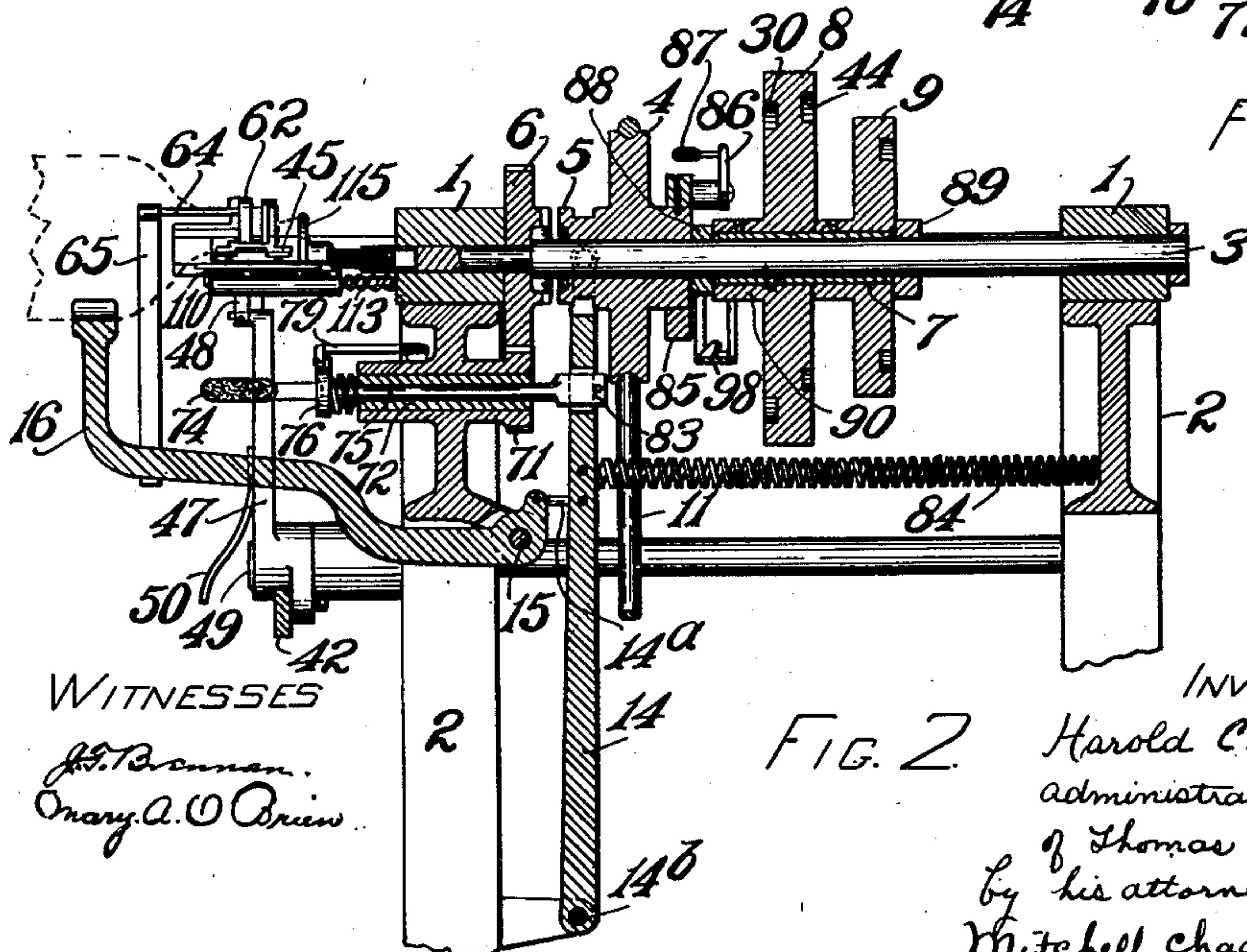
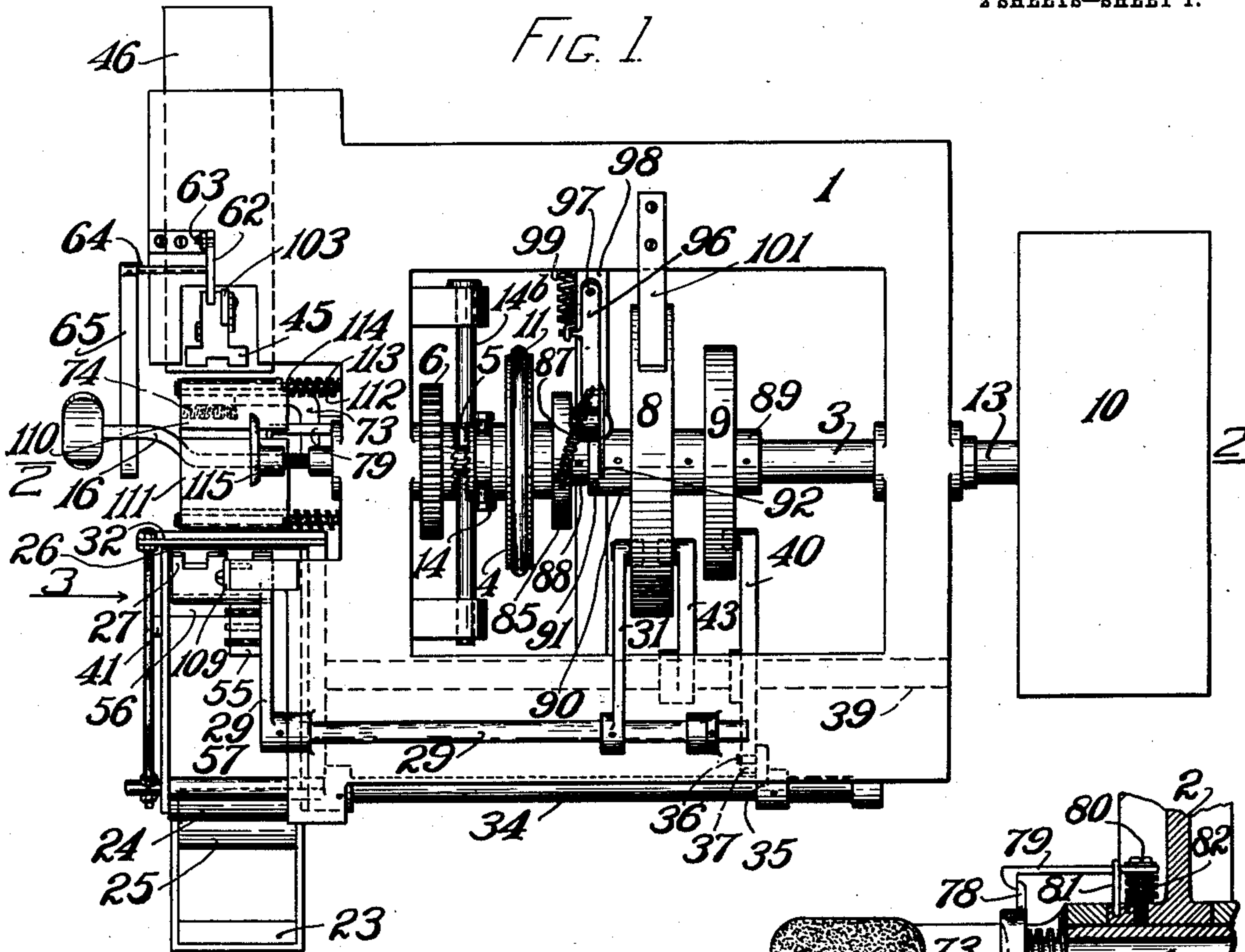


T. K. KEITH, DEC'D.
H. O. HUDSON, ADMINISTRATOR.
MACHINE FOR CLOSING BOTTLE ENDS WITH TIN FOIL.
APPLICATION FILED AUG. 2, 1909.

955,270.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.



WITNESSES
J. F. Brennan.
Oscar A. O'Brien.

FIG. 2

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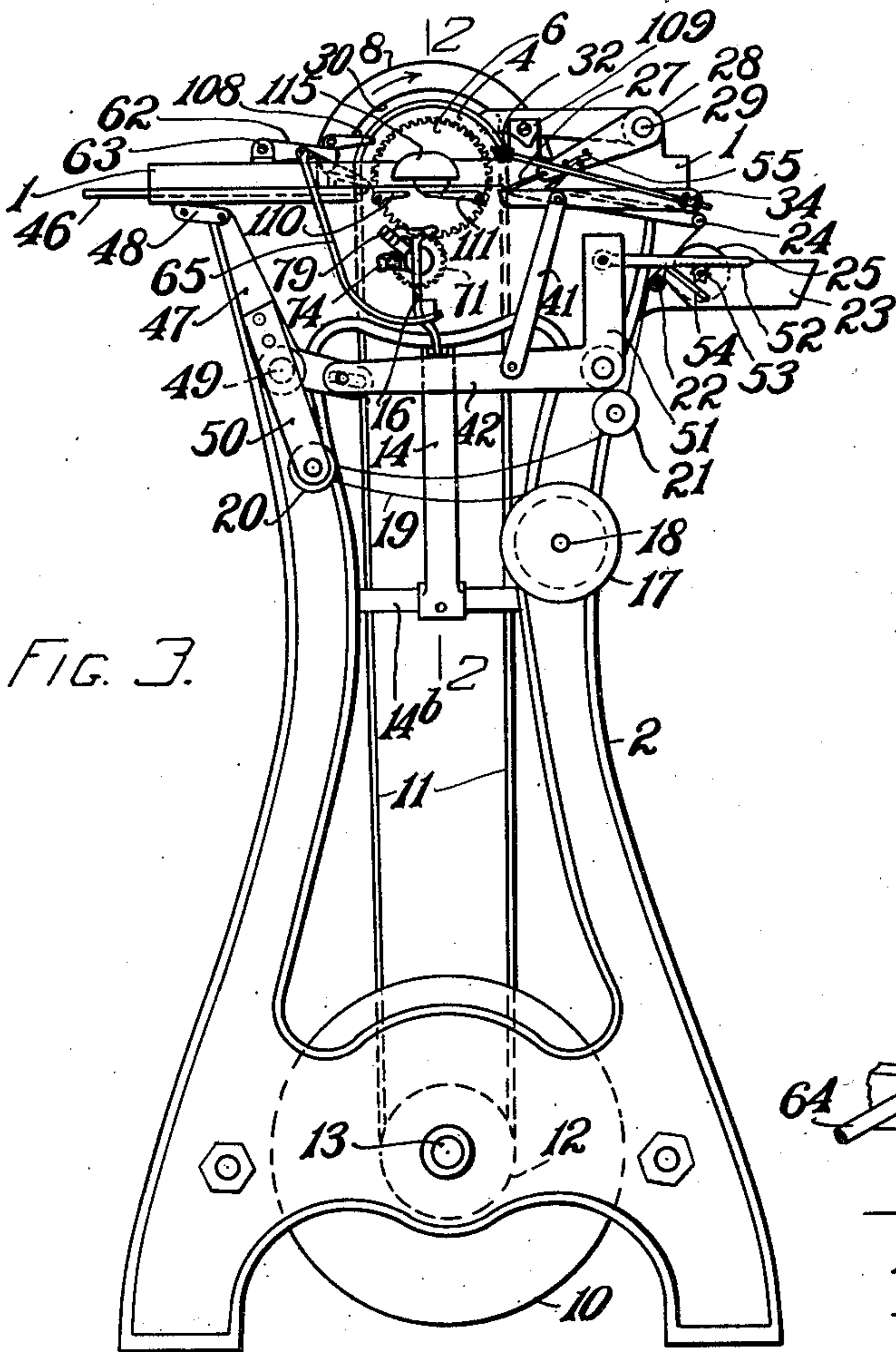


FIG. 3.

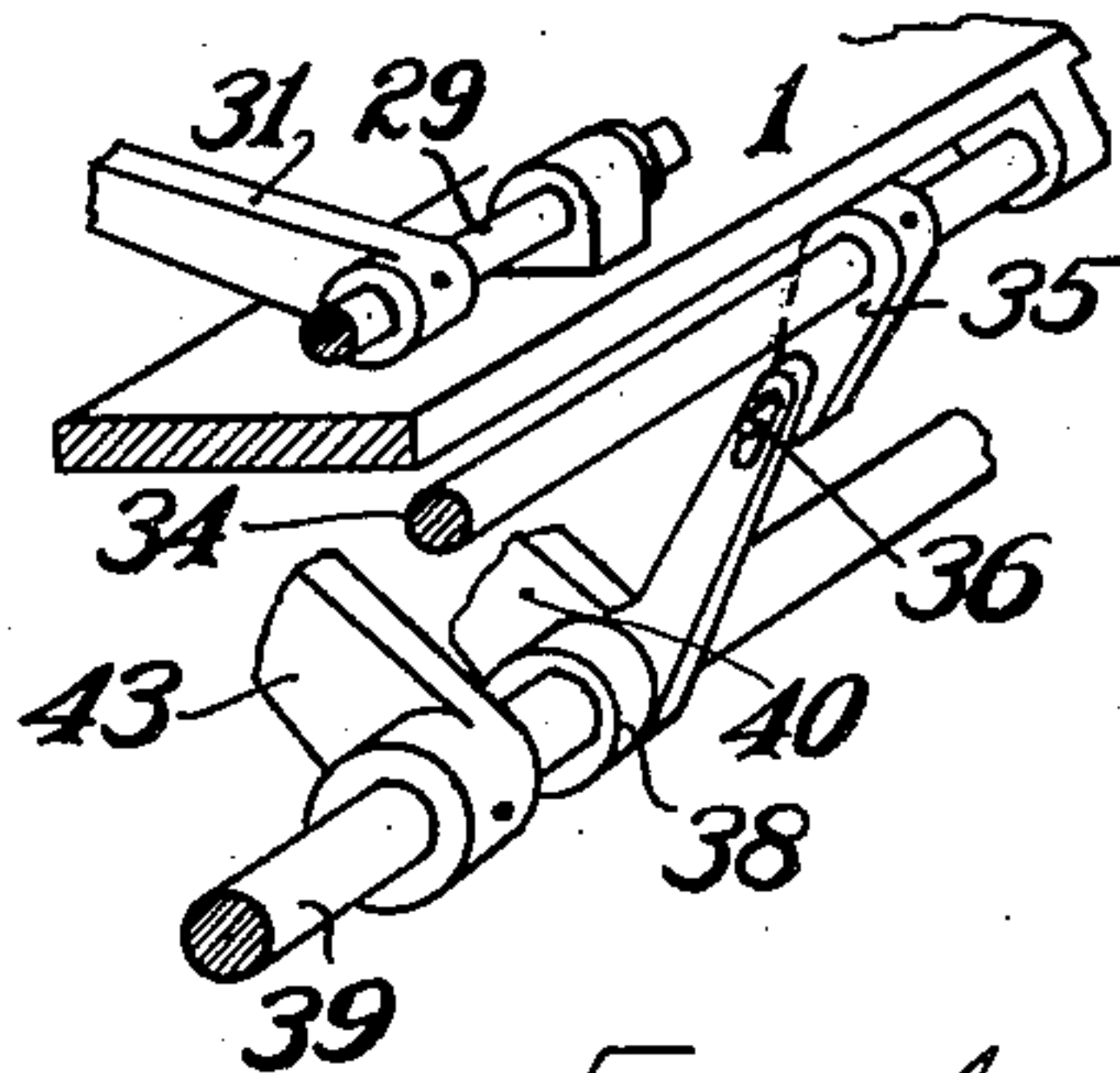


FIG. 4.

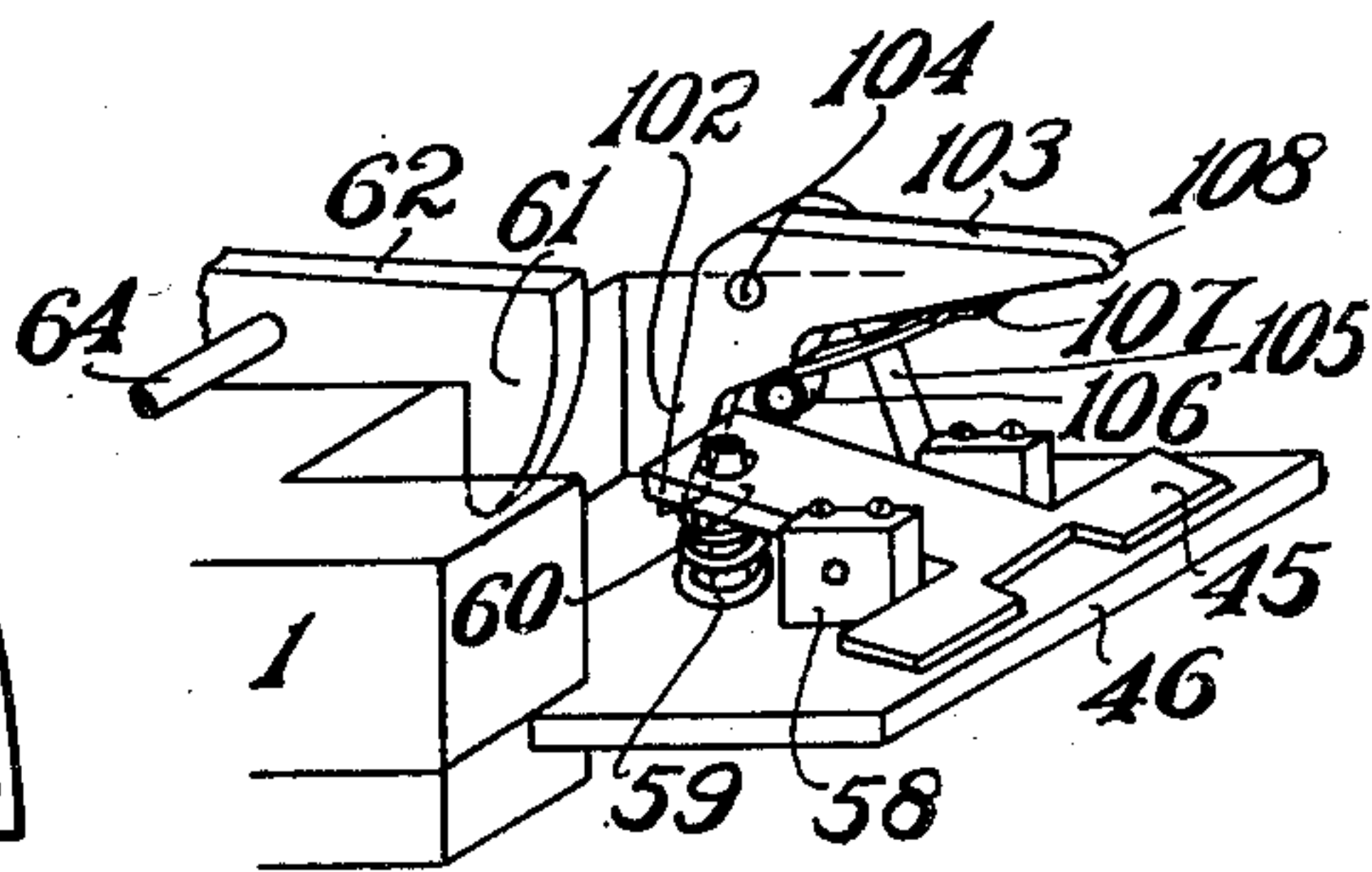
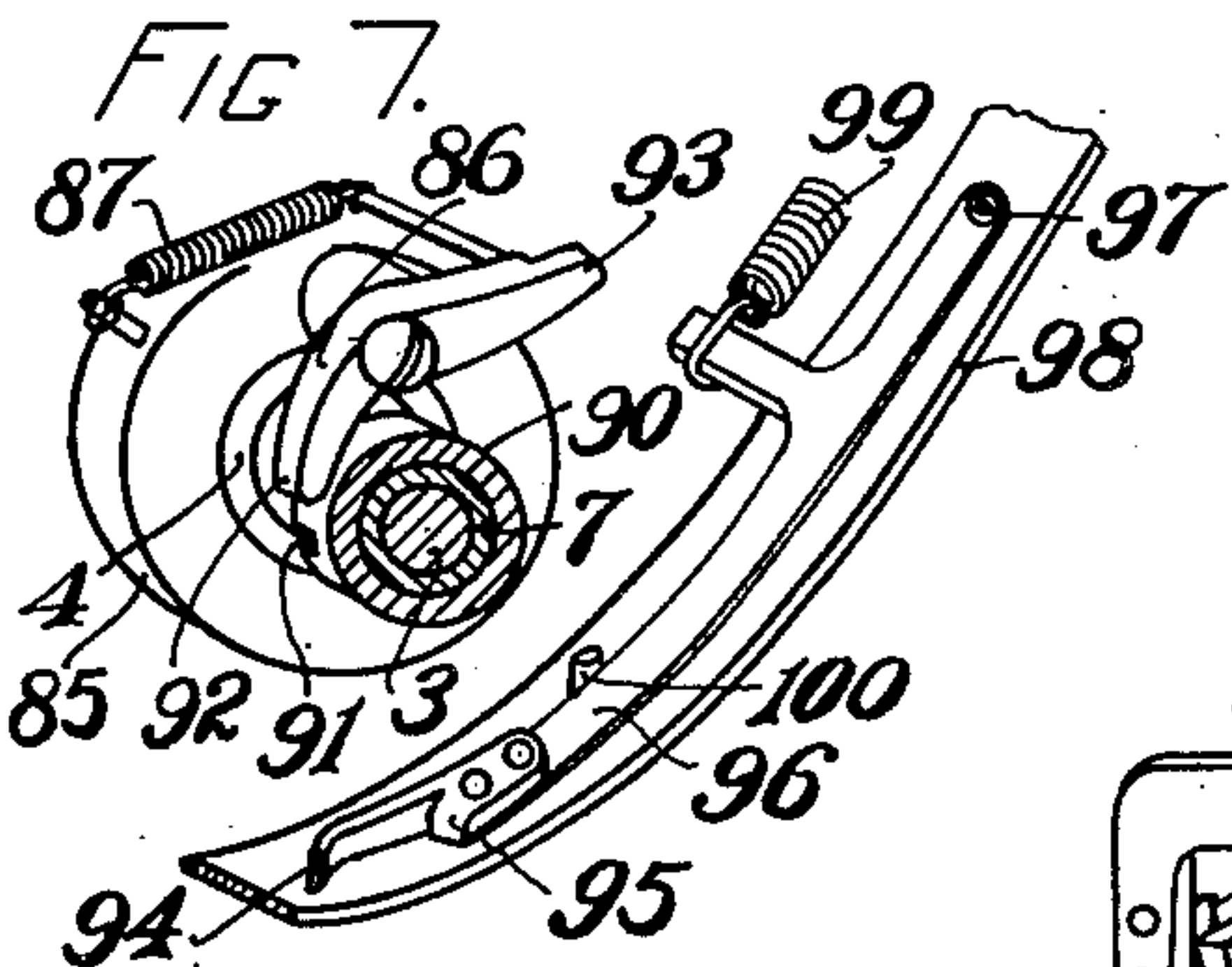
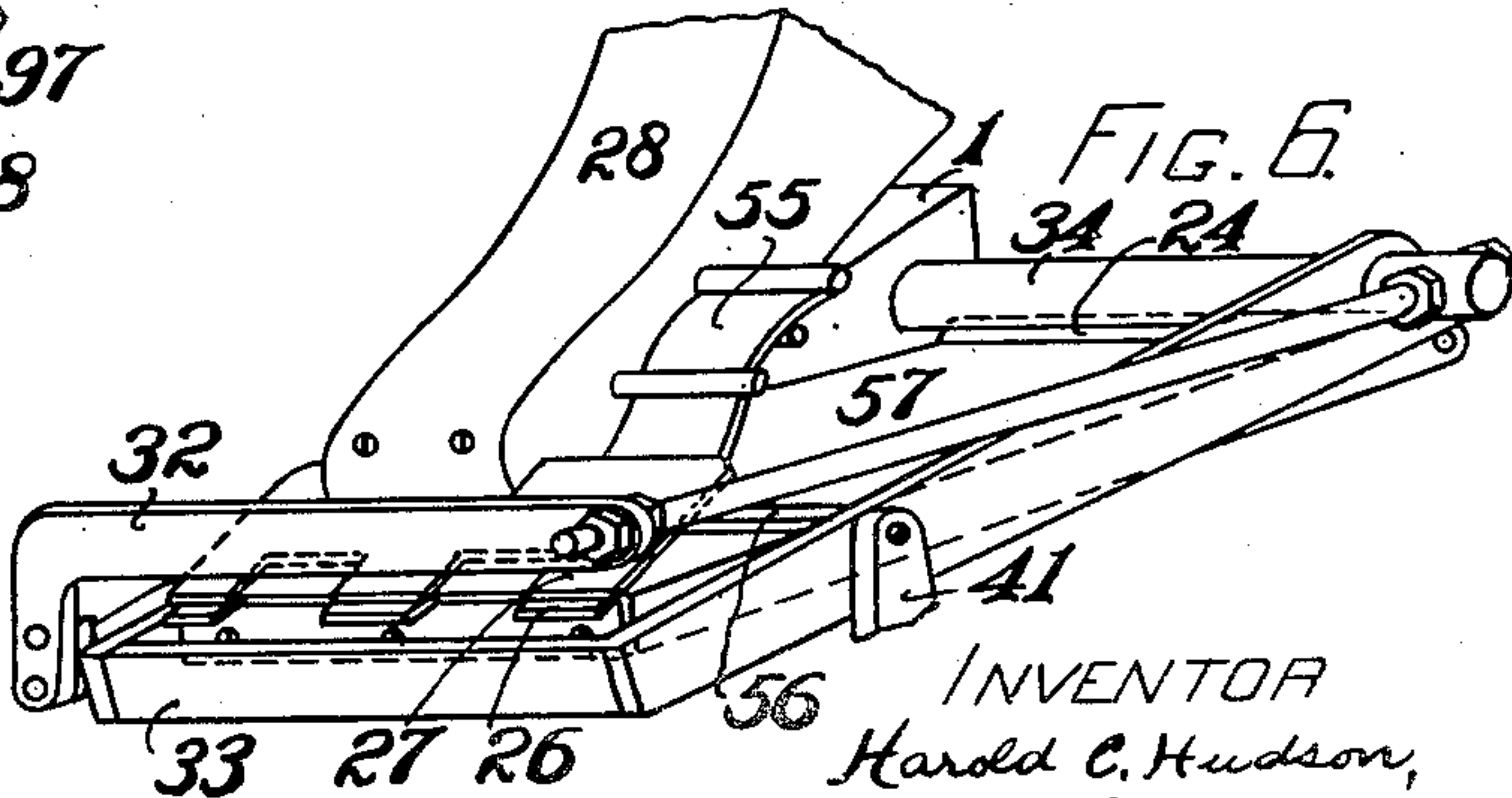


FIG. 5.



WITNESSES
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UNITED STATES PATENT OFFICE.

THOMAS K. KEITH, DECEASED, LATE OF BOSTON, MASSACHUSETTS; HAROLD C. HUDSON, ADMINISTRATOR, ASSIGNOR OF ONE-HALF TO FRANCIS N. CHAPMAN, OF SALEM, MASSACHUSETTS.

MACHINE FOR CLOSING BOTTLE ENDS WITH TIN-FOIL.

955,270.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed August 2, 1909. Serial No. 510,830.

To all whom it may concern:

Be it known that THOMAS K. KEITH, deceased, late a citizen of the United States; and resident of Boston, in the county of Suffolk and State of Massachusetts, did invent certain new and useful Improvements in Machines for Closing Bottle Ends with Tin-Foil, of which the following is a specification.

The object of the invention is to put around the necks of bottles a sheet of tin foil or the like, an operation which has heretofore been done by hand.

The invention is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 is a top plan view; Fig. 2 is a partial section on line 2—2 of Fig. 1; Fig. 3 is an end elevation; Fig. 4 is a perspective view of some of the linkage; Fig. 5 is a perspective view of the gripping device; Fig. 6 is a perspective view of the knives; Fig. 7 is a perspective view of the cam tripping device; and—Fig. 8 is a detail of punching disk mechanism.

Similar characters refer to similar parts wherever they occur on the different parts of the drawings.

1 is the frame of the machine, supported on standards 2—2, and carrying a stationary shaft 3, upon which are rotatably mounted the driving wheel 4, clutch 5, and gear wheel 6. Shaft 3 also has rotatably mounted upon it a sleeve 7, which carries rigidly attached to it cams 8 and 9, for purposes hereinafter described. Driving wheel 4 is connected to driving pulley 10, by means of belt 11, and pulley 12, mounted on shaft 13. Clutch 5 is engaged by forked lever 14, pivoted to standard 2 at 14^b, and operated by lever 16, pivoted to standard 2, at 15, through the agency of link 14^a.

17 is a roll of tin foil of the proper width, loosely mounted on pin 18, secured to standard 2. From roll 17 the tin foil 19 is carried around two idler spools 20—21, thence over idler roll 22, secured to the glue pot 23, and to idler roll 24, rubbing against the gluing roll 25 in passing, and thence to the clamping jaws 26, 27. The clamping jaw 27 is secured to lever 28 rigidly mounted on shaft 29, and is operated by cam groove 30, in cam 8, through the agency of lever 31 rigidly secured to said shaft 29.

Knives 32, 33, mounted respectively rigidly and loosely on shaft 34, serve to cut off the tin foil after a portion sufficient for one bottle has been fed to the gripper. Knife 32 is operated by the linkage shown in Fig. 4, and consists of a short lever arm 35, rigidly attached on shaft 34, and carrying a pin 36, which engages one end 37 of a bent lever 38, loosely mounted on rod 39. The other end 40 of lever 38 carries a cam roll which engages cam 9. Knife 33 is operated by a rod 41, pivotally connected at its lower end to a rock arm 42, rigidly mounted upon rod 39, which rod has rigidly mounted upon it cam lever 43, which engages cam groove 44 in cam 8.

The gripper 45 is mounted upon a sliding plate 46, and is formed with fingers which intermesh with those of the clamping jaws 26, 27, when sliding plate 46 is moved forward, so the tin foil can be seized by the gripper and carried back with the receding plate 46, jaw 2 being automatically opened to release said tin foil, after the gripper 45 has seized it.

The movement of plate 46 is controlled by rock arm 42, through the agency of rock arm 47, and link 48 pivotally secured to plate 46; said rock arm 42 being actuated by cam groove 44, as before described. Rock arm 47 is loosely pivoted to the frame at 49, and carries rigidly a flat bar 50, upon the lower end of which idler spool 20 is mounted. It will be thus noted that spool 20 oscillates while all the other spools and rolls 17, 21, 22, and 24 have stationary spindles. The object of this oscillation is to reel off a new supply of tin foil from roll 17 while the gripper is advancing, and to create a slackness of same, when gripper is receding with the free end of the tin foil, thus lessening the strain and consequent tendency to tearing.

Rock arm 42 has pivotally attached to its upright arm 51, a ratchet arm 52, which engages with a ratchet wheel 53, rigidly attached to the spindle which carries gluing roll 25.

54 is a scraping device to control the quantity of glue fed to roll 25. Lever 28, which carries clamping jaw 27, has also secured to it a second clamping plate 55, (see Fig. 6) which presses the foil against an abutment 56, on feed board 57. This abutment serves

to keep tin foil 19 out of contact with feed board 57, so that it is suspended between roll 24, and abutment 56, and again between abutment 56 and clamping jaw 26.

5 The gripper 45 is pivotally mounted in two blocks 58, 58, secured to plate 46, and is normally held in gripping position by coiled spring 59. (See Fig. 5.) When plate 46 is in its rearward position, the rear end 60 of gripper 45 has engaged the lug 61 on lever 62, and raised it from the normal position shown in Fig. 5. Lever 62 is pivoted to the frame 1 at 63, and carries near its free end a pin 64, which pin carries a bent lever 65, the free end of lever 65 passing under the forward end of lever 16.

15 Gear 6 is in mesh with pinion 71, set screwed to hollow counter shaft 72, mounted in standard 2, said shaft 72 carrying rigidly at its outer end brush lever 73, upon which brush 74 is mounted. Within hollow countershaft 72 is slidably mounted a spindle 75, carrying at its outer end a punching disk 76. Disk 76 is held normally away from the standard 2 by coiled spring 77, and has on one edge a catch 78, which is engaged by the pawl of flat spring 79, when disk 76 is drawn in toward standard 2. Spring 79 is mounted on stud 80 in the boss on standard 2, and is normally held against pin 81 (also in boss on standard 2) by coiled spring 82, but can be swung laterally by the lever 73, so as to release disk 76, returning against pin 81 after lever 73 has passed by. Spindle 75 is flattened at its inner end to prevent turning and passes through an elongated hole in lever 14, and receives a pin 83.

The motion is as follows: When the forward arm of lever 16 is depressed, the clutch 5 is moved forward on shaft 3, and into engagement with gear 6. As driving wheel 4 is constantly rotating, this sets pinion 71, rotating in the direction indicated by the arrow in Fig. 3. Pinion 71 causes brush 74 to rotate, and just before completing one revolution, lever 73 strikes spring 79, releasing catch 78 on disk 76. Spring 77 then projects the disk forward until pin 83 strikes lever 14 in its forward position. After lever 73 has passed, spring 79 returns to its normal position and upon releasing lever 16, spring 84 releases clutch 5, at the same time carrying back spindle 75 against spring 77, by means of pin 83. As the disk 76 recedes the catch 78 will again engage with the pawl on spring 79, which will yield sufficiently to permit of same.

Referring to Figs. 1, 2 and 7, it will be noticed that driving wheel 4 has a hub projecting from its rear face which receives rigidly a collar 85. Upon this collar is pivotally mounted a double pawl 86, controlled by spring 87. Adjacent to this collar is a washer 88, pinned to shaft 3. This with washer 89, likewise pinned to shaft 3, pre-

vents longitudinal movement of the cams 8 and 9 on shaft 3. Cam 8 has on its front face a hub 90, in the edge of which is a notch 91, for engaging finger 92 of double pawl 86. The other finger 93 of pawl 86 is engaged at different times by finger 94 and lug 95 on plate lever 96. Plate lever 96 is pivotally connected at 97 to a strap 98 secured to frame 1, and is controlled by spring 99, and pin 100 in strap 98.

75 The operation is as follows:—When the clutch 5 is in its rearward or open position, the finger 92 of double pawl 86 (which is carried backward and forward with the clutch 5) is held upon hub 90 of cam 8, by spring 87, at a point back of notch 91, and revolves thereon freely without affecting the cams 8 and 9. When clutch is moved forward by depressing forward arm of lever 16, the finger 92 moves forward sufficiently to leave hub 90 and then is held against the periphery of washer 86, by spring 87, revolving freely thereon as before. When pressure upon lever 16 is removed, the spring 84 acts to throw the clutch with the pawl 86 backward, but this is prevented for the moment by reason of the fact that said pawl abuts against the edge of hub 90. When, however, the continued revolution of pawl 86 brings finger 92 opposite notch 91, in hub 90, the parts 4, 5, with whatever is mounted thereon, including pawl 86, move backwardly to the depth of notch 91, which movement, it will be noticed, does not bring the parts 4, 5, etc., back to their first position. This brings pawl 86 directly over lug 95 on plate lever 96, and the cams 8 and 9 will revolve with pawl 86 until finger 93 on said pawl engages with said lug 95, releasing the finger 92 from notch 91, when cams 8 and 9 cease to revolve and the backward throw of pawl 86 is then completed. Brake 101, secured to the frame 1, assists in bringing the cams to a state of rest. When pawl 86 is abutting against the edge of hub 90, and the finger 92 is riding on washer 88, the finger 93 in its revolution strikes the forward side of finger 94 on plate lever 96, and forces said plate lever backward against spring 99, thus preventing lug 95 from affecting the position of pawl 86, until finger 92 has entered notch 91. If lug 95 should trip pawl 86 before finger 92 has entered notch 91, the said finger would miss the notch, and pawl 86 would return to its original position without rotating the cams 8 and 9.

The general operation of the machine is as follows: Before starting operations, a portion of the tin foil 19 is reeled from spool 17, carried around spools 20, 21, rolls 22, 24, and to clamping jaws 26, 27. The forward arm of lever 16 is then depressed by hand and released. This depression carries downward the free end of spring lever 65, which as before stated, is secured at its

fixed end to lever 62, through pin 64. As the movement of the forward arm of lever 16 is greater than is necessary to depress the free end of lever 62, (which it will be remembered was automatically raised by end 60 of gripper 45, at the completion of the previous backward motion of plate 46, the spring 59 being sufficiently stiff to overcome the weight of lever 62) the bend in spring lever 65 will straighten out to accommodate this difference. End 60 of gripper 45 is thus depressed sufficiently to permit of its being locked in this position by finger 102 of bent lever 103, pivotally mounted at 104 upon standard 105, secured to plate 46. (See Fig. 5.) Pin 106, secured to standard 105, limits the motion of finger 102, and carries a leaf spring 107, which impinges against finger 108 on bent lever 103, thus impelling said motion as soon as the depression of end 60 permits same to act. The release of lever 16 permits pawl 86 to cause one revolution of cams 8 and 9, as already described. This revolution causes the following sequence of motions. Plate 46 moves across to jaws 26, 27, with gripper 45 open. Knife 32 is up and stationary, but knife 33 is depressed by the same lever 42 which carries forward plate 46, so that said plate can ride under the fingers of jaw 26; and at the same time cam lever 31 operates to raise lever 28 with its jaw 27 thereby releasing the foil. At the forward end of the motion of plate 46, the finger 108 of bent lever 103 strikes a cam block 109 (see Fig. 3) and releases end 60 of gripper 45, and spring 59 causes the fingers of gripper 45 to seize and hold the foil firmly against plate 46. Then cam lever 43 operates to move plate 46 back to its original position, carrying with it the slack of the foil 19, which has been reeled from spool 17 by the forward motion just described. Just at the end of this backward motion, knife 33 ascends (through the agency of cam lever 43) and cam lever 40 causes knife 32 to descend and cut off a sufficient supply of foil for one bottle. Thus this supply of foil is released at its forward end by the knives, but is still held at its rear end by gripper 45. At this stage, the free end of this sheet of tin foil 19 rests upon a table made up of two folding leaves 110, 111, pivotally mounted on two pins 112, 112, secured to standard 2, and normally held in horizontal position by coiled springs 113, 113, and stop pins 114, 114. It will be noticed in Fig. 3 that leaf 110 is shorter than leaf 111, and that pinion 71 and the free end of arm 16 are at one side of the center of the machine. With this fact in mind it will be noted in Fig. 2, that the section is taken so as to pass through the spindle 75, as well as shaft 3, as is indicated by line 2—2 in Fig. 3. The next step is to grasp the bottle to be operated upon, by the body

portion, place the neck upon the sheet of tin foil directly over the forward arm of lever 16, with the body of the bottle resting thereon, and the cork slightly pressed against the gage 115, adjustably secured in the end of shaft 3, for the purpose of regulating the position of the foil on the neck of the bottle. Then press downward on the bottle in lever 16, and immediately bent lever 65 operates to depress end 60 of gripper 45, thus releasing the foil before the bottle has exerted sufficient pull to tear it. The foil, which has been previously gummed, adheres to the neck of the bottle, and descends with it, being wiped around said neck by the leaves 110, 111; the short end completely by leaf 110 and the long end but partially by leaf 111.

When the downward motion of the bottle is completed the neck is directly opposite disk 76, and brush 74, which are then in the positions shown in Fig. 2. Rotary motion is imparted to brush 74 by pinion 71, and said brush acts to wipe the long end of the foil upon the neck of the bottle. Just before brush 74 completes one revolution, its lever 73 releases disk 76, as previously described, and this disk strikes a blow on the cork, crushing the free edge of the foil upon said cork. This completes the operation, and when the pressure upon lever 16 is removed by taking out the bottle, another revolution of the cams is caused; but this time by the motions necessary to cover the bottle, and not as before by hand. As soon as the plate 46 has completed its backward movement with a supply of foil, cam lever 31 operates to close the jaw 27, thus holding the foil while it is being cut and until the gripper again comes forward for another piece. It will be thus seen that after one revolution of the cams has placed and cut off one supply of foil, the subsequent action of the machine depends solely upon the placing of successive bottles on lever 16, and depressing same.

It will be understood that if material already coated with adhesive be supplied to roll 17, the gluing roll 25 then becomes a moistening roll, and the glue pot would contain moistening liquid.

Having thus fully described the nature, construction and operation of the invention, I wish to secure by Letters Patent and claim:—

1. A bottle covering machine, comprising means actuated by the bottle for applying a sheet thereto, and means revolving about the bottle neck for wrapping the sheet thereon.

2. A bottle covering machine, comprising a non-rotating sheet carrying means actuated by the bottle for applying a sheet thereabout, and means revolving around the bottle neck for wrapping the sheet thereon.

3. A bottle covering machine, comprising a non-rotating shiftable means for guiding the bottle, mechanism for applying a sheet to the neck of the bottle, and means revolving around the neck for wrapping the sheet thereabout.
4. A bottle covering machine, comprising a non-rotating shiftable means for guiding the bottle, mechanism for applying a sheet to the neck of the bottle, and means revolving around the neck for wrapping the sheet thereabout, and a non-rotating member for compressing the projecting edge of the wrapped sheet against the cork of the bottle.
5. In a bottle covering machine, mechanism for applying a sheet to the neck of a bottle; means revolving around the neck for wrapping the sheet thereabout; a rest for holding the bottle stationary; and a compressor reciprocating in line of axis of the stationary position for closing the end of the wrapped sheet.
6. In a bottle covering machine, mechanism for feeding a sheet to a horizontal position beneath a bottle neck; a yielding support for the sheet in such position; a rest for the bottle when moved below said support; mechanism for wrapping said sheet around the bottle neck when on said rest.
7. In a bottle covering machine, means for applying a sheet to the bottle and wrapping it thereabout, in combination with means for holding a supply of the material in strip form; an oscillating lever equipped at one end as a take-up device, engaging a bight of the supply strip, and equipped at the other end with a gripper to draw the end of the strip into position for wrapping.
8. In a bottle covering machine, a yielding bottle support, a feeding device, consisting of an oscillating member, a spring controlled gripper, pivotally mounted upon said member, automatic means for causing said bottle support to release said gripper, a locking device, mounted upon said member for securing said gripper in released position, in combination with a tripping device for automatically throwing said gripper into operation, and means for automatically oscillating said member.
9. In a bottle covering machine, a yielding bottle support, a strip severing device, consisting of a pair of cutters, actuated by said bottle support, and intermediate connecting mechanism, in combination with an intermittently operated clamping device for clamping the uncut strip at proper intervals.
10. In a bottle covering machine, a yielding bottle support, a clamping device, consisting of a series of clamping fingers, actuated by said bottle support, and intermediate connecting mechanism; in combination with a gripping device consisting of a series of gripping fingers mounted upon a reciprocating support, said gripping fingers, spaced to intermesh with said clamping fingers and means for automatically causing such intermeshing.
11. In a bottle covering machine, a yielding rest for a bottle in non-rotating position; a yielding support for the wrapping sheet, set in the line of motion of the bottle neck when said rest yields; means to wrap the sheet about the neck; and power controlling mechanism, there being connection therefrom to said rest, whereby movement of the rest controls the operation of the machine.
12. In a bottle covering machine, a yielding arm controlling operation of the machine and adapted to be engaged by the bottle; means for feeding sheets automatically to the bottle neck; and mechanism connected with the control arm whereby the yielding motion thereof operates the wrapping mechanism and the return thereof operates the feeding mechanism.
13. In a bottle covering machine, a yielding bottle support, a pair of spring pressed, pivoted and yielding strip supports, adapted when depressed to partially form the strip around the bottle neck, in combination with a rotatable wiper adapted to complete the forming of said strip around said bottle neck, and means for rotating said wiper through the depression of said bottle support.
14. In a bottle covering machine, a sheet feeding device in combination with a support for sheets, comprising a pair of yielding hinged leaves of unequal width, whereby one leaf wraps one end of the sheet completely on the bottle neck and the other end is left projecting, and means to wrap the projecting end about the bottle neck and over the other end.
15. In a bottle covering machine, a yielding rest for supporting a bottle horizontally; yielding leaves arranged horizontally as wipers beneath the bottle neck; means to feed sheets thereon; means controlled by downward movement of the rest for wrapping around the bottle neck the sheet attached by the wipers during said downward movement.
16. In a bottle covering machine, means to rest a bottle in stationary position; means to feed sheets to the neck thereof; a rotating shaft in the line of axis of the neck; and an L-shaped arm projecting therefrom, holding a brush adjacent to the bottle neck, whereby rotation of the shaft revolves the brush about the bottle neck.
17. In a bottle covering machine, means to hold a supply of wrapping material in strip form; a gripping device intermittently seizing the end of the strip and drawing the same into position for wrapping; a shearing cutter for cutting the strip when thus positioned; a rock shaft 39; and con-

necting links, whereby the rock shaft imparts reciprocating motion to both gripper and cutter.

18. In a bottle covering machine, a rest
5 for a bottle in stationary position; an L-shaped arm rotating about an axis in line of the bottle axis, arranged to wrap a sheet about the bottle neck; a reciprocating plunger mounted on the same axis within the
10 cylinder of rotation of said arm, spring-pressed toward the bottle; a spring latch fastening the plunger normally in retracted position, said latch being engaged and released by the L arm at each revolution,
15 thereby releasing the plunger and pressing the projecting edge of the wrapper upon the bottle.

19. In a bottle covering machine, mechanism for wrapping a sheet about a bottle
20 neck; a movable member for starting and stopping the same; a plunger, engaged and retracted thereby on its stopping movement; a latch, holding the plunger thus retracted and arranged to be engaged and
25 released by the wrapping mechanism when in operation; there being means to force the plunger forward when so released, the plunger being arranged longitudinally opposite the bottle neck.

30 20. In a bottle covering machine, mechanism for feeding sheets to the bottle; mechanism for wrapping same about the bottle; in combination with a driving pulley normally disengaged from both mechanisms,
35 movable in one direction to engage and op-

erate the wrapping mechanism and in the opposite direction to engage and operate the feeding mechanism.

21. In a bottle covering machine, mechanism for feeding sheets to the bottle; mechanism for wrapping same about the bottle;
40 in combination with a driving pulley normally disengaged from both mechanisms, movable in one direction to engage and operate the wrapping mechanism and in the
45 opposite direction to engage and operate the feeding mechanism, the engagement with the latter comprising a notch and pawl; and means to automatically disengage them after the feeding cycle has been once per-
50 formed.

22. In a bottle covering machine, reciprocatory mechanism for intermittingly feeding sheets to a bottle; rotatory means for
55 wrapping one of said sheets about the bottle; a stationary shaft having a driving pulley rotatable and movable axially upon the shaft; a clutch on one side of the pulley connected with said wrapping means; a
60 clutch on the other side of the pulley connected with said feeding mechanism; and means to move the driving pulley to and fro between said clutches.

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Witnesses:

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