

May 6, 1930.

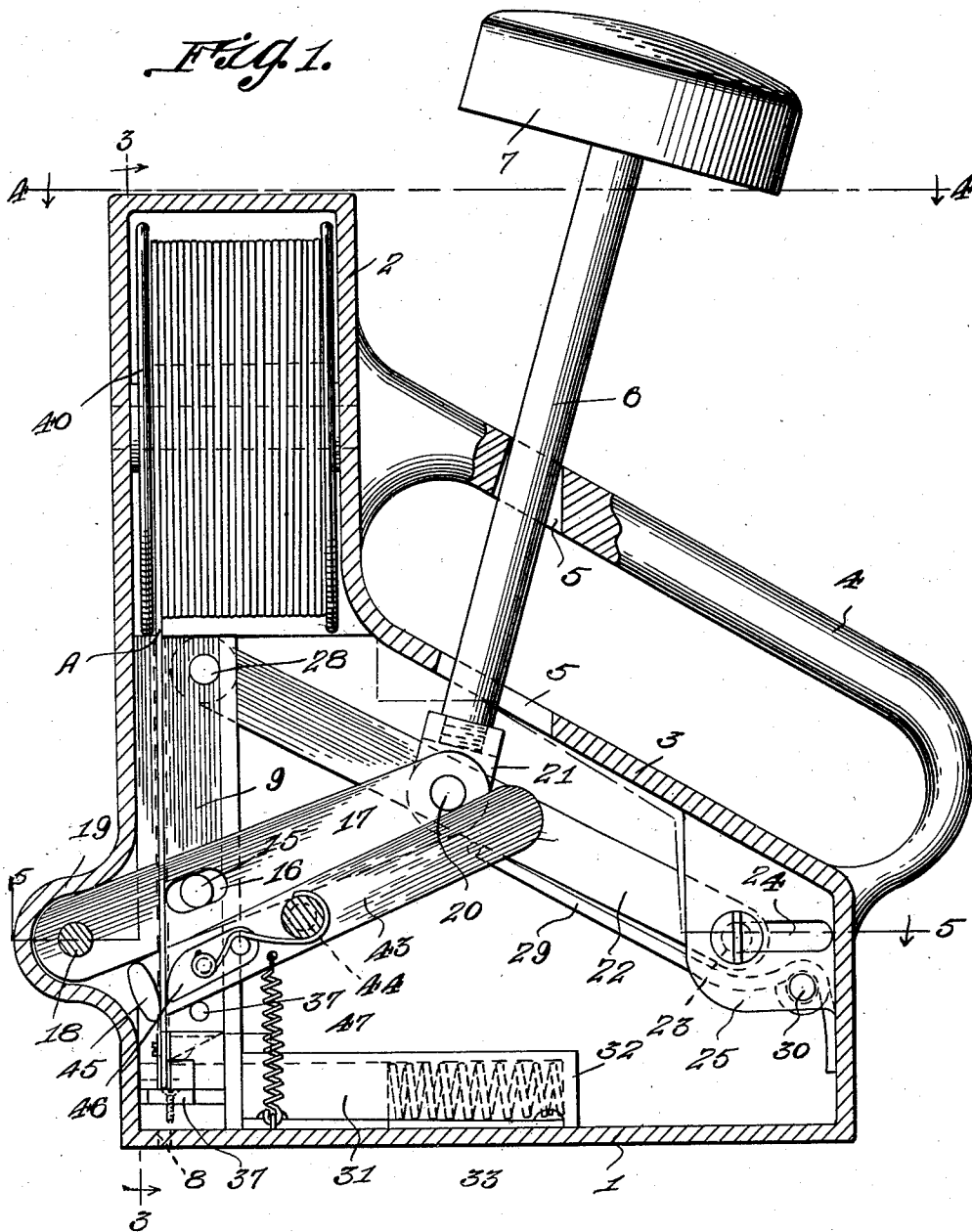
F. L. ST. HILAIRE

1,757,883

STAPLING MACHINE

Filed Oct. 19, 1928

4 Sheets-Sheet 1



Frank L. St. Hilaire,
INVENTOR

INVENTOR

BY *Victor J. Evans*

ATTORNEY

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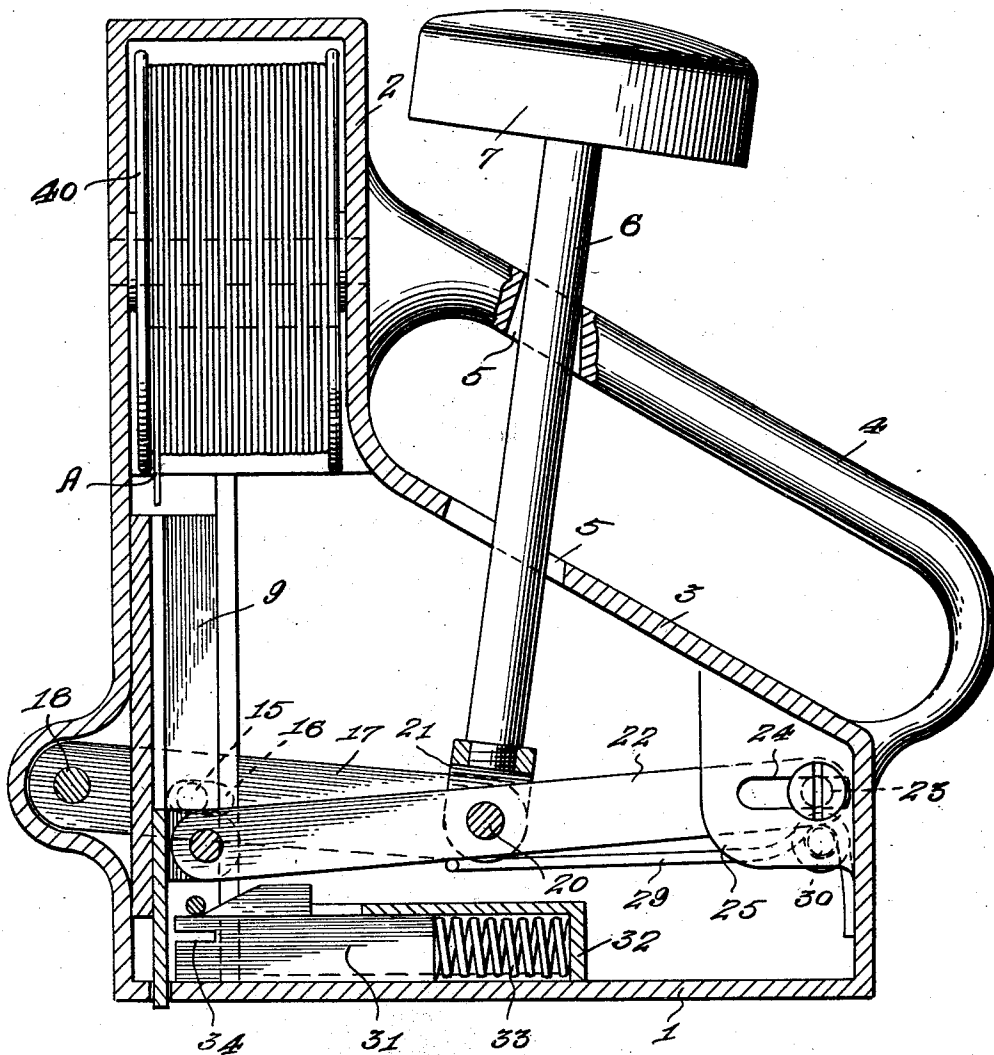
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Fig. 2.



Frank L. St. Hilaire
INVENTOR

BY *Victor J. Evans*
ATTORNEY

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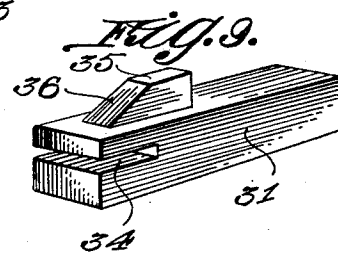
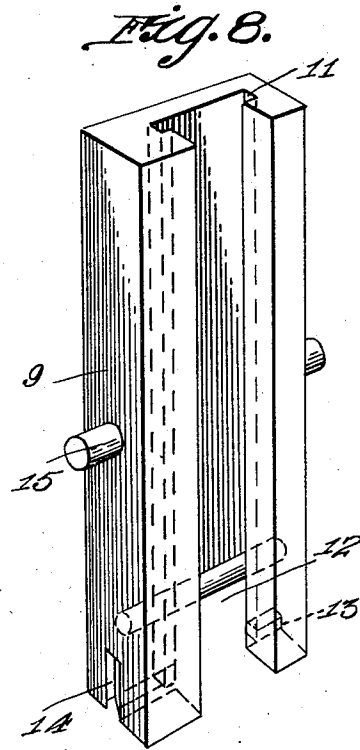
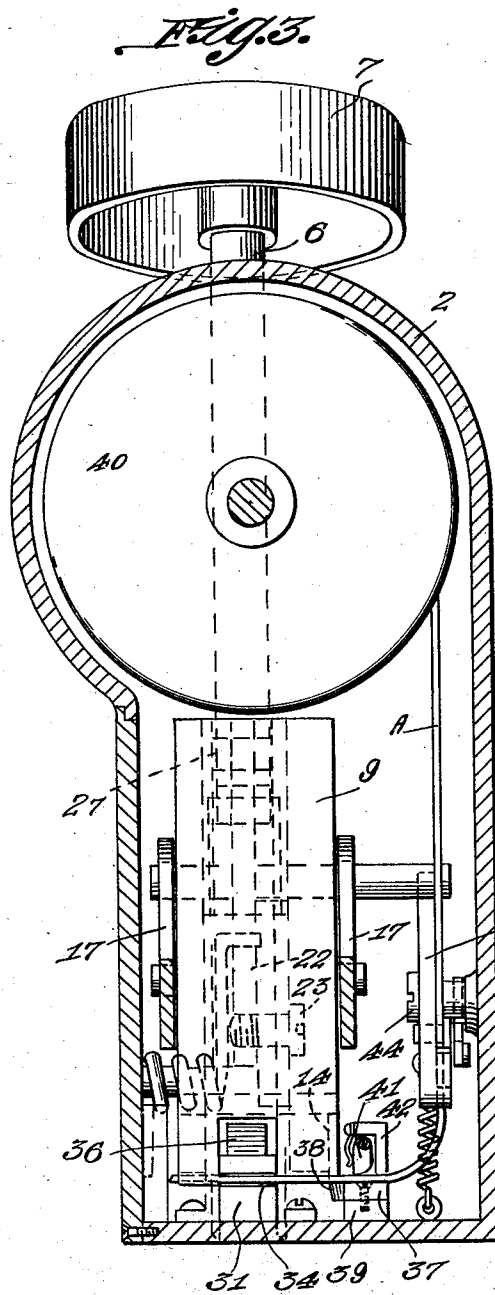
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4 Sheets-Sheet 3



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INVENTOR

BY Victor J. Evans
ATTORNEY

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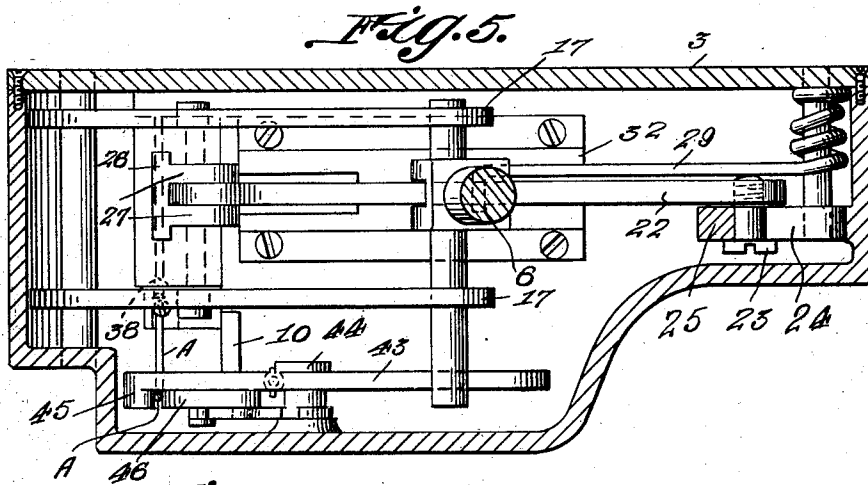
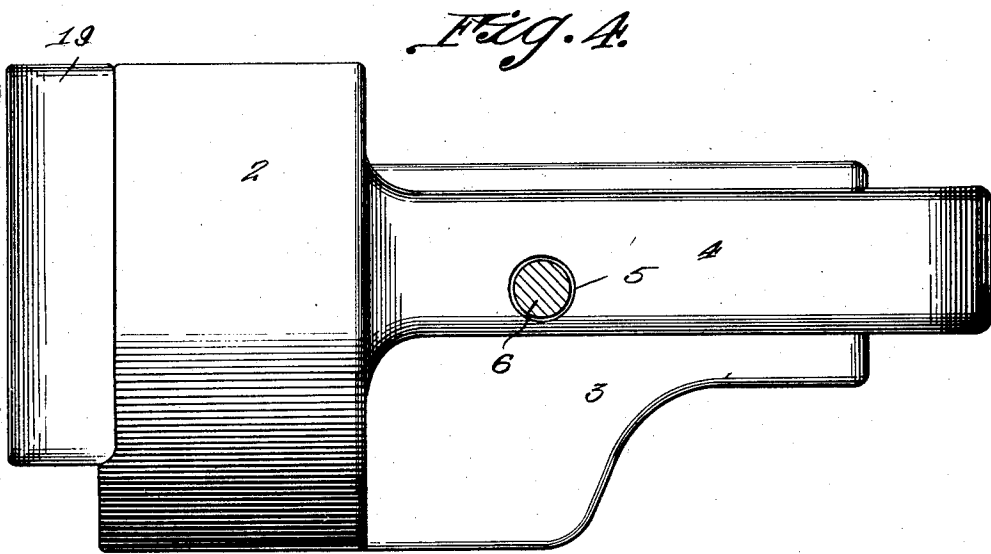


Fig. 6.

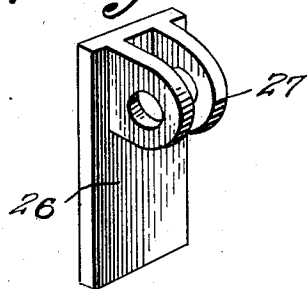
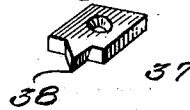


Fig. 7.



Frank L. St. Hilaire
INVENTOR

BY Victor J. Evans
ATTORNEY

UNITED STATES PATENT OFFICE

FRANK L. ST. HILAIRE, OF CINCINNATI, OHIO

STAPLING MACHINE

Application filed October 19, 1928. Serial No. 313,574.

This invention relates to a stapling machine, the general object of the invention being to provide a small casing provided with a handle and in which is located a reel containing wire and means also within the casing for forming staples from the wire and driving the staples into an object, with a plunger passing through the upper part of the casing for operating the interior parts whereby staples are formed from the wire and driven into an object by the actuation of the plunger so that the staples can be formed without loss of wire and in the minimum amount of time and the device can be reloaded easily and quickly, as it is simply necessary to place more wire on the reel after the wire has been used therefrom.

Another object of the invention is to so arrange and construct the interior parts that they can be placed in a small casing which can be easily handled, and each staple is formed and driven by one operation of the plunger.

The invention is mainly designed for attaching window shades to rollers, though it will, of course, be understood that it can be used for other purposes.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a vertical sectional view through the device.

Figure 2 is a similar view but showing the parts in lowered position.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 1.

Figure 6 is a perspective view of the hammer.

Figure 7 is a perspective view of the cutting die.

Figure 8 is a view of the former member. 55

Figure 9 is a view of the anvil member.

In these views, the numeral 1 indicates a casing which is formed with a reduced upper part 2 and a sloping top part 3 which connects the reduced part with the wide part. A handle 4 is connected to the reduced part and the wide part and parallels the sloping wall 3. This wall 3 and the handle are formed with the openings 5 through which passes the shank 6 of a plunger-like operating member, the upper end of the shank having connected thereto the handle part 7. A small opening 8 is formed in the bottom of the casing adjacent its front side, for the discharge of the staples and a former member 9 is slidably arranged in the top part of the casing, this member operating in the guideways formed by the vertically arranged internal partitions 10. This former member is of channel shape in cross section with its side walls undercut to form the grooves 11, with the lower portions of the flanges extending below the lower end of the bight to form an opening 12. A notch 13 is formed in the lower end of each flange and these notches form right angular extensions of the grooves 11. A short groove 14 is formed in one side of the former member and has a straight wall and a beveled wall so that this groove forms a cutting part. 85

Pins 15 project from the sides of the former member and engage slots 16 formed in the two levers 17 which are pivoted at their front ends to a shaft 18 which is arranged in a recess formed by a projecting part 19 of the front wall of the casing. A shaft 20 passes through the rear ends of these levers and through a head 21 attached to the lower end of the shank 6 so that the levers will be rocked by the movement of the shaft 6, and this rocking movement will move the former member vertically in its guideways. 95

A lever 22 has a pivot 23 at its rear end which passes through a slot 24 in a bracket 25 in the rear part of the casing and this 100

lever is also connected to the plunger 6 by the shaft 20. The front end of the lever is pivotally connected to a hammer 26 slidably arranged in the grooves 11 in the former member and having a pair of perforated ears 27 thereon between which the front end of the lever 22 is located and the pivot pin 28 passes through the perforations in the ears and through the lever. Thus the lever and hammer are also actuated by the movement of the plunger 6. A spring 29, having a part coiled around a pin 30 arranged at the rear of the casing, engages the lower edge of the lever 22, and acts to hold said lever, as well as the levers 17 and the plunger, in raised position.

An anvil member 31 is slidably arranged in a small housing 32 horizontally arranged on the bottom of the casing with its front end open and its rear end closed. A spring 33 in the rear end of the housing 32 holds the anvil member 31 in projected position, with its front end abutting the front wall of the casing so that as the former member is lowered, the opening 12 therein will pass over the front part of the anvil member. This front part of the anvil member is provided with a horizontal slot 34 and a projection 35 on its top which is formed with a beveled front end 36 which will be engaged by a pin 37 carried by the former member during the downward movement of said former member, whereby the anvil member will be forced rearwardly into the housing 32 by said pin engaging the beveled end of the projection, just as the former member completes its downward stroke. This movement of the anvil member is sufficient to move its front end beyond the grooves 11 in the former member so that the lower ends of these grooves will be unobstructed by the anvil member.

A cutting die 37, having a beveled projection 38 thereon, is fastened to a block 39 on the bottom of the casing, with its projection adapted to enter the groove 14 in the former member on the downward movement of said member so that the projection 38 cooperates with the groove 14 to cut the wire, as hereinafter to be described.

The wire A is carried by a reel 40 which is rotatably arranged in the reduced upper part 2 of the casing, and the wire passes downwardly to a point adjacent the bottom of the casing and is then bent and passes horizontally over the die 37 and through the slot 34 in the anvil member, with its free end abutting a side wall of the casing. A spring pressed dog 41 is carried by a support 42 and engages that part of the wire which passes over the die 37. This dog is so arranged that it will act to hold the wire with its free end against the side of the casing, as it prevents retrograde movement of the wire, but permits the feeding movement of the wire. This

feeding movement is imparted to the wire by a lever 43 pivoted intermediate its ends to a side wall of the casing, as shown at 44, with its front end having a lateral projection 45 thereon which bears against a part of the wire and said lever carries a spring pressed pawl 46 which grips the wire between itself and the projection 45 on the downward movement of the front end of the lever, so that this movement of the lever will act to pull some of the wire from the reel and feed it downwardly under the dog 41 and through the slot 34 in the anvil member until its free end strikes a side wall of the casing. On the upward movement of the front end of the lever 43, the pawl gives sufficiently to permit the parts to slide over the wire without exerting a pull thereon and, of course, the dog 41 prevents any movement of the wire while the front end of the lever 43 is moving upwardly. This lever 43 is moved to secure a new grip on the wire by the depression of the plunger, as its rear end extends under the pin 20 so that as the plunger is lowered, the pin 20, engaging the rear end of the lever 43, will rock said lever on its pivot 44 and thus raise the front end of the lever so that the lever will secure a new grip on the wire and then, when the parts, including the plunger, are moved upwardly by the spring 29, a spring 47 connected with the front part of the lever 43 and the bottom of the casing, moves the said front part downwardly and this downward movement will feed another portion of the wire through the slot in the anvil member.

From the foregoing it will be seen that when the plunger is depressed, the downward movement of the levers 15 will move the former member 9 downwardly so that its lower part will straddle the anvil member and the groove 14 is brought over the projection 38 on the die so that the wire is cut at this point. Then the ends of the wire which project from the slot 34 enter the notches 13 and upon further downward movement of the former member, these ends are bent so as to produce the staple and the limbs of the staple pass into the grooves 11. The pin 37 then strikes the beveled end of the projection 35 on the anvil member and moves said member out of the path of the former member, with the staple held in the grooves 11 and unsupported by the anvil member. As the grooves 11 in the former member are in alignment with the opening 8, said staple is held above said opening. Upon further downward movement of the parts, the hammer 26 is caused to strike the staple, due to the downward movement of the front end of the lever 22 and thus the staple is driven into an object against which the part of the casing in the opening 8 is placed. Upon release of the handle or plunger, the springs return the parts to normal position and during this

movement, another portion of wire is fed through the slot in the anvil member so that the device is ready to form another staple.

Thus I have produced a simple and efficient device whereby staples can be formed and driven very rapidly and without waste of material. The device can be easily reloaded as it is simply necessary to refill the reel after the same has been emptied.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claim.

What I claim is:—

A stapling machine comprising a casing having an opening in its bottom and a handle at its top, a plunger passing through the top of the casing, a reel in the upper portion of the casing containing a length of wire, a spring actuated anvil member horizontally arranged in the bottom part of the casing and having a slot in its outer end for receiving a portion of the wire, a former member vertically movable in the casing and having an opening in its lower part for receiving the slotted end of the anvil member when the former member is in lowered position, the side walls of the opening acting to bend the wire passing through the slot in the anvil member into the form of a staple, said former member having grooves therein for receiving the limbs of the staple, said grooves being arranged in alignment with the opening in the bottom of the casing, a beveled projection on the anvil member, a part of the former member for engaging the same for retracting the anvil member as the former member moves downwardly, a hammer sliding in the grooves in the former member, a lever pivoted in the casing and connected with the hammer, a second lever pivoted in the casing and connected with the former member, a wire feeding lever pivoted in the casing, means thereon for feeding the wire downwardly, holding means for the wire for preventing retrograde movement of the same, stationary cutting means for the wire in the lower part of the casing, cutting means on the former member cooperating with the stationary means for severing the wire on the downward movement of the former member, and means for actuating the levers by the plunger.

In testimony whereof I affix my signature.

FRANK L. ST. HILAIRE.