

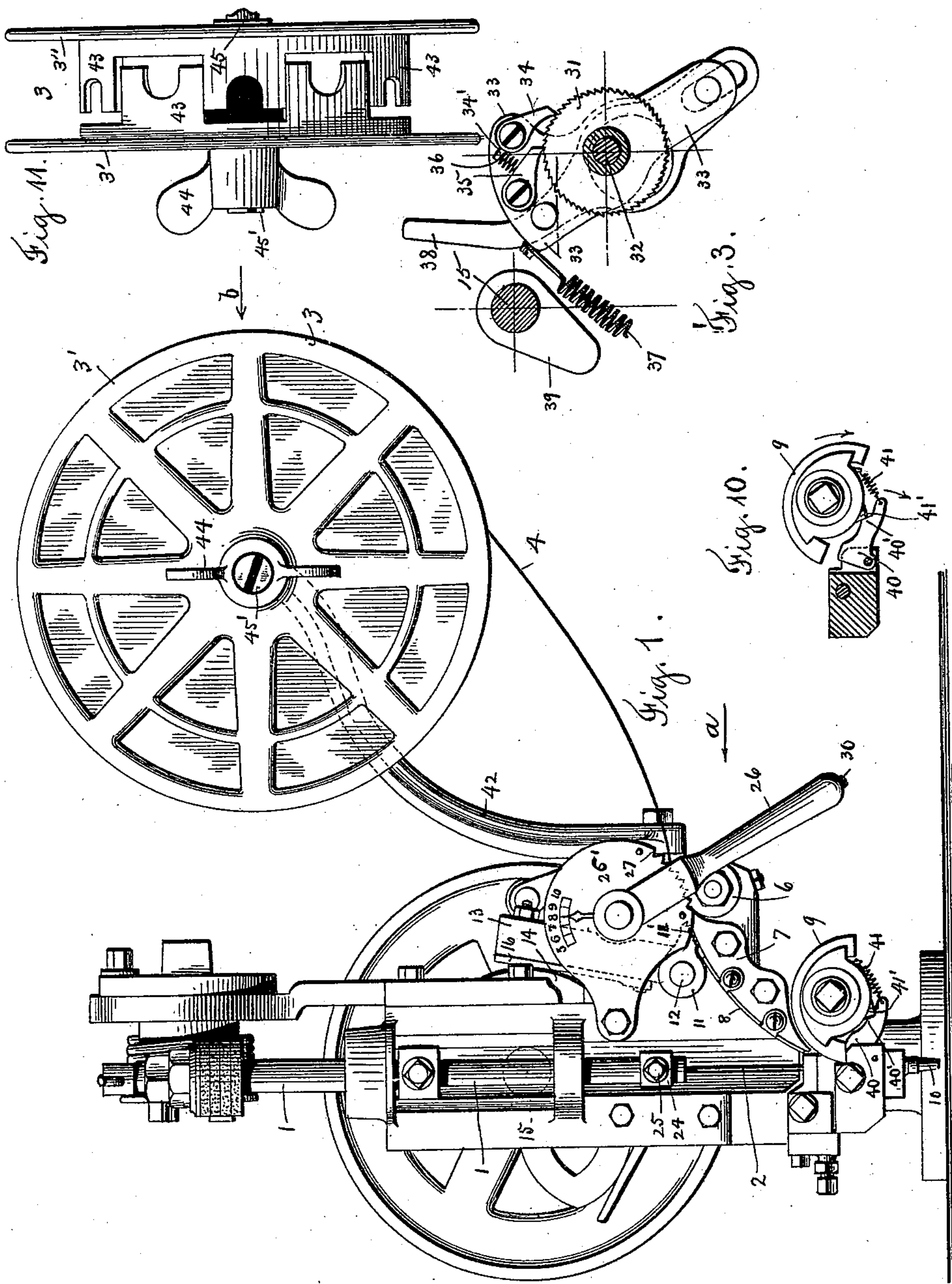
(No Model.)

3 Sheets—Sheet 1.

J. E. WEATHERWAX.  
TACKING MACHINE.

No. 554,470.

Patented Feb. 11, 1896.



Witnesses  
Chas. F. Smith  
M. J. Galvin

Inventor  
J. E. Weatherwax,

By Attorney  
John C. Devey.

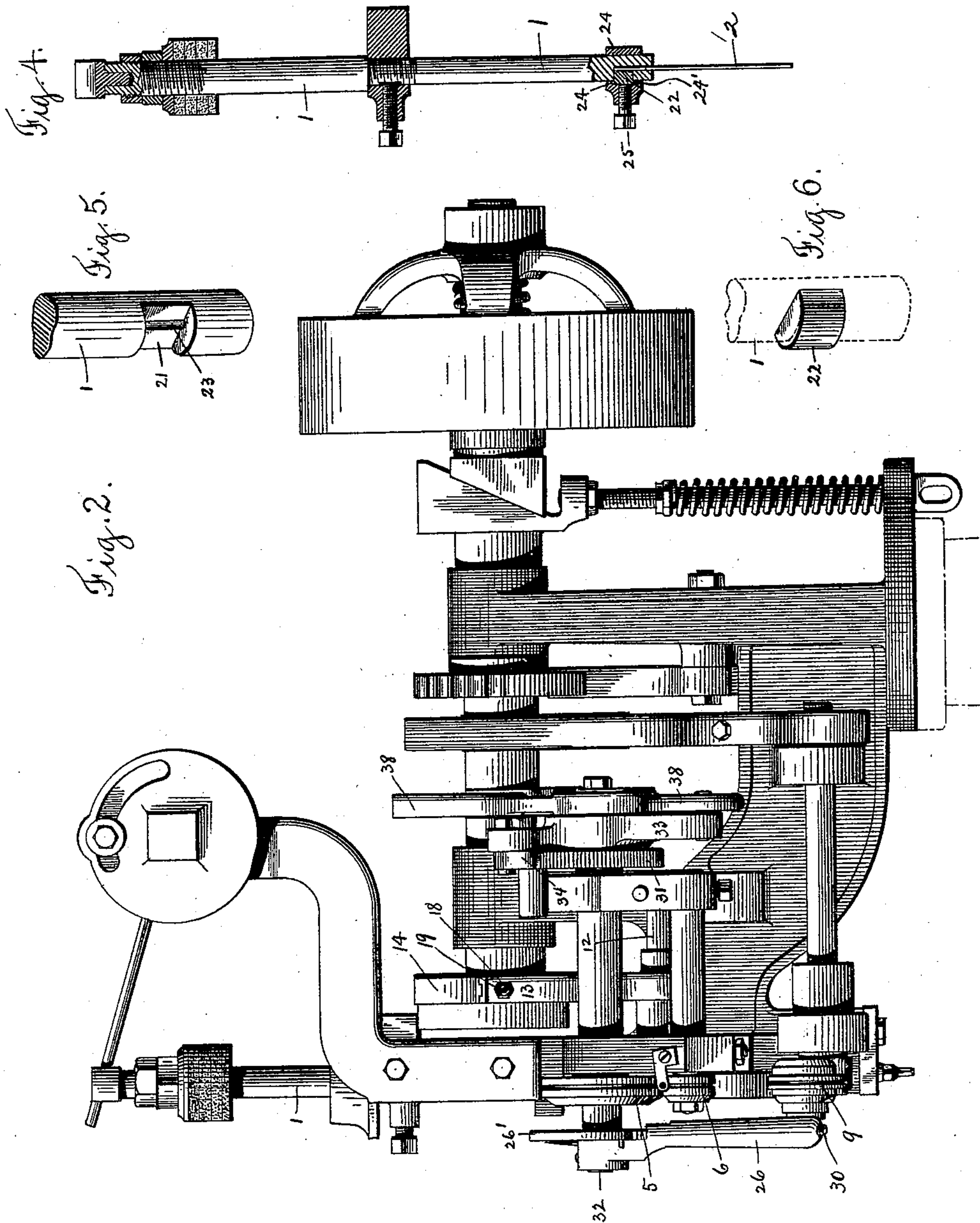
(No Model.)

3 Sheets—Sheet 2.

J. E. WEATHERWAX.  
TACKING MACHINE.

No. 554,470.

Patented Feb. 11, 1896.



Witnesses  
Chas. F. Schuch  
M. J. Galvin.

Inventor  
J. E. Weatherwax,

By Attorney  
John C. Dewey.



(No Model.)

3 Sheets—Sheet 3.

J. E. WEATHERWAX.  
TACKING MACHINE.

No. 554,470.

Patented Feb. 11, 1896.

Fig. 7.

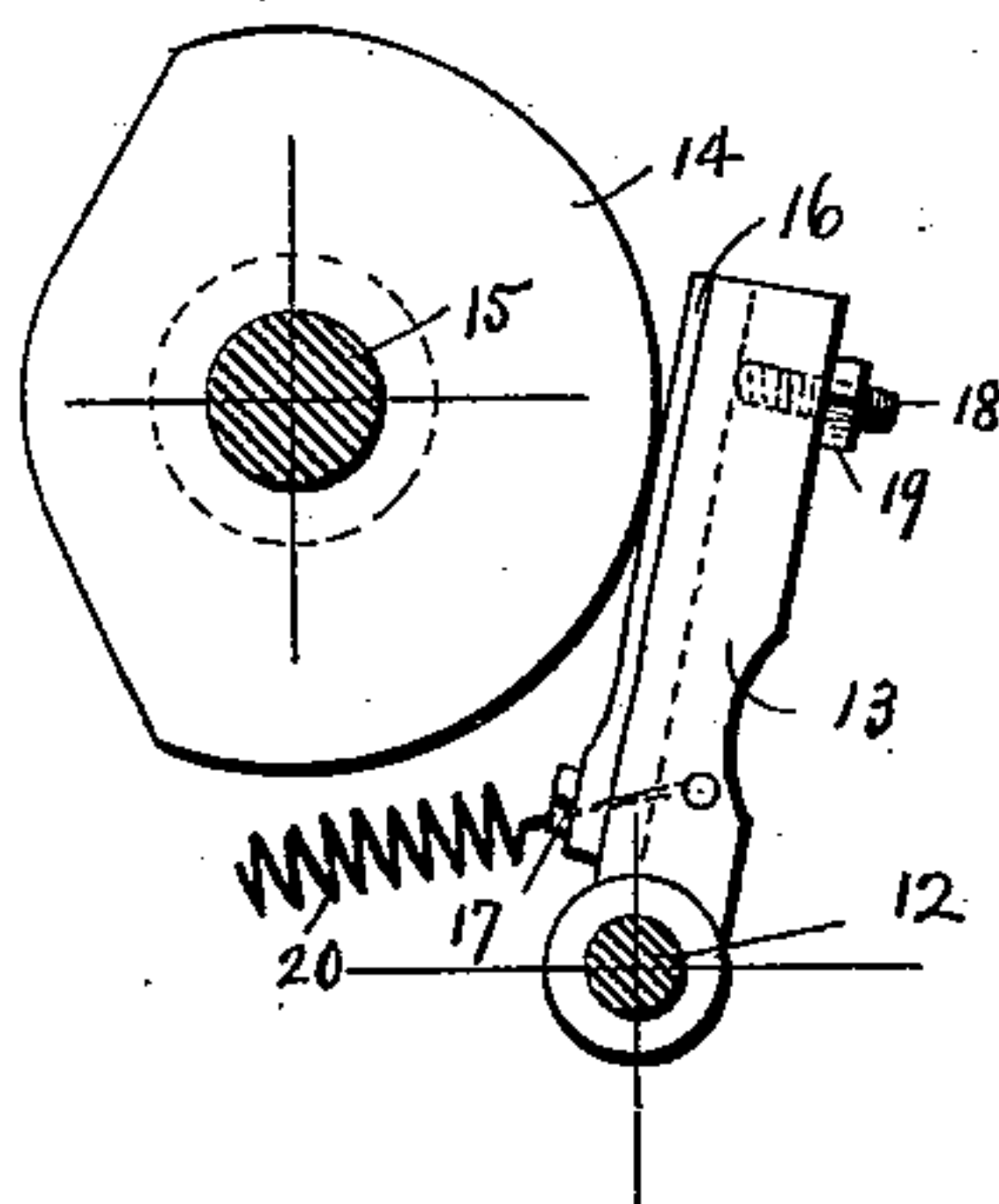


Fig. 8.

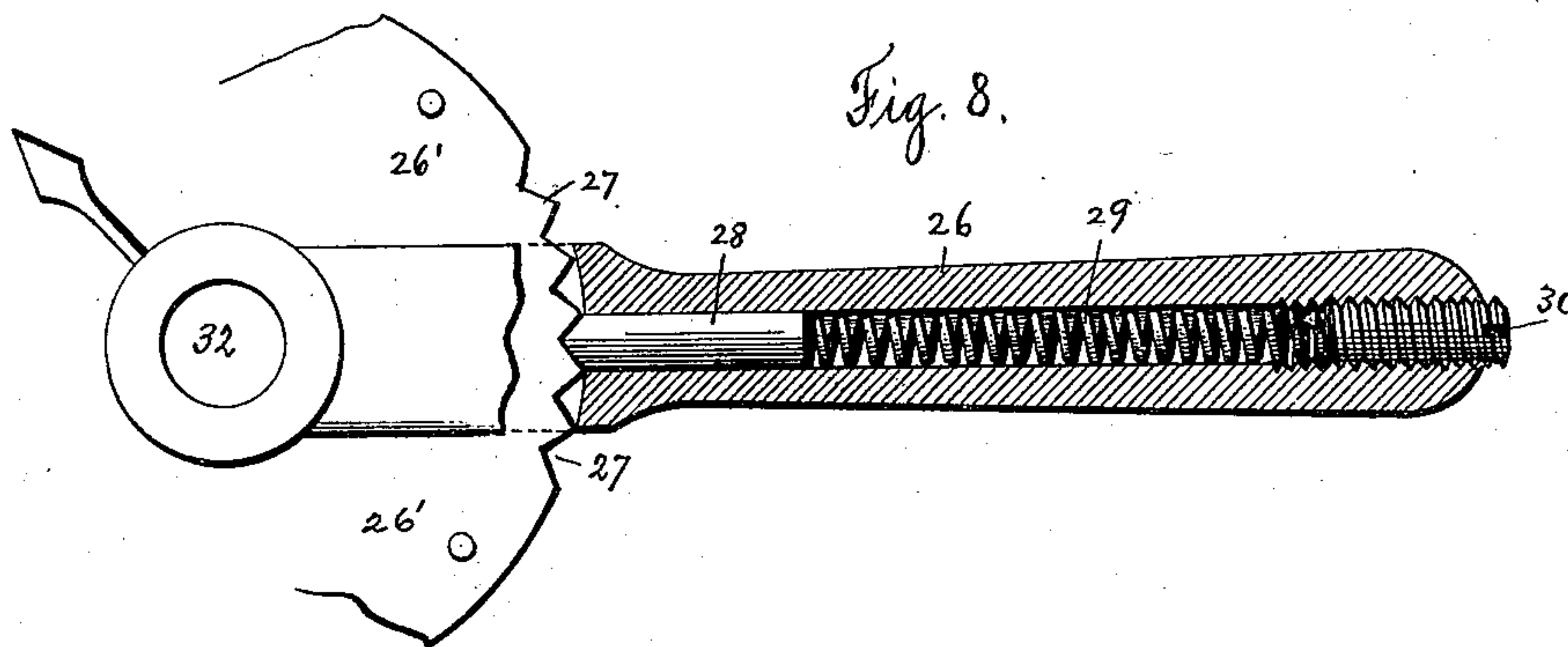
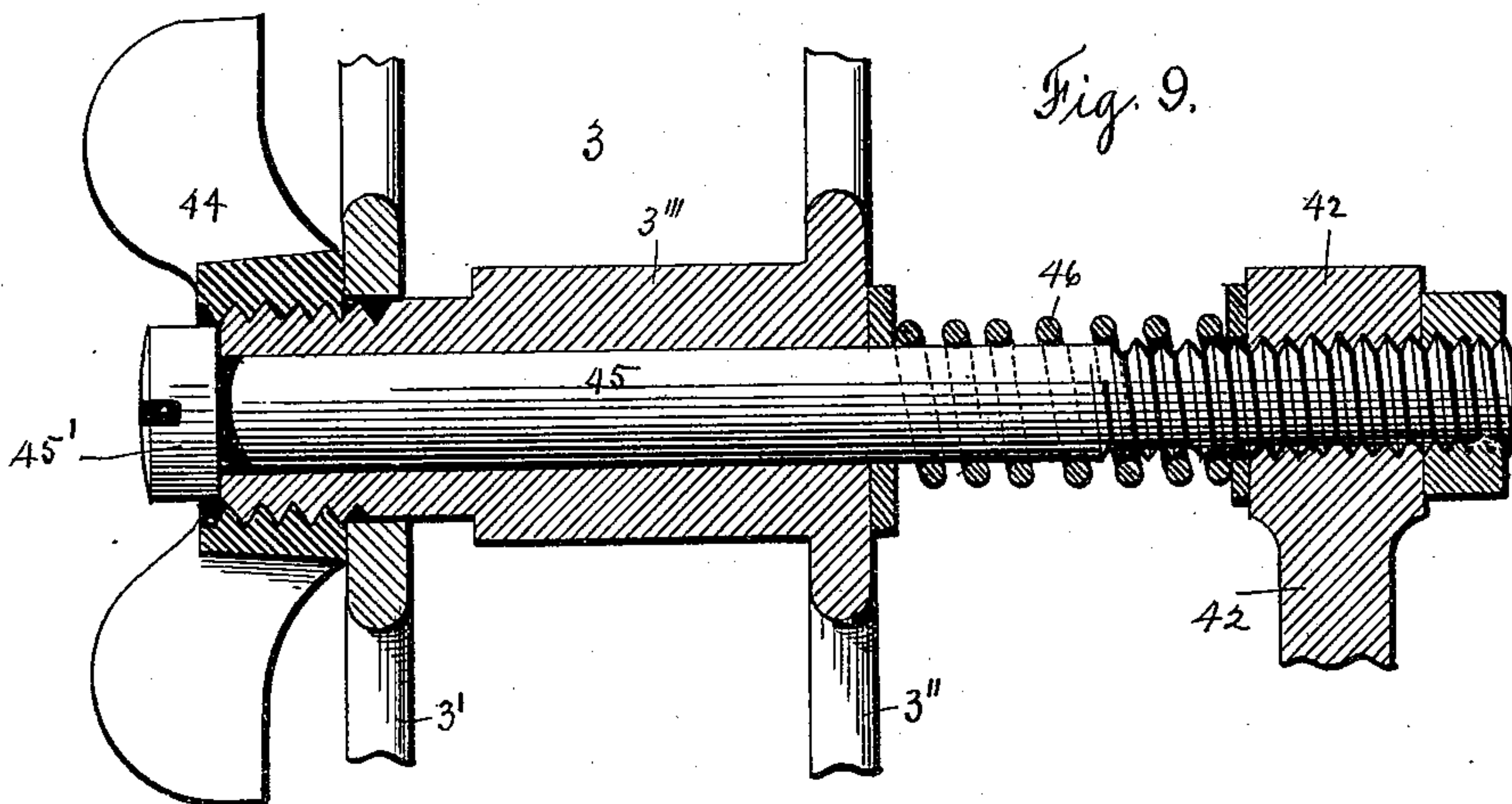


Fig. 9.



Witnesses  
Chas. F. Fennell  
M. J. Balwin

Inventor  
J. E. Weatherwax,

By Attorney  
John E. Dewey.



# UNITED STATES PATENT OFFICE.

J ENSIGN WEATHERWAX, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO  
RUTH L. HOWARD, OF SAME PLACE.

## TACKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 554,470, dated February 11, 1896.

Application filed August 19, 1895. Serial No. 559,722. (No model.)

*To all whom it may concern:*

Be it known that I, J ENSIGN WEATHERWAX, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tacking-Machines, of which the following is a specification.

My invention relates to tacking-machines of the class described and shown in United States Letters Patent No. 467,665, dated January 26, 1892, and particularly to certain improvements on the tacking-machine shown and described in said patent. It has been found in practice that some of the parts of said tacking-machine fail to operate in a proper manner, particularly the grip for holding the wire while it is being cut off by the cutter. In said patent the grip is spring-actuated, and in my improvement I provide a positive grip for the wire. I also provide an improved way for attaching the driver to the plunger by means of a detachable block. I also provide an improved way of locking the adjusting-lever to the graduated disk, for varying the length of the nails. I also provide an extra pawl for the ratchet-wheel of the wire-feed mechanism, to reduce any variation in the length of the nail. I also provide a spring combined with the device which lifts the nail and holds it in a vertical position, said spring acting to bring said device into a position to lift or move the nail into a vertical position. I also provide an improved construction of the reel, on which coils of wire of varying thickness or width may be placed and held without changing the action of the friction-spring on the reel, so that the wire will always be drawn off evenly.

My invention consists in certain novel features of construction of the parts of the machine above referred to, and in combining the same with said patented machine, as will be hereinafter fully described.

I have shown in the drawings the tacking-machine shown and described in said Patent No. 467,665, with my improvements applied thereto, and substituted for corresponding parts shown and described in said patent.

Referring to the drawings, Figure 1 is a

front elevation of the machine. Fig. 2 is a side elevation looking in the direction of arrow *a*, Fig. 1. The wire-reel and supporting-arm are left off in this figure. Fig. 3 is a detail of a portion of the wire-feed mechanism. Fig. 4 is a sectional detail of the plunger and driver. Fig. 5 is a detail of a portion of the plunger. Fig. 6 is a detail of the detachable block which secures the driver to the plunger. Fig. 7 is a detail of a portion of the grip mechanism for holding the wire. Fig. 8 is a sectional detail of the adjusting and locking lever and the graduated disk. Fig. 9 is a sectional detail of a portion of the wire-reel. Fig. 10 is a detail of the cutter and the mechanism which lifts and holds the tack in a vertical position; and Fig. 11 is an edge view of the reel, looking in the direction of arrow *b*, Fig. 1. Figs. 4, 5, 6, 8, and 9 are shown on an enlarged scale.

The machine shown in the drawings is of the same construction and operation as the machine shown in said Patent No. 467,665, with the exception of my improvements substituted for corresponding parts of said patented machine, and as the construction and operation of said machine is well known it is not necessary to give a description thereof, except sufficient to illustrate the nature of my improvements applied thereto. For a detail description of said machine and the operation thereof reference is made to said Patent No. 467,665.

In the accompanying drawings, 1 is a vertical plunger carrying the driver 2. Said plunger is operated in the usual and well-known manner.

3 is the reel which carries the coil of wire from which the nails are made. The wire 4 passes between grooved feed-rolls 5 and 6 of the ordinary construction and operation, onto the race 7, beneath a thin metal cap 8, secured to said race 7, as shown in Fig. 1, to the reciprocating circular cutter 9, which is of the same construction and operation as set out in said patent. The desired length of the wire is cut off by said cutter to form the nail, which is driven into the shoe-sole, held at the lower end of the throat 10, by the driver in the usual way.



I will now proceed to describe my improved construction of some of the parts of said machine, as referred to above.

I will first describe the grip mechanism for holding the wire while it is being cut by the cutter. As stated above, the grip device in said patented machine is spring-actuated to apply a yielding force to the wire. My improved grip device is not spring-actuated.

Referring to Fig. 1, the grip 11 is fast on the rock-shaft 12 and is provided with a serrated end 11', which, when it is desired to grip the wire, is forced into contact therewith, as it rests on the nail-race 7, by means of an arm or lever 13, extending up from and fast on said rock-shaft 12. (See Fig. 7.) The rock-shaft 12 and grip 11 are operated, through the arm 13, by a cam 14, fast on the driven shaft 15. In order to provide for any wear of the arm 13, which is in contact with the cam 14, I provide a removable plate 16 of hardened steel, which is set into a longitudinal groove in the front edge of the arm 13 and secured therein at its lower end by a screw 17 and adjustable in or out at its upper end by a screw 18 and a nut 19. A spring 20 acts to keep the arm or lever 13 in engagement with the cam 14. (See Fig. 7.)

It will thus be seen that I communicate a positive motion to the grip 11 to hold the wire, and I provide for any wear of the parts by means of the adjustable plate 16 in the arm 13.

I will now describe my improved way of attaching the driver to the plunger.

It has been found in practice that the driver, when it breaks, will always break at its point of attachment to the plunger, and where it is difficult to get at it to remove it and substitute another driver. In my way of attaching the driver to the plunger I am enabled to quickly detach the driver from the plunger for any purpose. I provide a transverse notch or cut-out portion 21 on one side of the plunger, at the lower part thereof, and into said notch I fit a detachable block 22, of cylindrical shape in cross-section, which is a little thicker than the depth of the notch 21, so that when said block is inserted in said notch it will be supported therein and the outer curved surface thereof will extend slightly beyond the surface of the plunger, as shown in Fig. 4.

The upper end of the driver 2 is inserted in a central hole 23 in the lower end of the plunger 1, and the block 22 is inserted in the notch 21 with its inner straight face bearing against the upper end of the driver on one side thereof. A collar 24, provided with a set-screw 25, is mounted on the lower end of the plunger 1, but is adapted to slide up thereon, as shown in Fig. 4. The lower part of said collar is cut out, as shown at 24', to allow the collar to slide up by the block 22.

When it is desired to insert or remove the driver, the screw 25 is loosened, and the collar 24 pushed up on the plunger 1 to free the block 22. The end of the driver 2 may be

withdrawn from the hole 23 in the plunger 1. To secure the driver to the plunger, the end thereof is inserted in the hole 23, and the block 22 placed in the notch 21, and the collar 24 moved down on the plunger to extend over the block 22. The screw 25 is then screwed in to bind the block 22 against the upper end of the driver 2.

It will thus be seen that in my improved way of attaching the driver to the plunger said driver may be quickly and readily removed from or attached to the plunger.

I will now describe my improved way of locking the adjusting-lever, the movement of which varies the length of the nails to the graduated disk.

In said Patent No. 467,665 the graduated disk, corresponding to the disk 26', is provided with a series of holes or depressions in the front face thereof, and the lever or arm 26, corresponding to the arm or lever of said patent, is provided with a spring-actuated lever carrying a pin, which registers with the holes in said disk. It has been found in practice that the pin fails to enter said holes, and thus allows the lever or arm to move up or down, thus varying the length of the nails and causing the machine to work improperly.

In my improved construction of the adjusting lever or arm, I do away with the holes or depressions in the disk, and the spring-actuated pin registering therewith, and provide a series of teeth or indentations 27 on the edge of the graduated disk 26', into which the beveled end of a spring-actuated pin 28, carried within the handle of the arm or lever 26, is adapted to extend to hold said arm in the desired position. The pin 28 is actuated by a spring 29, extending within a central hole in the handle of the lever 26. A screw 30 is screwed into the end of said handle and regulates the tension of said spring on the pin 28.

It will thus be seen that I provide a very simple and efficient device for locking the adjusting-lever of the mechanism for varying the length of the nails to the graduated disk.

I will now describe my improved construction of the ratchet-feed mechanism.

In my improved construction, I provide an extra pawl for the ratchet-wheel of the wire-feed mechanism, as shown in Fig. 3. Referring to said figure, 31 is a ratchet-wheel fast on the shaft 32 of the feed mechanism. 33 is an arm loose on said shaft and carrying the two pawls 34 and 35 pivoted on the upper end thereof and held in engagement with the teeth of the ratchet-wheel 31 by a single spring 36, which bears at one end against the heel 34' of the pawl 34 and at its other end against the pawl 35. A spring 37 acts to keep the arm 33 in its rearward position. The arm 33, carrying the pawls 34 and 35, is operated to operate the ratchet-wheel 31 and turn the feed-shaft 32 by an adjustable lever 38, which is engaged at its upper end by a cam 39 on the shaft 15, in the same manner as set out in said patent. By means of the two pawls



34 and 35, I am enabled to hold the ratchet and prevent any backward movement of the same to make a variation in the length of the nails, as said pawls are so placed that the end of one will extend into the teeth in the ratchet-wheel when the other one is at an intermediate point, as shown in Fig. 3.

In the tacking-machine shown and described in United States Letters Patent No. 467,665, above referred to, it has been found in practice that the mechanism for placing the nail in a vertical position (shown in Fig. 8 of said patent) is not entirely satisfactory in its operation, and by reason of the wear of some of the parts the same are inoperative. In my improved construction I provide the lever or piece 40, corresponding to the piece 17 of said patent, with a spring 41, which acts to move the piece 40 into position to place the nail in a vertical position. I also provide the upper edge of said piece 40, near its lower end, with a projection 40', which is engaged by a cam 41' on the cutter-shaft to move said piece 40 down to its lowered position, as shown in Fig. 10, when the wire is being fitted to the cutter. By this construction I prevent any wear of the upper edge of the piece 40 and am thus enabled to cause the nail to always be moved into the same vertical position.

I provide an improved construction of the reel, on which the coils of wire are placed from which the nails are cut.

The object of my improvement is to make the reel in such a manner that coils of wire of varying thickness or width may be placed and held on the reel without changing the action of the friction-spring on the reel, so that the wire will always be drawn off evenly, as above stated. The reel 3 is supported on the outer end of the arm 42, bolted to the frame of the machine. Said reel consists of two side pieces or heads 3' and 3'', each of which is provided with inwardly-extending portions 43, which interlock, as shown in Fig. 11, to form an even surface upon which the coil of wire is supported. One of the sides or heads, as 3'', of the reel 3 is provided with an inwardly-extending hub 3''', which is turned down, or of less diameter at its outer end, and made screw-threaded, as shown in Fig. 9, and upon the outer end of said hub is mounted the other side or head 3' of the reel 3, which side is held thereon by a thumb-screw 44. Said thumb-screw 44 presses against said side 3' to cause the inwardly-extending projections thereon to interlock with the projections on the other side, 3''. A bolt 45 extends loosely through the hub 3''' and is screwed at its inner end into the upper end of the supporting-arm 42. A coiled expansion-spring 46 extends between the upper end of the arm 42 and the inner surface of the head 3'' of the reel 3, as shown in Fig. 9, and one end of said spring bears against the stationary arm 42 and the other end against the inner side of the reel, loosely mounted on the

bolt 45, to bind said reel between said spring 46 and the head 45' of the bolt 45, against which head the projecting end of the hub 3''' of the reel bears, as shown in Fig. 9, thus putting friction on the reel and causing the same to turn evenly as the wire is unwound therefrom.

It will be seen from the above description of the reel that in case a thicker coil is placed on the reel the thumb-nut 44 can be turned off somewhat, to allow the head or side 3' to move away from the head 3'' to widen the reel, without varying the friction of the spring 46 on the reel, for the thumb-screw 44, turning on the hub 3''' of the reel, instead of on the supporting-bolt 45, as is usually the case, allows the head or side 3' of the reel 3 to be moved in or out, leaving the other side or head 3'' in the same position, and this has been found to be of considerable advantage in the practical operation of the machine.

The advantages of my improvements will be readily appreciated by those skilled in the art.

It will be understood that the details of construction of some of the parts of my improvements may be varied somewhat, if desired.

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

1. In the grip mechanism of a tacking-machine, the combination with the nail-race 7, upon which the wire, from which the nail is cut, rests, of the movable grip 11 fast on the rock-shaft 12, and means for operating said grip 11 to communicate a positive motion thereto, consisting of an arm or lever 13 extending up from and fast on said rock-shaft 12, and a cam 14 fast on a driven shaft 15, substantially as set forth.

2. In the grip mechanism of a tacking-machine, the combination with the nail-race 7, upon which the wire, from which the nail is cut, rests, of the movable grip 11 fast on the rock-shaft 12, and means for operating said grip 11 to communicate a positive motion thereto, consisting of an arm or lever 13 extending up from and fast on said rock-shaft 12, said arm or lever 13 provided with a removable plate 16 extending in a longitudinal groove in the front edge of said arm or lever, and adapted to be moved in or out at its upper end, and to be engaged by a cam 14 fast on the driven shaft 15, and said cam, substantially as set forth.

3. In the grip mechanism of a tacking-machine, the combination with the nail-race 7, upon which the wire, from which the nail is cut, rests, of the movable grip 11 fast on the rock-shaft 12, and means for operating said grip 11 to communicate a positive motion thereto, consisting of an arm or lever 13 extending up from and fast on said rock-shaft 12, said arm or lever 13 provided with a removable plate 16 extending in a longitudinal groove in the front edge of said arm or lever, and secured therein at its lower end by a



screw 17, and adjustable in or out at its upper end by a screw 18 and a nut 19, and a spring which acts to keep the arm or lever 13 in engagement with its operating-cam 14, substantially as set forth.

4. In a tacking-machine of the class described, the combination with the graduated disk 26', provided with a series of teeth 27 on the edge thereof, of the movable arm or lever 26 secured on the shaft 32, and having the handle portion thereof provided with a central longitudinal opening in which extends a pin 28, the end of which is adapted to engage with the teeth in the disk 26', and a spiral spring inclosed in said opening, and bearing at one end against said pin, and at its other end against an adjusting-screw, and said screw, adapted to be turned in or out in said central opening to vary the tension of the spring on the pin, substantially as set forth.

5. In a tacking-machine, the combination with the ratchet-wheel of the wire-feed mechanism, of an arm carrying two pawls for actuating said ratchet-wheel, said pawls held in engagement with said ratchet-wheel by a single spring interposed between the heel of one pawl and the front portion of the other pawl, substantially as set forth.

6. In a tacking-machine of the class described, the combination with the pivoted device which acts to lift the nail and hold it in a vertical position, said device provided with a cam portion at its lower portion, of a spring which acts to bring said device into a position to move the nail into a vertical position, and a cam which operates to lower the device against the action of said spring, substantially as set forth.

7. In a friction-reel for supporting a coil of wire, the combination with the headed shaft or bolt on which the reel is loosely mounted, and a spring mounted on said shaft or bolt and adapted to bear at one end against a stationary or fixed point, and at its other end

against the reel, to apply friction thereto, of the two side pieces or heads of the reel provided with inwardly - extending portions which interlock, and one of the heads provided with a laterally-extending hub loosely mounted on the supporting-bolt, and bearing at one end against the head of said bolt, and the other side or head loosely mounted on said hub, and a thumb-screw which turns on a thread on the end of said hub, and is adapted to be screwed on or off, to adjust the position of the movable side or head of the reel, to vary the width of the reel without varying the friction of the spring thereon, substantially as set forth.

8. In a friction-reel, the combination with a supporting-arm, and a bolt secured at one end in said arm, and provided at its other end with a head, and a spring mounted on said bolt, and bearing at one end against said stationary arm, and at its other end against the reel, loosely mounted on said bolt, of said reel, consisting of two side pieces or heads, as 3', and 3'', each of which is provided with inwardly-extending portions which interlock to form an even surface upon which the coil of wire is supported, and one of said heads, as 3''—provided with a hub 3''' loosely mounted on the supporting-bolt, with its outer end adapted to bear against the head of the bolt, and provided with a screw-thread upon which is loosely mounted the other side or head, as 3', which is held thereon by a thumb-screw adapted to be turned on or off of the threaded portion of said hub, to move the side or head 3' toward, or away from the side or head 3'', to vary the width of the reel, without varying the action of the friction-spring thereon, substantially as set forth.

J ENSIGN WEATHERWAX.

Witnesses:

JOHN C. DEWEY,  
M. J. GALVIN.