

No. 735,911.

PATENTED AUG. 11, 1903.

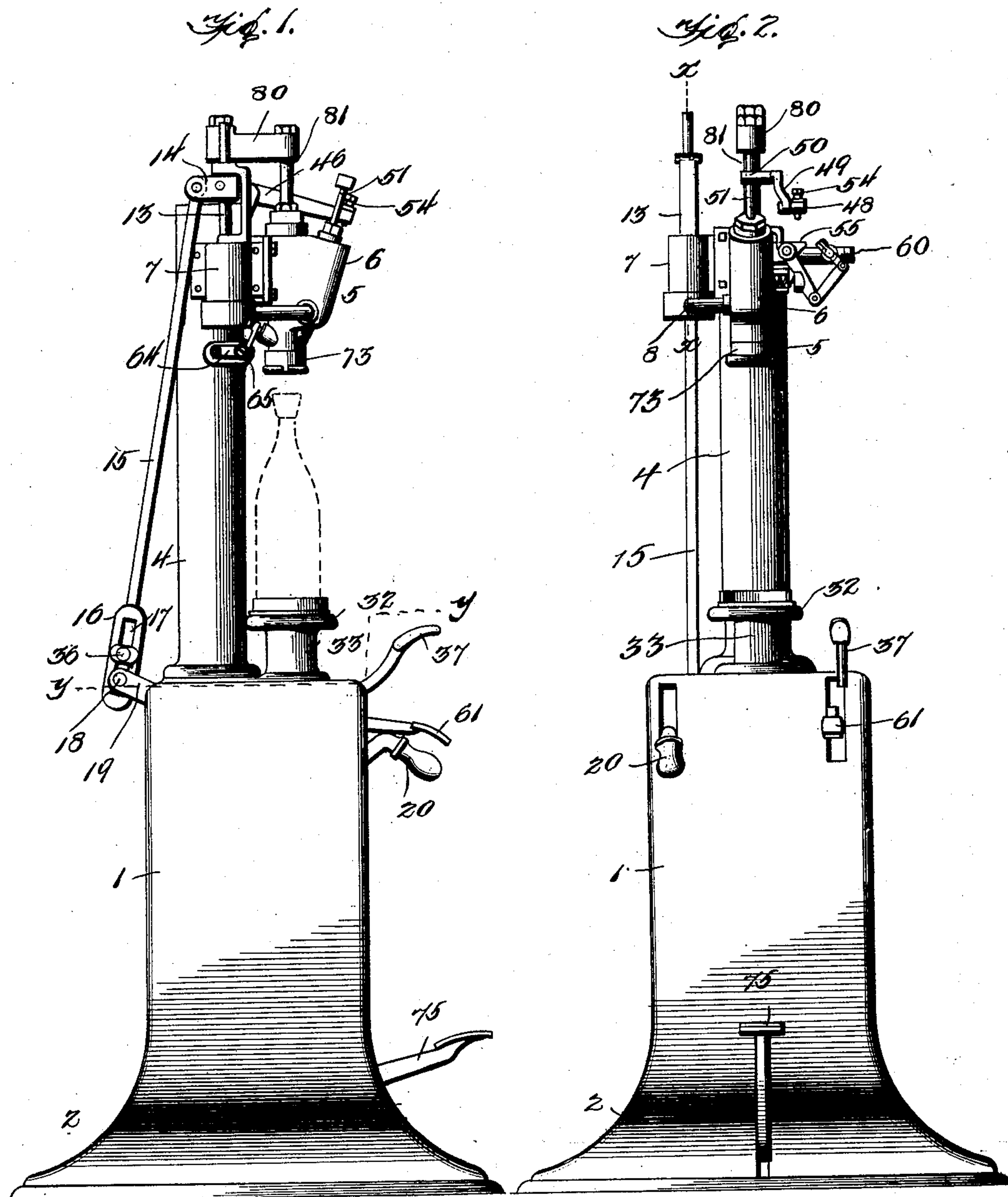
E. D. SCHMITT.

MACHINE FOR FILLING AND SEALING BOTTLES.

APPLICATION FILED OCT. 10, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses
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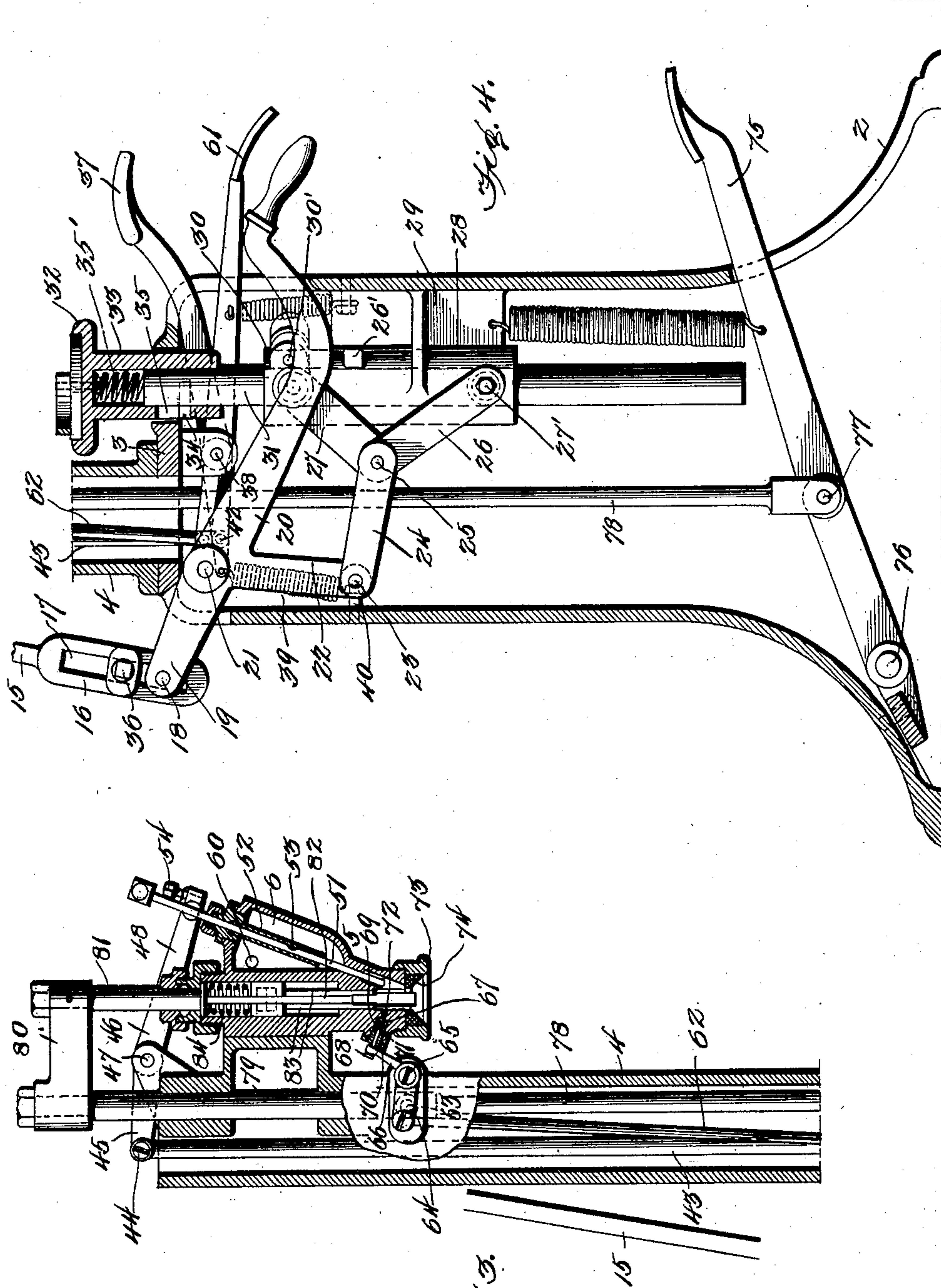
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4 SHEETS—SHEET 2.



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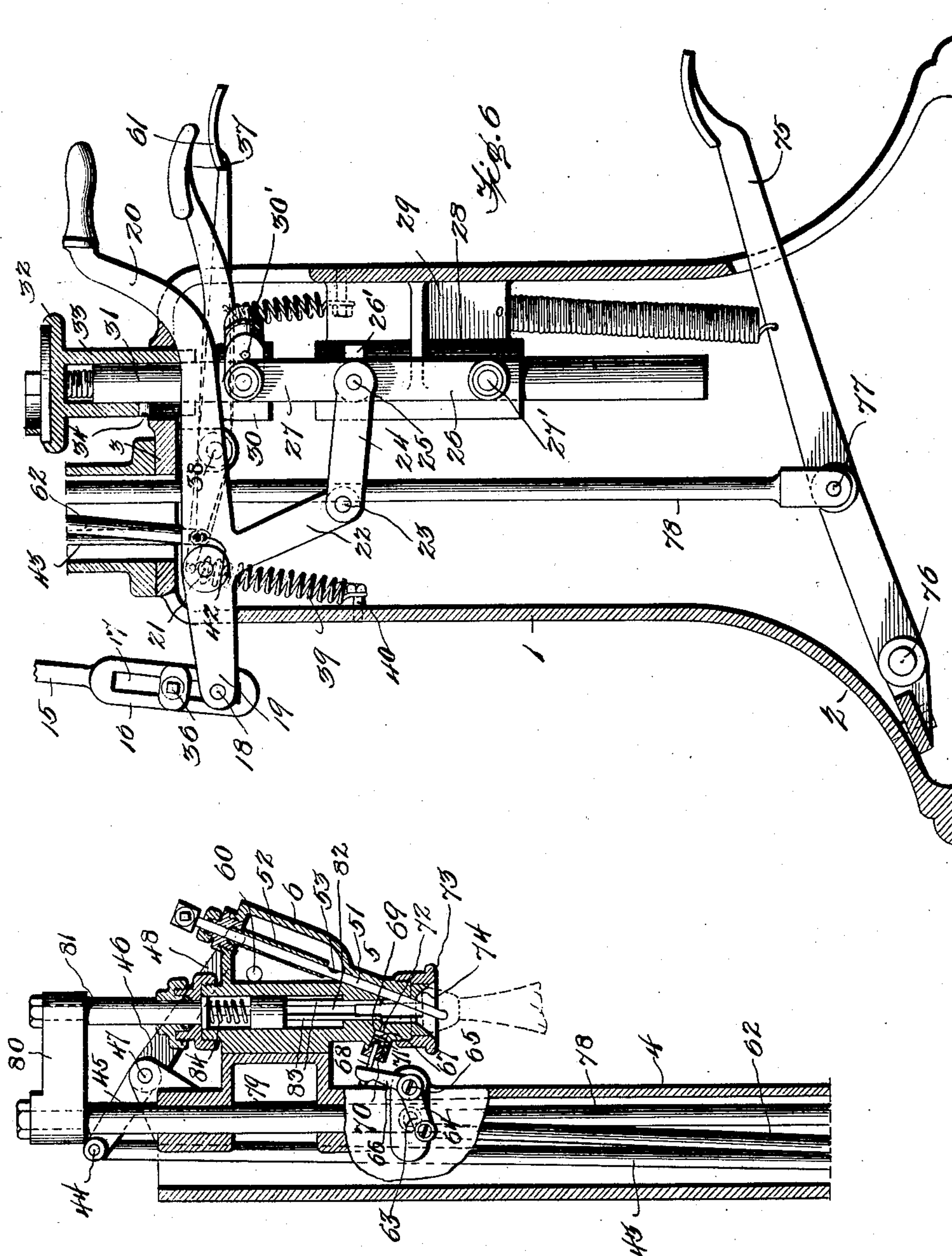
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 7.

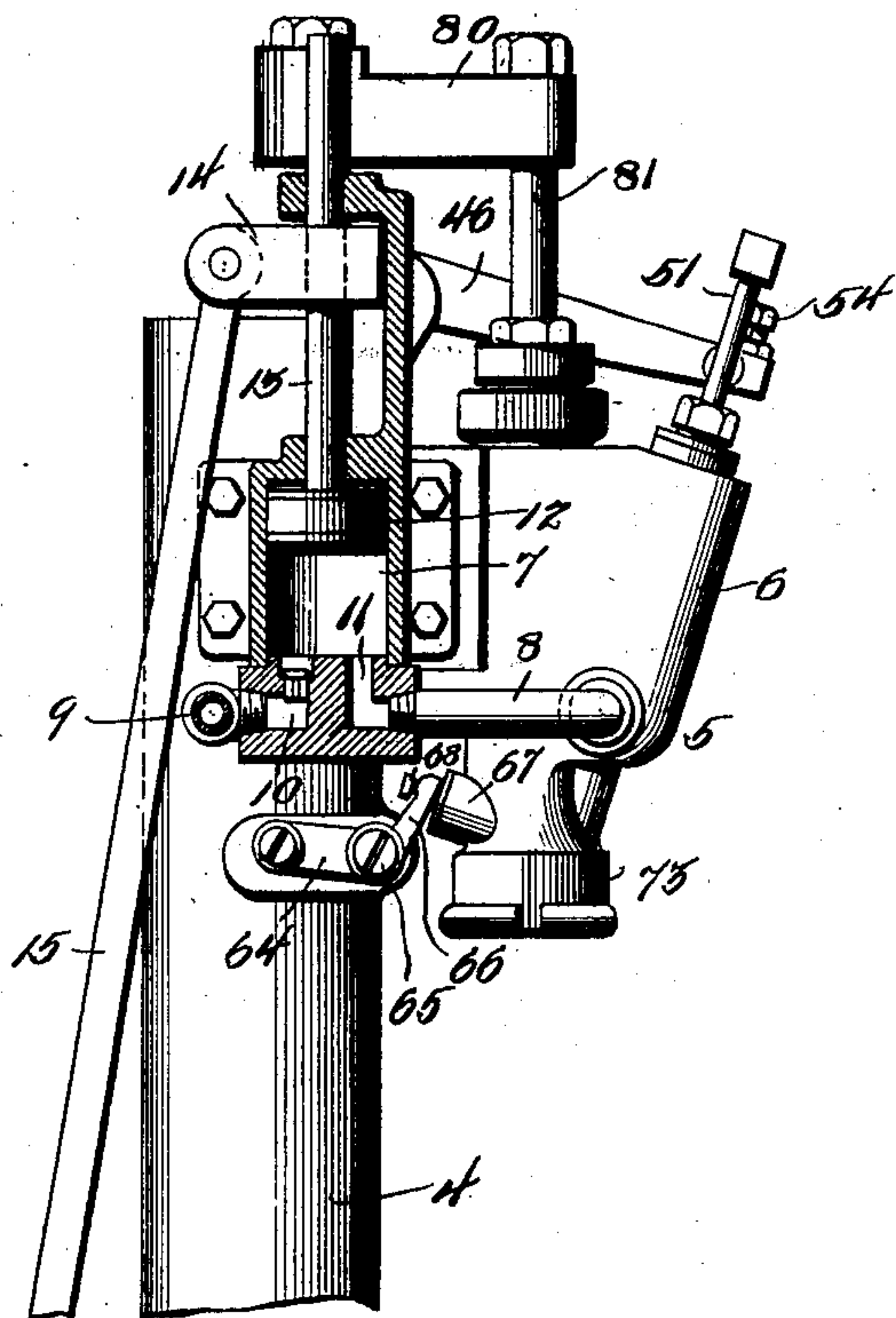


Fig. 8.

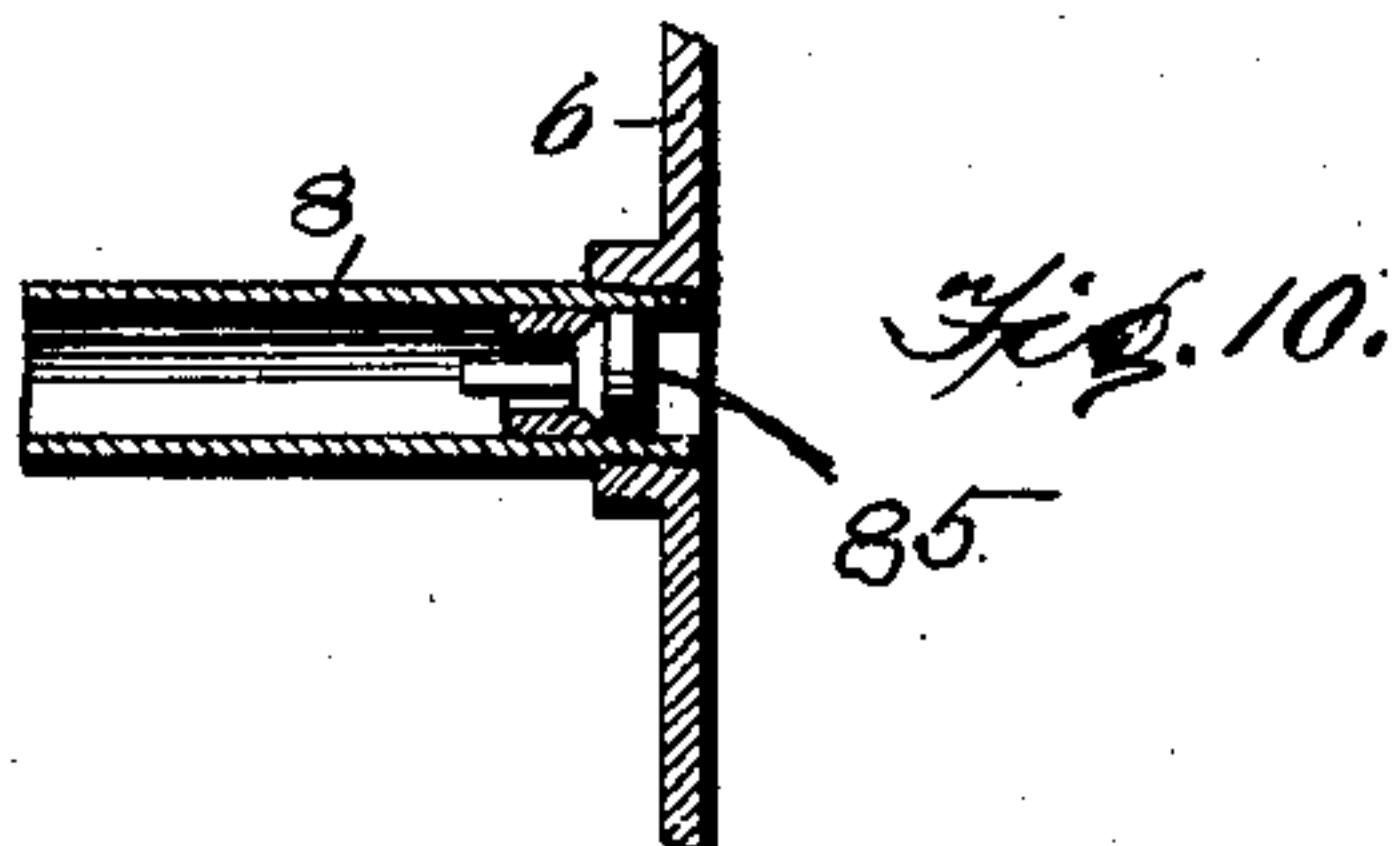
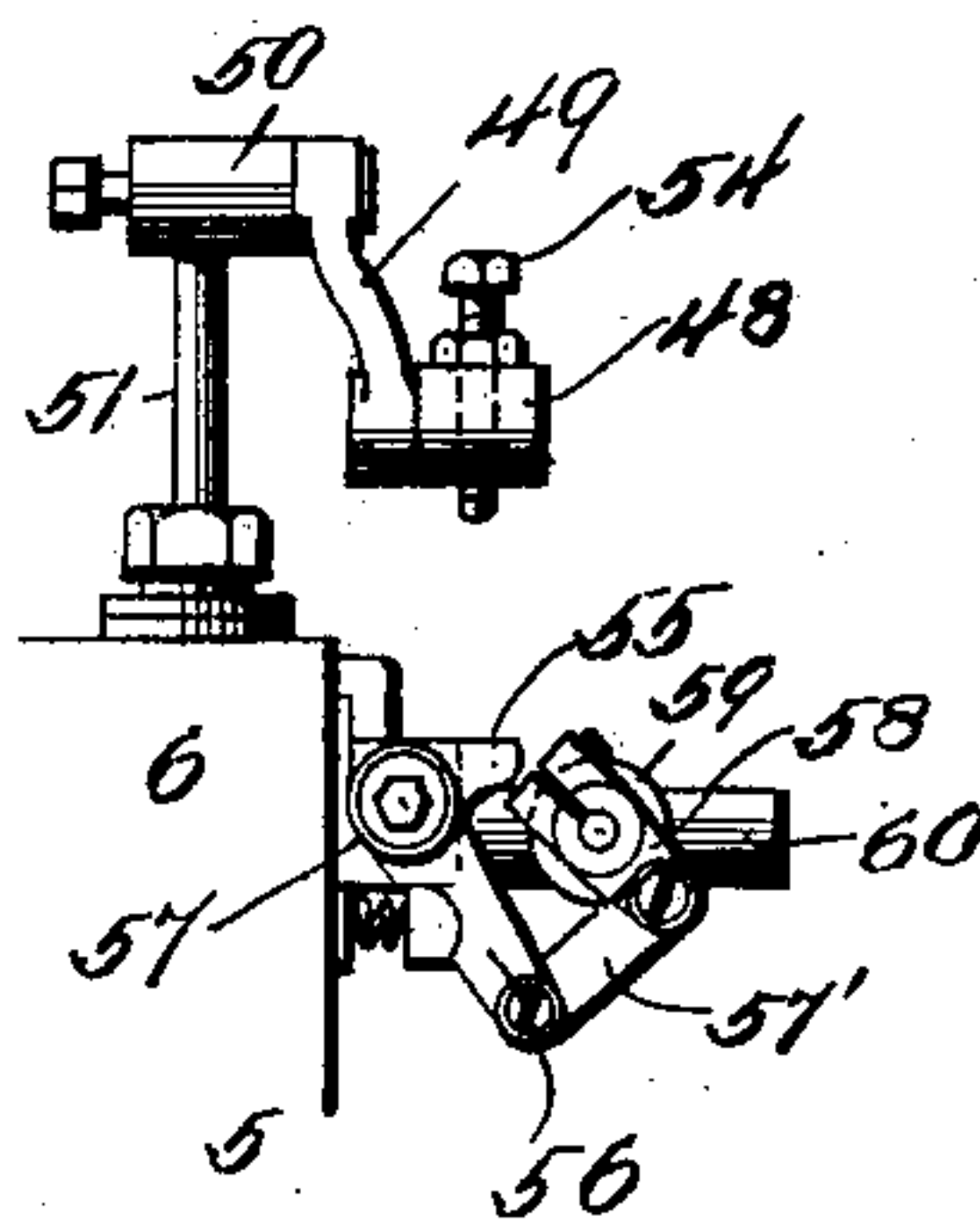
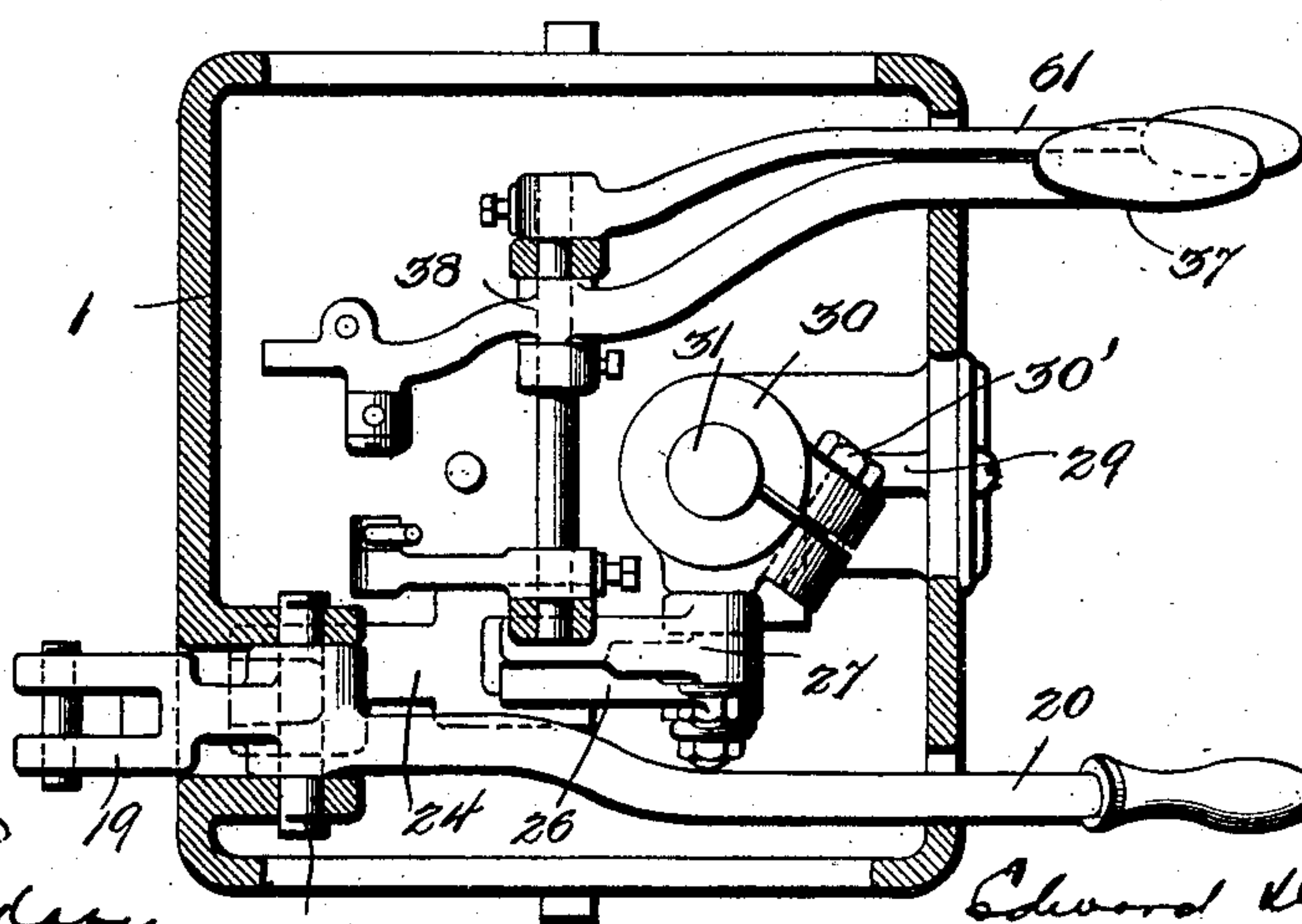


Fig. 9.



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UNITED STATES PATENT OFFICE.

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

MACHINE FOR FILLING AND SEALING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 735,911, dated August 11, 1903.

Application filed October 10, 1902. Serial No. 126,752. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing in the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Filling and Sealing Bottles; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in machines for filling and sealing bottles, and is especially adapted for filling the same with charged liquids and applying a seal, such as that shown in my Patent No. 685,227, of October 22, 1901, and my Reissue Patents Nos. 12,032 and 12,033, of September 16, 1902.

The object of the invention is to provide a machine that will reduce the waste of the material or beverage to a minimum in the bottling operation and one that will be durable and simple in operation.

Another object is to provide a machine in which the syrup or flavor of the beverage to be bottled and the charged or carbonated water can be conveniently handled from separate sources and united or mixed in the filling operation.

A further object of the invention is to provide a simple and efficient means for conveniently exhausting the air from the bottle during the sealing operation.

A still further object is to provide a machine that will be capable of either filling the bottle with a carbonated water or other unflavored beverage or filling the same with a flavored and sweetened beverage by thoroughly and effectually mixing the syrup and carbonated or other water.

While I have stated that the machine about to be described is especially adapted for applying a seal devised by me which requires certain structural characteristics of the sealing-plungers in the sealing-head, yet the machine could be obviously adapted for applying other seals requiring the same or sub-

stantially the same mechanical movements in the sealing operation by merely varying the form of plunger.

In the drawings, Figure 1 is a side elevation of the machine, the operating parts being in normal position. Fig. 2 is a front elevation. Fig. 3 is a central vertical section of the upper portion of the machine. Fig. 4 is a similar section of the lower portion thereof. Fig. 5 is a central section of the upper part of the machine with a portion of a bottle in the position it occupies during the filling and sealing operations, the operating parts of the upper portion of the machine being also in filling position. Fig. 6 is a central section of the lower portion of the machine or pedestal with the operating parts thereof in the position they occupy in the filling operation. Fig. 7 is a sectional view of the upper portion of the machine, taken about on the line *x x* of Fig. 2, showing the flavoring or syrup pump and its connections with the mixing-chamber and syrup-supply. Fig. 8 is an enlarged front elevation of the sealing-head. Fig. 9 is a horizontal section taken about on the line *y y*, Fig. 1, showing in plan the operating parts supported in the lower portion or pedestal of the machine. Fig. 10 is an enlarged detail sectional view of a portion of the mixing-chamber, a syrup-pipe leading thereto, showing the valve therein for preventing back pressure through the mixing-chamber in the operation of the machine.

For the sake of clearness of description I will first describe the mechanism for filling the bottle, as the mechanism for sealing the bottle is independent of that for filling and is only operated in the final operation of the machine. The internal construction of the sealing-head in the present instance is substantially that shown and described in my Patents Nos. 697,280, 697,281, and 697,282, and needs no detail description here.

Referring to the drawings, and especially to Figs. 3, 4, 5, 6, and 7, the numeral 1 indicates a substantially rectangular cast-metal hollow pedestal having the usual widened base 2 and provided with slots for the passage of the operating-levers, as is usual in machines of this character. Mounted upon

the top plate 3 of the pedestal and secured thereto by any suitable means is a tubular sleeve 4, through which the lever-rods work, and to the front side of which near the top of the sleeve I bolt the sealing-head 5, upon the front of which in the present instance I provide a mixing-chamber 6 for the reception of carbonated or charged water and syrup and in which the two are thoroughly mixed before being admitted to the bottle, as will become apparent farther along.

The numeral 7 indicates what I term the "syrup-pump," which is securely bolted to the upper part of the frame at one side of the sealing-head and is connected with the mixing-chamber near the bottom of said chamber by a connecting-pipe 8, through which the syrup passes from said pump to the chamber. The pump is connected by means of the connection 9 with any suitable supply of syrup or flavoring material, and the syrup is in the operation of the machine drawn into the pump-cylinder through valve-controlled passage 10 and forced therefrom to the mixing-chamber through passage 11 and pipe 8 in predetermined quantities, depending upon the length of the stroke of the piston 12 of the pump, which is regulated in a manner which will presently be described. Connected to the piston-rod 13 of the pump by a clamp 14 is a rod 15, having an enlarged lower end 16, having therein an elongated slot 17 for the passage of the bolt 18, passing through the bifurcated end 19 of the pump and table-lifting lever 20, pivoted at 21 in the upper part of the pedestal. This lever is formed with a depending arm 22, which has its lower end pivotally connected at 23 to a toggle-link 24, which link is pivoted by a common pivot 25 to two toggle-links 26 and 27, the toggle-link 26 being pivoted at 27' to the stationary bracket 28, supported by a web 29 at the front of the pedestal. The upper end of the link 27, however, is pivoted to the collar 30, which is firmly held to the shaft 31 by binding-nut 30', upon which shaft is mounted the bottle-supporting table 32.

The numeral 26' indicates a lug cast on the bracket 28 to limit the backward movement of the toggle-link and is so located that it arrests the movement of said links just beyond the point at which the pivot 25 comes in vertical line with the pivot 27', thus setting the lever 20 in depressed position. The shaft 31 is vertically movable in the bracket 28 and is raised or lowered, together, of course, with the bottle-supporting table 32, when the pump and table-lifting lever are operated. The bottle-supporting table is formed with a sleeve 33, which embraces the end of the shaft 31 and is slidable or movable vertically on said shaft for a short distance, limited by the screw 34, extending into the slot 35 in the sleeve. Interposed between the under side of the supporting-table and the upper end of the shaft is a spiral spring 35' for the obvious purpose of lessening the shock to the

bottle in the sealing operation and making it possible to seal bottles of different heights. The degree of movement of the rod 15, and consequently the stroke of the pump-piston, is regulated by the gage-nut 36, adjustable in the slot 17 of the lower end of the rod, as obviously the position of this nut in the slot will determine the amount of lost motion occurring in the sealing operation between the end of the pump-lever 20 and said rod.

The numeral 37 designates the lever that controls the admission of the charged water to the mixing-chamber and also operates the mechanism that permits the mixed beverage to pass into the bottle. This lever is pivoted at 38 and is held normally raised by a spring 39, connected to its rear end and to a stud 40 on the rear portion of the pedestal. Pivoted at 42 is the lower end of the rod 43, which passes upward through the sleeve 4 and is pivoted at its upper end at 44 to the rear end of an arm 45 of lever 46, which is pivoted between two lugs at 47, cast on the top of the frame. The forward end 48 of the lever 46 is pivoted to the lower end of an arm 49, Figs. 2 and 8, to the upper end of which is pivoted the head 50 of a sliding tube 51, which works through suitable packing devices in the top of the mixing-chamber and through a sleeve 52, supported in said chamber. This tube is adapted to extend into the neck of the bottle, as shown in Fig. 5 of the drawings, and is provided with an opening 53, which when the parts are in normal position is covered by sleeve 52; but when said parts are in filling position this opening will be exposed below the end of the tube and in a position to receive the contents of the mixing-chamber and permit the same to pass into the bottle. Carried by the forward end of the lever 46 is an adjustable screw 54, which is adapted to engage the short laterally-extending arm 55, Figs. 2 and 8, of a bell-crank lever 56, pivoted to a lug at 57, cast upon the side of the mixing-chamber. The lower end of the lever 56 is pivotally connected by a link 57' to the arm 58 of valve or cock 59, which controls the admission of carbonated or charged liquid to the mixing-chamber through the connection 60, which may be connected with a tank or other suitable carbonated or charged water-supply. (Not shown.)

The numeral 61 designates the snifting-valve lever, which is pivoted, together with the lever 37, at 38, and connected with the rear arm of this lever is a rod 62, which has its upper end pivotally connected to the arm 63 of the bell-crank lever 64, pivoted at 65. The arm 66 of this lever operates the snifting-valve 67 through the medium of headed rod 68. This valve is kept normally seated by a spiral spring 69, interposed between the valve-head and the under side of a screw-plug 70. The numeral 71 designates a small opening which communicates with the chamber of the snifting-valve and with the lower portion of

the sealing-head through channel 72 when the valve is opened for the obvious purpose of exhausting the air from the bottle and sealing-head during the filling operation.

5 The lower portion of the sealing-head is screw-threaded for the reception of the usual ring 73, containing a gasket 74, of rubber or other compressible material, adapted to make an air and gas tight joint between the top of the
10 bottle and said gasket in the sealing operation.

The foot-lever 75, which is pivoted at 76 near the base of the pedestal, has connected therewith at 77 in the usual way a rod 78, to
15 the upper portion of which is pivoted a rod 79, to the upper end of which rod is secured a bracket 80, having its forward end connected with the upper end of the plunger 81, which extends into the sealing-head and carries the
20 seal-locking arm 82 of the sealing device, which sealing device comprises said arm 82 and two seal-seating arms 83, the arms being capable of independent movement and are adapted to act yieldingly upon the seal in the
25 sealing operation by the interposition between the arms of a spring 84; but, as before stated, the sealing device being the same as that heretofore patented by me there is no necessity for a description in detail.

30 In the operation of filling and sealing the bottle is placed upon the bottle-supporting table and the pump and table-lifting lever raised, which action will raise the table through the action of the toggle-links and
35 bring the upper edge of the bottle in close contact with the gasket in the sealing-head. This movement of the lever will also, through the medium of the rod 15, cause the piston in the syrup-pump to descend, forcing from the
40 cylinder of said pump into the mixing-chamber the predetermined amount of syrup which has been drawn into the space below the piston. The syrup now being in the mixing-
45 chamber, it is desirable to admit the charged water, and this is done by depressing the lever 37 until the screw 54 on the end of the lever 46 comes into engagement with the short
50 arm 55 of the bell-crank 56, which engagement will, through the medium of the link 57', result in opening the valve 58. During this movement of the lever 46 the tube 51 has been projected through the lower portion of the sealing-head and into the bottle-
55 mouth, bringing the opening 53 below the sleeve 52 and permitting the now mixed contents of the mixing-chamber to pass into the bottle under considerable pressure, displacing the air in the bottle and causing the same
60 to fill that portion of the bottle which remains unfilled and the lower portion of the sealing-head. The downward movement of the lever 37 is so limited that in its final position the hand of the operator will be in convenient
65 reach of the snifting-valve lever, and the operator can conveniently with the fingers of the hand still upon the lever 37 move said lever

61 sufficiently to exhaust the air or gas from the sealing-head through the medium of the snifting-valve. After the bottle is filled the
70 foot-lever is depressed, causing the plunger in the sealing-head to descend and seat and lock the seal in the bottle.

The pump and table-raising lever is so connected with the toggle-links that the same
75 will remain in raised position when it has reached the limit of its upward movement. This is for the purpose of holding the bottle in close contact with the gasket in the sealing-head during the sealing operation and
80 permit the operator to use both hands for performing the operations that follow the lifting of the table. This is accomplished by the pivot 25 being thrown a little beyond a line drawn vertically through the pivot 27 and
85 the pivot directly above it, and the backward movement of the links is limited by the lug 26' on the bracket 28. It will be observed that this will cause the pump-piston to remain at the bottom of the cylinder until the
90 lever is depressed to normal position, thus insuring the complete emptying of the cylinder and the accuracy of the quantity of syrup forced into the mixing-chamber at each operation of the machine.

I provide in the pipe 8 near the mixing-chamber an ordinary valve 85, which opens to permit the passage of the syrup to the
100 mixing-chamber upon the downward movement of the piston and closes by the pressure of the charged water in the mixing-chamber in the operation of filling the bottle, thus preventing the contents of the mixing-chamber from passing into the pump-cylinder.

When it is desired to use the machine for
105 bottling carbonated mineral or other unflavored waters, the syrup-supply is cut off, and the movement of the operating-lever 20 would in this instance raise and lower the bottle-supporting table, which will still be a necessary operation; but the piston in the syrup-pump would be caused to move idly therein, in no way interfering with the operation of the machine.

I claim—

1. In a machine of the character described, the combination with a sealing-head, of a chamber communicating with said head, a water-supply connected with the chamber, a reciprocating conveying or conducting device
120 for conveying the contents of the chamber to the bottle, substantially as described.

2. In a machine of the character described, the combination with a sealing-head, of a chamber communicating therewith, a water-
125 supply connected with the chamber, a reciprocating conveying device for conveying the contents of the chamber to the bottle, said device being adapted to be projected into filling position to establish communications
130 between the chamber and sealing-head and retracted to cut off same, and means for reciprocating the said device.

3. In a machine of the character described,

the combination with a sealing-head, of a mixing-chamber communicating therewith, a syrup and a water supply connected with the chamber, means for controlling communication between the supplies and chamber, a reciprocating conveying device for conducting the contents of the mixing-chamber to the bottle, and means for reciprocating said device for the purposes set forth.

4. In an apparatus of the character described, the combination with a mixing-chamber, a water and syrup supply connected with said chamber and means whereby admission of syrup and water to said chamber is controlled, a reciprocating conveying or conducting device for conveying the contents of the chamber to the bottle, substantially as described.

5. A filling and sealing machine, comprising a sealing-head having therein seal seating and locking devices, a mixing-chamber communicating with said head, suitable syrup and water supplies connected with said chamber, and means for controlling communication between said supplies and chamber in the operation of the machine, a reciprocating conveying device for conveying the contents of the chamber to the bottle, said device being adapted to be projected into filling position to establish communication between the mixing-chamber and the sealing-head and retracted to cut off such communication, means for reciprocating the conveying device, and means for operating the seal-applying devices in the head, substantially as described.

6. In a filling and sealing machine, the combination with a sealing-head having therein a compound plunger one part thereof adapted to seat the seal and the other to lock the same, a mixing-chamber communicating with said head, suitable syrup and charged-water supplies connected with the mixing-chamber, a sleeve in said chamber, a conveying device working in said sleeve and having therein an opening which when brought below the sleeve will permit the contents of the chamber to pass into the bottle, means for projecting the conveying device into filling position and means for retracting the same therefrom, and means for operating the sealing-plunger to apply the seal after the bottle has been filled, substantially as described.

7. In a filling and sealing machine, the combination with a sealing-head having seal-applying devices therein, a mixing-chamber communicating with said head, a charged-water supply connected with said chamber, and means for controlling the admission of water to said chamber, a syrup-supply having connection with the mixing-chamber, a syrup-pump interposed between the supply and the chamber, and means for regulating the stroke of the piston thereof to force a predetermined amount of syrup into the mixing-chamber, a reciprocating conveying device for conveying the contents of the chamber to the bottle, said

device being adapted to be projected to a position to establish communication between the mixing-chamber and sealing-head, and retracted from such position to cut off such communication, means for reciprocating said device, and means for operating the seal-applying devices in the head, substantially as described.

8. In a machine of the character described, the combination with a sealing-head, of a chamber communicating with said head, a charged-water supply and means for controlling the admission of water to said chamber, a reciprocating conveying device for conveying the liquid from the chamber to the sealing-head, said device being adapted to be projected into position to establish communication between the chamber and the sealing-head, and retracted from such position to cut off communication, means for reciprocating the conveying device for these purposes, and means for establishing communication between the water-supply and chamber as the conveying device reaches filling position, substantially as described.

9. In a machine of the character described, the combination with a sealing-head, of a mixing-chamber communicating with said head, a charged-water supply and a syrup-supply having connection with the chamber, a syrup-pump interposed between the syrup-supply and chamber and means for regulating the stroke of the piston thereof for the purpose set forth, a reciprocating conveying device for conveying the contents of the chamber to the bottle, and adapted to operate as described, a lever pivoted in the frame and having connection with the conveying device whereby the same is projected into filling position and retracted therefrom, said lever being also adapted to operate through suitable devices to establish communication between the water-supply and mixing-chamber as the conveying device reaches filling position, substantially as described.

10. In a filling and sealing machine, the combination with a sealing-head provided with a seal seating and locking device, and a gasket of compressible material in the lower portion thereof, a mixing-chamber communicating with the sealing-head and having therein a sleeve, a tube working in said sleeve and having therein an opening which, when brought below the end of the tube will permit the contents of the mixing-chamber to pass into the bottle, means for reciprocating the tube for the purposes set forth, a water-supply and a syrup-supply connected with the mixing-chamber, a bottle-supporting table below the head and means for raising the same to bring the bottle into engagement with the gasket in the head, substantially as described.

11. A filling and sealing machine, comprising a sealing-head having a mixing-chamber communicating therewith, a reciprocating conveying-tube adapted to be reciprocated to permit the contents of the mixing-chamber to

pass into the sealing-head or cut off communication between the head and chamber, a water-supply and a syrup-supply, a lever pivoted in the frame and having connections with the conveying device whereby it is reciprocated, suitable devices controlling the admission of water to the mixing-chamber and connections between said lever and the controlling devices whereby water is let into the mixing-chamber when the conveying device reaches filling position, substantially as described.

12. The described filling and sealing machine, comprising a sealing-head, a mixing-chamber communicating with said head, a water-supply and a syrup-supply connected with the chamber, a pump interposed between the mixing-chamber and the syrup-supply, a bottle-supporting table below the sealing-head, a lever pivoted in the frame and having a toggle connection with said table, connections between said lever and the piston-rod of the pump whereby a predetermined amount of syrup is forced into the mixing-chamber when the lever is operated, substantially as described.

13. In a filling and sealing machine the combination with a sealing-head, of a mixing-chamber having a syrup-supply and a water-supply connected therewith, and means for establishing communication between the supplies and mixing-chamber and cutting off the same at proper times in the operation of the machine, a reciprocating conveying device

adapted to be projected through the sealing-head into the neck of the bottle, and to establish in such position communication between the chamber and the sealing-head, a valve in the sealing-head and means for operating the same to relieve the pressure of the head, substantially as described.

14. In a filling and sealing machine the combination with the sealing-head, a mixing-chamber, syrup and water supplies connected with said chamber, the conveying device for conducting the contents of the chamber to the sealing-head, all adapted to operate substantially as described, of a pump adapted to force a predetermined amount of syrup into the mixing-chamber, a lever pivoted in the frame, adjustable connections between said lever and pump whereby the stroke of the piston is regulated, a vertically-movable shaft carrying a bottle-supporting table, a toggle connection between said lever and shaft whereby the table is raised when the lever is raised, said toggle connections between the table and lever being such that the lever and table will remain raised during the filling and sealing operation, substantially as and for the purpose set forth.

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

EDWARD D. SCHMITT.

Witnesses:

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FLORA PIERCE.