No. 875,678. PATENTED DEC. 31, 1907.

J. M. HICKS.

MACHINE FOR FILLING AND CAPPING VESSELS WITH FLUID UNDER PRESSURE.

APPLICATION FILED JULY 12, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

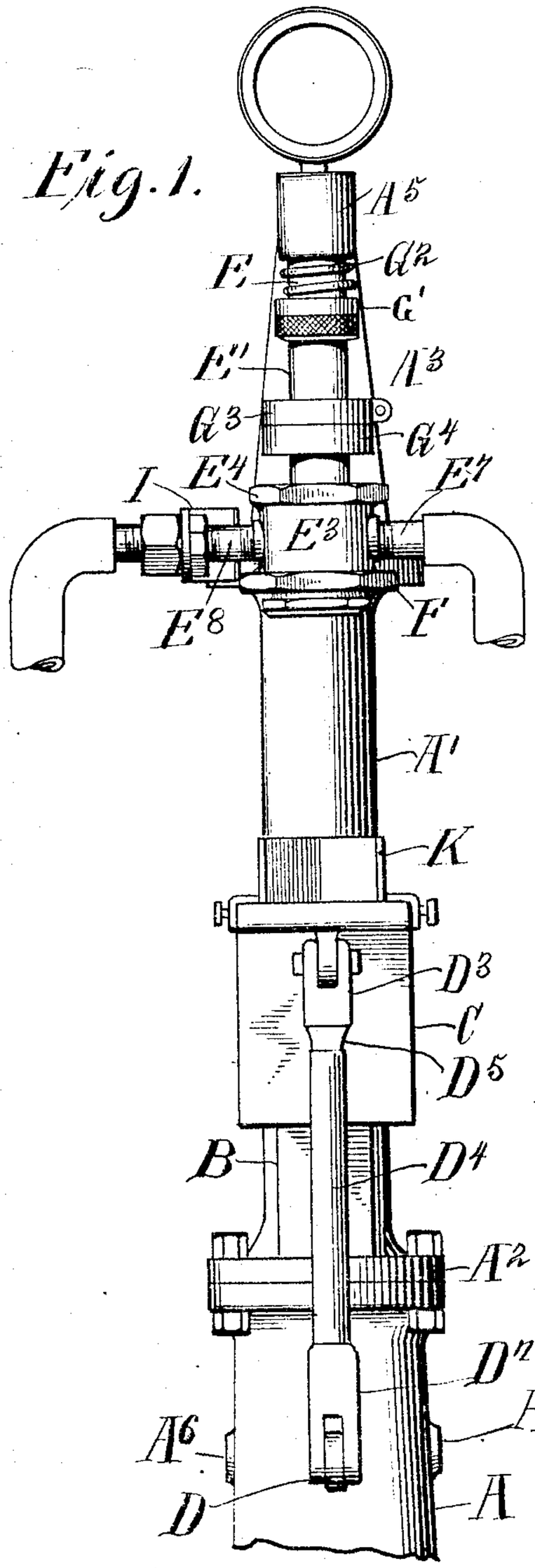
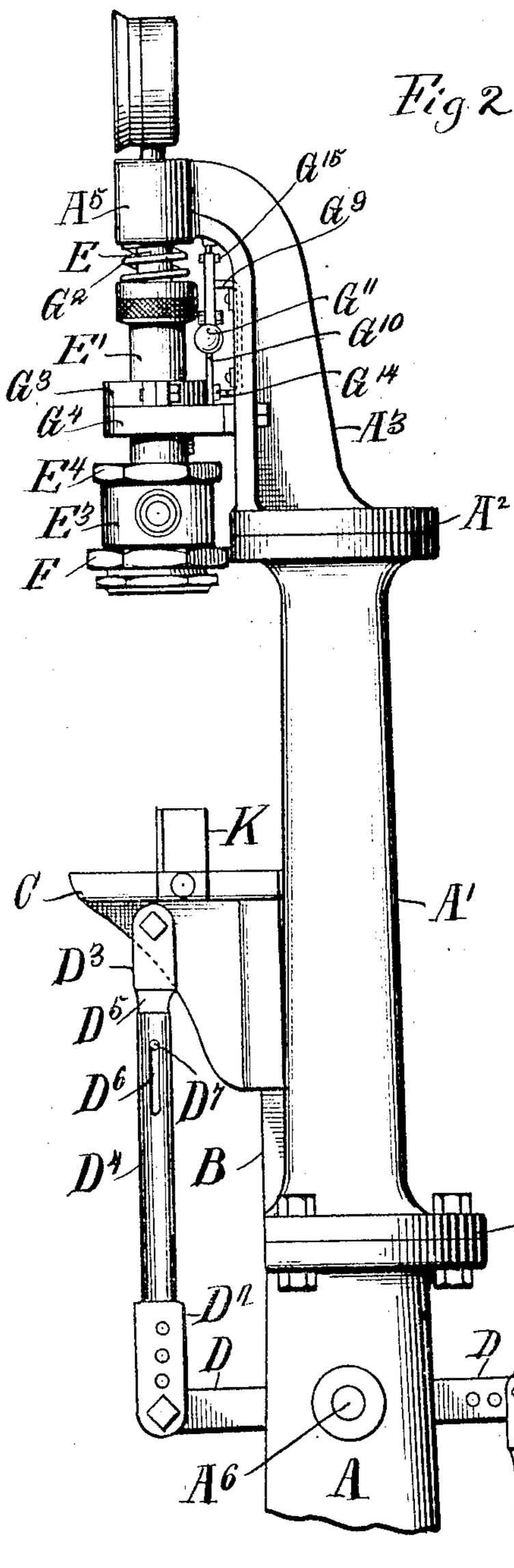


Fig. 2.



WITNESSES

James T. Duhamel.

John A. Hicks

INVENTOR

James M Hicks.

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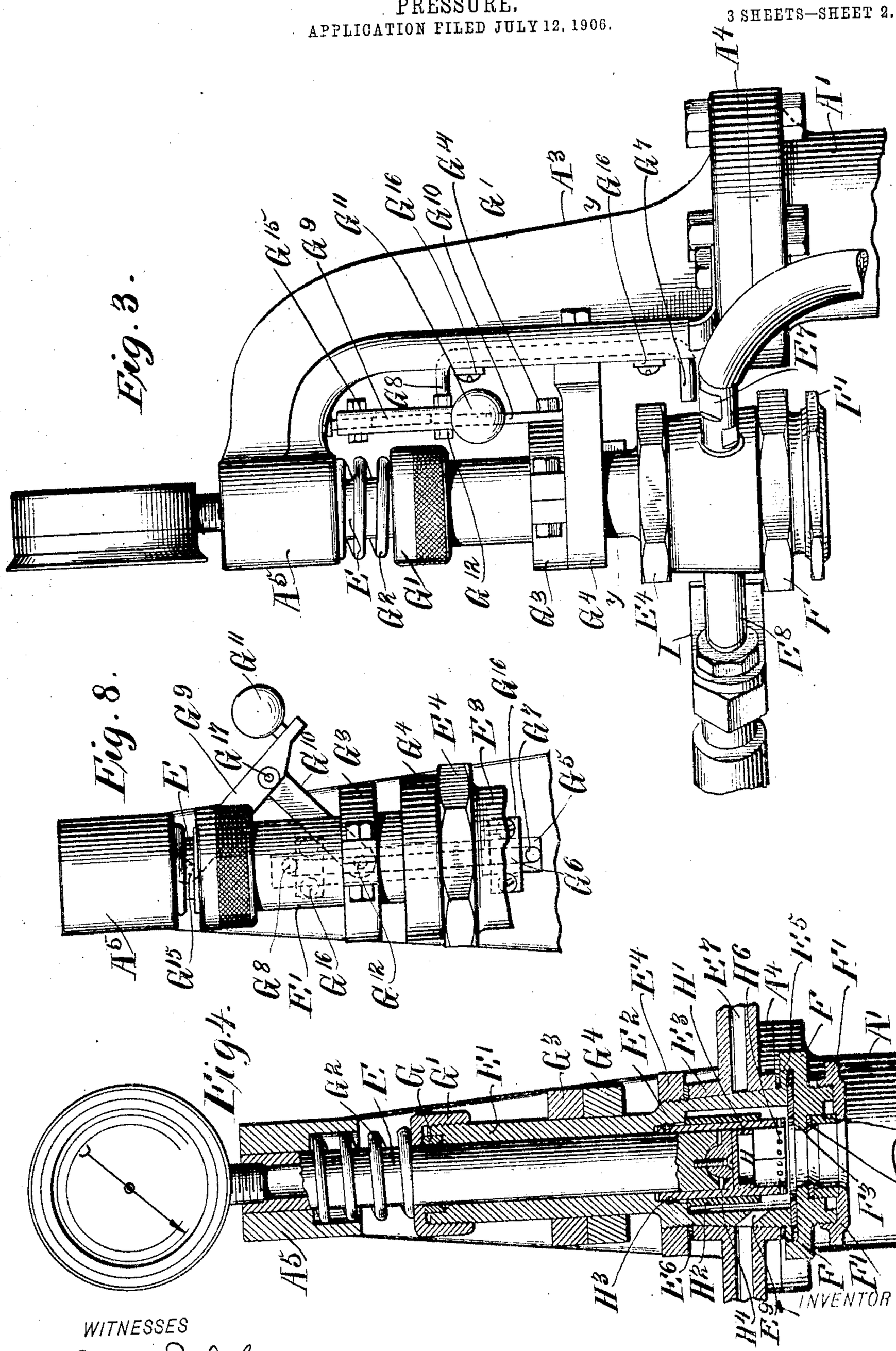
3 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

James F. Duhamel.

Wm. A. Hicks

INVENTOR

James M. Hicks

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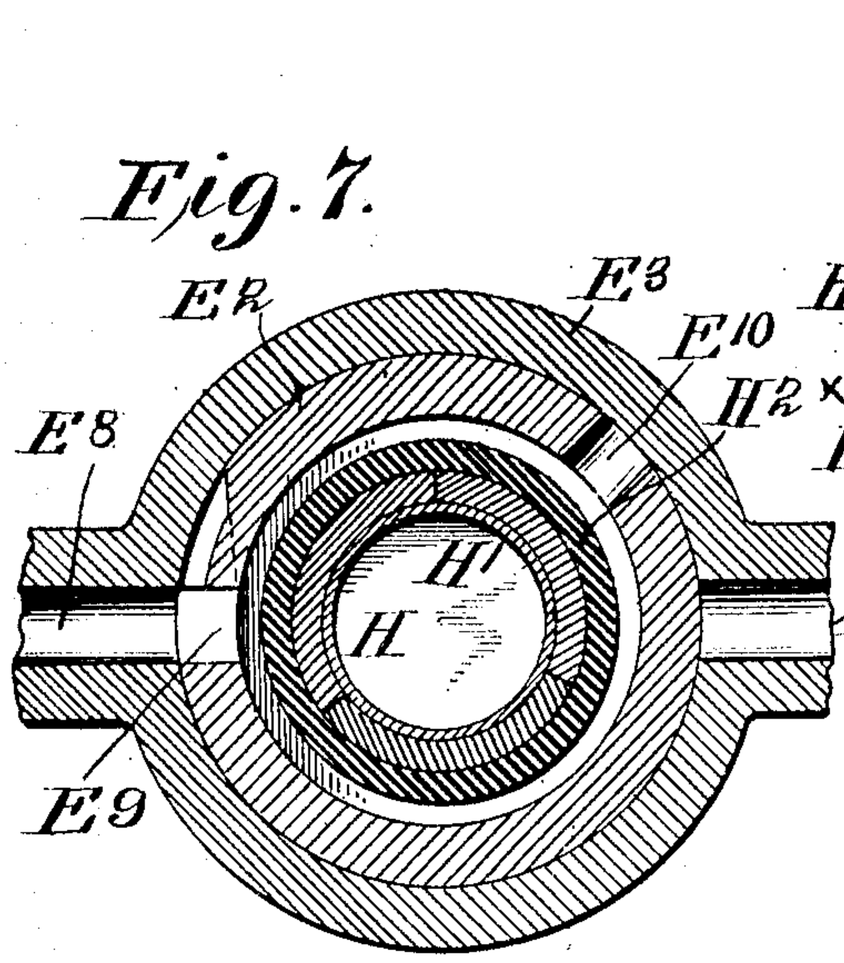
3 SHEETS—SHEET 3.

Fig. 7.



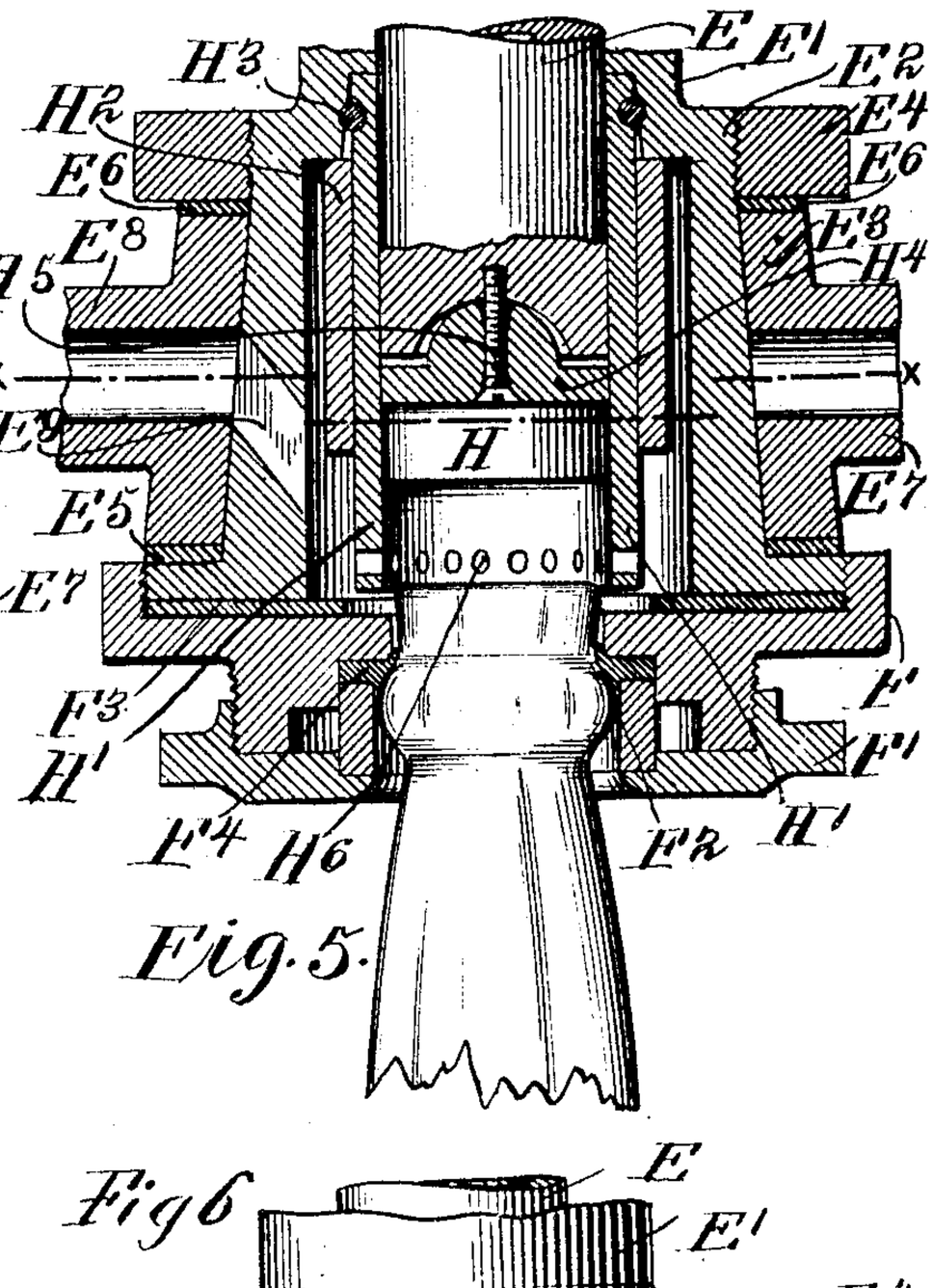


Fig. 5.

Fig. 9.

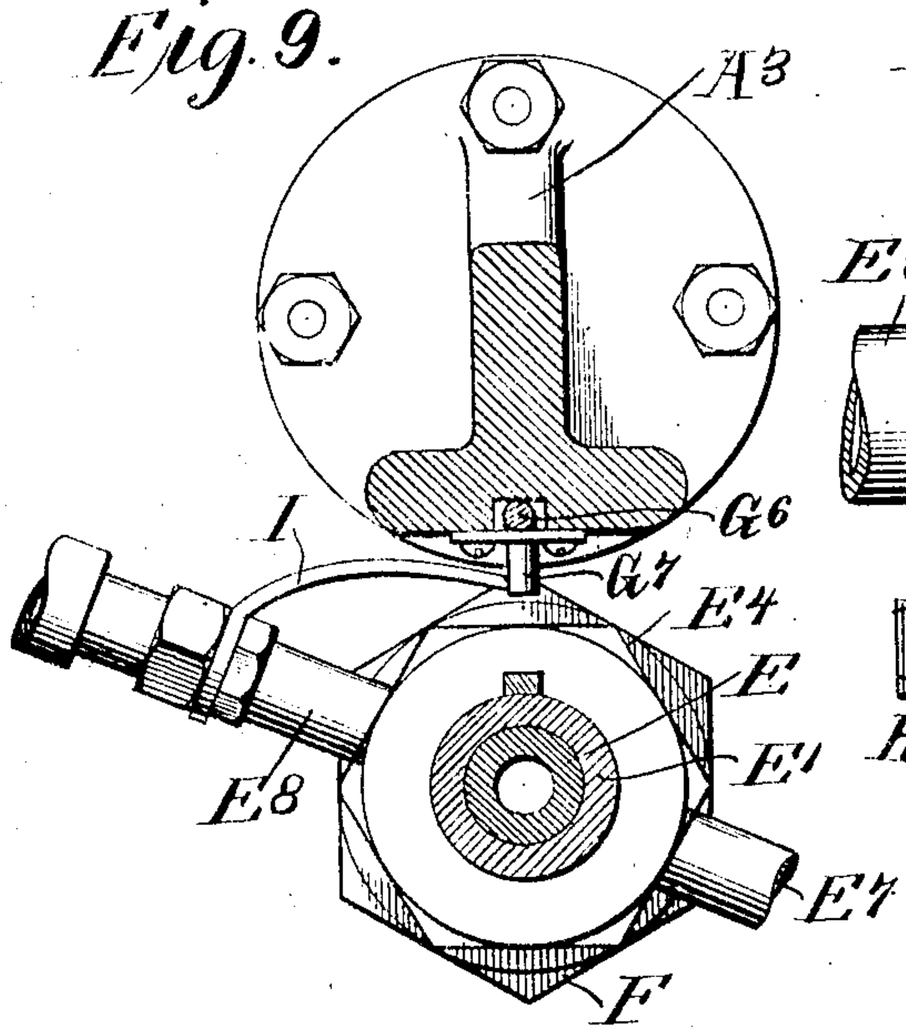
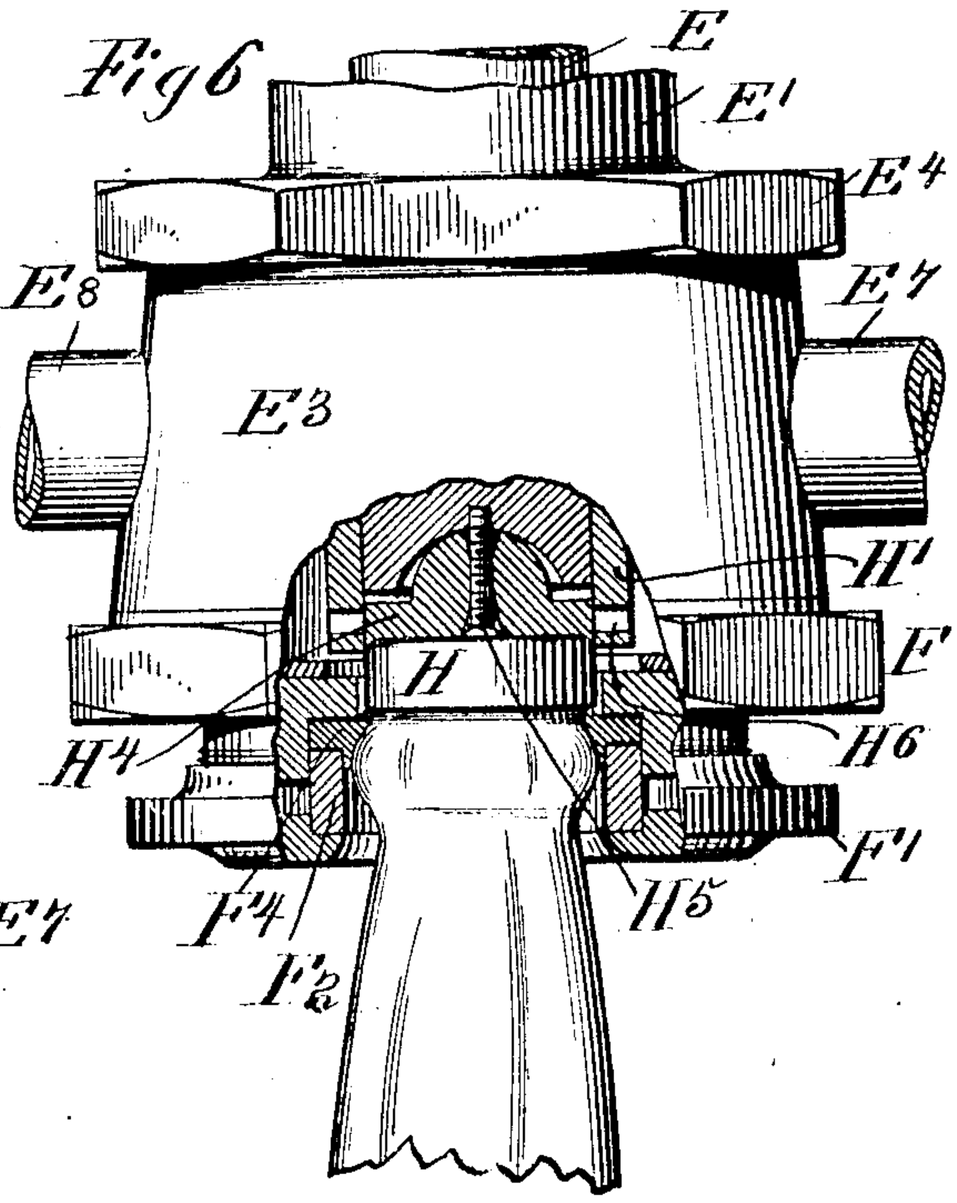


Fig 6



WITNESSES

James F. Duhamel

John A. Hicks

INVENTOR

James M. Hicks

UNITED STATES PATENT OFFICE.

JAMES MILNOR HICKS, OF SUMMIT, NEW JERSEY, ASSIGNOR TO AUTO STOPPER COMPANY, OF NEW YORK, N. Y.

MACHINE FOR FILLING AND CAPPING VESSELS WITH FLUID UNDER PRESSURE.

No. 875,678. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed July 12, 1906. Serial No. 325,772.

To all whom it may concern:

Be it known that I, JAMES MILNOR HICKS, a citizen of the United States, residing at Summit, county of Union, State of New Jersey, have invented certain new and useful Improvements in Machines for Filling and Capping Vessels with Fluid under Pressure, of which the following is a specification.

My invention relates to machines for filling vessels with fluids under pressure and to sealing them while under pressure with sealing caps and to this end it consists in certain elements and combination of elements fully specified and claimed hereinafter.

In order that those skilled in the art to which my invention appertains may understand, construct and use my invention, I will proceed to describe it, referring to the accompanying drawings forming part of this specification, in which

Figure 1 is a front elevation of my filling and capping machine the upper part only being shown, the foot lever mechanism for operating the reciprocating table which holds the vessel to be filled and capped, being the same as shown in the application of John A. Hicks, filed March 31st, 1905, for machine for capping vessels, Serial Number 253,155. Fig. 2 is a side elevation of the same looking from the right side of Fig. 1. Fig. 3 is an enlarged elevation of Fig. 2 as to its top portion. Fig. 4 is a longitudinal central section of the filling and capping mechanism as in Fig. 3. Fig. 5 is an enlarged central longitudinal front section of the lower portion of the filling and capping mechanism, showing a bottle in position against a packing washer, ready to be filled with fluid under pressure, the valve being shown open, and a sealing cap held above the top of the bottle in spring grasping jaws. Fig. 6 shows the same in part central section in front view, showing the bottle after it has been capped and filled. Fig. 7 is a full cross section on lines X X of Fig. 5 of the mechanism shown in Fig. 5 in part section, showing the sealing cap gripping jaws in multiple parts held together by an inclosing spring, also the valve in its open position delivering fluid to the filling chamber. Fig. 8 is a partial front elevation, showing in dotted and full lines the stop mechanism. Fig. 9 is a cross section of Fig. 3, on line Y Y but in front and top view.

A is the lower section of the frame which supports the operating mechanism and A^1 is the upper section bolted to A at A^2.

A^3 is a bracket supported on the top of A^1 at A^4. A^3 has a head A^5 overhanging the front of the frame A, A^1. On A^1 at its front is a table holding and guiding plate B. A bottle holding table C is carried on guiding plate B. A lever D is pivoted to vibrate in frame A on pivot A^6, this lever passes through the body of A in a slot therefor. On the rear end of lever D a rod D^1 takes; its lower end being in connection with the foot lever power below, (not shown). On the front end of D a pitman D^2 takes and D^2 takes onto table C, so that the table C is moved up and down toward and from the filling and capping head at the top of the machine by the foot lever mechanism below, not shown. The pitman D^2 is in two parts, the lower part D^4 incloses the upper part D^5 and within the inclosure, between the bottom of the hollow of D^4 and the lower end of D^5 a spring is operative to force the two parts away from each other.

D^6 is a slot in D^4 and D^7 is a pin passing through D^6 into D^5 and defines the extreme length of D^2, but D^2 may be shortened by the compression of the spring inclosed in D^4 when needed in operation with varying lengths of bottles.

E is a vertical post held securely in head A^5.

E^1 is a sleeve bored out to fit the post E. A stuffing box G^1 and gland G is arranged on the top of E^1. A spring G^2 bears upon stuffing box G^1 and against the under side of head A^5, and keeps the sleeve E^1 pressed down to its lowest point, governed by a stop G^4 held on the front of A^3 by bolts, this stop G^4 is bored out to fit the sleeve E^1 on its exterior. G^3 is a similar stop piece secured on sleeve E^1 so that when the sleeve E^1 is in its lowest position G^3 rests on G^4 but sleeve E^1 is free to move upward the necessary distance shown at Fig. 8. A spline or key (not shown) is fixed on sleeve E^1 and G^4 is slotted for the spline to slide in, this spline prevents the sleeve E^1 from circular movement on post E. At the lower end of post E an equalizing plate H^4 is secured by screw H^5, the lower end of post E being cupped out and the top of the equalizing plate H^4 being curved to move freely therein, and take any angle required. The lower end of sleeve E^1

is enlarged and chambered out to receive clamping jaws H^1, made circular to fit the post E and divided into multiple parts, (usually three) and held together by circumferential spring H^2 (usually of rubber). Jaws H^1 are flexibly held within the bore of sleeve E^1 by a wire H^3 which rests in a groove partly in sleeve E^1 and partly in the surface of jaws H^1 at their tops. Holes H^6 are made in jaws H^1 to convey fluids from the supply pipe E^8 to the bottle to be filled whose mouth is within the jaws H^1, shown at Fig. 5 and to permit the air snifted from the bottle to pass out through pipe E^7 when desired.

E^3 is a valve surrounding the lower end of E^1 which it fits on a taper, downward. Ports E^9 and E^{10} are made in the lower end of sleeve E^1 to receive fluid and to discharge air respectively, governed by the operation of the valve E^3.

E^4 is a screw nut on a thread on the sleeve E^1 above the valve E^3.

E^6 is a washer between the screw nut E^4 and the top of valve E^3. E^5 is a washer between the bottom of valve E^3 and a shoulder on the bottom of sleeve E^1. These washers serve to pack the valve joints.

H is a sealing cap held in jaws H^1 against the equalizing plate H^4 at the bottom of post E.

F is a nut which is screwed on the bottom of sleeve E^1.

F^5 is a washer to pack the joint between nut F and sleeve E^1. The nut F has an opening in its center of proper diameter to receive and pass a bottle nose through it and small enough to prevent a bead below the bottle nose from passing.

F^4 is a washer held beneath the edges of the opening in nut F by a follower F^2 pressed upward against it by a nut F^1 which engages its lower end and screws onto the bottom of nut F. The front side of bracket A^3 is grooved out vertically and a rod G^6 is placed in it having arm G^7 at its base and arm G^8 at its top.

G^6 is supported in position by plates G^{16} screwed to A^3 in front of it.

G^9 and G^{10} constitute an elbow joint stop, G^{16} being pivoted to stop G^5 on sleeve E^1 at G^{14} and G^9 being pivoted to the underside of bracket A^3 at G^{15} near the head A^5. G^{10} and G^9 being jointed together at their middle portion G^{17}. G^{11} is a weight on the lower end of G^9. These several members when in position as shown in Figs. 2 and 3 act as a stop or resistance to the upward thrust of the bottle shown in Fig. 5 while the bottle is being filled, and snifted of air, by the operation of the valve E^3.

Fig. 8 shows the stop mechanism just described thrown out of action as a stop, and in the position it is when the sleeve E^1 is pressed upward to permit a sealing cap to be forced over the bottle mouth of a bottle resting on table C, by means of the upward thrust of the table C and bottle bead pressing against washer F^4 in nut F after the bottle has been filled and as shown at Fig. 6. The pipe E^8 which supplies fluid to the chamber inside of sleeve E^1, through valve E^3 has a trip attachment I, secured to it, which attachment strikes the arm G^7, Fig. 3, when the valve E^3 is turned after filling the bottle, and turns the rod G^6 so that the arm G^8 strikes the stop arms G^9 and G^{10} and throws them from their normal position as shown in Figs. 3, 9 and 2 to the position shown in Fig. 8, which permits the sleeve E^1 to rise and compress spring G^3. When valve E^3 is moved back to its normal closed position shown in Figs. 1 and 2 the trip I is out of engagement with the arm G^7, and the foot being removed from the foot lever which actuates the table C, the spring G^3 forces the sleeve E^1 downward into its normal position ready for another operation, and the stop mechanism is thrown into its normal position to act as a stop to the upward throw of the sleeve E^1 and to remain so until another bottle is filled, and valve E^3 is moved far enough to throw the stop mechanism off its center, and permit the sleeve E^1 to be raised.

The operation of my invention is as follows:—The position of the several parts of my apparatus being normally as shown in Figs. 1 and 2 the operator places a bottle to be filled and capped on table C, with the center of the bottle in line with the opening in the center of nut F shown in Figs. 4, 5 and 6 and places his foot upon the foot treadle beneath (not shown) and thus through the lever mechanism described raises the table C with its bottle until the large bead on the bottle neck presses against the packing washer F^4 shown in Fig. 5. The valve E^3 is then turned by means of the pipe E^8 as a handle until the valve supply port coincides with the port E^9 in the sleeve E^1, and the snifting port in E^1 is closed as shown at Fig. 7, the bottle will then fill to near its top, the valve E^3 is then returned to its original normal position and snifting port E^{10} coincides with the pipe opening E^7 when the air in the bottle will be forced out. The valve E^3 is then moved to its open filling position as in Fig. 7 and the bottle is filled to the desired point. The valve E^3 is thrown then still further until trip I throws the stop mechanism out of line, so that the pressure of the foot on the treadle throws the sleeve E^1 upward until the bottle nose enters the cap held in jaws H^1 shown in Fig. 6 and completes the filling and capping operation, the valve E^3 is then returned to its normal position and the port E^{10} opened to the air. This being done the bottle is removed from table C and the foot removed from the actuating foot treadle (not shown) and the

spring G² forces all the parts back to their normal position ready for another operation. The cap H is forcibly stretched over the bead upon the top of the bottle neck and contracts beneath the said bead to grip under it, the cap being of less diameter than the said bead in the manner set out in my patent issued Feb. 21st, 1905, No. 783,038.

Having now fully described my invention and the manner in which I have embodied it, what I claim as new and as my invention and desire to secure by Letters Patent is

1. A machine for filling vessels and sealing them with sealing caps while under full pressure, consisting of a supporting frame; a vessel support, guided, and vertically reciprocative on said frame; means for reciprocating said support; a resistance post secured on the said frame directly over and above said vessel support; means at the base of said post to grip a sealing cap and hold it; a sleeve surrounding said post constructed to be reciprocated vertically thereon, and in close contact therewith; a chamber in the base of said sleeve and beneath the said post having a supply port through its circumference; a valve containing a port constructed to operate on the outer circumference of said chamber and arranged to control the supply of fluid to said chamber when desired; means at the base of said chamber to permit the passage of a sealing cap to the gripping device at the base of said post and to admit the nose and bead on a vessel neck to pass through it and to cause a second bead on the vessel neck below the upper bead to engage with the bottom of said sleeve; packing material located and secured below the said sleeve to pack the joints between the said lower bead and the bottom of said sleeve and seal the said chamber from below, all constructed, arranged and combined to operate to close the filling chamber and raise the said sliding sleeve by means of the vessel resting on said vessel support while raising the said vessel support; to fill the vessel by the operation of the valve mechanism, and to seal the vessel within the filling chamber by entering a bead upon the vessel neck into the flange of a sealing cap when held beneath the said resistance post and while the filling chamber is charged with full pressure, substantially as specified.

2. A vessel-filling and capping machine consisting of a frame; a vertically reciprocated table carried on said frame; a filling and capping chamber carried on said frame above said table; consisting of a vertical resistance post; a sleeve on and around said post, constructed to be moved vertically on said post by a vessel located on said table and bearing against the lower end of said sleeve; means in the base of said sleeve to receive the bead on the nose of the vessel within the said chamber; a flange at the base of said sleeve provided with a packing washer on its under side against which a bead upon the vessel neck engages to close said chamber from below and to raise said sleeve; a valve mechanism located on the exterior of said chamber, to control the supply of liquid under pressure to the interior of said chamber and fill the vessel; means within said chamber around the base of said post to hold a sealing cap against the base of said post; means for reciprocating said table and vessel upward against the said flange and its packing at the base of said sleeve, to fill the vessel, and to force the sleeve upward around said post after filling, and the nose of the vessel into the flange of the sealing cap against said post in the act of sealing, all arranged to operate to first fill a vessel with liquid under pressure, and then apply a sealing cap thereto while the nose of the vessel is within the closed filling chamber, substantially as specified.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this eleventh day of July 1906.

JAMES MILNOR HICKS.

Witnesses:
LINCOLN A. STUART,
JOHN A. HICKS.