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PATENTED DEC. 31, 1907.

W. N. PARKES.

BOBBIN CASE THREADING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED NOV. 2, 1903. RENEWED NOV. 18, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

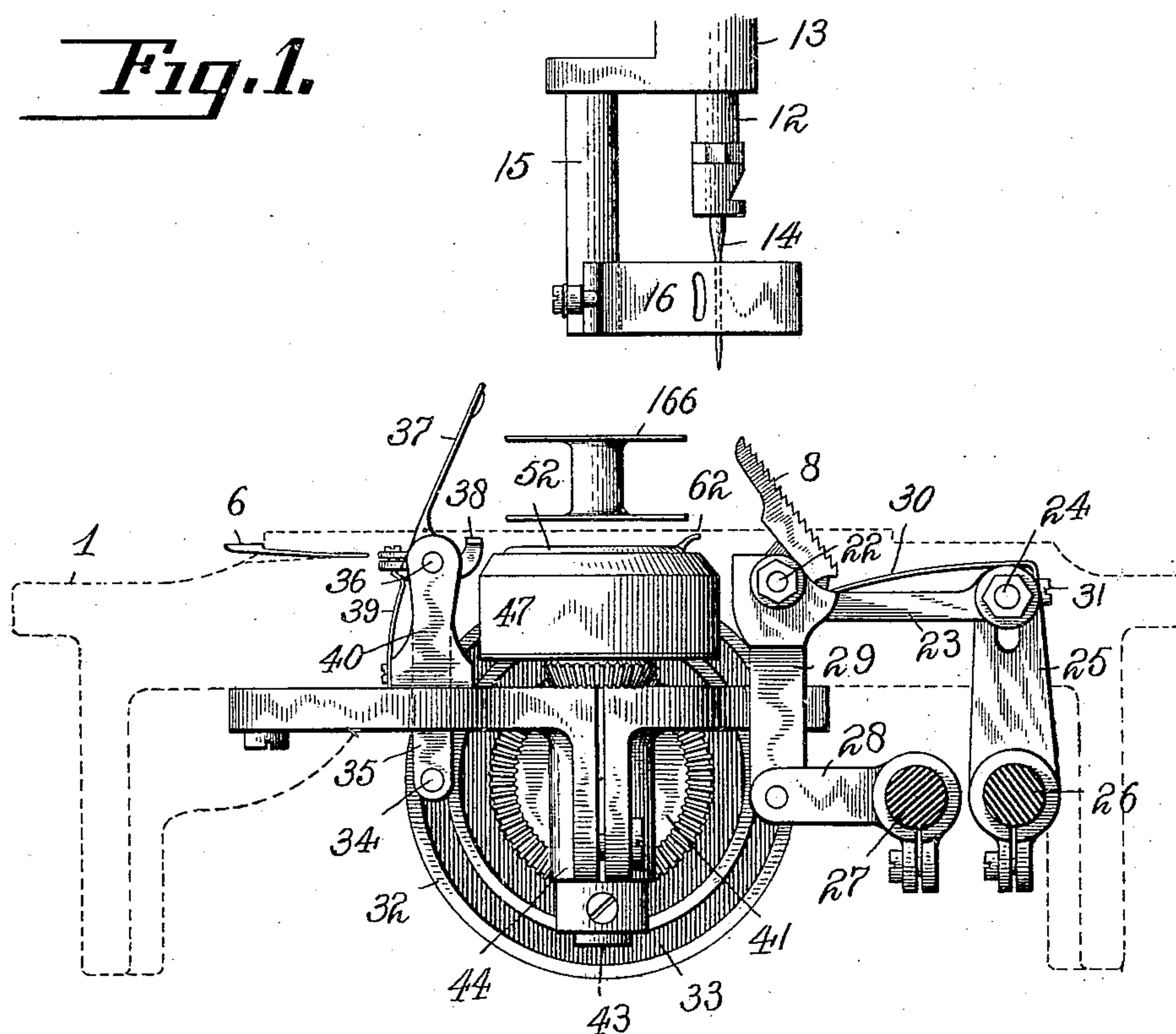
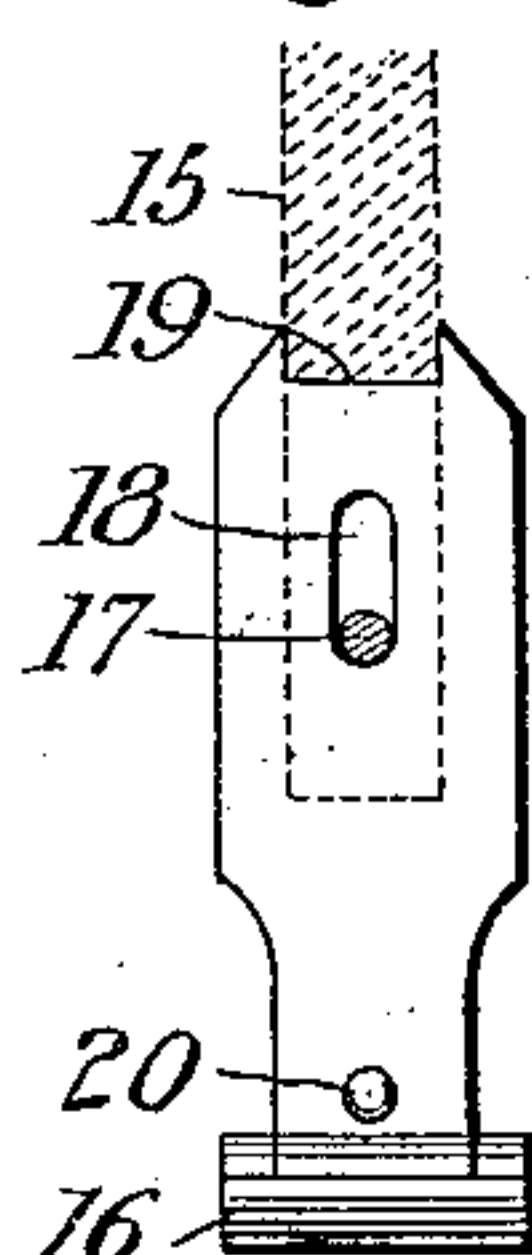


Fig. 8.



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2 SHEETS—SHEET 2.

Fig. 3.

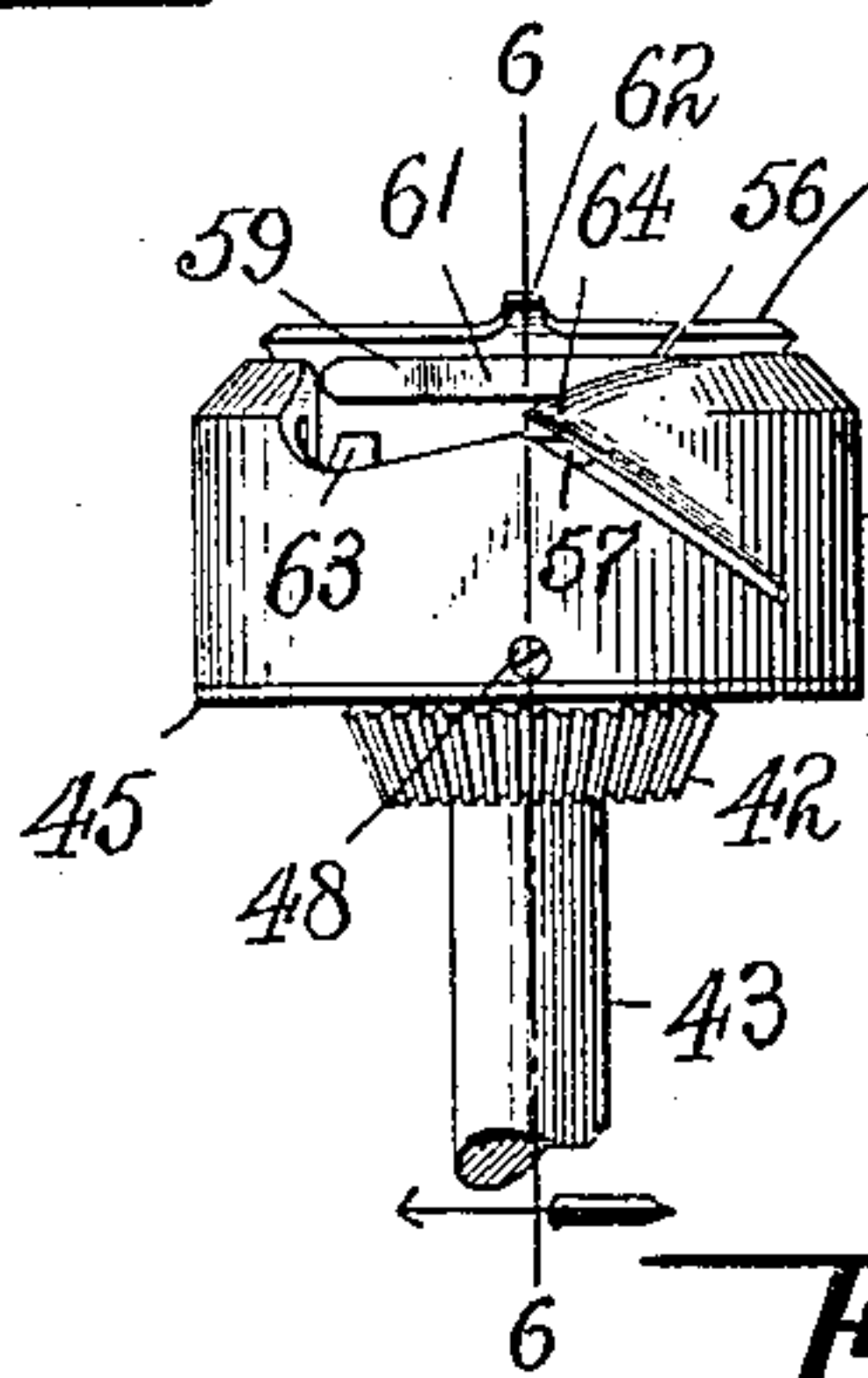


Fig. 4.

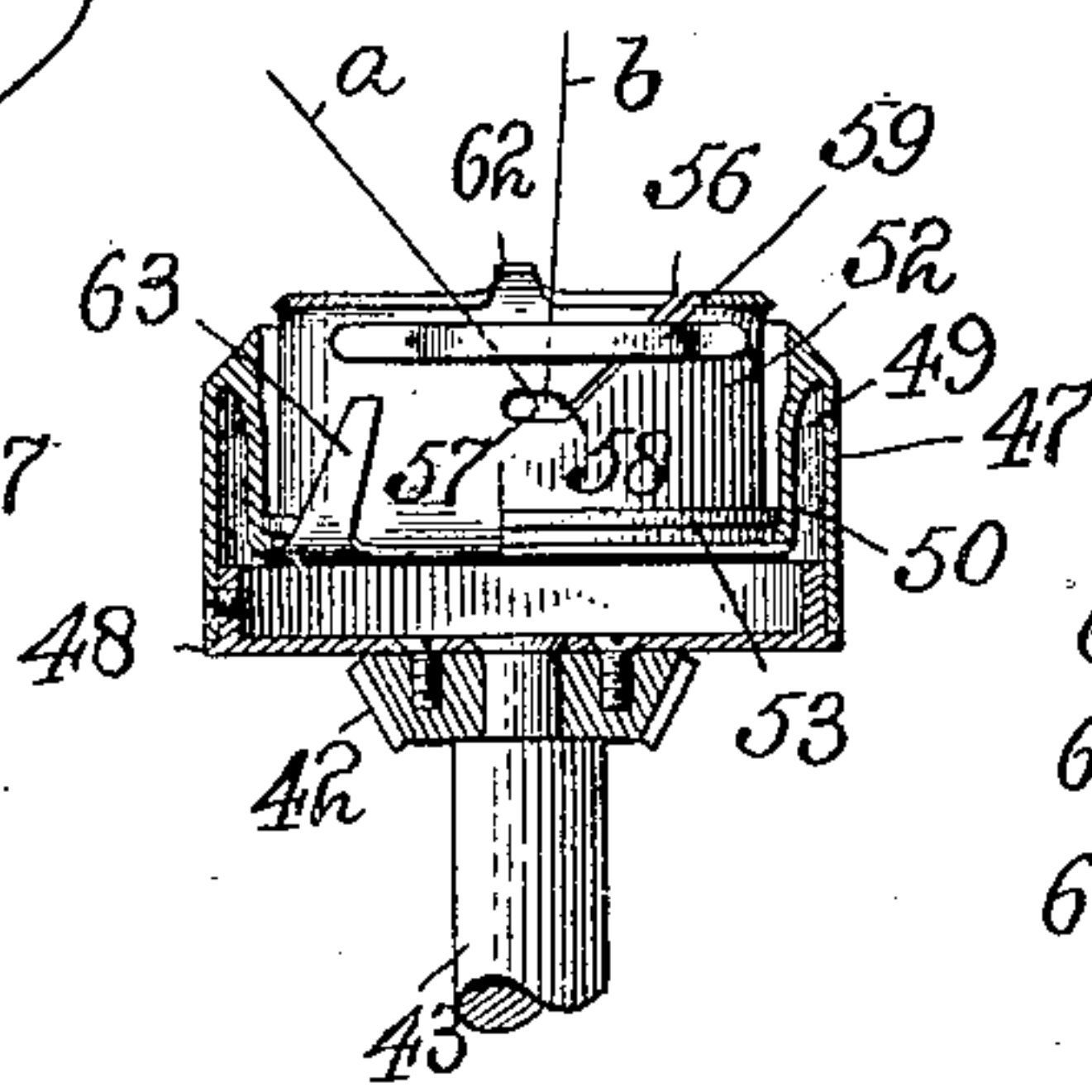


Fig. 5.

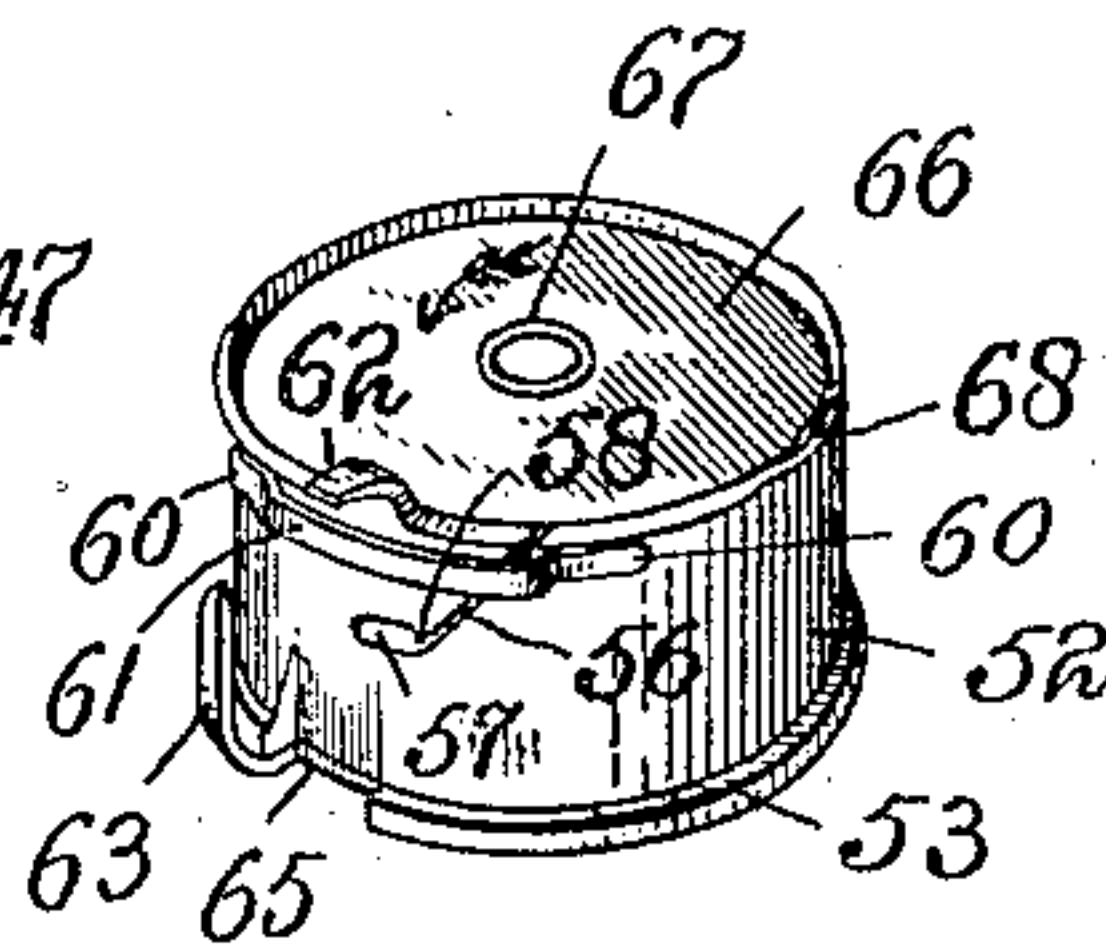


Fig. 6.

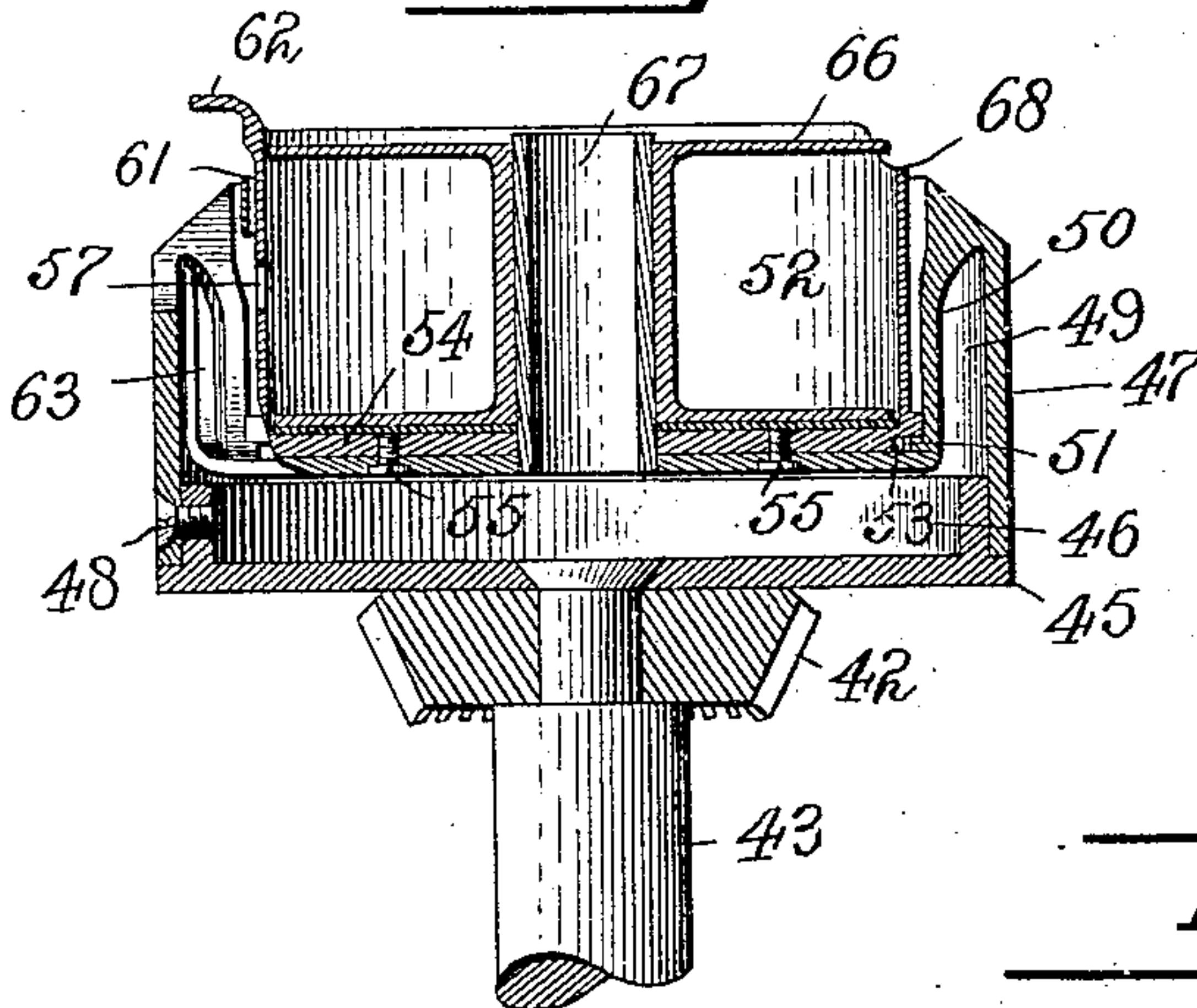


Fig. 7.

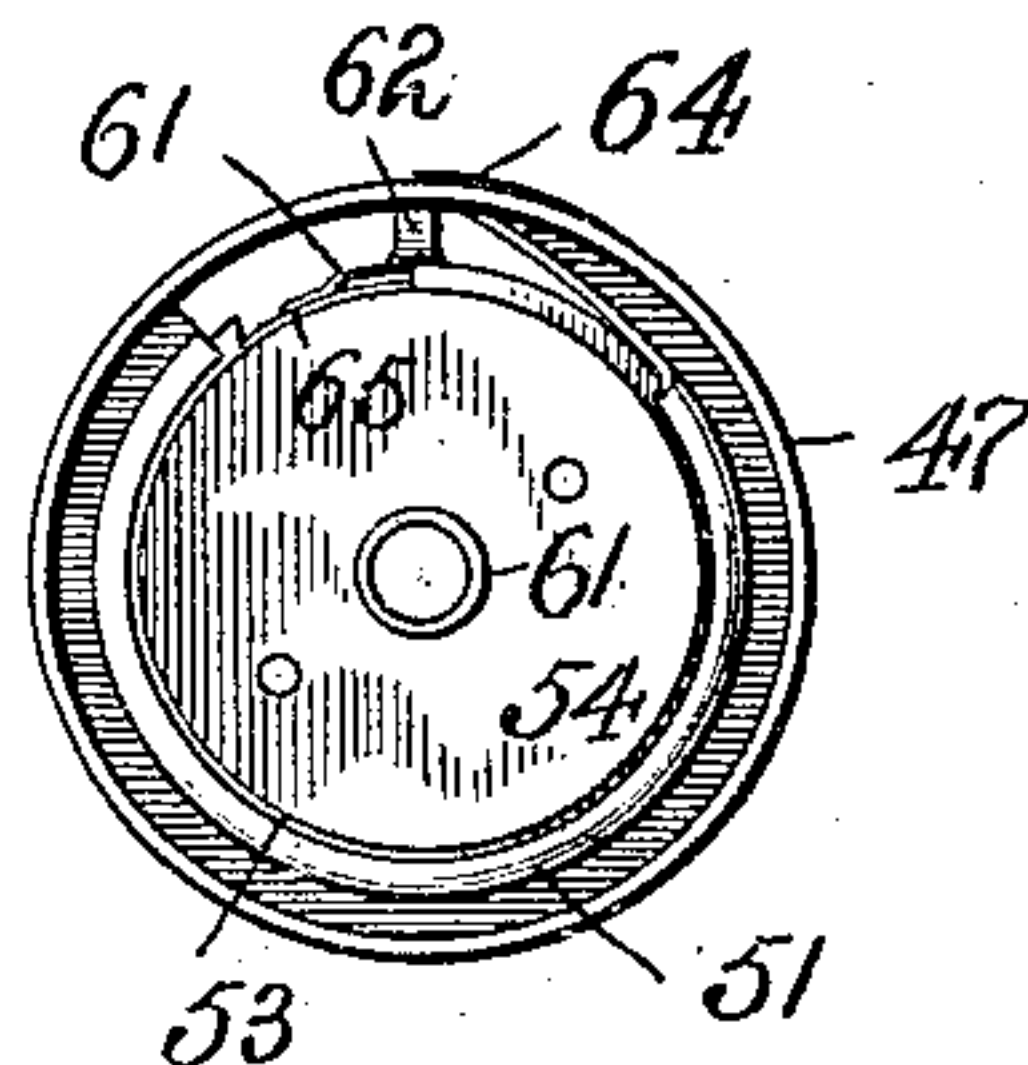
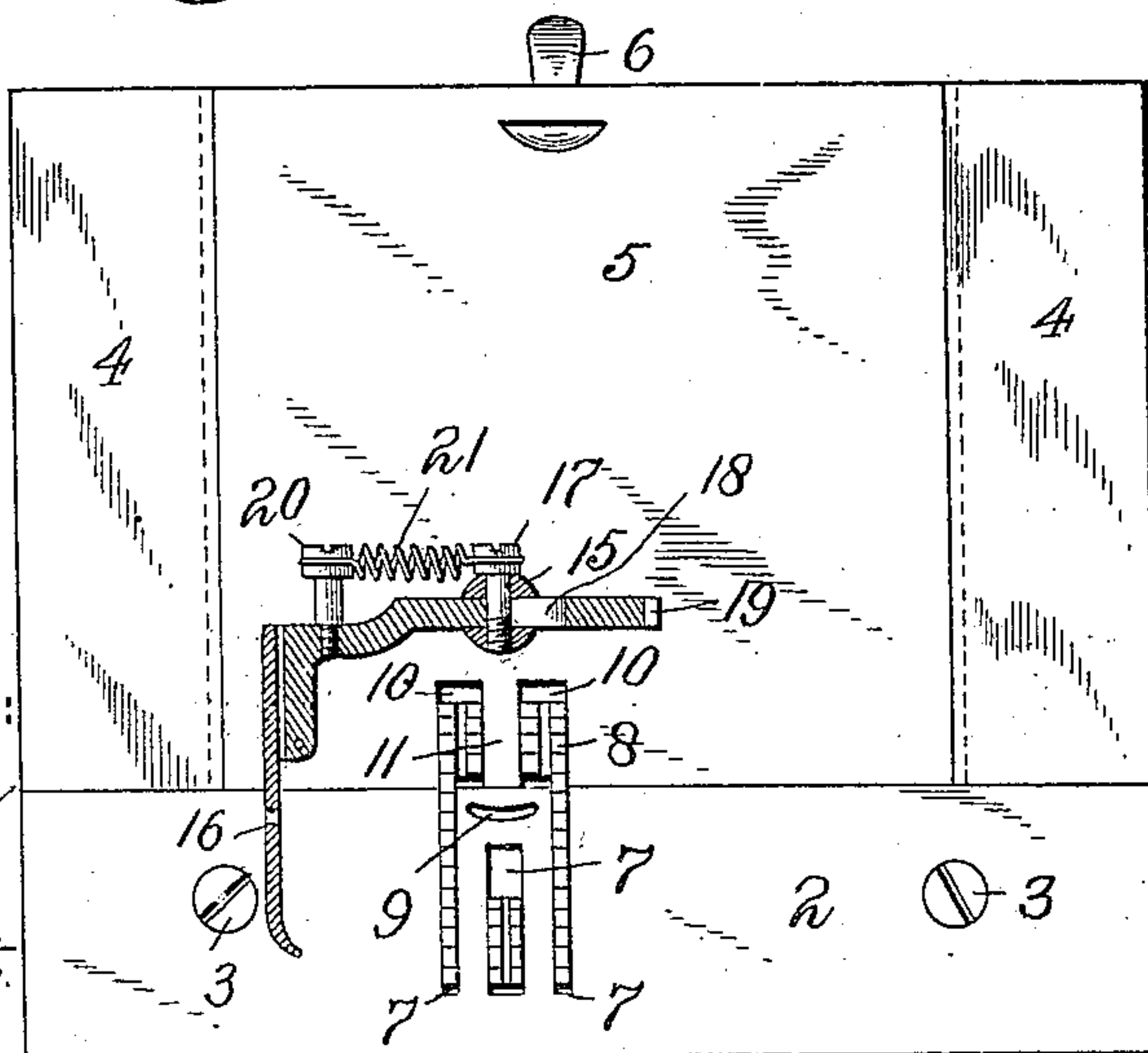


Fig. 2.



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BOBBIN-CASE-THREADING MECHANISM FOR SEWING-MACHINES.

No. 875,621.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed November 2, 1903, Serial No. 179,468. Renewed November 18, 1907. Serial No. 402,742.

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Bobbin-Case-Threading Mechanism for Sewing-Machines, of which the following is a description.

This invention relates to sewing machines of the lock-stitch class, and has particular reference to the looper mechanism covered by my Patent No. 730,692 granted June 9, 1903, and is specially intended for use in connection with the same.

Principally the invention relates to so called "self-threading" bobbin-cases, or the means whereby the bobbin-case may be easily and quickly threaded after the bobbin has been inserted in the case, and without the removal of the latter from the looper or from the machine.

An object of my invention is to provide means whereby a bobbin-case, located in a horizontal plane, may be "threaded" quickly and easily by the operator without removing the same or any part thereof from the looper or the machine.

Another object of my invention is to provide means whereby, by a single movement of the hand, the bobbin-case may be "threaded" while in the machine.

Another object of my invention is to provide means whereby, after the bobbin-case has been "threaded" the thread will be properly disposed, without any further manipulation, for proper coöperation with the needle thread-loop.

Another object of my invention is to provide means whereby, after the bobbin-case has been "threaded", the bobbin-thread will be held and retained in such position as to prevent it from becoming entangled with the point or toe of the hook of the looper.

It is also an object of this invention to provide a bobbin-case for a hook which rotates in a horizontal plane in which the bobbin may be located, and from which the thread may be drawn without producing any tension on the thread other than the slight tension that is produced by drawing the supply of thread from the bobbin, and to provide such a case with means for conveniently threading, without removing it, or any part of it from the machine.

The bobbin-case and the means provided

for threading the same, is especially adapted for use in combination with my bobbin controller application filed April 27th, 1903, serially numbered 154,457.

Other objects of my invention will be pointed out during the course of this description and with them all in view, my invention consists in the parts, features and combinations hereinafter described and claimed.

In the drawings I have illustrated enough of a lock-stitch sewing machine to enable those skilled in art to understand the combination of parts, their disposition and operation, and therein:

Figure 1 is a front end elevation of such portions of the stitch-forming mechanism, feeding and bobbin-controlling mechanisms, as are deemed sufficient to illustrate the disposition and operation of parts; Fig. 2 is a plan of the throat-plate of the machine, showing the presser-foot in section and turned aside preparatory to sliding the movable section of the throat-plate from above the looper mechanism so that parts of the latter may be removed or the bobbin-case "threaded"; Fig. 3 is a front elevation of the looper mechanism, a portion of its actuating-shaft being removed; Fig. 4 is a transverse vertical section of the looper mechanism, showing the bobbin-case and secondary hook in elevation; Fig. 5 is a perspective view of the bobbin-case with the bobbin therein, and the arrow indicating the direction of rotation of the bobbin; Fig. 6 is an enlarged vertical sectional view of the looper mechanism taken on the line 6—6 of Fig. 3, looking in the direction of the arrow; and Fig. 7 is a bottom plan view of the body portion of the looper, and showing also the bottom of the bobbin-case, the latter being held in the looper. Fig. 8 is a front elevation of my presser foot.

The bed or cloth-plate of the machine is shown in Fig. 1 in dotted lines and indicated by 1. The throat-plate of the machine is made up of the fixed section 2, held in place by the screws 3, adjacent the ways 4 of the cloth-plate, in under-cut grooves of which ways 4, the removable section 5 of the throat-plate is held in position by any suitable form of spring-catch 6, partially shown in Fig. 2, and shown in elevation in Fig. 1. The section 2, of the throat-plate, is provided with the slots 7, through which the feed-dog 8 works, and also is provided with the needle-slot 9. The sliding section 5, of the throat-

plate, is provided with slots 10, through which the feed-dog 8 works, and which slots are made in continuity of the outside slots 7, of the section 2 of the throat-plate. Slots 10, as formed, provide a tongue 11 between them for the support of the work.

The needle-bar is indicated by 12, and is caused to reciprocate in any usual way, as well as vibrate in a carrier 13, pivoted in the head of the machine. The needle is indicated by 14.

15 is the presser-bar, 16 the presser-foot pivotally supported on the bar by means of screw 17, which is tapped into the bar and passes through the slot 18, in the shank of the presser-foot. The upper end of the shank of the presser-foot is provided with a bifurcation 19, the prongs of which embrace the presser-bar, the shank of the presser-foot operating in a saw-cut extending transversely and longitudinally of the lower end of the bar 15. The shank of the presser-foot carries a pin or screw 20, to which one end of a coiled spring 21 is secured, the other end of said spring being secured to the screw 17. In Figs. 1 and 2 the foot is shown turned up out of the way of the operator, this position being attained by a slight downward pressure on the presser-foot which will disengage the bifurcation 19 from the presser-bar and lower the shank of the foot in the saw-cut mentioned; then a slight lateral pressure is brought to bear upon the foot which will turn it upon the pivot-screw 17, whereupon by releasing the foot the spring 21 will instantly draw the foot and shank into position shown in the drawings, there to be retained until the operator is ready to start the machine. The object of this manipulation is to put the foot out of the way when it is desired to remove parts of the looper mechanism, or thread the bobbin-case, or inspect portions of the machine below the throat-plate.

The presser foot structure just described is for the purpose of readily removing the same to one side for the convenience of swinging the feed, and bobbin-controller out of position, and removing the bobbin from the hook, as is clearly seen from Fig. 1. It is to be understood however that this lateral movement of the presser foot is not essential, as any ordinary presser foot may be used, and the same may be lifted sufficiently for the purposes set forth.

In the following description of parts, so much of the feed and bobbin-controller mechanisms is described as is thought necessary for the working of these parts in combination with the bobbin-case, and their location relative to the same.

The feed-dog 8, is pivotally supported at 22, at the outer end of the feed-bar 23, said feed-bar being pivoted at 24, to a rock arm 25, secured to the rock-shaft 26, an adjacent rock-shaft 27, carrying the arm 28, which

pivotally supports the link 29, pivoted to the pin 22. The spring 30, secured by screw 31, to the feed-bar 23, extends into engagement with the rear end of feed-dog 8, and holds the same either in the position shown in Fig. 1, or in its normal feed position illustrated in Fig. 2. This means of swinging the feed dog, being provided for the purpose of removing the same from above the bobbin-case and hook, so that these parts may be readily removed, as is clearly shown in Fig. 1.

A full description of the mechanism that is only partly shown herein, is illustrated in my application filed March 30th, 1903, and serially numbered 150,182.

On the driving-shaft of the machine is carried a disk 32, provided with a cam-groove 33, in which runs a usual roller mounted on a pin 34, carried by an arm 35, suitably supported at 36, by a short shaft. Said shaft carries the bobbin-controlling finger 37, the normal operative position of which is controlled by the adjustable finger 38, also carried by the shaft 36. A spring 39, is provided for holding the bobbin controller finger out of engagement with the bobbin leaving the same free to be removed, as seen in Fig. 1, and means (not shown) is provided for holding the said finger of the bobbin controller in operative position for engaging the bobbin, said means being fully illustrated in the above mentioned application.

The looper is driven from the driving-shaft by means of a bevel-gear 41, meshing with a bevel-pinion 42, carried by the looper-shaft 43, suitably supported in journal bearing 44. At the upper end of shaft 43, the flanged disk 45, is suitably secured, said disk having the rim-portion 46, to which is secured the body-portion 47 of the looper, by means of screws 48. The looper is provided with the concentric vertical groove 49, affording an interior wall 50, having a flange 51, which supports the bobbin-case. The bobbin-case consists of the body-portion 52, the bottom portion of which is flanged and grooved at 53, and has secured to the bottom thereof the plate 54, by means of screws 55, thus providing a race in which runs the flange 51 of the looper.

The bobbin-case is provided with the open-end diagonal slot 56, running to its upper edge, said slot terminating at its lower end in the enlarged eye 57. At the junction of the eye or aperture extending horizontally through the bobbin-case with the slot there is formed a downwardly depending tongue 58. Rigidly secured to the bobbin-case near its upper edge is a combined thread-guard and support 59. This guard is soldered or otherwise secured at its ends 60, to the body of the bobbin-case, and is disposed in a horizontal plane, and extended partially around the periphery of the bobbin-case and transversely across the diagonal slot 56. Between

its ends the guard is bowed or sprung at 61, sufficiently for the free and easy passage of the thread between the same and the body of the bobbin-case. The bobbin-case is provided with the usual projecting finger 62, which engages a suitable stationary portion (not shown) of the throat-plate or cloth-plate of the machine for the purpose of preventing the bobbin-case from turning with the looper; and the thread-eye 57, is disposed below said finger 62, and extended partially thereunder and a little to one side of the said finger. The bowed portion 61, of the guard 59, extends from one side of the slot 56, to the other side of finger 62, thus giving plenty of room for the manipulation of the bobbin-thread for threading the bobbin-case. The bobbin-case is provided with the secondary hook 63, which travels in the groove 49 of the looper, and coöperates with the beak or point 64 of the latter. The bobbin-case is suitably cut out as indicated at 65, for the purpose of permitting the free passage of the needle thread around the same.

For a full detail description of the foregoing hook mechanism, see the above mentioned Patent #730,692.

From the above exposition of the features of my invention, the following description of operation will be clear: The bobbin 66, is supported and permitted to rotate on the spindle 67 of the bobbin-case, and in the operation of the machine the thread is drawn off, and the bobbin rotates in the opposite direction to that in which the hook rotates. After setting the bobbin in place, leaving a portion of the thread thereof extending outside the bobbin-case and looper to be grasped by the operator, the thread is drawn to the left until it reaches the open end of the slot 56, whereupon it will enter said slot and engage the top of the bowed portion 61, of the guard 59. Continuing to draw the thread to the left along the top of the bowed portion of the guard, the thread will gradually descend the inclined slot 56, until it reaches and enters eye 57. Having reached the eye 57, at which time it will extend substantially as shown by the line *a*, in Fig. 4, after the machine is started and the bobbin thread has been picked up by the needle thread loop, and drawn up into the goods it will assume a vertical position as indicated by reference character *b*. Thus it will be seen that the bobbin-case is threaded by a single movement of the hand and while the said case is in the machine, and that no part of the looper mechanism, nor any part of the bobbin-case, is removed as a preliminary to threading the case or as an aid for the purpose. The bobbin-case being thus "threaded", it will be found that the guard 59 prevents the thread from bowing or buckling between the thread-eye 57 and said guard, and that the latter will hold and sustain the

thread in a position which will prevent any portion from engaging the beak or point of the looper during the operation of the machine.

Ordinarily, the angle at which the thread is held, as shown in Fig. 4 by the line *b*, is such as to prevent the same from getting into the slot 56 and thus unthreading the bobbin-case; but, in order to provide against any possibility of the bobbin-case becoming unthreaded by reason of the thread assuming an unusual angle, the depending tongue or finger 58, is provided, which guards the passage from the eye 57, to the slot 56, and prevents the thread from getting into the latter and unthreading the bobbin-case. A depression 68, is provided in the upper edge of the bobbin-case, to permit the insertion of the finger-nail under the top flange of the bobbin so the latter may be lifted from its spindle or pin 67 for removal.

The convenience for threading the bobbin-case without removing it, or any part thereof, from the machine, and for inserting or removing the bobbin or bobbin-case for any purpose will be apparent upon inspection of Fig. 1. That is to say, the horizontal disposition of the looper mechanism, the pivotal arrangement of the feed-dog, bobbin-controlling finger and presser-foot, and the disposition of the sliding portion 5 of the throat-plate, are all important in providing for the ready removal of the parts of the looper mechanism, or for the removal of the bobbin from the bobbin-case, the insertion of a filled bobbin and the rapid threading of the bobbin-case. And it will be seen that when the different parts are manipulated into the position of Fig. 1, and the throat-plate 5 has been sufficiently moved, a filled bobbin can be set upon its spindle 67 and the thread quickly led by a single rapid movement to the eye 57 and placed in position for operation.

It is preferable to place the bobbin in the bobbin-case so that the bobbin in unwinding will rotate in a direction opposite to that in which the hook rotates, because the lead of the thread from the bobbin to the thread eye 57, makes the threading of the bobbin-case easier, more especially when there is a small quantity of thread on the bobbin. It is also seen when the thread is drawn from the bobbin in this manner, the tendency is to keep the thread running from the bobbin, well into the eye 57, or to the side of the eye farthest from the tongue 58. Thus avoiding any liability of the thread getting by the said tongue into the slot 56, and thus unthreading the bobbin-case.

In the above description, I have set forth my invention in connection with a "right-hand" looper, viz., a looper which rotates from right to left, and a vibrating needle; but, it is to be understood that a "left-hand"

looper may be used and combined with either a vibrating needle or with one which is confined to reciprocation, and the right-hand looper may be also combined with a 5 needle which is confined to reciprocate. This difference in connection with the movement of the bobbin-thread in the several combinations noted should, however, be observed: 10 with a vibrating needle, the bobbin-thread will be caused to vibrate from one side to the other of the finger 62, on the bobbin-case, the lead of the thread from the eye 57 to the work being such as to cause the thread to just avoid the end of the finger 62; with a 15 needle which is confined to reciprocate, the thread will lead to the work from the eye 57 on either the right or left of said finger 62, accordingly as a right or left-hand looper is used.

20 It is to be understood that various changes may be made in these mechanisms, and that various parts of the mechanisms described may be omitted and I do not, therefore, wish to be confined to the particular form and construction herein shown and described.

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

1. In combination, a horizontally disposed 30 looper, bobbin-case and bobbin, the bobbin-case being provided with means whereby the same may be threaded from the top thereof while in place in the looper.

2. In combination, a looper horizontally 35 disposed, a bobbin-case supported thereby, the latter having means for threading the same while in the looper and also having means for preventing the thread from becoming loose and thus engaged by the hook of 40 the looper.

3. In combination, a horizontally disposed looper, carrying a horizontally disposed bobbin-case provided with a diagonal open-end slot terminating in a horizontally extending 45 thread-eye, and having a guard attached thereto for preventing the thread, extending

from the said eye to the work, from bowing or becoming loose.

4. In combination a looper, a bobbin case carried by the same, a bobbin carried by said 50 case, a bobbin controller adapted to engage the bobbin, means for removing the controller from its operating position to permit of the insertion of the bobbin in the case, and means whereby the case may be threaded 55 from the top thereof while in place in the looper.

5. In combination a looper horizontally disposed, and a bobbin case carried by the same, a bobbin carried by the case, a feed dog 60 extending over a portion of the bobbin and case, means adapting the case to be threaded without removing it from the looper, and means for removing the feed dog to permit of the threading of the case. 65

6. A bobbin-case having a finger for preventing the same from rotating, a thread-eye located beneath said finger, a threading-slot terminating in said eye, and a guard extending across the slot and between the finger and 70 eye, whereby the bobbin-case may be threaded from the top of the latter and the thread is prevented from becoming disengaged from the said case.

7. In combination a looper, a bobbin case 75 carried by the same, a bobbin carried by the case, means whereby the case may be threaded from the top thereof while in place in the looper, a bobbin controller extending over the bobbin, a feed dog extending over the 80 bobbin, and means for removing the bobbin controller and the feed dog from above the bobbin to permit of the insertion and removal of the bobbin and the threading of the case. 85

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:

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