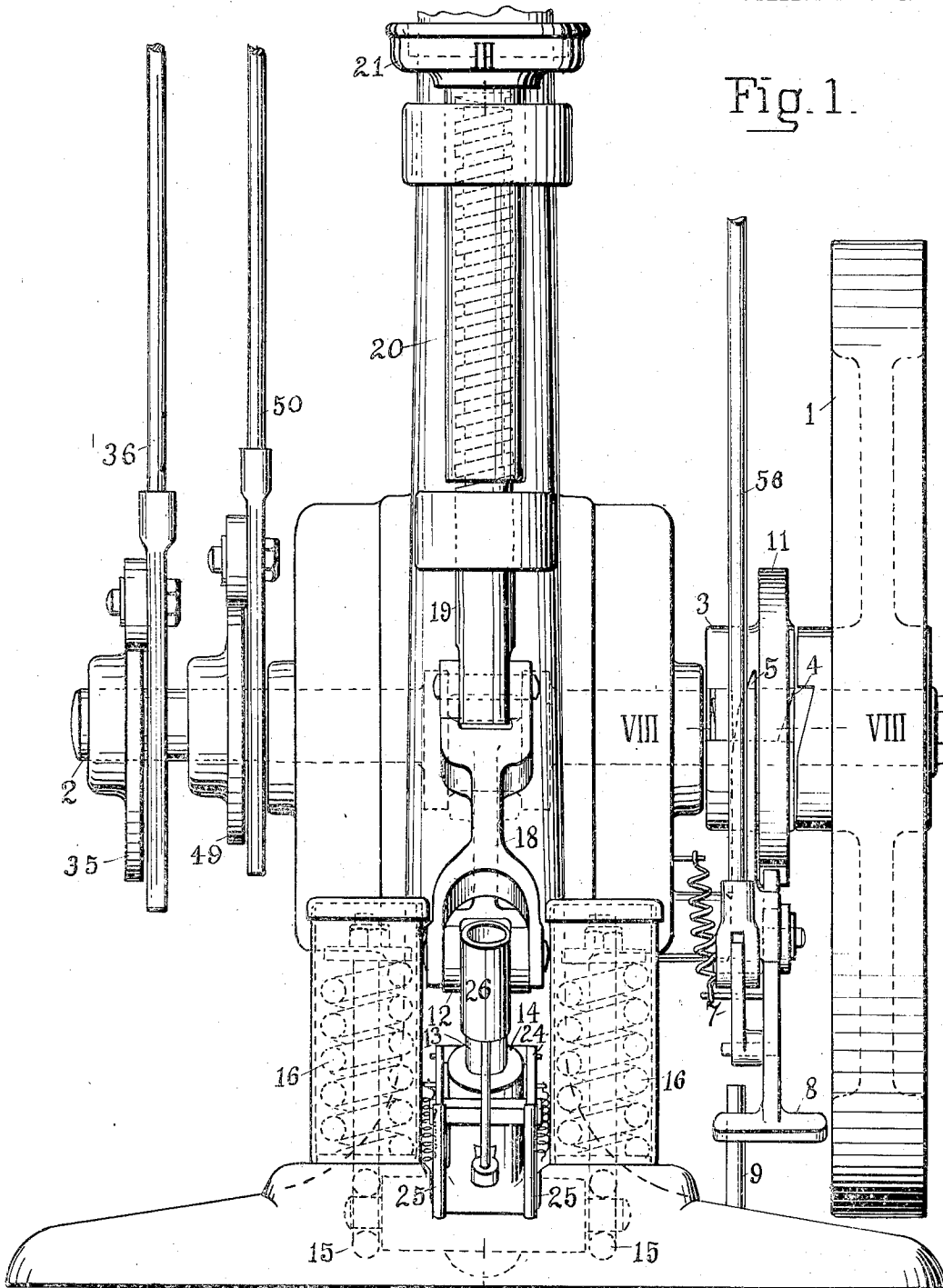


F. RECHT.
MACHINE FOR APPLYING CAPS TO BOTTLES.
APPLICATION FILED MAR. 26, 1907.

1,007,892.

Patented Nov. 7, 1911.
7 SHEETS-SHEET 1.

Fig. 1.



Witnesses:

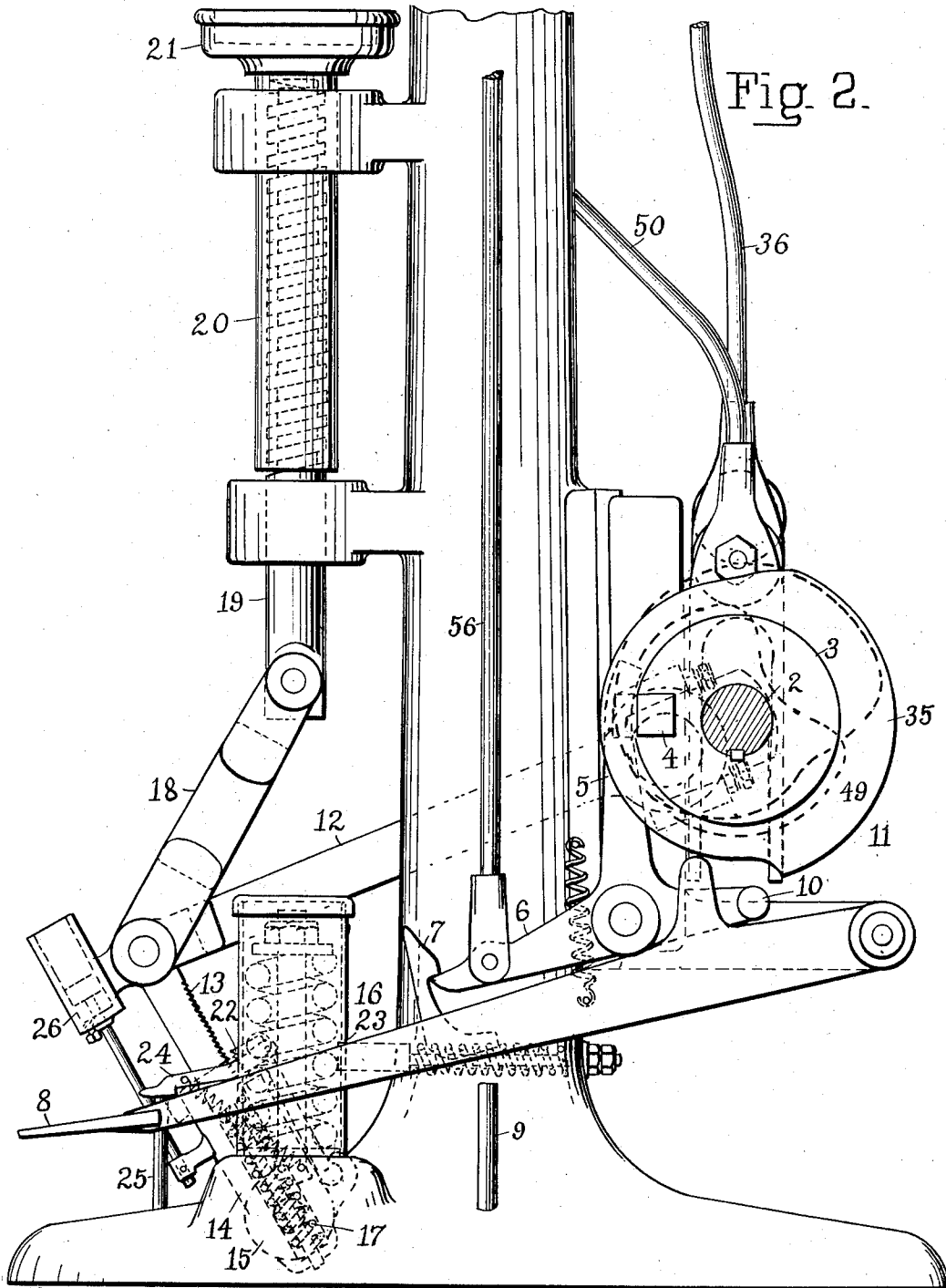
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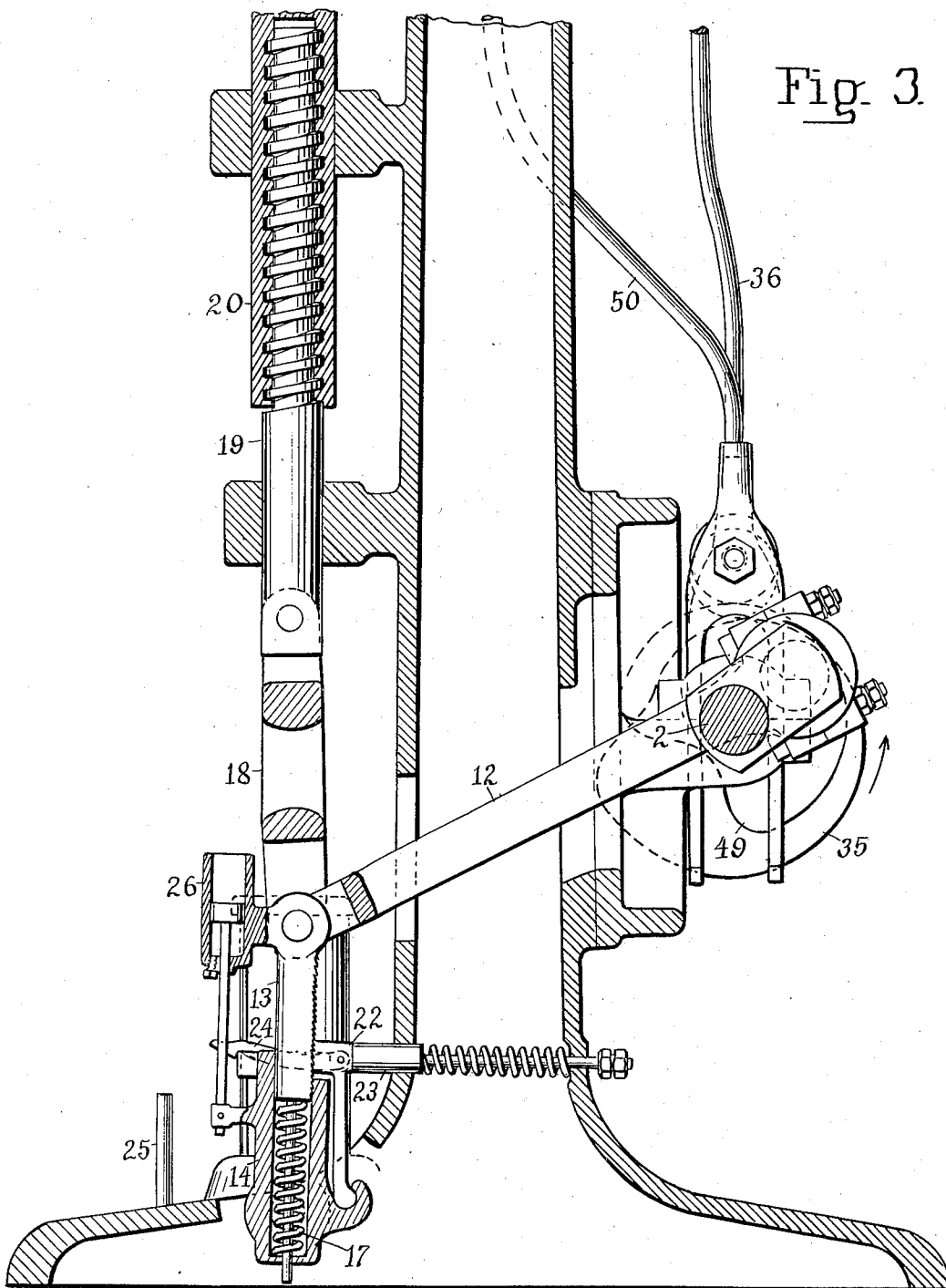
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7 SHEETS—SHEET 3.



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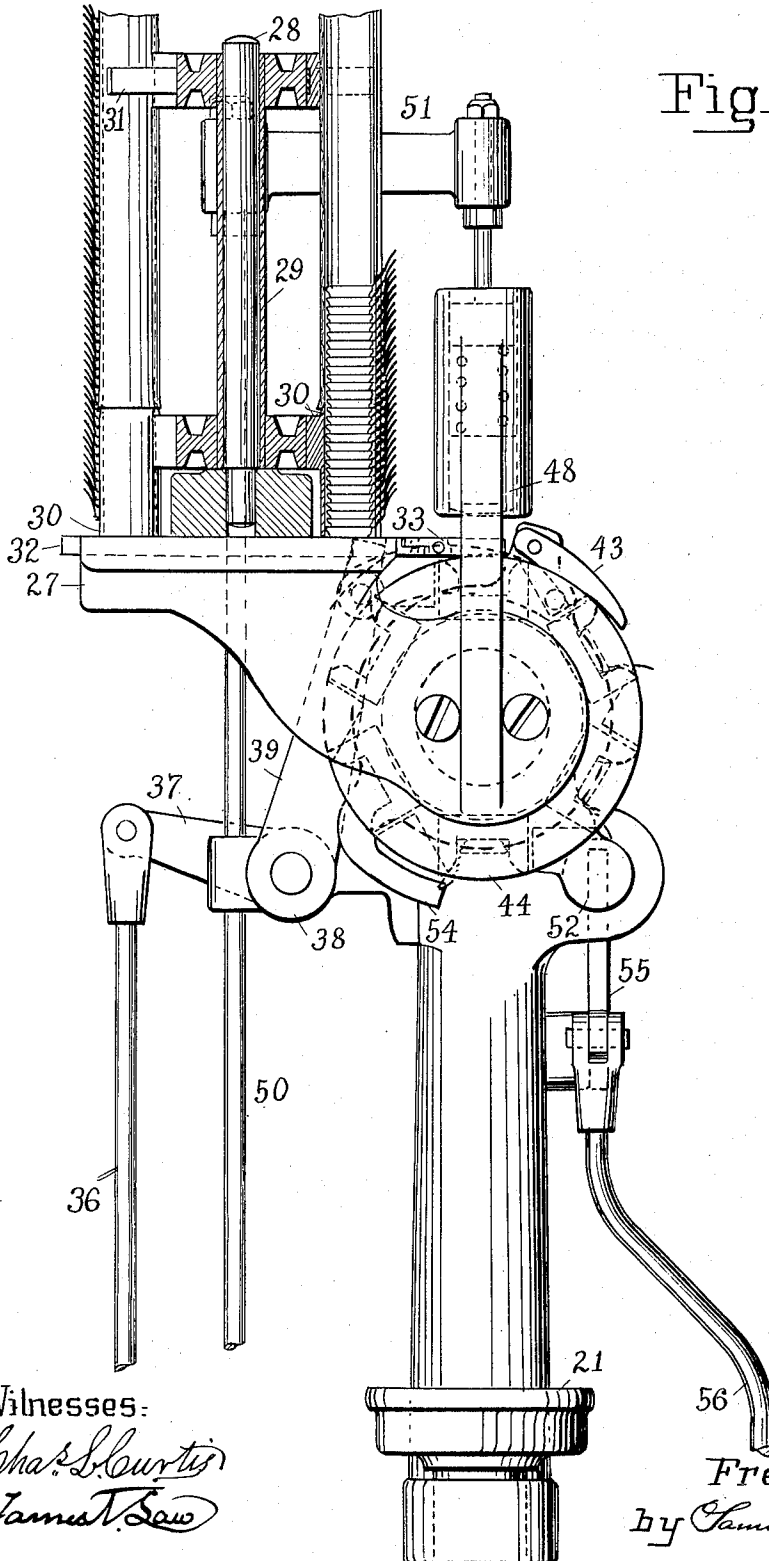
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7 SHEETS—SHEET 4.

1,007,892.

Fig. 4.



Witnesses:

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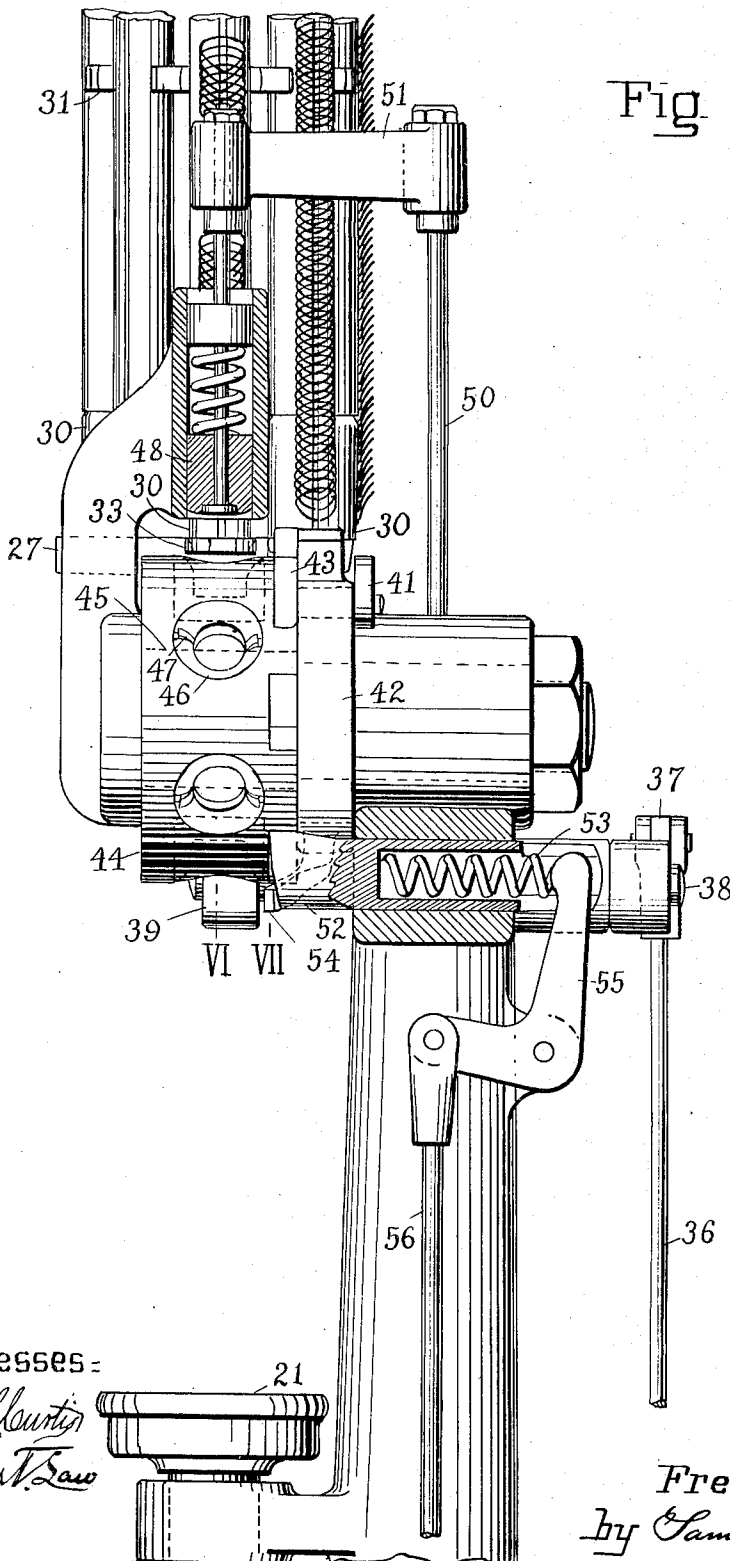
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7 SHEETS—SHEET 5.

Fig 5.



Witnesses:

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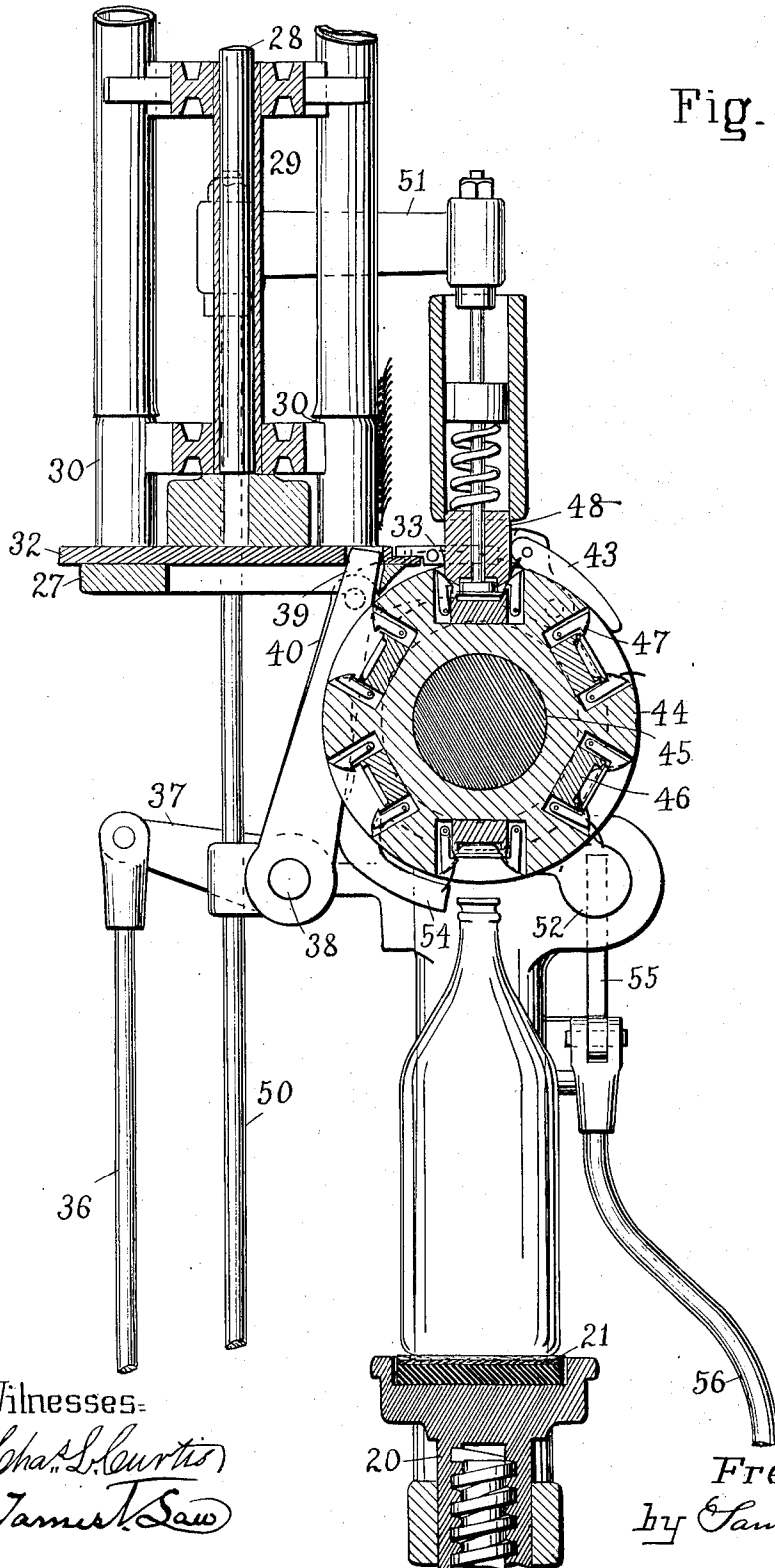
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7 SHEETS—SHEET 6.

Fig. 6.



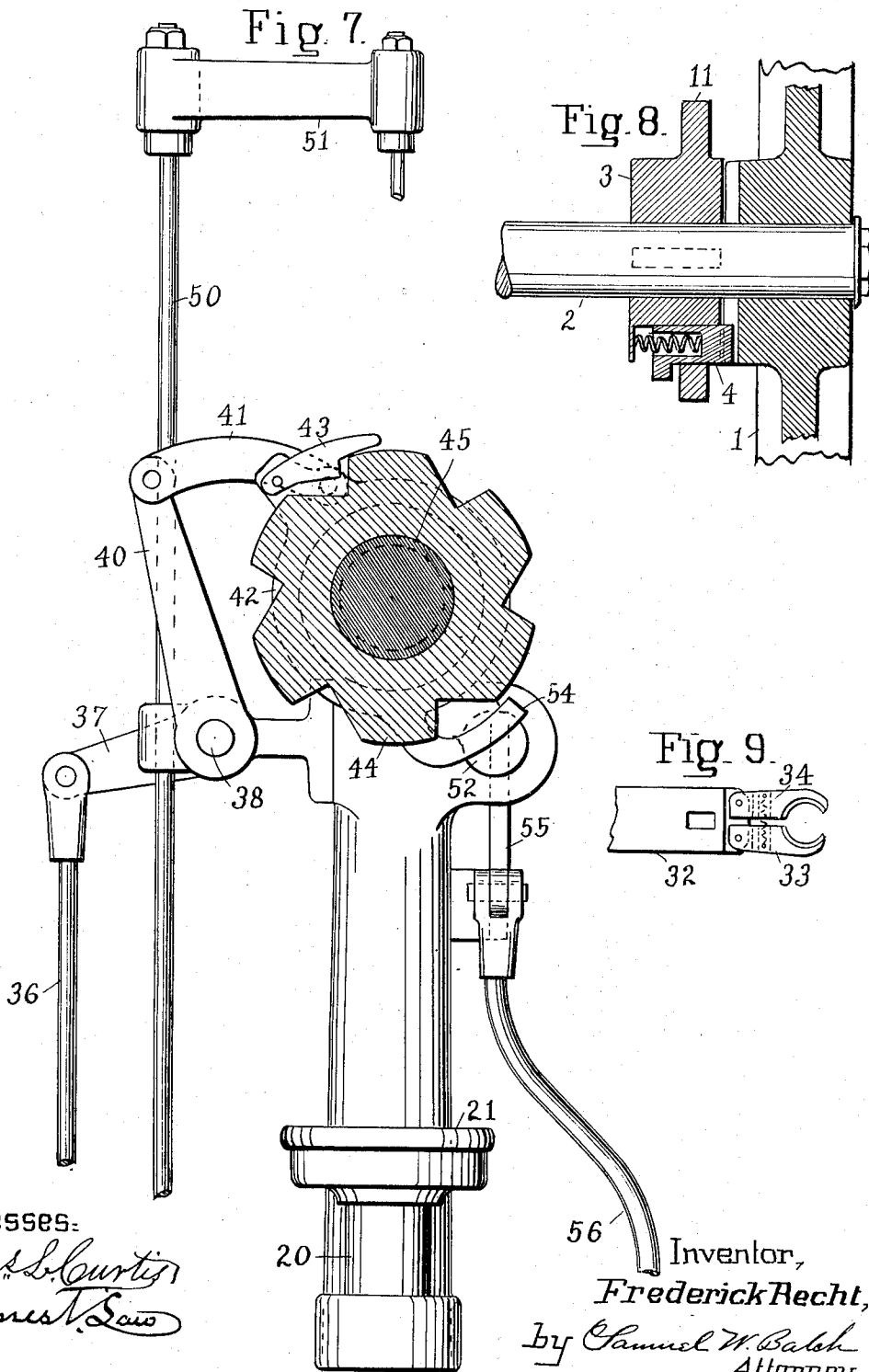
Witnesses:
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Patented Nov. 7, 1911.
7 SHEETS—SHEET 7.



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UNITED STATES PATENT OFFICE.

FREDERICK RECHT, OF NEW YORK, N. Y.

MACHINE FOR APPLYING CAPS TO BOTTLES.

1,007,892.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed March 26, 1907. Serial No. 364,602.

To all whom it may concern:

Be it known that I, FREDERICK RECHT, a citizen of the United States of America, and a resident of the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Machines for Applying Caps to Bottles, of which the following is a specification.

This invention relates to machines for applying sealing caps to the mouths of bottles.

The machine illustrated is intended especially for the application of a metallic sealing cap or bottle seal which is provided with a compressible or elastic sealing medium, as a disk of cork, and means for locking the cap to the bottle, and more particularly for the application of the form of cap set forth in Letters Patent of the United States No. 646,627 granted to me April 3, 1900, and an improvement thereon set forth in Letters Patent of the United States No. 796,354, granted August 1, 1905, on my application.

This form of cap is provided with a locking wire which has a loop pendant from the edge of the cap. By reason of this form conditions are imposed in the automatic handling which do not arise with a form of sealing cap without such a pendant wire loop. Such caps are conveniently supplied by the manufacturer arranged in pasteboard containers consisting of tubes which have been slitted lengthwise so that the sheet metal portions of the caps with the sealing disks may be stacked within the tube while the wires extend through the slot and the loops lie outside the tube as illustrated in application for Letters Patent of the United States filed by me January 13, 1906, Serial No. 295,864.

One object of the invention is to provide a machine in which caps such as have been above defined are fed automatically, it being necessary merely to set a container with caps in proper position in the machine and the caps will be fed therefrom and brought into position for applying to a bottle at each revolution of the machine. Such caps can, I find, be most satisfactorily applied by means of a specially constructed head or chuck which receives the cap and through which pressure is applied in the direction of the bottle axis by relative movement of the head and support for the bottle to effect sealing contact between the cap and bottle and their locking together, such a chuck being set forth in application for Letters

Patent of the United States filed by me September 2, 1904, Ser. No. 223,088. The axial pressure requisite is considerable and the power expended is proportionate to the distance through which the moving parts are required to travel while the pressure is sustained. Such distance, with power-driven mechanism wherein parts of the transmitting mechanism have fixed distances of travel, can be reduced to a minimum by close adjustment of the nearness of approach of the support for the bottle and the pressure-applying head according to the height of the bottle to be capped. Where there is variation in the heights of bottles for which individual gaging and manual adjustment is impracticable, such adjustment is made for the shortest bottle of the lot, and heretofore when longer bottles are placed in the machine, the pressure is applied at an earlier point in the movement and sustained for a longer time with consequent waste of power, excessive pressure, danger of breakage, and curtailment of the time of the machine which can be allotted to the operations of bringing the caps into position and removal of the capped bottles.

A further object of the invention is to provide means by which the application of the heavy sealing pressure is held back or delayed in the case of the longer bottles being capped, and applied only toward the end of each stroke of the machine and at the same point in the stroke measured from its completion irrespective of the height of the bottle, whereby the pressure is sustained only through the required distance and no more with all heights of bottles within the capacity of the machine with a given manual adjustment.

Further objects of the invention relate to devices for safeguarding the operation of the machine.

In the accompanying seven sheets of drawings which form a part of this application is illustrated a power capping machine embodying my invention in which,

Figure 1 is a front elevation of the lower portion of the machine, showing the driving pulley, starting mechanism, crank and cam shaft and transmission mechanism to the support for the bottle. Fig. 2 is a side elevation of the lower portion, omitting the pulley. Fig. 3 is a vertical section of the lower portion on the line III—III of Fig. 1. Fig. 4 is a front elevation of the upper

portion of the machine showing the holder for cap containers in section, the pressure-applying turret-head with chucks for holding the caps, cap-feeding mechanism and actuating mechanism. Fig. 5 is a side elevation of the upper portion. Fig. 6 is a vertical section of the upper portion on the line VI of Fig. 5. Fig. 7 is a vertical section of the upper portion on the line VII of Fig. 5. Fig. 8 is a section at one end of the crank shaft on the line VIII—VIII of Fig. 1, showing the clutch mechanism. Fig. 9 is a plan of the end of the slide for ejecting caps from the tubes.

The machine is power driven by a belt on a pulley or fly wheel 1. This pulley runs loosely on a crank and cam shaft 2, and a collar 3 keyed to the shaft carries a bolt 4 engaging with the pulley. A knob on the bolt is engaged by a pivoted wedge 5 at each revolution of the machine and the bolt thereby withdrawn from engagement with the pulley. The pivoted wedge connects through an arm 6 and latch 7 with a treadle 8 by which the machine is started. A stud 9 throws off the latch when the treadle is depressed, thereby permitting the wedge to return to engaging position if the treadle is held down, and the pivoted wedge also has an arm 10 which is engaged by a cam 11 and the pivoted wedge positively returned into position to engage with the bolt and stop the machine at the completion of a revolution, thereby necessitating the depressing of the treadle for each revolution.

A pitman 12 connects the crank of the crank shaft with the junction point of toggle members. The lower of the toggle members consists of two telescoping parts, an upper part 13 hinged at the junction point of the toggle members, and a lower part 14 hinged to suitable abutments. The abutments are eye-bolts 15 15 held in place by heavy compression springs 16 16. The tension of these springs may be such that the eye-bolts do not move in the ordinary operation of the machine, and act as substantially rigid abutments. These springs serve as a safeguard in event of the machine being operated with anything therein which is less elastic than a bottle and unused cap, as for example a bottle which has been capped, or a bottle without there being a cap in the opposing chuck. A light spring 17 keeps the telescoping parts normally extended. The upper toggle member 18 is hinged to a vertically sliding screw-threaded shank 19 which threads into a shank 20 of the table 21 which supports the bottle. By manually revolving the table, adjustment is effected for heights of bottles in excess of the variation which may be met with in any given lot. The yielding of the light spring between the telescoping parts of the lower of the toggle members compensates for such variation in heights as is un-

avoidable in a lot of bottles which the machine may be called on to cap. The pressure is limited to the tension of this spring during the initial approach of the support for the bottle toward the pressure-applying head until the crank shaft reaches a certain definite point in its revolution and the toggle comes within a certain definite distance from straight. Then a toothed latch pivoted to the lower of the telescoping parts of the lower toggle member is brought into engagement with teeth on the shank of the upper telescoping part and the two rigidly connected. This engagement is effected by contact of the back of the latch with a spring-pressed pad 23. Hooks 24 24 engage the lower of the telescoping parts of the lower toggle member through a bar attached thereto and make the engagement of the latch more secure. From this point in the movement and during the further straightening of the toggle the spring between the telescoping parts is thereby cut out of action, and as the pressure is no longer limited thereby, it will increase with further straightening of the toggle, depending upon the resistance to compression by the packing in the cap, unless or until further limited by the yielding of the heavy springs through which the eye-bolts are hung. The hooks hold the latch in engagement until the toggle returns to its initial bent condition, thereby promptly lowering the table since the telescoping parts are thereby kept from extending while the toggle is flexing, and releasing the bottle to permit its removal, and to permit other operations of the machine to take place. When the toggle is fully bent the ends of the hooks strike studs 25 25, the telescoping parts are unlatched thereby and return to their normal extended relation. A dash-pot connection 26 between the parts prevents the return from being too sudden.

Near the top of the machine is a table 27 which supports a vertical spindle 28. On the spindle is a sleeve 29 which carries a number of slotted metal tubes 30 at its lower end, and at its upper end a corresponding number of pairs of spring clips 31. The pasteboard containers for the caps are set on the ends of the metal tubes and steadied by the clips. The caps fall from the pasteboard containers into the metal tubes and rest on the table, except that one tube overlies an ejector slide 32 which carries cap grippers 33 and slides in a groove in the table. The grippers are drawn together by a spring 34. The ejector slide is actuated from a cam 35, through a rod 36, arm 37, rock-shaft 38, and arm 39. On the rock-shaft is also an arm 40 which connects through a link 41 with an oscillating ring 42. This ring carries a pawl 43 which engages notches in the turret or rotatable carrier 44 to revolve the same with a step-by-step movement. The turret is

mounted on a horizontal stud 45 which projects from the head of the column of the machine. A series of chucks or pressure-applying sealing heads 46 46, suitably formed for holding the caps and applying the caps to the bottles are set in the convex periphery of the turret. Each one is brought in turn into sealing position over the table on which the bottles are supported, and constitutes a pressure applying head for applying a cap and effecting the closure of the cap on the mouth of a bottle upon the application of pressure in the direction of the bottle axis through the rising of the table as detailed in my above mentioned application for Letters Patent of the United States Serial No. 223,088. Latches 47 keep the cap from falling out. Each cap as ejected is held by the grippers over the uppermost chuck in the turret and under a punch 48. The punch is under control of a cam 49, rod 50, and connecting arm 51, and descends at the proper time, drives the cap through the grippers, and seats it in the chuck. A turret-bolt 52 positively locks the turret. The bolt is forced into locking position by a spring 53, and is retracted by a finger 54 which is carried by the oscillating ring. Behind the bolt is an angle lever 55 which connects through a rod 56 with an arm of the wedge through which the machine is stopped and started, and prevents the starting of the machine if the turret is not in position with a chuck directly over the supporting table for the bottle.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a machine for effecting the closure of a cap on the mouth of a bottle, a pressure-applying head, a support for the bottle opposed thereto, means for moving the support for the bottle toward the pressure-applying head and effecting closure thereby, means for automatically limiting the pressure during the initial approach of the support to the head, and means for cutting the pressure-limiting means out of action when the moving means has reached a definite point in its movement.

2. In a machine for effecting the closure of a cap on the mouth of a bottle, a pressure-applying head, a support for the bottle opposed thereto, means for moving one of said parts relatively to the other, telescoping parts in said moving means, and means for latching the telescoping parts to each other when the moving means has reached a definite point in its movement.

3. In a machine for effecting the closure of a cap on the mouth of a bottle, a pressure-applying head, a support for the bottle opposed thereto, a toggle for moving one of said parts relatively to the other, one of the members of the toggle consisting of telescoping parts, means for operating the toggle,

and means for latching the telescoping parts to each other when the toggle comes within a certain definite distance from straight.

4. In a machine for effecting the closure of a metallic cap on the mouth of a bottle, a turret mounted to revolve about a horizontal axis and provided with a series of cap-holding means in its convex periphery, means for inserting caps in the cap-holding means, means for revolving the turret, a support for the bottle opposed to the lowermost cap-holding means, and means for moving the turret and support relatively to each other.

5. In a machine for effecting the closure of a metallic cap on the mouth of a bottle, a turret provided with a series of cap-holding means, a turret bolt, means for revolving the turret and operating the bolt, a support for the bottle, means for moving the turret and support relatively to each other, a clutch in said moving means, means for operating the clutch, and means connected with the turret bolt for locking the clutch operating means.

6. In a machine for applying bottle seals, a rotatable carrier, a plurality of pressure-applying sealing heads mounted on the carrier, means for rotating the carrier with a step-by-step movement, and a bottle support common to all of the sealing heads upon the carrier, and means for actuating the parts to obtain the required sealing pressure.

7. In a machine for applying bottle seals, a rotatable carrier, a plurality of sealing heads mounted on the carrier, means for rotating the carrier with a step-by-step movement, means for locking the carrier positively at each point of stoppage, a bottle support common to all of the sealing heads upon the carrier, and means for actuating the parts to obtain the desired sealing pressure.

8. In a machine for applying bottle seals, a rotatable carrier, a plurality of radially arranged sealing heads upon the carrier adapted when the carrier is rotated to be successively brought to sealing position, means for rotating the carrier with a step-by-step movement, means for positively locking the same at points of stoppage, a bottle support and means for moving one of the parts relative to the other to obtain the required sealing pressure.

9. In a machine for applying bottle seals, a rotatable carrier, a plurality of sealing heads carried thereby and adapted when the carrier is rotated to be successively brought to sealing position, means for rotating the carrier with a step-by-step movement, a bottle support, and means for moving one of said parts relative to the other to get the desired sealing pressure.

10. In a machine for applying bottle seals,

a rotatable carrier, a plurality of sealing heads carried thereby and adapted when the carrier is rotated to be successively brought to sealing position, means for rotating the carrier with a step-by-step movement, a bottle support, means for moving one of said parts relative to the other to get the desired sealing pressure, and means for returning the parts to normal position.

10 11. In a bottle sealing machine, a rotatable carrier, a plurality of seal retaining and applying heads on said carrier, means for rotating said carrier and heads in a vertical plane whereby the heads are successively brought to sealing position, a suitable bottle support, and means for moving one of said parts relative to the other to get the required sealing pressure.

20 12. In a bottle sealing machine, a rotatable carrier, a plurality of seal retaining and applying heads on said carrier, means for rotating said carrier and heads with a step-by-step movement in a vertical plane, whereby the heads are successively brought

to sealing position, a suitable bottle support 25 and means for moving one of said parts relative to the other to get the required sealing pressure.

13. In a machine for applying bottle-caps, a capping mechanism, a vertically adjustable bottle support, a sustaining spring for said support, means cooperating with said support and actuated by devices independent of the capping mechanism whereby said support is held in proper position relative 30 to the capping mechanism.

14. The combination of a bottle stand, a head, and means to press the two together including a toggle joint yieldingly mounted and a non-yielding rack engaging the toggle 35 at the conclusion of its stroke.

Signed by me at New York (borough of Manhattan), N. Y., this twenty-fifth day of March, 1907.

FREDERICK RECHT.

Witnesses:

SAMUEL W. BALCH,
HUGH H. SENIOR.