A. R. TIFFANY.

STAPLING MACHINE.

APPLICATION FILED DEC. 9, 1907.

925,531. **Patented June 22, 1909.**

3 SHEETS—SHEET 1.

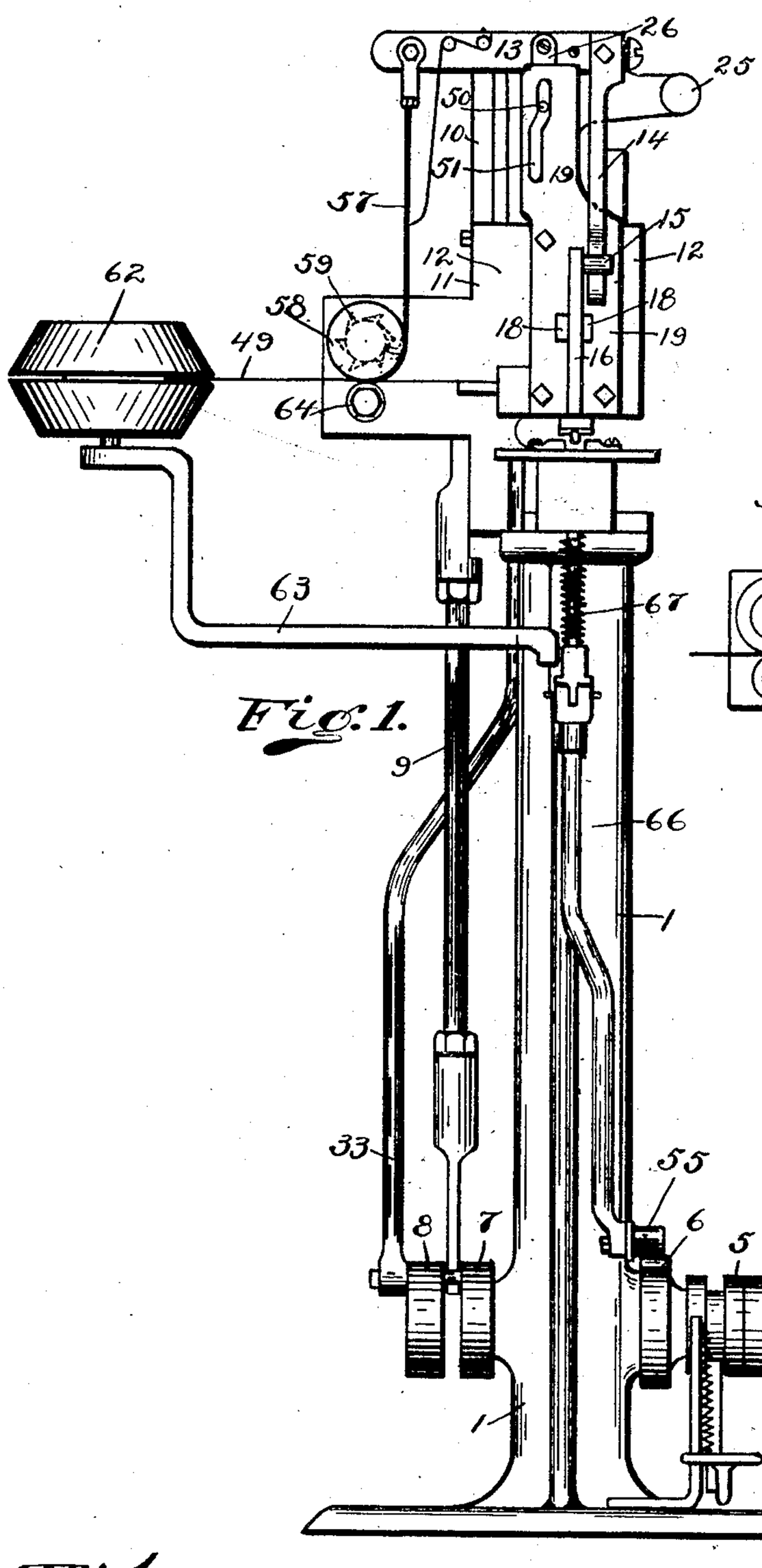

Fig. 1.

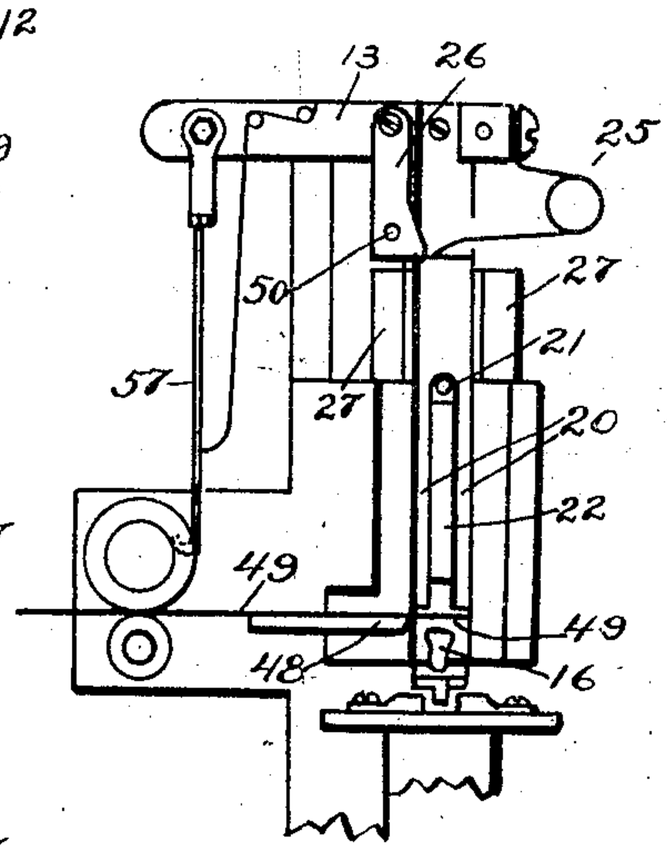

Fig. 2.

Fig. 3.

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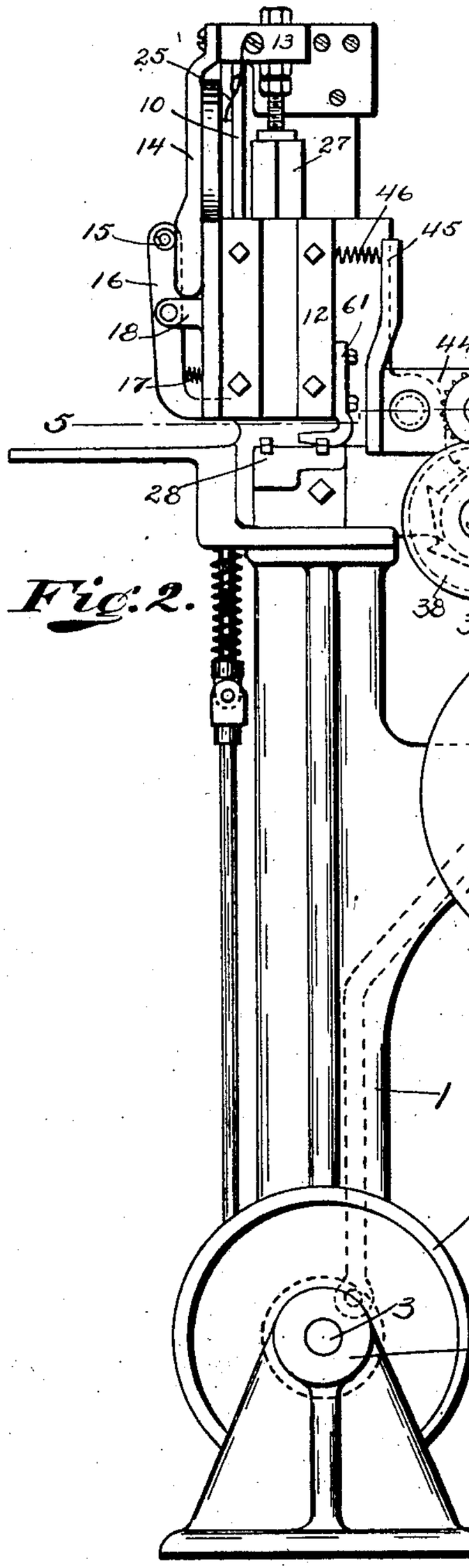

Fig. 2.

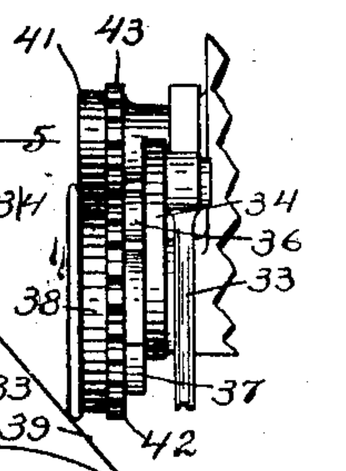

Fig. 4.

Witnesses

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3 SHEETS—SHEET 3.

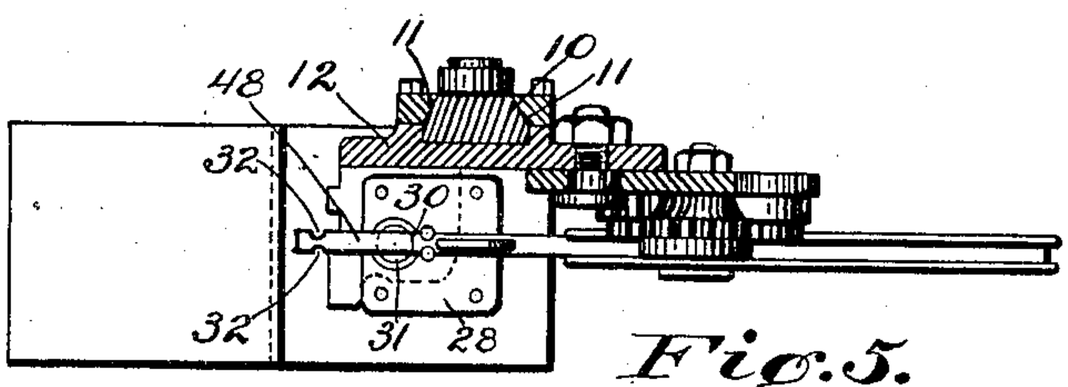

Fig. 5.

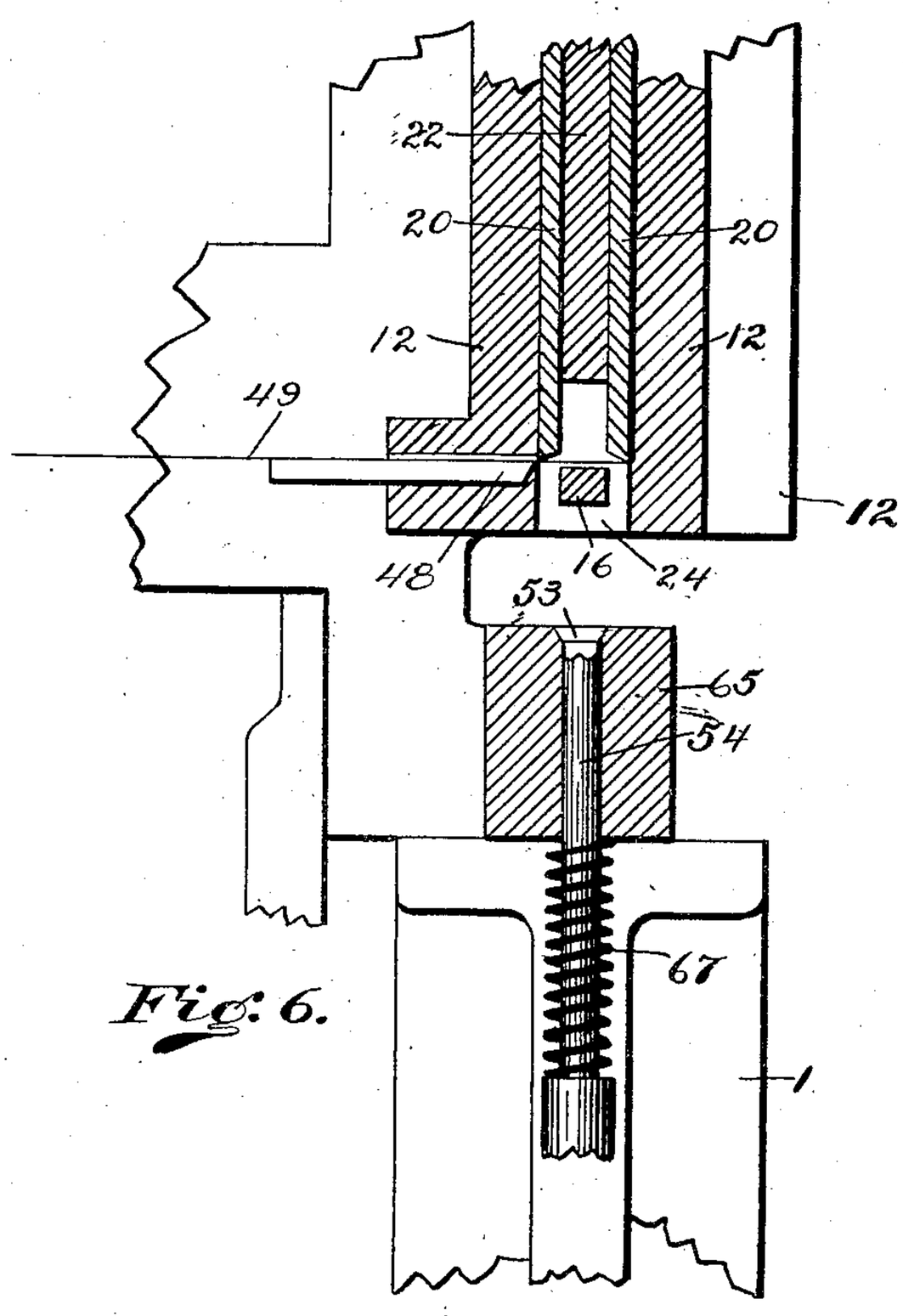

Fig. 6.

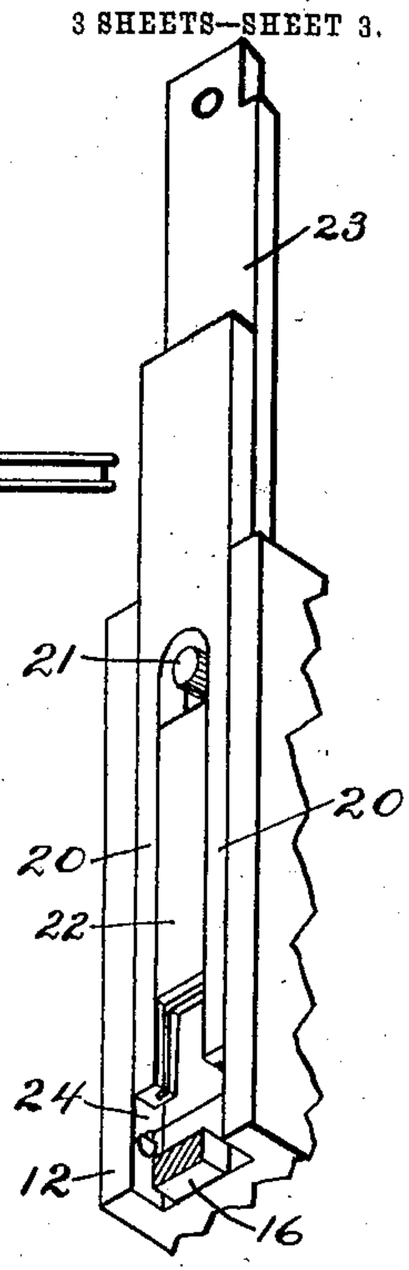

Fig. 7.

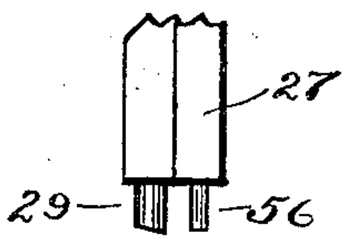

Fig. 8.

Fig. 9.

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UNITED STATES PATENT OFFICE.

ALBERT R. TIFFANY, OF DAYTON, OHIO, ASSIGNOR TO THE O-K PAPER PAIL COMPANY, OF MIDDLETOWN, OHIO, A CORPORATION OF OHIO.

STAPLING-MACHINE.

No. 925,531. Specification of Letters Patent. Patented June 22, 1909.

Application filed December 9, 1907. Serial No. 405,823.

To all whom it may concern:

Be it known that I, ALBERT R. TIFFANY, a citizen of the United States, residing in Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Stapling-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to machines designed to form and secure by wire staples to the interlocking flaps of paper vessels, the tin strips that are employed in locking the covers of paper vessels in place.

For certain constructions of paper vessels used temporarily for oysters, berries and the like, in the sale of grocer's goods, it has been customary to employ for locking down the integral cover of the bucket, a tin strip or tongue secured to one side edge of the cover, and arranged to be inserted and locked through an eyelet or loop on the other cover. These tongues or tin strips are purchased cut into the proper length, with a hole punched through one end, and an eyelet machine has been used to fasten the strips in place. These eyelets also have to be purchased in large quantities, they are necessarily small, and the machine frequently fails to catch them properly, so that they are wasted. The tin strip is held by the eyelet alone, and if the outside fold of the bucket and cover becomes loosened, the tin strip falls off, and the bucket cannot be used. The eyelets vary in size somewhat, and the holes in the tin strips are not of exact uniform diameter, consequently, when the eyelet is reamed, if the hole in the tin strip is too large for the eyelet, the tin strip will not be held, and the entire pail must be thrown away. In thus securing the tin strips by eyelets to the paper pails, a number of different operations are necessary, so that the output of any operator per day is necessarily limited. Moreover, when the tin strip is fastened with the eyelet, it can rotate on the eyelet, and very frequently the tin turns down between the folds of the cover, so that it cannot be gotten at, or being out of sight, the bucket is thrown away as defective. Then, the securing is necessarily a dangerous operation, as the parts are small, and the hand of the operator is very apt to get caught in the machine.

It is to overcome these objections to the ordinary method of securing the locking tongues to the covers of oyster pails, and the like, that my invention is directed, and it consists of that certain novel construction and arrangement of parts in the machine to be hereinafter particularly pointed out and claimed, in which the tongues or tin strips are formed in the machine itself, and the material for the strips is furnished in coils, or rolls, and instead of securing the strip by an eyelet, wire is furnished from a roll, and staples formed in the machine, by means of which the strips are stapled to the bucket cover in semi-circular cuts formed on the sides of the strip. Instead of the strips being secured by a reamed-over eyelet to one fold, the tin is fastened securely by the staple through both folds of the cover, and if one fold is torn out, the tin is still fastened to the bucket cover, and can be used. In addition to this, while the tin strip thus stapled has a swiveled movement, so as to permit its ready insertion through the locking loop or eyelet, the strip can no longer rotate, and cannot drop down out of place.

In the drawings, Figure 1 is a front elevation of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the upper part of the machine, with the cam plate and attached parts removed. Fig. 4 is a rear view of the mechanism for feeding the tin strip. Fig. 5 is a cross section of the machine taken on lines 5—5 of Fig. 2. Fig. 6 is an enlarged vertical section of the staple forming, driving and clenching devices. Fig. 7 is a perspective view of said staple forming and driving devices. Fig. 8 is a detail elevation of the punches for cutting the tin strip. Fig. 9 is a plan of one of the tin strips detached from the pail.

1 is the frame or standard for supporting the operating mechanism, provided with a pillow block 2, secured to an extension of the base, in which is journaled the shaft 3, carrying the fly wheel pulley 4, running loose on the shaft, and connected thereto by the clutch 5, and by means of which pulley and belt (not shown) the machine is driven. Mounted on this same shaft 3 is the cam 6, and the crank disks 7 and 8. The crank disk 7 is connected by the rod 9 with the vertical moving slide 10, which slides in ways 11 in the upper framework 12 of the machine,

which framework is securely bolted to the standard 1. The slide 10 is provided with the head 13, bolted thereon, and this head carries the depending cam arm 14, which cam engages a roller 15 mounted in the upper end of an anvil lever 16, pivoted at about its middle point on a lug 18 on the cam plate 19 secured to the frame 12. A spring 17 bears between this anvil lever and the side of the frame, so that as the slide 10, with its head 13 and cam arm 14, is moved downward, the roller 15 on this lever will be forced into the cut-away portion of the cam, and the lower or anvil end of the anvil lever will be shifted forwardly. It is around the lower end of this anvil lever that the staple is formed, as will be hereinafter described. This staple forming and driving mechanism is illustrated in Figs. 3, 6 and 7.

Mounted on, and depending from, the head 13 is the bifurcated slide or former 20. This bifurcated slide 20 rides in a slot 24 in the framework 12, and is carried upward by the pin 21 on the slide plate 23, which at its upper end is secured to the head 13, and which slide plate 23 carries the driving member 22 a part thereof, and which member 22 is projected between the forks of the former 20. The former 20 is normally held down by the spring 25, and locked in this position by the dog 26, pivoted on the head 13. The head 13 also carries adjustably attached thereto the depending plunger 27, which carries the punches (Fig. 8) 29 and 56, which enter the openings 30 and 31 in the die plate 28, which is horizontally mounted in the frame of the machine. The punch 29, which is employed for severing the tin strips into the proper lengths, as will be hereinafter described, is beveled off, so as to only cut at the back edge of its opening in the die plate, while the two similar punches 56 are squared at the bottom to cut semi-circular notches on each edge of the tin strip, as shown at 32 in Figs. 5 and 9.

39 is the continuous strip of tin furnished for the machine in a roll, or coil 40, mounted to rotate freely on an arm extending out from the standard 1. This strip 39 is passed between the feed roller 38, mounted on the shaft 35 journaled in the frame, and underneath the pressure roller 41, which bears on the feed roller. The shaft 35 carries the ratchet 37, which is engaged by the pawl 36, mounted on the lever 34, which is pivoted on the shaft 35. The outer end of the lever 34 is connected by the connecting rod 33 with the crank disk 8 at the bottom of the machine, so that with the rotation of the shaft 3, the pawl 36 will be actuated to partially rotate the shaft 35, to feed by means of the feed wheel 38 the proper length of tin strip to the machine. The pressure roller 41 is geared to the feed roller 38 by the gears 42, 43, and this pressure roller 41 is mounted in the rocking plate 44, which is pivoted to the frame 12, and kept in contact with the feed wheel 38 by the pressure of the spring 46 bearing on the vertical arm 45 on the plate 44.

61 is a presser-foot secured on the frame 12, which bears on the tin strip, as it is fed along over the die plate 28 to hold the same in place.

The wire from which the staples are formed is mounted on the reel 62, journaled on the arm 63, supported by the standard, and this wire is fed between the feed roller 58 and pressure roller 64, journaled in the frame 12, the feed roller 58 being provided with the ratchet wheel 59.

57 is a hook depending from the head 13, which engages the teeth of this ratchet on the upstroke, and thus feeds forward to the machine the proper length of wire.

Immediately underneath the staple driving mechanism is a block 65 mounted on the standard, and provided with a recess 53 in its upper face. 54 is a plunger which rides through this block 65, and is actuated by the rod 66, coupled to its lower end. The lower end of this rod 66 carries the roller 55, which is engaged by the cam disk 6 to raise the rod and plunger at the proper time for clenching the staple, and 67 is a coiled spring bearing between the block 65 and the shoulder on the rod 66 to return same to its normal position, as soon as it is released by the cam.

In the operation of the machine, the coil of wire and the tin strip roll being mounted in the machine and fed to the feeding devices, the driving shaft 3 is set in motion, and the crank disk 8 being in advance actuates first the connecting rod 33 to operate the tin strip feeding device, and to feed forward under the die plate the proper length of strip, the notches 32—32 in the strip, as shown in Fig. 5 having been cut in the previous operation. The paper bucket to which the tin strip is to be attached is then fed over the die plate with the tin strip 46 preferably between the two thicknesses or folds of the pail. The crank disk 7 being later in action than the crank 8, then pulls down on the rod 9 forcing the head 13 downward, and as the edge of the fork 20 passes the cutter plate 48, the wire 49 is severed from the roll, and the severed end is forced down by the forks 20 over the end of the anvil lever 16 forming a staple. As soon as this staple is formed, the pin 50 on the dog 26, which rides in the slot 51 in the plate 19, bolted to the frame 12, shifts the dog to release the bifurcated slide 20, and the head 13 continuing its downward stroke, the driver 22 is forced downward by the pin 21 of the plate 23 to drive the staple at the same time that the roller 15 falls into the cut-away part of the cam 14, which causes the anvil

lever to move out of the path of the driver 22. The staple is then forced through the notches 32—32 of the wire strip 46, and through the folds of the bucket into the space 53 in the block 65, and the cam 6 then acting on the roller 55, raises the plunger 54 to clench the staple on the underside of the bucket. As the staple is driven to its lowest point, the plunger 27 advances cutting off the stapled tongue by the punch 29, and cutting the notches 32—32 in the next piece. The pail with the tin strip attached is then removed from the machine, and upon the upstroke of the head 13 the hook 57 engaging the ratchet wheel 59 on the feed roller 58 feeds forward the requisite length of wire for the next staple.

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

1. In a stapling machine, the combination with a staple forming and driving mechanism, of mechanism for feeding a continuous strip of suitable material to said staple driving mechanism, means for cutting grooves in the strip for the reception of the staple, and for severing the proper length of the strip after each stapling operation.

2. In a stapling machine, a mechanism for forming and driving the staple, comprising a head carrying a bifurcated plunger, and a driving plunger, and means for disconnecting the bifurcated plunger from the head to permit the driving plunger to drive the staple mechanism for feeding a continuous strip of suitable material to said staple driving mechanism, means for cutting grooves in the strip for the reception of the staple, and for severing the proper length of the strip after each stapling operation.

3. In a stapling machine, the combination, with a staple forming and driving mechanism, and means for feeding a continuous strip of suitable material to said staple driving mechanism, of mechanism for cutting grooves in the strip before each stapling operation, and means for severing the proper length of the strip after each stapling operation.

4. In a stapling machine, a movable head carrying the staple forming and driving devices, with mechanism for feeding a continuous strip of suitable material intermittently to said stapling mechanism, a cutting device carried by said head to cut grooves in the next succeeding portion of the strip, and to sever the portions of suitable length from the strip after each stapling operation.

5. In a stapling machine means for feeding a strip of suitable material, in combination with a vertically reciprocating head carrying a bifurcated staple forming plate, a sliding staple driving plate, a cutting device for cutting grooves in each side of the strip, a cutting device for severing desired lengths from the strip, a movable anvil around which the staple is formed, a cam for shifting said anvil, a ratchet wheel and a hook to engage same, mounted on said head for feeding the wire to the staple forming devices.

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