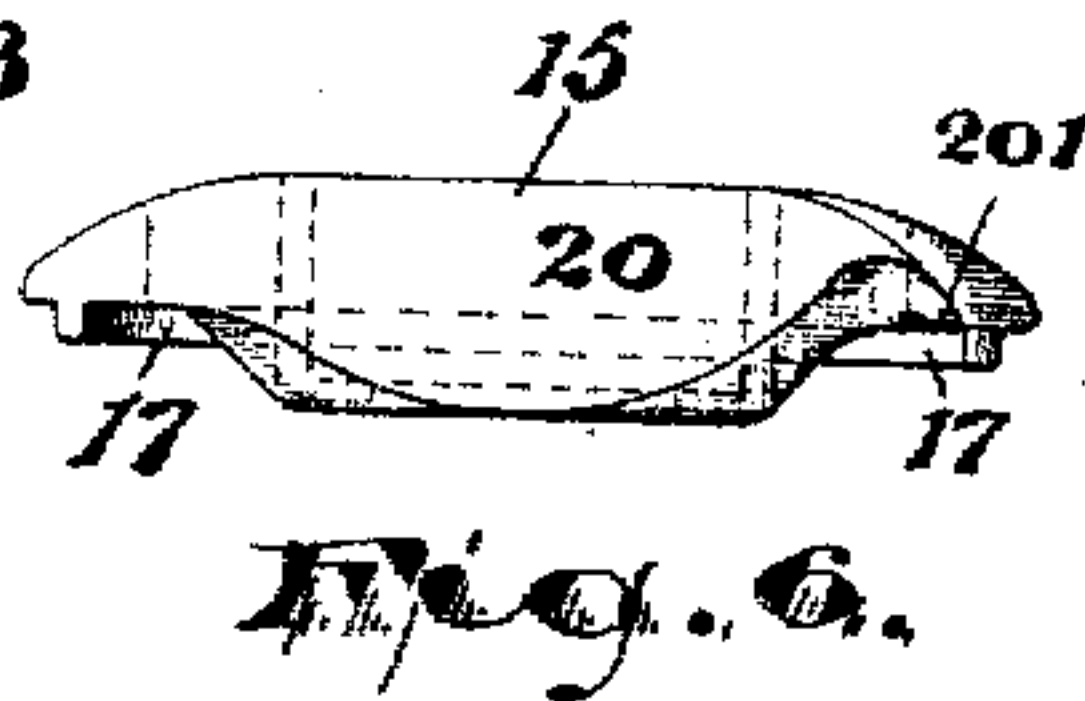
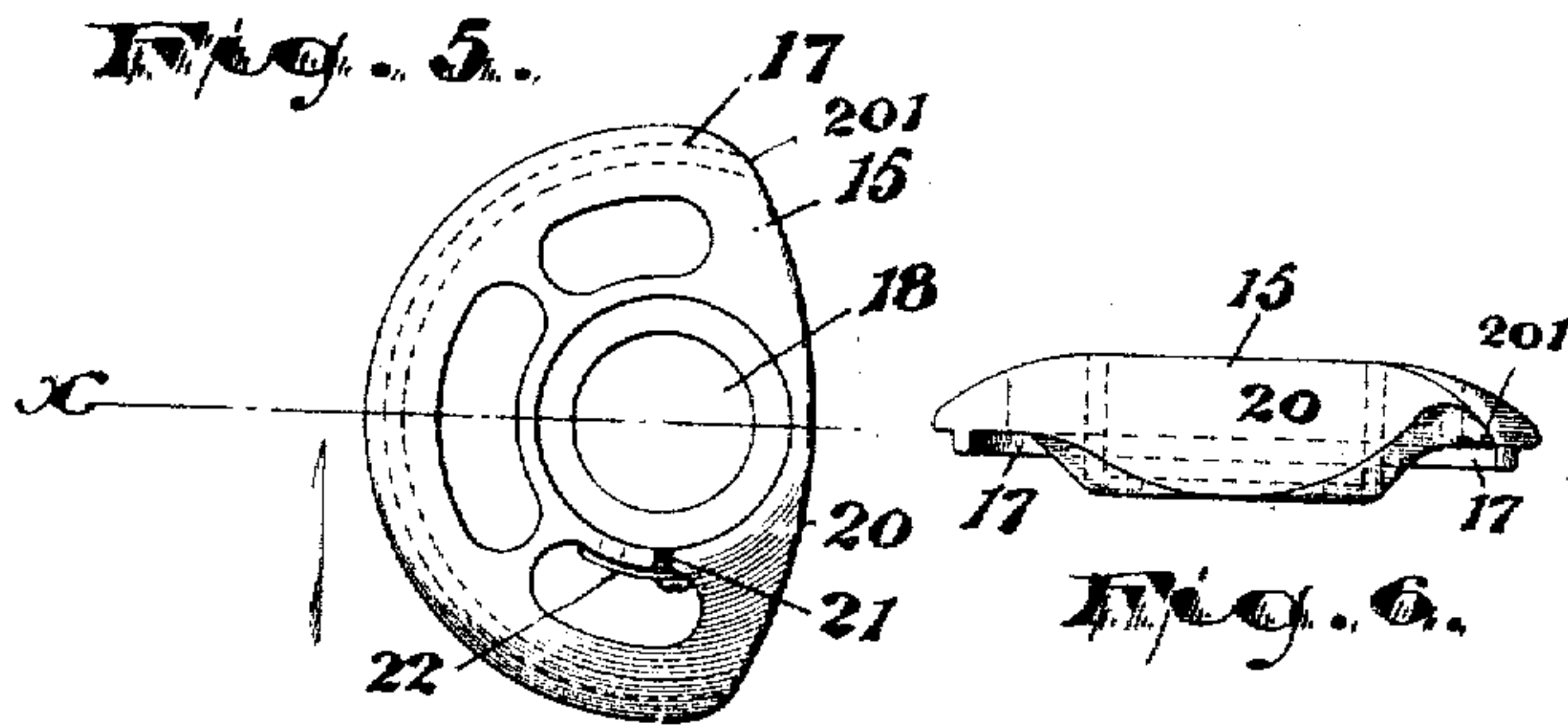
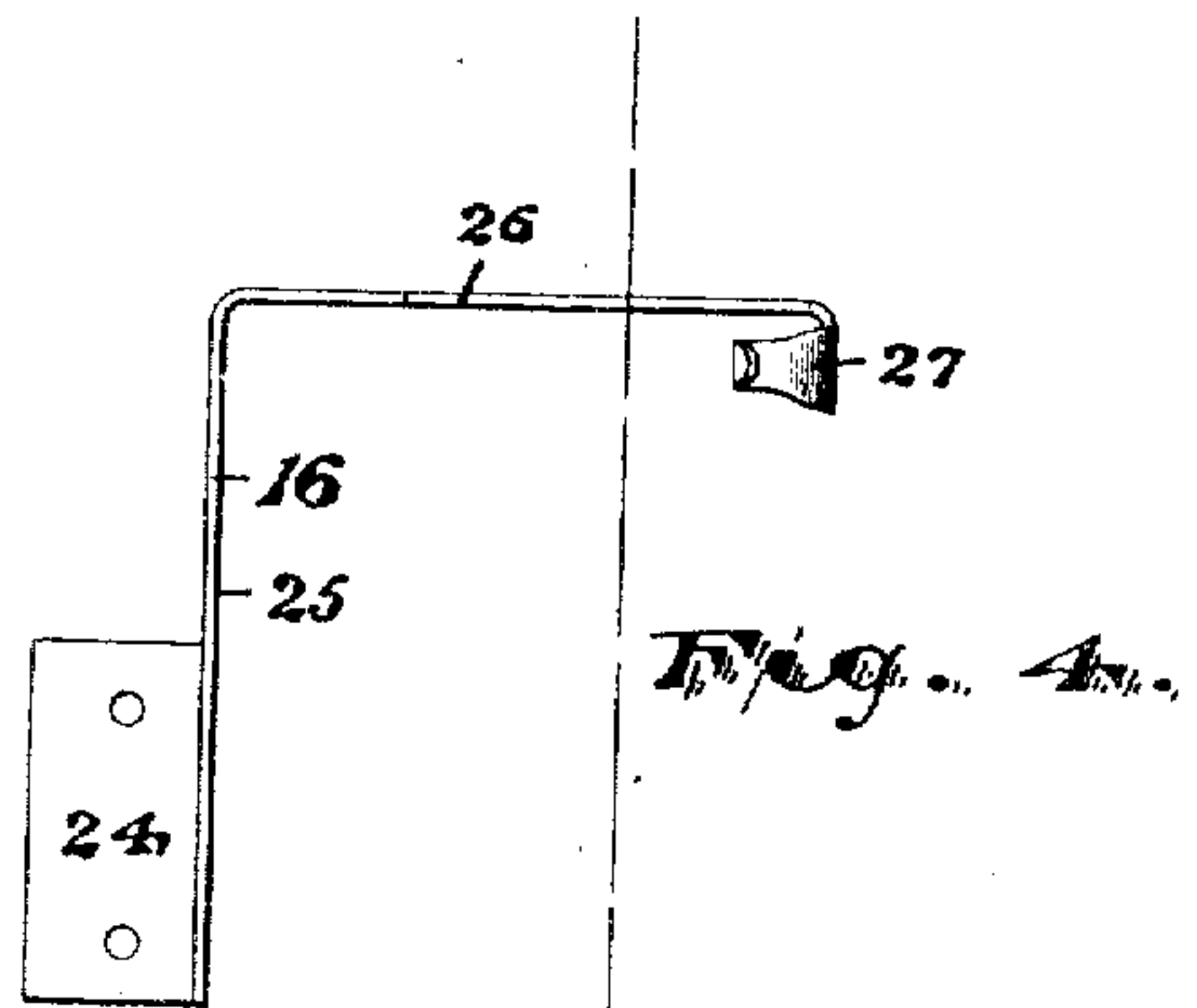
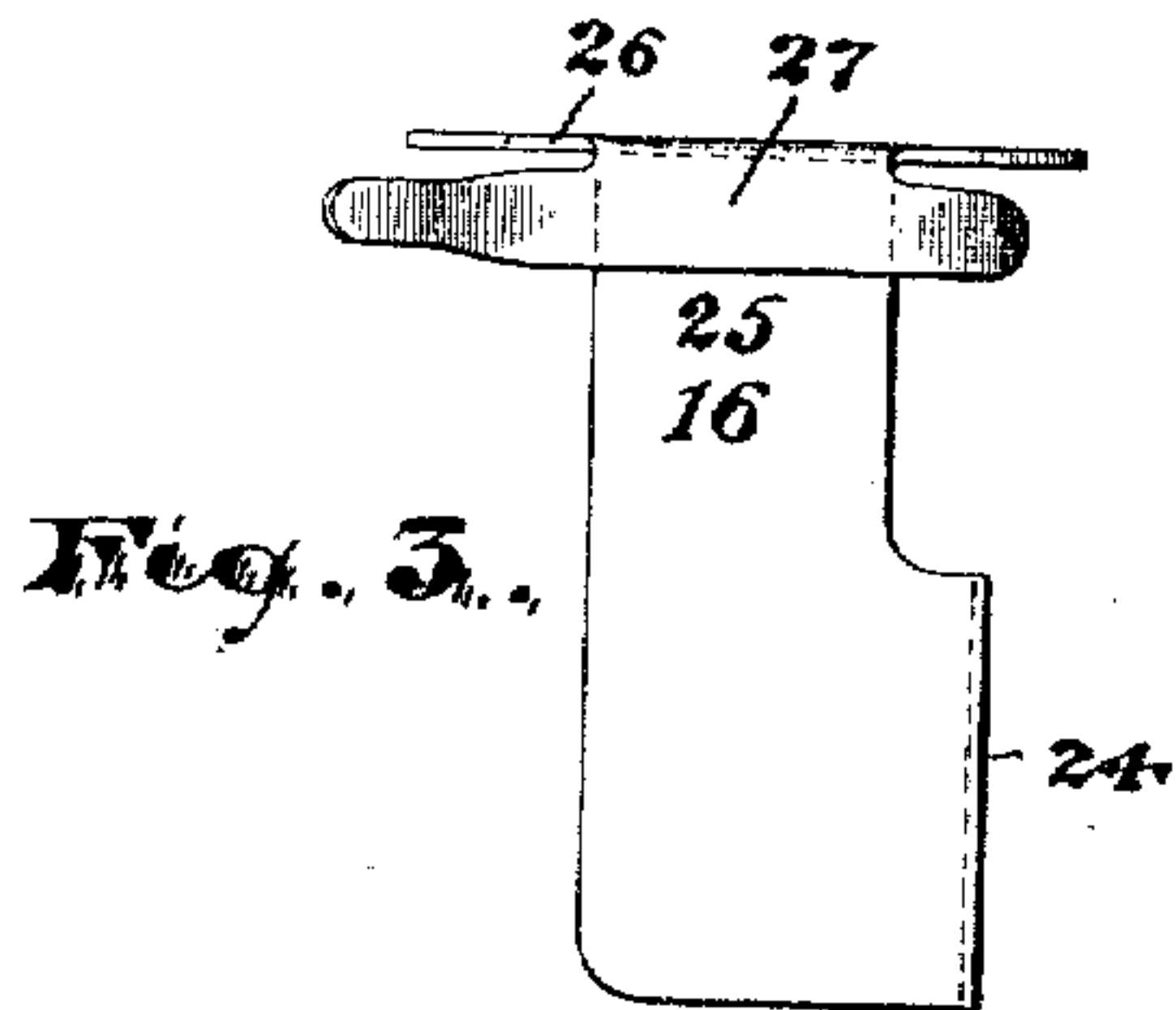
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# UNITED STATES PATENT OFFICE.

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FREDERICK JACOB ASSIGNOR TO RUDOLPH L. JACOB, OF NEWARK,  
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## SEWING APPARATUS.

No. 845,092.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed December 8, 1905. Serial No. 290,920.

*To all whom it may concern:*

Be it known that we, FREDERICK JACOB and JACOB BOPPEL, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Sewing Apparatus; and we 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in that class of lock-stitch sewing-machines represented by the one illustrated in the patent of one of the parties to these improvements, Jacob Boppel, No. 439,234, dated October 28, 1890.

The objects of the present improvements are to enable the thread-carrying bobbin to be more readily and quickly removed from its holder or casing; to simplify and reduce the cost of construction; to prevent more effectually the clogging of the device by accumulated lint from the thread and goods sewed upon; to provide a more durable and noiseless device; to enable a higher speed to be obtained, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved sewing apparatus and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a plan of a portion of the bed-plate of a sewing-machine and the bobbin-holding case and hooked looping-ring and connections. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation, and Fig. 4 is a front elevation, of a bobbin-case holder or keeper in detail. Fig. 5 is a plan, and Fig. 6 is a side elevation, of a bobbin-case; and Fig. 7 is a section of the same, taken at line *x* of Fig. 5. Fig. 8 is a detail side view of a bobbin used in connection with our improvements. Fig. 9 is a plan of the loop-

ing-ring in detail; and Fig. 10 is a sectional view of the same, taken at line *y* of Fig. 9 and showing a bobbin-ejector therein.

In said drawings, 5 indicates part of the frame of a lock-stitch sewing-machine of any suitable construction. 6 indicates a bracket attached to said bed-plate and having horizontally-projecting arms 7 8, which furnish bearings for the oscillating shaft 9 of the looping-ring. Said shaft is arranged vertically in said bearings, and between said bearings said shaft 9 is adapted to receive any suitable means by which it is turned and preferably oscillated. Above the upper bearing 7 the said shaft is provided with a horizontal radial arm 91, which is turned upward at its outer end to form a vertical extension 92, which in turn carries the looping-ring 10, the parts 9 and 10 being either integral or in pieces, as convenience may render desirable. Said looping-ring 10 is horizontally disposed and is concentric with the shaft 9, turning therewith under the power of the operating means. (Not shown.) In the upper edge of the ring 10 is a concentric groove 11 for the bobbin-casing, and through said ring are formed a series of perforations 12, opening into the bottom of the groove 11 and permitting the out passage from said groove of any lint, grit, or the like which if permitted to accumulate would clog the movements of the parts. The perforations provide also air-passages by which the air is caused to circulate at the contact surfaces to cool said surfaces, and the air-currents induced by centrifugal force tends to blow out the lint to clear the bearings, as above indicated.

At one side of the ring 10 the same is recessed, as at 13, and at said recess is formed a hook or pointed projection 14, adapted to enter between the needle-thread and needle and form a loop, as hereinafter described. The point of said hook 14 lies within the peripheral line of the ring and below the plane of the rib 17 of the bobbin-casing 15 and is timed to catch the needle-thread as the latter is carried up by the needle. The needle travels parallel with the axis of the bobbin and reciprocates inside the ring near the portion of the bobbin-casing that divides the loop, as will be hereinafter described. Seated on top of said ring is arranged a bobbin-casing 15, which is held stationary, or sub-



stantially so, on said ring 10 as the latter oscillates by the bobbin-casing holder 18. Said bobbin-casing is provided with a rib 17 on the under side, at or near its periphery, which fits loosely into the groove 11 to permit a free oscillation of the ring 10. Concentric with said rib and with the ring 10 is formed in said casing 15 a bobbin chamber or receptacle 18, in which the bobbin 19 is seated and freely works to pay out the bobbin-thread. Said bobbin 19 is preferably a metallic spool, on which the thread may be wound preliminary to the sewing operation; but it may be a wooden spool, such as is common on the market, said bobbin-casing and its receptacle 18 being then sized to suit. At one side of the casing 15 the same is cut away to provide a bearing 20, said bearing being curved on a radius larger than that on which the normal periphery of the casing is formed to permit an easy slipping of the thread therefrom. The edge 201 of the ring 15 divides the loop on the hook 14 as the hook passes this point and conducts the thread so that one part of the loop passes between the bobbin-casing and the part 26 and the other part under the bobbin. The loop then passes between the casing 15 and part 27 and is ready to be drawn taut.

The wall of the receptacle 18 is slotted and provided with a tension-spring 22, Fig. 5, and through the slot 21 and between the body of the ring and the spring 22 the thread passes out from the bobbin, as in other bobbin holders or casings now in common use.

To hold the bobbin-holder in place on the ring 10, we have provided the keeper 16. (Shown in Figs. 1 and 2 and in detail in Figs. 3 and 4.) This comprises a sheet-metal piece bent and shaped to be fastened to the part 5 or the bracket or plate 6, attached thereto and extended over the top of the bobbin-holder 15, the free end pressing gently down on the top of said bobbin-holder with a gentle resilient pressure, such as will not interfere with the loop of the needle-thread passing both over and under said bobbin-holder to lock with the bobbin-thread. To this end said keeper at one end is provided with a perforated seat or bearing 24, by which the keeper is screwed or otherwise fixed to the part 5, a forwardly and upwardly projecting arm 25, which is bent so that its upper part 26 lies in a horizontal plane to engage the top of the bobbin-holder. This horizontal part 26 is provided with a larger perforation or opening 27, which coincides with the chamber or receptacle 18 in the bobbin-holder, as shown in Fig. 1, so that the bobbin can easily be removed from its chamber or receptacle through said opening or perforation. The projecting extremity of the arm or horizontal part 26 is bent or turned downward, as at 27, Figs. 2, 3, and 4, to lie against the surface 20 of the bobbin-holder, the depending

part 27 conforming to some extent to the curvature of the cut-away side of the bobbin-holder, so that the latter will be prevented from turning axially with the hooked ring.

To facilitate the removal of the bobbin from its receptacle, we have provided a lifting-rod 28, having a head 281, adapted to underlie the spool or bobbin resting in its receptacle 18. The shaft 9 is hollow axially to receive said rod 28, and the bobbin-holder 15 is open or perforated at its bottom, as at 29, Fig. 7, to permit the head 281 to pass there-through and engage the under side of the bobbin and raise said bobbin to a point at which it can be conveniently grasped by the hand. To thus raise said head 281, we have employed a lifting-lever 30, fulcrumed at 31 on a bracket 32 and having a finger extension 33, which projects up through the ring and lies just outside of the depending part 27 of the keeper, where it can be depressed by one finger of the hand about to grasp the bobbin as it rises. The rod 28 being at the center of the shaft 9 may turn therewith or not without interference with the movement of said shaft or the hooked ring, and all danger of rattle or noise therefrom is avoided. The bracket 32 is also fastened against the part 5 or bracket 6 and does not interfere with the movements of the ring or the thread forced thereby over the bobbin holder or case.

In operating the device the needle-thread being caught by the hook or projection 14 is drawn by said hook over the blade-like end or terminal 201 of the surface 20 at the periphery of the bobbin-casing, where the thread is caused to pass both over said casing between it and its keeper and under said bobbin-casing between it and the looping-ring, and thus enter into locked relation to the bobbin-thread in a manner similar to that common in the art.

Having thus described the invention, what we claim as new is—

1. In a sewing-machine the combination with the machine-frame having bearings for a vertical shaft, a hollow shaft arranged in said bearings, a ring carried by said hollow shaft, a groove being formed in the top of said ring concentric to the axis of said hollow shaft, a bobbin-casing having a rib to enter said groove, means for holding said bobbin-casing onto said ring, said means comprising a sheet-metal piece fastened to said machine-frame and extending over the bobbin-casing and having an opening through which the bobbin may pass, and an ejector-shaft arranged in said hollow shaft and adapted to engage the bobbin in its casing to lift the same therefrom.

2. In a sewing-machine, the combination with a hooked ring for catching the needle-thread, said ring having a groove therein concentric with the axis of said ring and hav-



ing side openings communicating with the said groove, a bobbin-casing having a rib to enter said groove and having a receptacle therein and means for holding said bobbin-casing onto said ring.

3. In a sewing-machine, the combination with the ring having a groove and having a recess at one side and a hook extending into said recess to catch the needle-thread and having at the sides openings communicating with the groove in said ring, of a bobbin-casing adapted to rest on said ring, the said casing being furnished with a rib adapted to enter said groove and a keeper comprising a piece bent and providing a seat arranged to rest over the casing, the overlying part of said keeper being open to permit the insertion and withdrawal of the bobbin, substantially as set forth.

4. In a sewing apparatus, the combination with the machine-frame, of a vertical shaft having at the top a horizontal ring with openings at the sides and a groove at the top in open communication with said side openings, a bobbin-casing seated on said ring and having a rib lying in said groove and a bobbin seated in said casing, the said ring having a recess at one side with a hook extending from the body of said ring into said recess, the point of the hook lying below the plane of said rib to permit said hook to pass underneath said casing.

5. In a sewing apparatus, the combination with a machine-frame, of a vertical hollow shaft having at the top a horizontal ring with a thread-hook, and having a groove in its up-

per face, a bobbin-casing having a rib to enter the groove in the ring, the bobbin-casing being cut away on one side, a keeper secured to the frame and bent to go over the bobbin-casing, and having extensions to engage the cut-away portion of the bobbin-casing, the top portion of the keeper having a perforation, a receptacle within the bobbin-casing for receiving a bobbin and arranged to support the bobbin, a rod arranged in the shaft and having a head to engage the bobbin, a lever having an arm between the head of the rod and the end of the shaft, and the finger-piece of the lever extending up between the ring and the bobbin-casing.

6. In a sewing apparatus, the combination with a machine-frame, of a vertical hollow shaft having at the top a horizontal ring having a thread-hook, a bobbin-casing on the ring having one of its sides cut away, a member bent to go over the bobbin-casing and maintain it in its position, a receptacle in the bobbin-casing to support a bobbin, a rod in the hollow shaft, a head on the rod, a lever on which the head of the rod rests, and a finger-piece on the lever projecting up between the ring and the bobbin-casing.

In testimony that we claim the foregoing we have hereunto set our hands this 1st day December, 1905.

FREDERICK JACOB.  
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Witnesses:

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