

W. PEPPERLING.
SEWING MACHINE.
APPLICATION FILED FEB. 4, 1909.

975,155.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

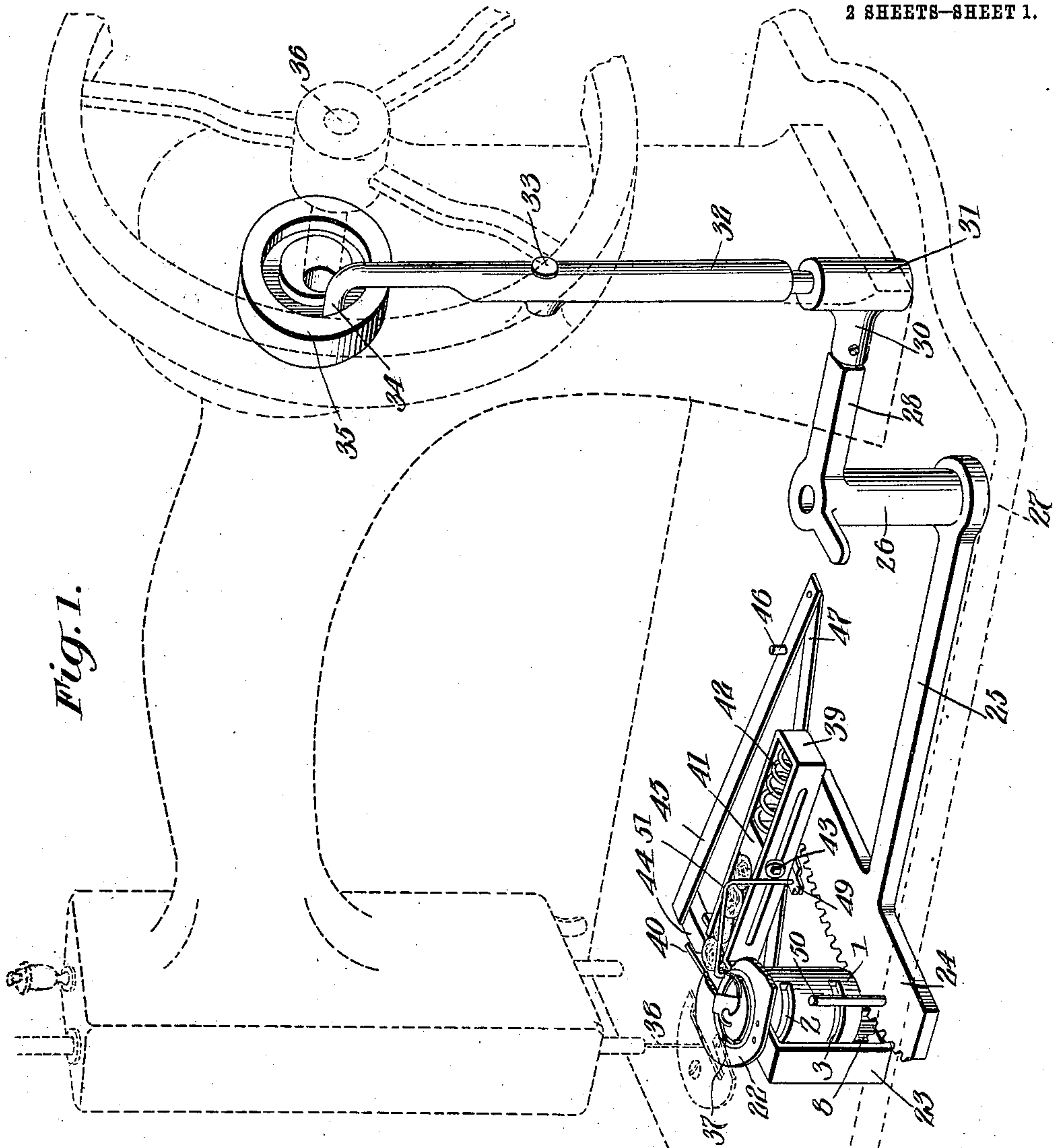


Fig. 1.

Fig. 6.

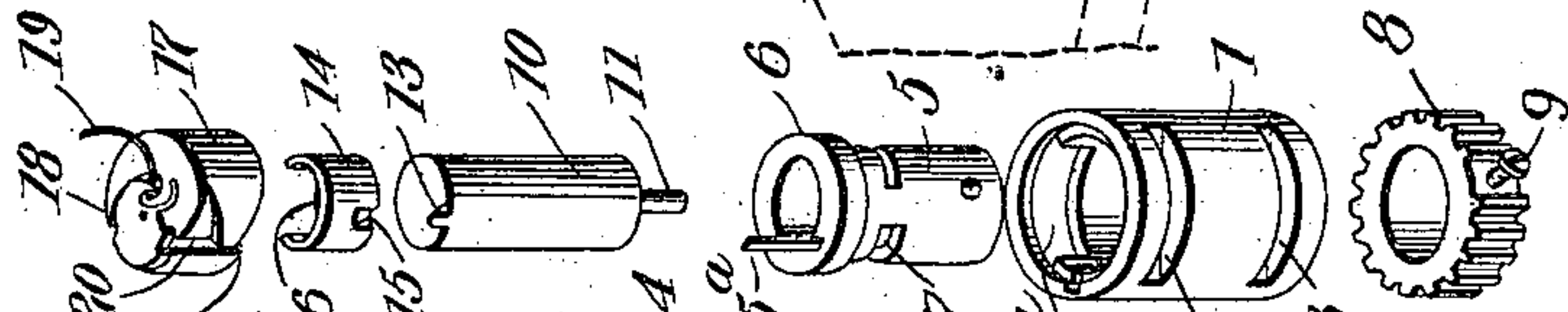
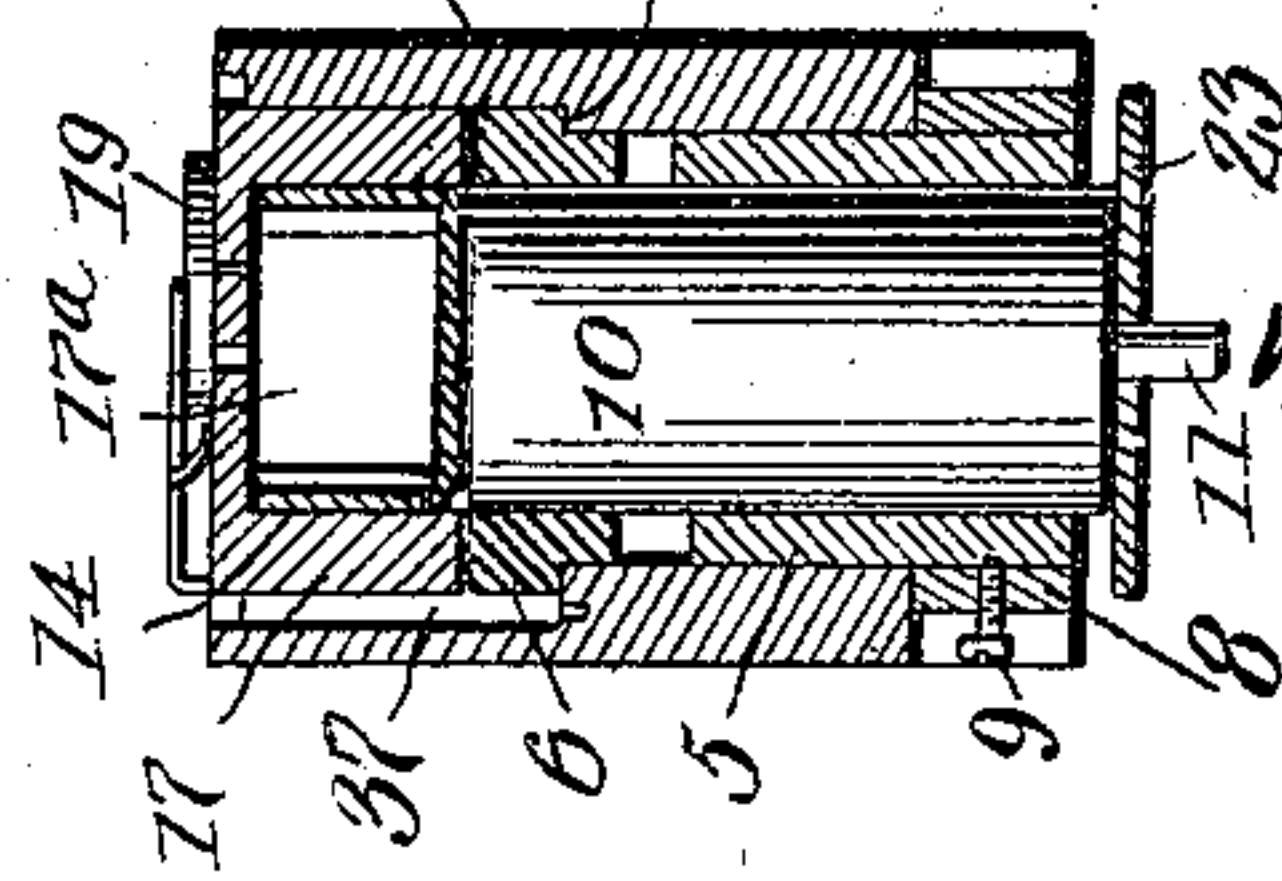


Fig. 5.



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2 SHEETS—SHEET 2.

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Fig. 2.

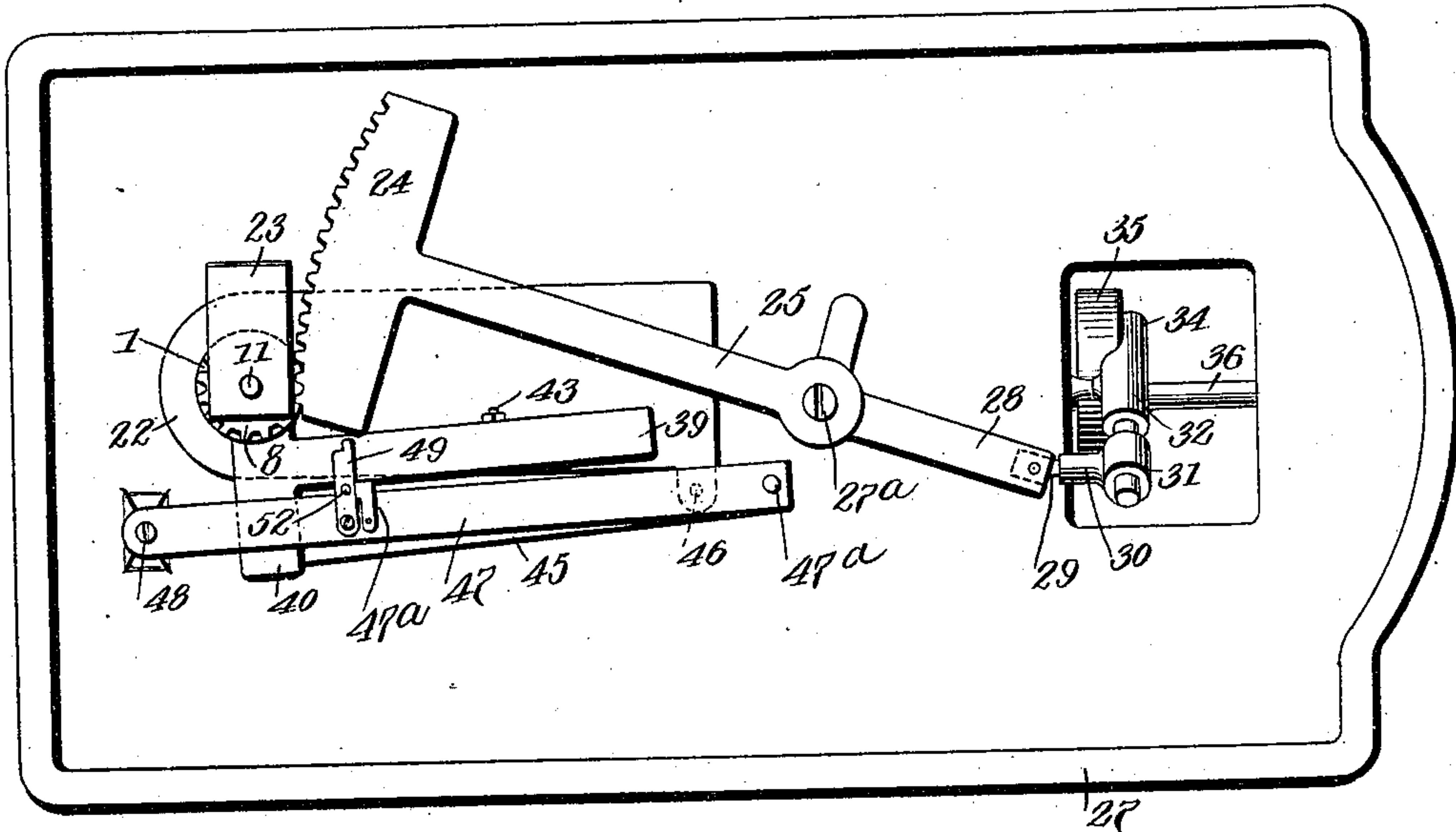
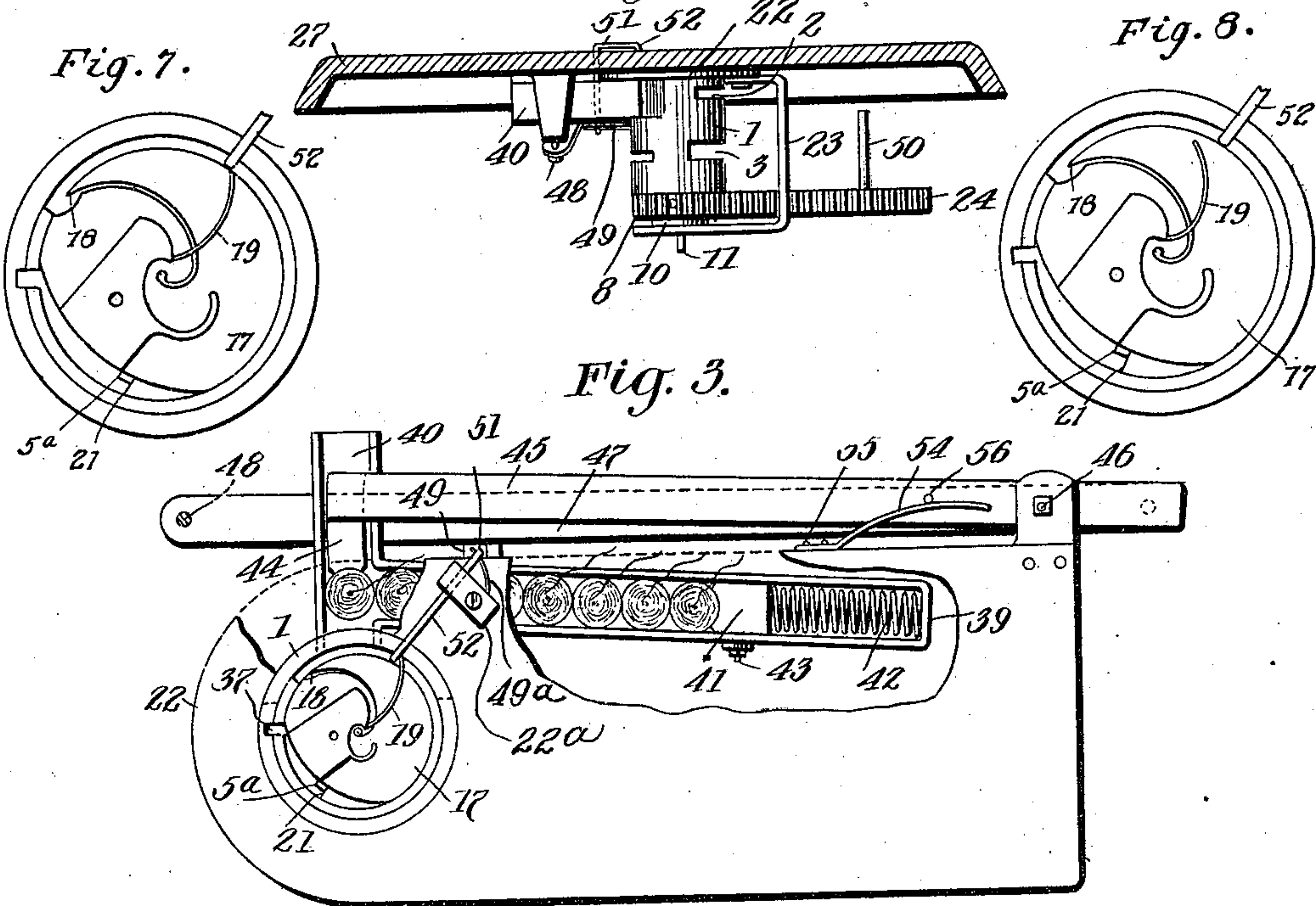


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM PEPPERLING, OF TWO HARBORS, MINNESOTA.

SEWING-MACHINE.

975,155.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed February 4, 1909. Serial No. 476,149.

To all whom it may concern:

Be it known that I, WILLIAM PEPPERLING, a citizen of the United States, and a resident of Two Harbors, in the county of Lake and State of Minnesota, have made certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention is an improvement in sewing machines, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a magazine machine, wherein when the thread of the shuttle is exhausted, a new supply will be introduced automatically.

Referring to the drawings forming a part hereof Figure 1 is a perspective view of the improvement; Fig. 2 is a bottom plan view; Fig. 3 is a top plan view partially broken away; Fig. 4 is a transverse section; Fig. 5 is a longitudinal section of the shuttle and its operating mechanism, Fig. 6 is a perspective view of the same with the parts separated. Fig. 7 is a diagrammatic view of the shuttle not supplied with thread, and Fig. 8 is a similar view showing the same supplied with thread.

The present embodiment of the invention comprises a shell 1 provided near each end with an interrupted transverse slot 2, 3, for lightness and cleanliness and its internal diameter is increased above its vertical center to form a shoulder 4. A second shell 5 is arranged within the first shell, and is provided at its upper end with an annular flange 6, resting upon the shoulder and with an interrupted transverse slot 7, below the shoulder. A pinion 8, is secured to the lower end of the shell 5, which extends below the shell 1, by means of a screw 9.

A cylindrical pin 10 is arranged within the shell 5 and the lower end of the pin is provided with a trunnion 11, which is journaled in a bracket 23 on the machine. The upper face of the pin is provided at one side with a rounded projection 13, for a purpose to be presently described, and a thread receptacle or cup 14, rests on the end of the pin, the base of the cup having a recess 15 for receiving the projection. One side of the cup is cut away as at 16 for a purpose to be presently described.

The shuttle 17 is of inverted cup shape,

and is provided in one side with a slot, which extends in a curved direction as at 18 to the center of the shuttle. A spring 19, is connected with the top of the shuttle, and extends across the curved portion of the slot as shown in Figs. 1 and 6. The shuttle is provided with a vertical groove 20, on its outer face, and one of the side walls of the groove is cut away from the top of the shuttle to form a hook 21 at the bottom of the shuttle. The shuttle rests on the edge of the shell 5, and incloses the receptacle or cup 14 and the upper edge of the shell 5, is provided with a pin 5^a which extends into the groove 20 of the shuttle, whereby to cause the shuttle to move with the shell. The upper end of the shell 1 is fixed in a bearing plate 22, arranged below the top plate 27 of the machine, and the bearing is secured to a bracket 23, secured to the base plate.

The pinion 8 before mentioned meshes with a gear segment 24, on the end of an arm 25, connected with a sleeve 26 journaled on a pin 27^a, in the top plate of the machine. The sleeve is provided with an arm 28, having a recessed end in which is secured a lug 29, extending into a bearing 30 on a sleeve 31, secured on the reduced end of an arm 32, which is pivoted to the arm of the machine as at 33. The upper end of the arm is provided with an angular portion 34, which engages a cam 35 secured to the driving shaft 36 of the machine arm.

It will be evident from the description, that when the shaft 36 rotates the arm 25 will be oscillated, and through the gear segment and the pinion the shuttle will also be oscillated. The shell 1 is provided on its inner face with a vertical groove 37, into which the needle 38 of the machine extends, on its downward stroke, and the hook 21 is adapted to engage within the loop of thread formed by the commencement of the upward stroke of the needle.

The cup or receptacle 14 is adapted to contain a ball of thread which is so wound as to unreel from the inside, and the balls are supplied to the cup from a magazine 39, arranged below the top plate and rectangular in shape. A chute or passageway 40 is arranged transversely of the magazine at the end adjacent to the shuttle, and a follower 41 in the magazine is acted upon by a spring 42, to move the balls toward the chute, the

follower having a lug 43 extending through a longitudinal slot in one side of the magazine, whereby to guide the follower.

A slide 44 moves through the chute, which communicates with the magazine and has its end opening adjacent to the cut away portion of the cup 14, which is always stationary within the shuttle. The slide 44 is connected to one end of a lever 45, pivoted to the top plate as at 46, and the other end of the lever is pivoted to one end of a second lever 47 pivoted by its other end as at 48, to the top plate. The lever 47 has pivoted thereto, an arm 49, whose free end is normally out of the path of movement of a pin 50 on the gear segment 24, and a rod 51 is connected with the arm, the rod being provided with an angular portion 52, which extends to a point adjacent to the spring 19 and normally in the path of movement thereof, when the shuttle is oscillated. The arm 49 is retained out of the path of movement of the pin 50, by means of a spring 49^a, whose one end is secured to a bracket 22^a on the plate 27, the other end engaging the rod 51.

In the operation of sewing, the shuttle oscillates and the spring 19 oscillates therewith. When there is thread in the shuttle, the thread passes up through the slot, and interlocks with the thread from the needle in the usual manner. The engagement of the shuttle thread with the spring 19, holds the said spring in the position shown in Fig. 8, so that as the shuttle oscillates it will not engage the angular portion 52 of the rod 51. As long as there is thread in the shuttle, the spring is so held as it passes the portion 52 of the rod. When however the thread in the shuttle is exhausted the spring is free to take the position shown in Fig. 7. When now the shuttle oscillates with the spring in this position, the free end thereof will engage the angular portion 52 of the rod and will swing the arm 49 into position for engagement by the rod 50. The segment 24 vibrates continuously, and when the pin engages the arm 49, the slide 44 is operated to push a ball of thread into the cup or receptacle. As soon as the needle thread interlocks with the thread just supplied to the shuttle the shuttle thread is drawn upwardly through the slot and engages the spring 19 to move it into the position shown in Fig. 8 so that it will not strike the angular portion 52 of the rod. Then the spring 52^a immediately returns the arm 49 to its original position, where it will not be engaged by the arm 49. The pin strikes the arm, swings the lever 47 which in turn swings the lever 45, and moves the slide through the chute, thus pushing a ball into the cup. A spring 54 is secured by one end to the top plate, as at 55 and the other end engages a pin 56 on the lever 45, to return the parts to their normal

position. A stop 47^a is provided on the end of the lever 47, to limit the swinging movement of the arm 49 in one direction.

It will be evident from the description that whenever the thread in the cup is exhausted, the spring 19 will move into position for engaging the angular portion of the rod, which engagement will set into motion the mechanism for inserting another ball.

The stitch is formed, by the engagement of the hook 21 with the loop of thread on the needle, during the forward oscillation of the shuttle, the lower portion of the loop passing between the shuttle and the upper edge of the shell 5, and between the cup and the upper end of the cylinder 10, so that the shuttle passes entirely through the loop. When the loop tightens, it tightens on the lower thread, the thread from the ball forming the lower portion of the stitch. The engagement of the projection 13 with the recess 15 prevents rotation of the cup.

The transverse slot 2 at the upper end of the shell 1 as will be observed from inspection of Fig. 6 is enlarged as at 22^a to permit the passage of the ball of thread, and a portion of the side of the shuttle is cut away as at 17^a for the same purpose. When the shuttle is in normal position, the cut away portion thereof registers with the cut away portion of the cup, which latter registers at all times with the enlarged portion 22^a of the slot.

I claim:—

1. In a sewing machine, a cylindrical shell provided on its inner surface with an annular shoulder, a second shell having a flange resting upon the shoulder, said second shell extending below the first shell, a pinion secured to the extended portion, a cylindrical pin within the second shell, said pin having on its upper end a projection, a thread cup or receptacle resting upon the end of the pin, said cup having one of its sides cut away, a shuttle of inverted cup shape resting upon the upper edge of the second shell and inclosing the cup, said shuttle having a cut away portion normally registering with the cut away portion of the cup and having a curved slot extending through the side thereof to the center of the shuttle for permitting the passage of the thread, a spring crossing the slot, said shuttle having on one side a groove and a hook adjacent to the groove for engaging the thread of the needle, a pin on the second shell extending into the groove whereby to cause the shuttle to rotate with the shell, a magazine adjacent to the shell, said magazine being provided adjacent to the shell with a transverse chute whose one end registers with the side opening of the cup, a follower in the magazine normally spring pressed toward the chute, a slide movable through the chute, a gear segment meshing with the pinion,

said segment being provided with a pin, an arm for moving the slide normally out of position for engagement by the pin on the segment, a rod connected with the arm and
5 normally in position for engagement by the spring on the shuttle when said spring is not engaged by the thread in the cup and means for operating the segment.

2. In a sewing machine, an oscillating
10 shuttle, a stationary thread receptacle or cup within the shuttle, said cup having a cut away portion at one side for receiving a ball of thread and a shuttle having a cut away
15 portion normally registering with the cut away portion of the cup, a magazine for holding balls of thread adjacent to the shuttle and provided with a transverse chute registering with the cut away portion of the
20 cup, a spring pressed follower in the magazine, a slide movable through the chute, means for oscillating the shuttle, means operated by said oscillating means for moving
25 the slide through the chute, and normally disconnected therefrom, a spring connected with the shuttle for connecting the oscillating means with the slide moving means, said
30 spring being arranged in the path of movement of the thread passing from the shuttle, whereby to be moved out of engaging position when the shuttle is supplied with thread.

3. In a sewing machine, an oscillating shuttle, a thread receptacle within the shuttle said shuttle and receptacle being pro-
35 vided with normally registering openings for permitting the passage of a ball of thread, a magazine for supplying the balls of thread, means for moving the balls of thread from the magazine into the re-
40 ceptacle, means for oscillating the shuttle, means for connecting the oscillating means with the ball moving means, a spring in connection with the shuttle for operating said connecting means, said spring being ar-
45 ranged in the path of movement of the

thread passing from the shuttle and adapted to be moved out of operative position when the shuttle is supplied with thread.

4. In a sewing machine, an oscillating shuttle, a thread receptacle within the shut- 50 tle, said shuttle and receptacle being provided with normally registering openings for permitting the passage of a ball of thread, a magazine for supplying the balls of thread, means for moving balls of thread 55 from the magazine into the receptacle, means for oscillating the shuttle, normally inoperative means for connecting the oscillating means with the ball moving means, means for operating the connecting means, and 60 means controlled by the passage of the thread from the receptacle, for restraining the operation of the means for operating the connecting means.

5. In a sewing machine, an oscillating 65 shuttle, a thread receptacle within the shuttle, means for supplying balls of thread in succession to the receptacle, means for oscillating the shuttle, means for connecting the oscillating means with the ball supplying 70 means whereby to operate the same, normally active means for actuating the connecting means to connect the oscillating means with the ball supplying means, and means controlled by the passage of the 75 thread from the receptacle for restraining the operation of the said normally active means.

6. In a sewing machine, an oscillating shuttle, means for oscillating the shuttle, 80 normally inoperative means for supplying thread to the shuttle, means for actuating the supplying means, and means operated by the passage of thread from the shuttle to restrain the said actuating means from op- 85 eration.

WILLIAM PEPPERLING.

Witnesses:

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