No. 697,280. Patented Apr. 8, 1902.

E. D. SCHMITT.

MACHINE FOR APPLYING BOTTLE SEALS.

(Application filed Sept. 28, 1901.)

(No Model.) 2 Sheets—Sheet 1.

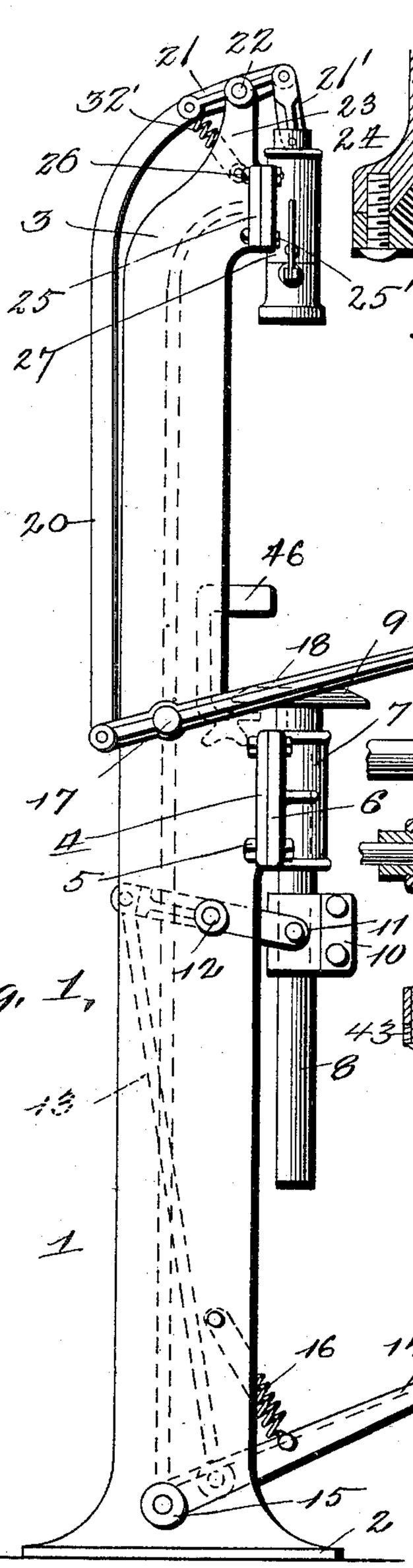

Fig. 1.

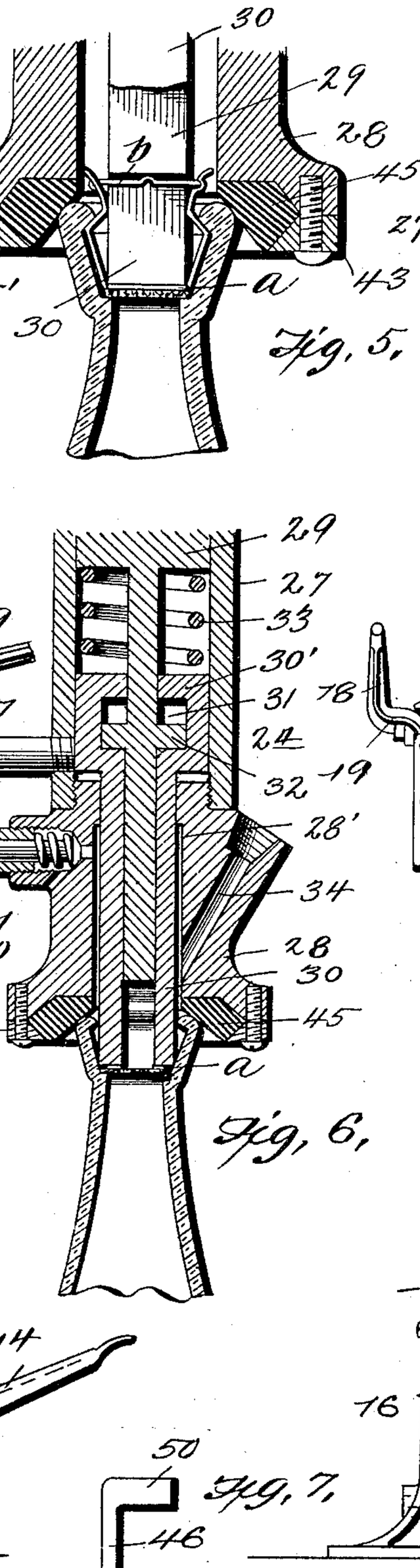

Fig. 6.

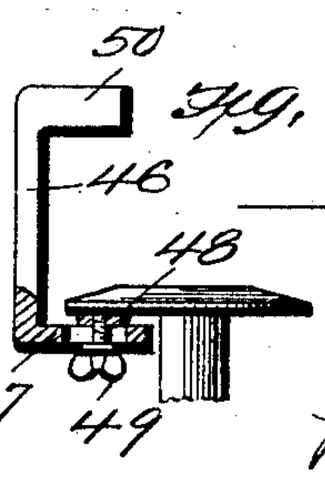

Fig. 7.

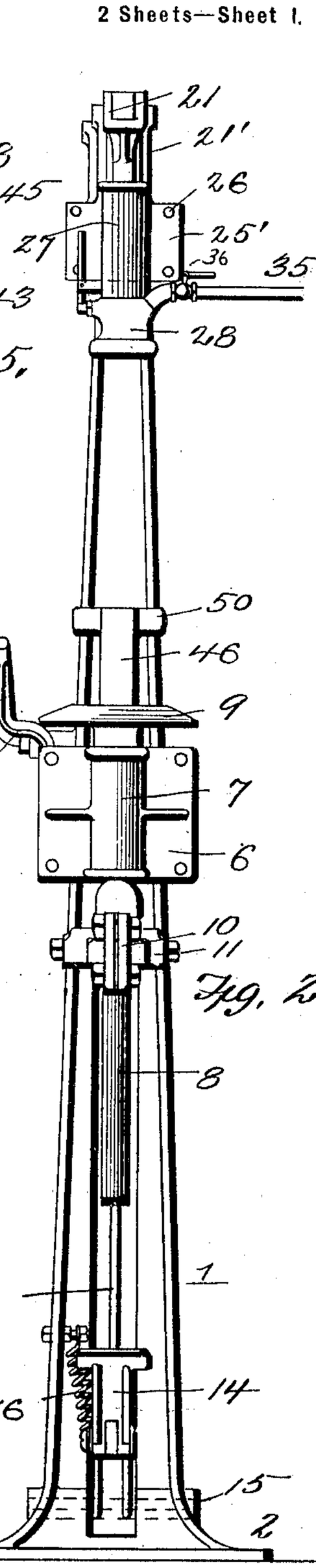

Fig. 2.

Fig. 5.

Witnesses
T. L. Mockaby
F. F. Johnson

Inventor
Edward D. Schmitt
By F. W. Johnson,
Attorney

No. 697,280. Patented Apr. 8, 1902.

E. D. SCHMITT.

MACHINE FOR APPLYING BOTTLE SEALS.

(Application filed Sept. 28, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

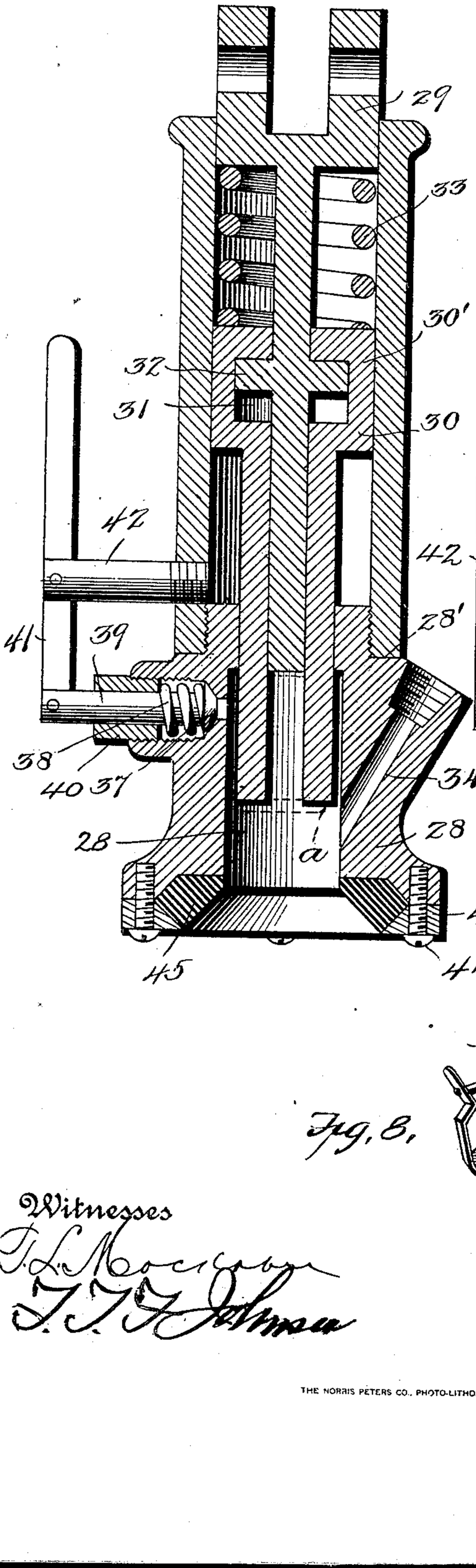

Fig. 4.

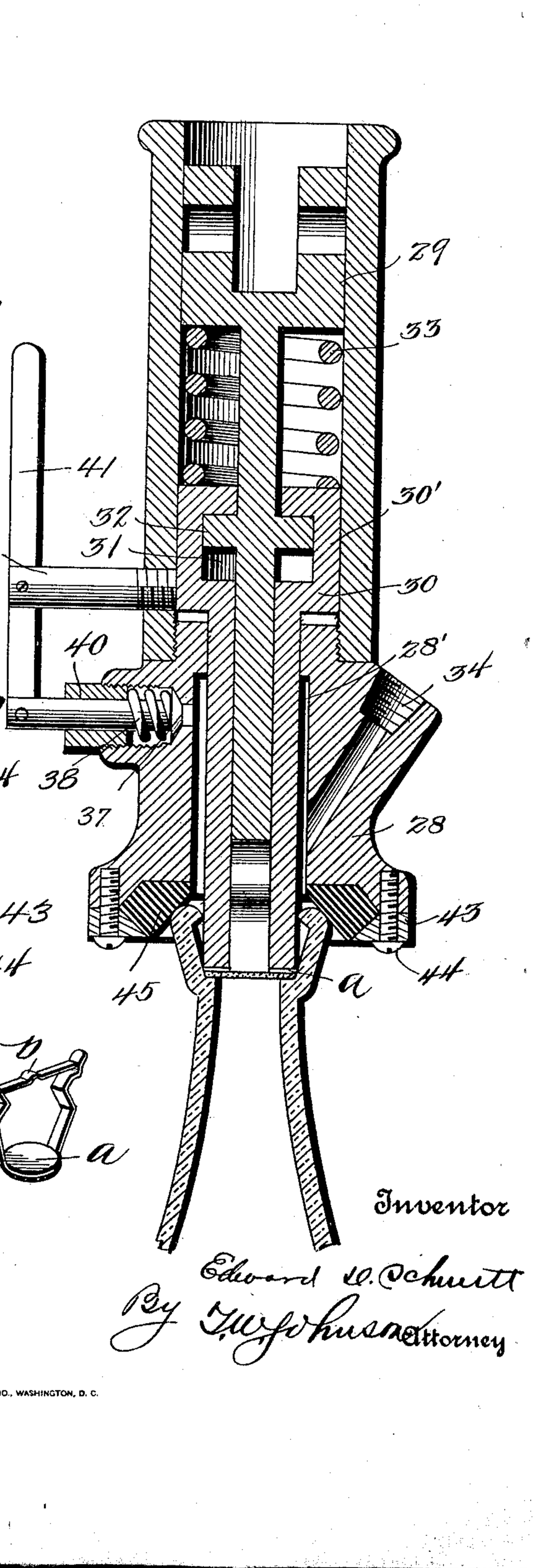

Fig. 8.

Witnesses
T. L. Macgregor
T. C. Johnson

Inventor
Edward D. Schmitt
By T. W. Johnson Attorney

UNITED STATES PATENT OFFICE.

EDWARD D. SCHMITT, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNIVERSAL SEAL AND STOPPER COMPANY, OF CAMDEN, NEW JERSEY, AND BALTIMORE, MARYLAND, A CORPORATION OF NEW JERSEY.

MACHINE FOR APPLYING BOTTLE-SEALS.

SPECIFICATION forming part of Letters Patent No. 697,280, dated April 8, 1902.

Application filed September 28, 1901. Serial No. 76,874. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Machines for Applying Bottle-Seals; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in machines for sealing bottles, and more especially bottles containing aerated or charged liquids.

One object of the invention is to provide a machine by which a seal of special construction can be applied internally to the bottle-neck, securely sealing the bottle and locking the seal in place, the special seal referred to being illustrated in connection with the machine.

A further object is to provide a machine capable of applying the seal illustrated, as well as seals that may require the same or substantially the same movements in the sealing operation.

In devices of this character it is highly important that the "live" or charged liquid be fed through the sealing-head from the tank to the bottle in as direct a manner as possible and that the construction of the sealing-head be such that the waste of the material or gases will be reduced to a minimum.

Another object, therefore, of this invention is to provide such a construction as will supply these desirable features.

In the drawings illustrating the invention, Figure 1 is a side elevation of the machine. Fig. 2 is a front elevation of the machine. Fig. 3 is an enlarged section of the sealing-head with a seal therein in dotted lines in its position before the sealing operation takes place. Fig. 4 is a similar view of the head with a bottle below the same and a seal in place in the bottle and about to be locked therein. Fig. 5 is a view showing the position of the parts relative to the bottle and seal in the final position. Fig. 6 is a section including the upper part of the sealing-head with the upper plunger member in its lowest position. Fig. 7 is a view, partly in section, of the device for guiding the bottle or centering the same upon the supporting-table; and Fig. 8 is a perspective view of the seal that the machine applies.

Referring to the drawings, the numeral 1 indicates the frame, formed, preferably, of metal and provided with a widened base 2 and slightly-curved overhanging portion 3.

Rigidly secured to a plate 4, integral with the frame and held thereto, preferably by bolts 5, is a corresponding plate 6, having formed integral therewith a sleeve 7, through which operates a vertical shaft 8, carrying on its upper end a bottle-supporting table 9. Below the sleeve and adjustably secured to the shaft is a collar 10, embraced by the bifurcated end of a rocker-arm 11, which end has pivotal connection with said collar. The rocker-arm is pivoted to the frame, as indicated by the numeral 12, and its rear end is pivotally connected with a rod 13, (shown in dotted lines, Fig. 1,) which in turn has its lower end pivoted to the foot-lever 14, pivoted to the frame at 15 and held normally in raised position by a spring 16, which is secured to the lever and the frame in the usual manner.

Pivoted to the frame at 17 in a convenient position to be gripped by the hand of the operator is a hand-lever 18, bent laterally, as shown at 19, so as to work free of the bottle-supporting table, and has its rear end pivoted to the vertical arm 20, which has its upper end embraced between the bifurcated ends of the rocker-arm 21, pivoted at 22 between the upper ends of the extension 23.

Numeral 24 is the sealing-head, rigidly secured, preferably by means of plates 25 25′ and bolts 26, to the upper portion of the frame, and it consists in the main of a stationary sleeve 27, internally screw-threaded at its

lower end to receive the externally-threaded boss of the lower head portion 28.

In carrying out my invention I preferably, though not necessarily, construct the plunger in three parts—namely, an upper member 29, pivotally connected with a link 21′, which has its upper end similarly connected to the forward end of the rocker-arm 21 and which member, as more fully hereinafter described, operates to lock the seal in the bottle, and a two-part lower member 30, which in the sealing operation seats the seal preparatory to its being locked by the upper member. Each part of the lower member is provided with a head 30′, recessed or chambered, as indicated by the numeral 31, for the reception of the cross-head 32, integral with the stem of the upper member when the two parts of the lower member are assembled. The legs of the lower member are extended through the lower head portion and terminate at a proper point in the chamber 28′, while the stem of the upper member of the plunger terminates considerably above the ends of the legs of the lower member. The plunger is a compound plunger, and between its upper and lower members is interposed a spring 33, having a tendency to keep the cross-head 32 normally in the upper part of the chamber 31, and the plunger in the concrete is held normally raised by a spring 32′, connected to the rear end of the rocker 21 and to the frame.

Communicating with the chamber 28 and preferably opening below the extremity of the legs of the lower member of the plunger is the charged-liquid-inlet passage 34, internally threaded at its outer end to adapt it for connection with the pipe 35, controlled by a cock 36 and leading to a suitable tank. (Not shown.) Preferably opposite the liquid-inlet opening is a valve 37, held normally closed by a spring 38, surrounding the valve-stem 39 and abutting against the valve-head, and a screw-plug 40. The end of the valve-stem is bifurcated to receive the lower end of a hand-lever 41, which is pivoted thereto and fulcrumed about centrally to an arm 42, supported in the sleeve portion of the head. In operation this valve works automatically under ordinary conditions, and the lever is merely provided so that the surplus material and gases from the chamber 28′ can be blown off should this be necessary or desirable.

The numeral 43 indicates a removable ring preferably held to the lower head portion by a short screw 44, and said ring is beveled from its inner side and adapted to hold in place the gasket 45, formed of rubber or other material adapted to make an air-tight seal between the upper edge of the bottle-neck and said gasket when the bottle is forced upward against the head.

In order that the bottle may be readily centered upon the table and maintained in such position while moving toward the sealing-head, I provide a centering device 46, having a slotted horizontal portion 47, adapted to be secured to a boss 48, formed on the under side of the table, and to be held to said boss by a thumb-screw 49. The slot in the part 47 is sufficiently elongated to permit of movement of the device to and from the center of the table. The upper portion of the device is formed of diverging arms 50 to embrace the bottle.

The friction between the extremities of the legs of the lower plunger member and the seal will be sufficient to hold said seal in proper position therebetween preparatory to the sealing operation; but I may magnetize in any suitable manner the lower plunger member or so much thereof as is necessary to assist in holding the seal.

In operation a seal—such, for instance, as is illustrated in the drawings—is inserted between the extremities of the legs of the lower plunger member, either with the circular portion of the seal actually engaged by the ends of the lower plunger member or with said ends a short distance above said circular part of the seal, which will result in such engagement upon the downward movement of the plunger. As shown in Figs. 3, 4, and 5, the circular portion *a* of the seal is engaged by the lower plunger member at the initial downward movement thereof as well as in the final position. A bottle is placed upon the table and the foot-lever operated to raise the bottle until its mouth engages the gasket in the lower head portion. The cock controlling the admission of liquid from the tank is then opened, admitting the charged liquid until the operator watching the bottle sees that it is sufficiently filled, when the cock is turned off and the hand-lever depressed to cause the plunger to descend, both members together, the engagement of the seal by the lower member being a yielding one by reason of the action of the spring 33, until the seal is seated upon the sealing-seat in the bottle, when obviously the upper member of the plunger will continue its downward movement until the cross-head 32 reaches the bottom of the chamber 31, which will be sufficient movement to force the locking-tongue *b* of the seal into locked position, as shown in Fig. 5, thus locking the seal in the bottle. The sealing-head is so constructed that with expert operation there will be no waste of material or gases; but in the event that the bottle be filled too full or too quickly the surplus of either or both will pass out of the head through the valve 37.

I claim—

1. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one part being adapted to seat the seal in the inside of the bottle-neck, and the other to engage the locking means of the seal and lock the seal in place therein, substantially as described.

2. In a machine for applying bottle-seals,

the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one part being adapted to seat the seal in the inside of the bottle-neck, and the other to engage the locking means of the seal and lock the seal in place therein, of means to operate the plunger to seat and lock the seal, substantially as set forth.

3. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one part being adapted to seat the seal in the inside of the bottle-neck and another to engage the locking means of the seal and lock the seal in place therein, and to operate yieldingly upon said seal, of means to operate the plunger to seat and lock the seal, substantially as described.

4. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one adapted to seat the seal in the inside of the bottle-neck and the other to engage the locking means of the seal to lock the seal in place therein, and to operate yieldingly upon the seal, means for operating the plunger to seat the seal, and means for returning the parts to normal position, substantially as described.

5. In a machine for applying bottle-seals, the combination with a sealing-head formed with a liquid-inlet therein and a chamber to receive the same and a valve communicating with said chamber for the purpose set forth, of a compound plunger in said head, the parts thereof being capable of independent movement, one part being adapted to seat the seal in the inside of the bottle-neck in its downward movement and the other part to lock the seal therein after the stoppage of the first-mentioned part, means for operating the plunger and means for returning all the parts to normal position, substantially as described.

6. In a machine for applying bottle-seals, the combination with a sealing-head formed with a liquid-inlet therein and a chamber to receive the same, and a valve communicating with said chamber for the purpose set forth, of a compound plunger in said head, the parts thereof being capable of independent movement, one part being adapted to seat the seal in the inside of the bottle-neck in its downward movement and the other part to lock the seal therein after the stoppage of the first-mentioned part, means for supporting the bottle below the head and moving the same to and from said head, means for operating the plunger, and means for returning all the operating parts to normal position after each operation, substantially as described.

7. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one adapted to seat the seal in the inside of the bottle-neck in its downward movement, and the other to engage the locking means of the seal to lock said seal in place therein, after the stoppage of the first-mentioned part, a bottle-supporting table below the head, means for raising and lowering the same, and means for returning all the operating parts to normal position after each operation.

8. In a machine for applying bottle-seals, the combination with a sealing-head, a plunger in said head comprising an upper member having a cross-head as 32 thereon, and a two-part lower member recessed to receive the cross-head, the two parts being adapted to operate in the described relation to each other to seat the seal in the inside the bottle-neck and to lock the same therein, a spring interposed between the two members and keeping the cross-head normally at the top of the recess in the lower member, and means for operating the plunger to cause both members to descend together in the initial movement of the plunger but to continue the movement of the upper member after the stoppage of the lower member, substantially as described.

9. In a machine for applying bottle-seals the combination with a sealing-head, a plunger in said head comprising an upper member having a cross-head thereon, and a lower member having a chamber to receive the said cross-head, said cross-head being capable of vertical movement in said chamber, a spring interposed between the two members and keeping the cross-head normally at the top of the chamber in the lower member, means for operating the plunger to cause both members to descend together in the initial movement of the plunger but to continue the movement of the upper member after the stoppage of the lower member, a lower head portion formed with a liquid-inlet therein and a chamber to receive the same and a valve communicating with said chamber for the purpose set forth, and means for controlling the admission of liquid to the chamber, substantially as described.

10. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger the parts thereof being capable of independent vertical movement, of means for operating the seal-seating plunger to seat the seal on the inside of the bottle-neck upon the initial movement of a part of the plunger, and to cause the locking-plunger to engage the locking means of the seal and lock the seal in place therein by a further downward movement, and means for returning the parts to normal position, substantially as described.

11. In a machine for applying bottle-seals, the combination with a suitable frame, of a sealing-head containing a compound plunger, the parts thereof being capable of independent vertical movement, one part being adapt-

ed to seat the seal in the inside of the bottle-neck and another to engage the locking means of the seal and lock the seal in place therein, and to operate yieldingly upon the seal, the movement of the part of the plunger to lock the seal being independent of the movement of the seal-seating part, and means for returning the operating parts to normal position.

12. In a machine for applying bottle-seals, the combination with a sealing-head containing a compound plunger, the parts thereof being capable of independent movement, means for operating the plunger to seat the seal in the inside of the bottle-neck upon the downward movement of one of the parts and to lock the same in place therein after the stoppage of the first-mentioned part, a bottle-supporting table below the head, and means for raising and lowering the same, a bottle-centering device secured to the table and adjustable toward and from the center thereof, and means for returning all the operating parts to normal position after each operation.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD D. SCHMITT.

Witnesses:
JOHN W. HEWES,
WALTER SMITH.