No. 636,618. Patented Nov. 7, 1899.

D. BEEBE.

BARREL FILLING OR RACKING MACHINE.

(Application filed July 19, 1898.)

(No Model.) 5 Sheets—Sheet 1.

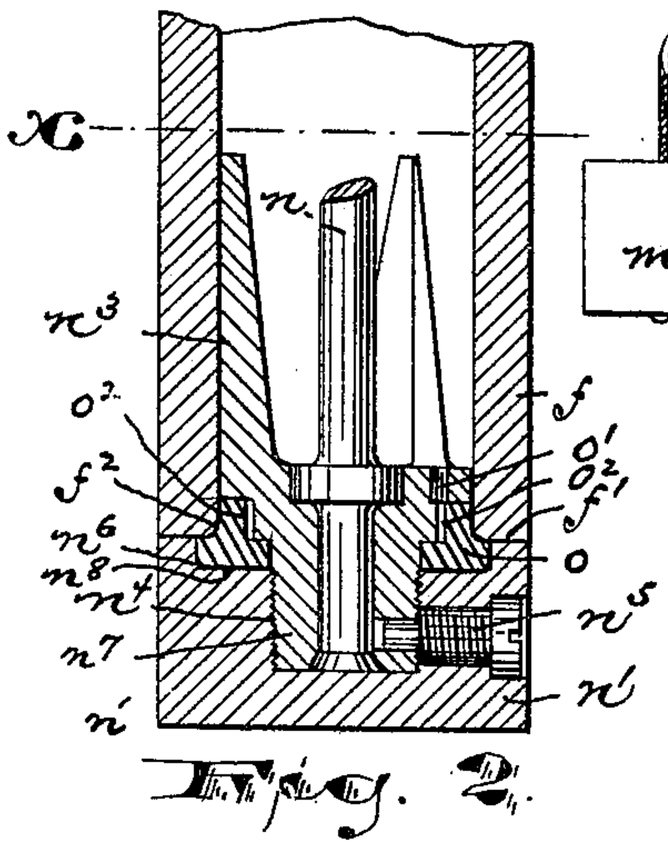

Fig. 2.

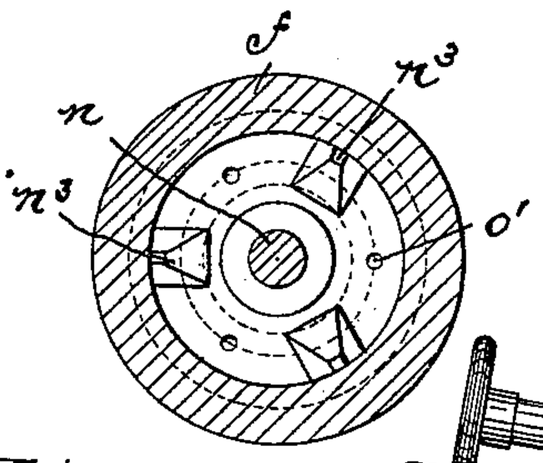

Fig. 3.

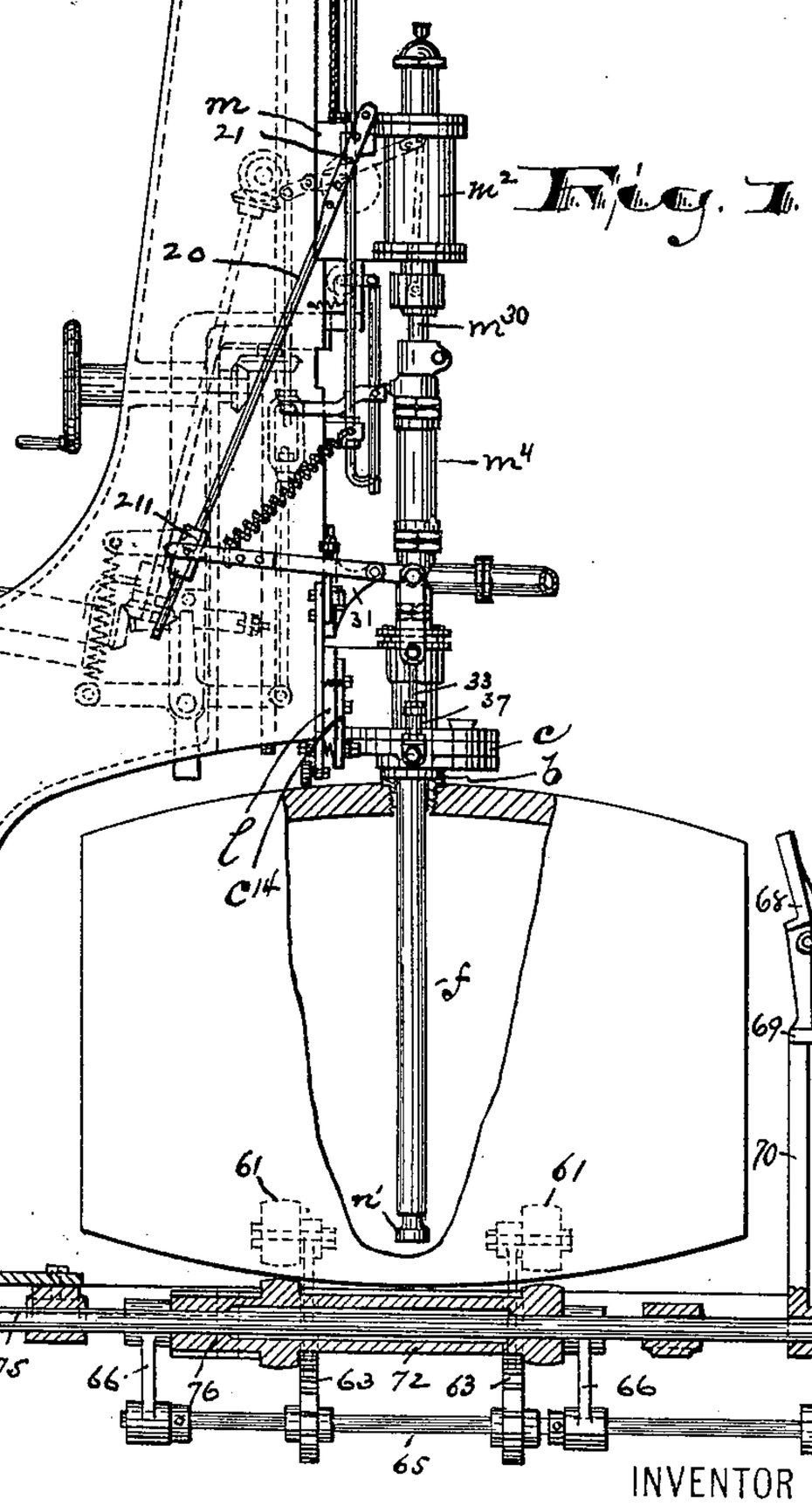

Fig. 1.

WITNESSES:

A. R. Krouse.

Russell M. Everett.

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Dillon Beebe,

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ATTORNEYS:

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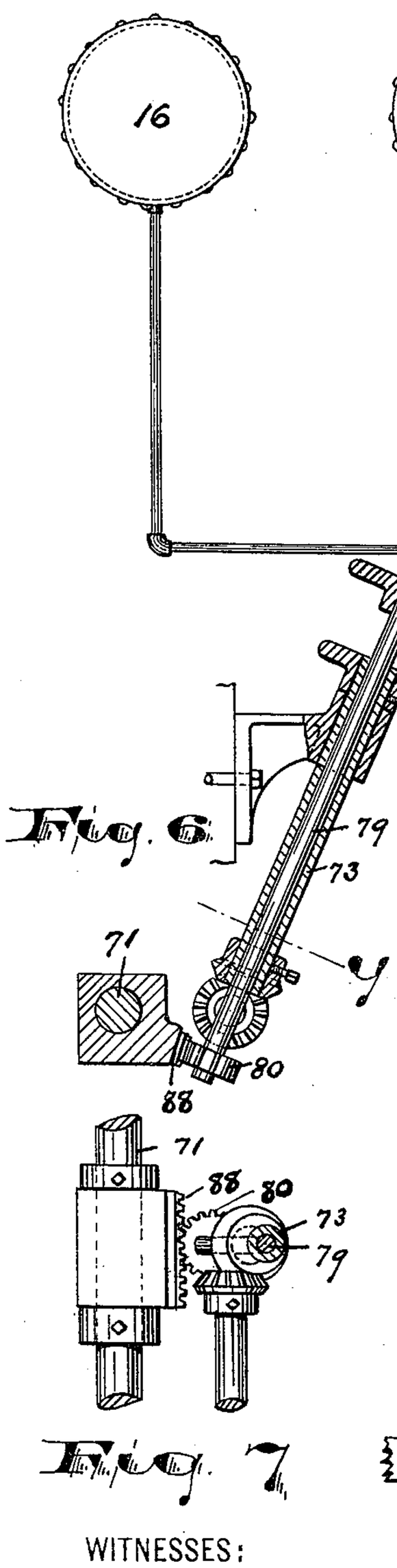

Fig. 6.

Fig. 7.

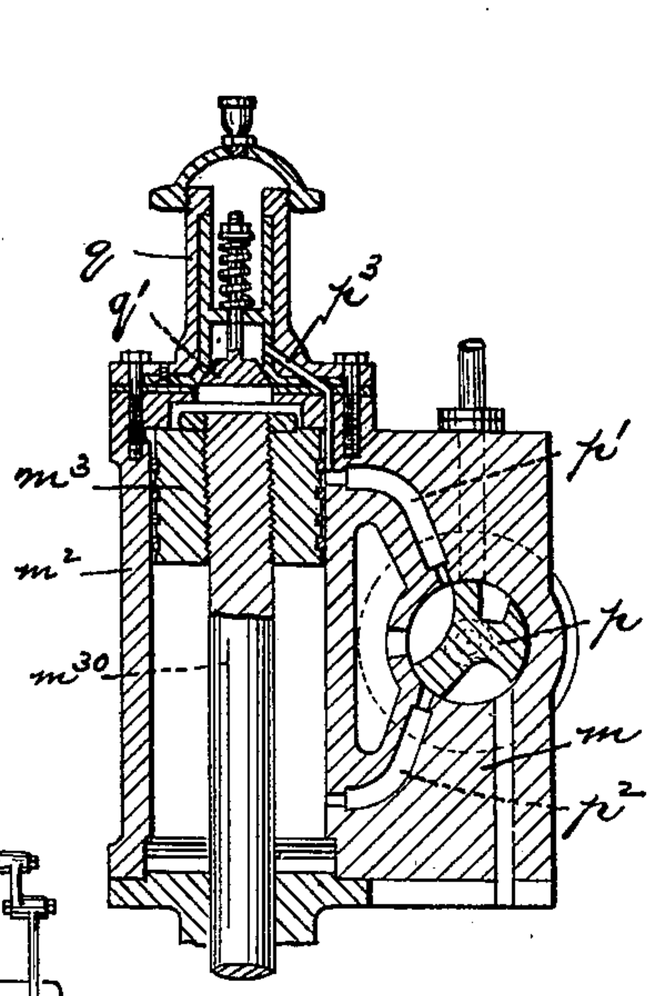

Fig. 5.

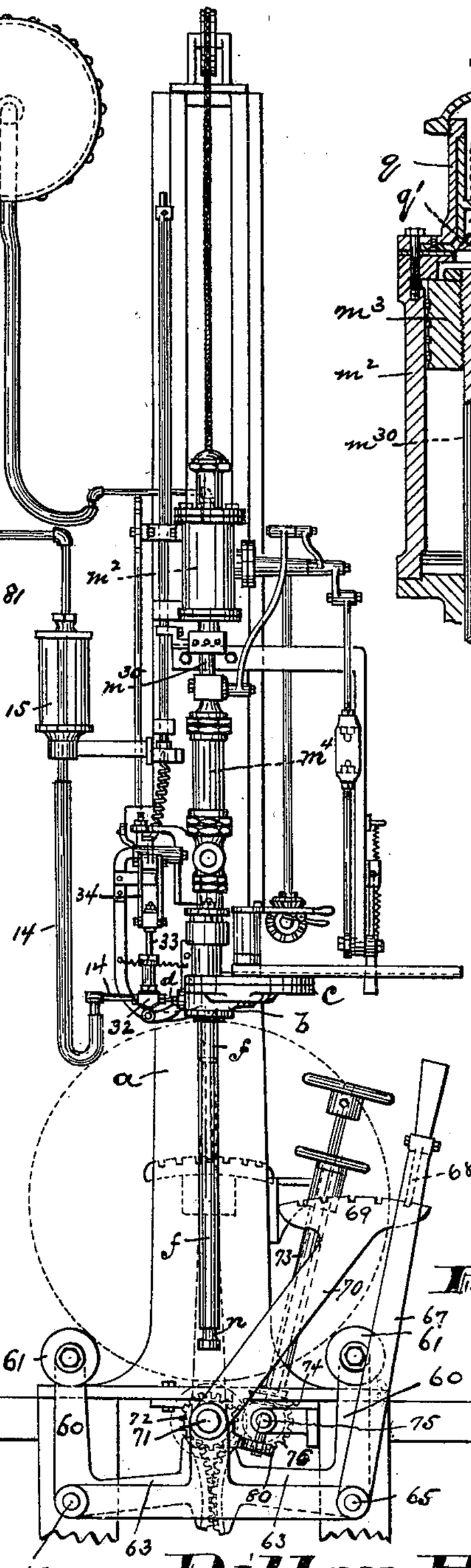

Fig. 4.

WITNESSES:

A. R. Krousse.

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(Application filed July 19, 1898.)

(No Model.) 5 Sheets—Sheet 3.

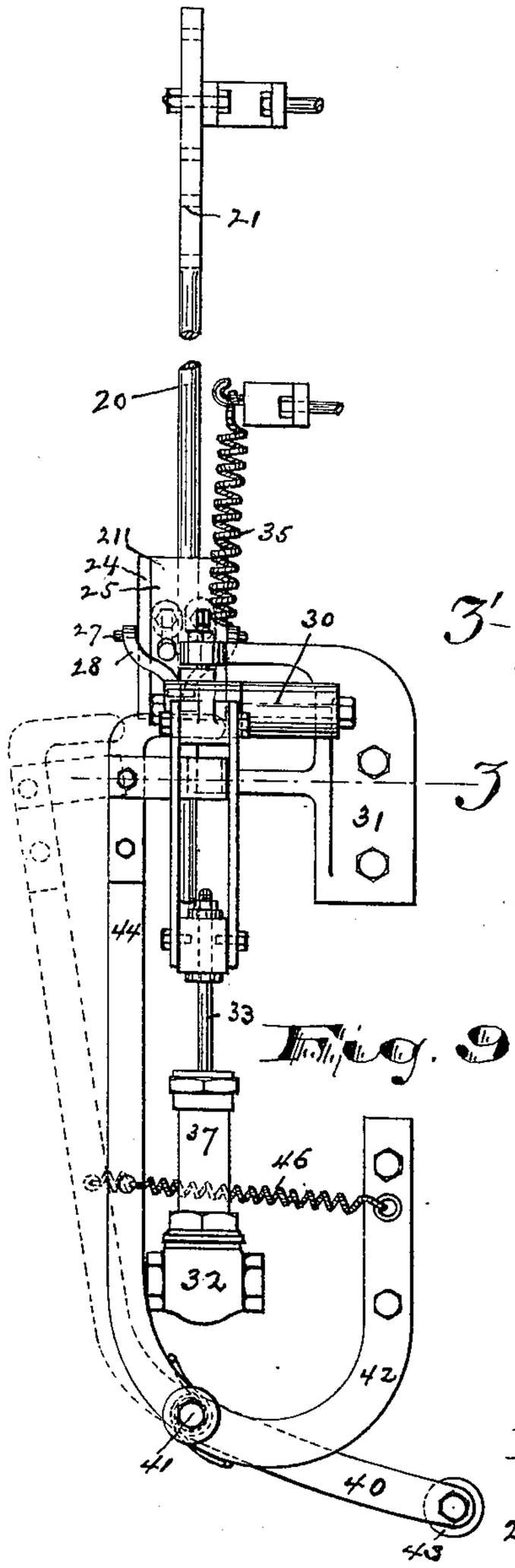

Fig. 9.

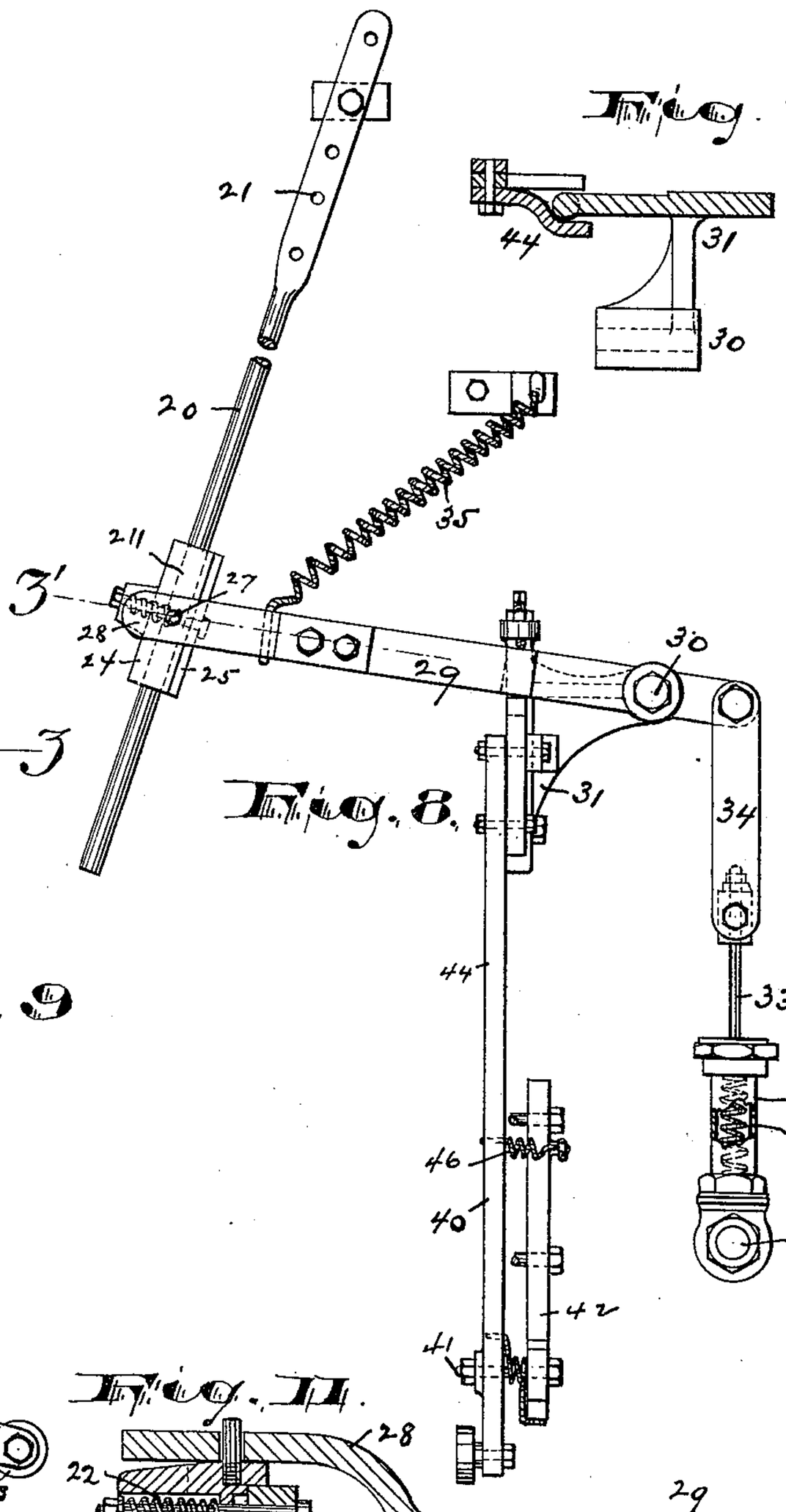

Fig. 8.

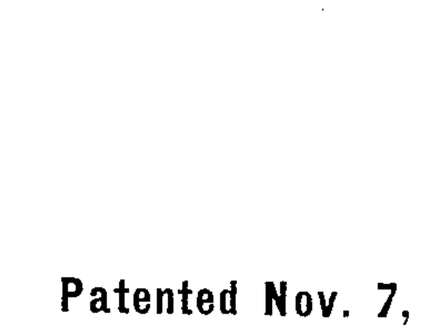

Fig. 10.

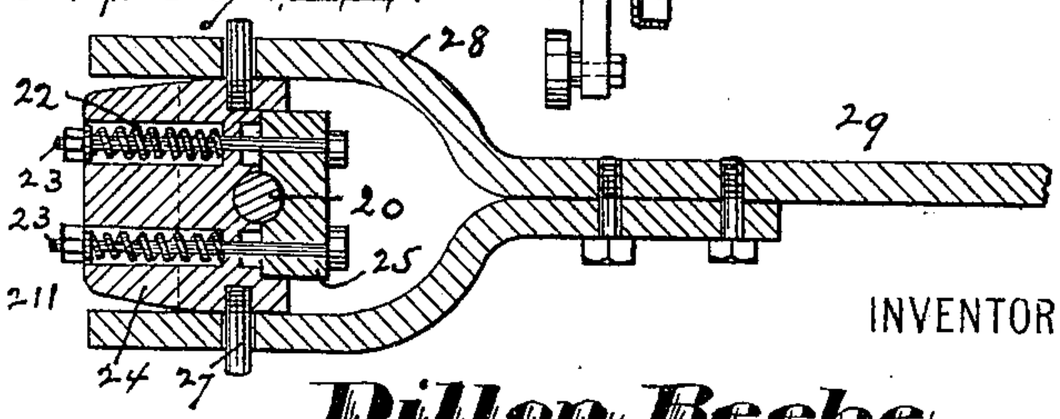

Fig. 11.

WITNESSES:

A. R. Krousse

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No. 636,618. Patented Nov. 7, 1899.

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(Application filed July 19, 1898.)

(No Model.) 5 Sheets—Sheet 4.

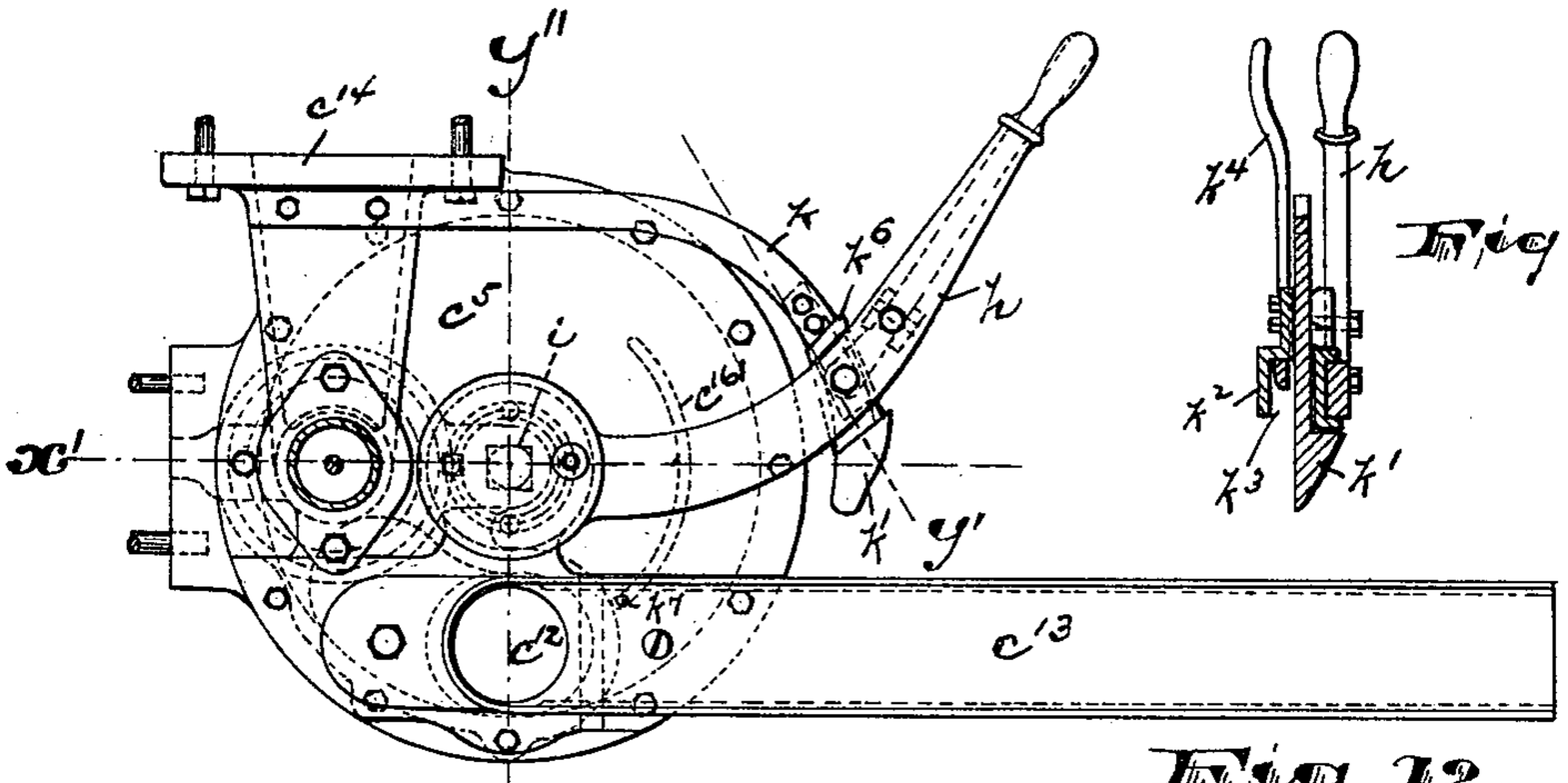

Fig. 12.

Fig. 13.

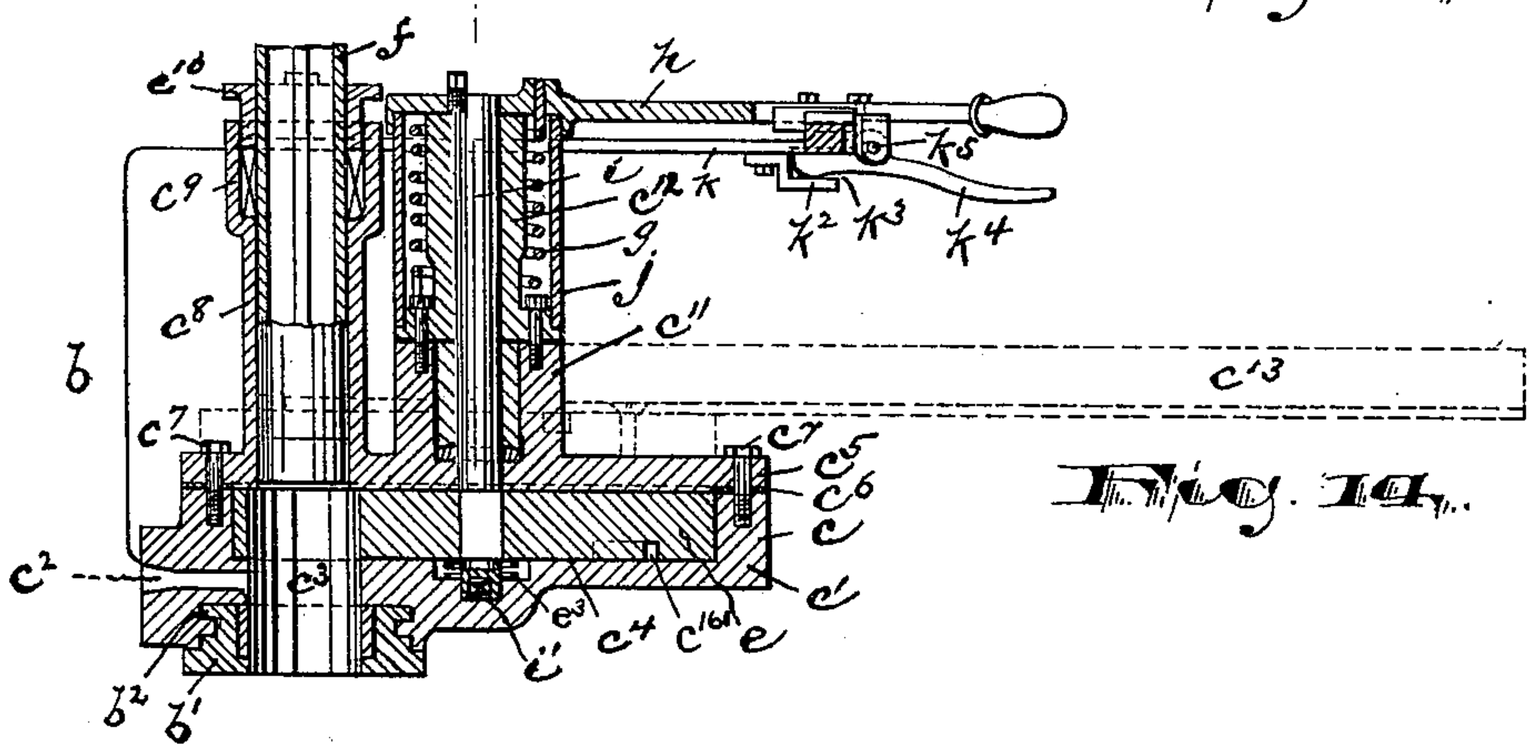

Fig. 14.

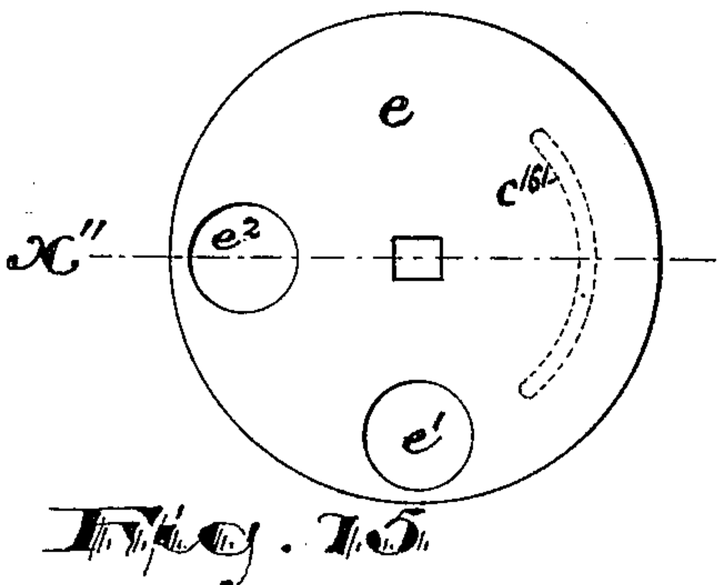

Fig. 15.

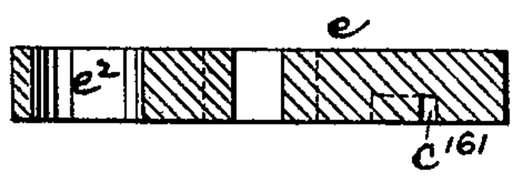

Fig. 16.

WITNESSES:

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No. 636,618. Patented Nov. 7, 1899.

D. BEEBE.

BARREL FILLING OR RACKING MACHINE.

(Application filed July 19, 1898.)

(No Model.) 5 Sheets—Sheet 5.

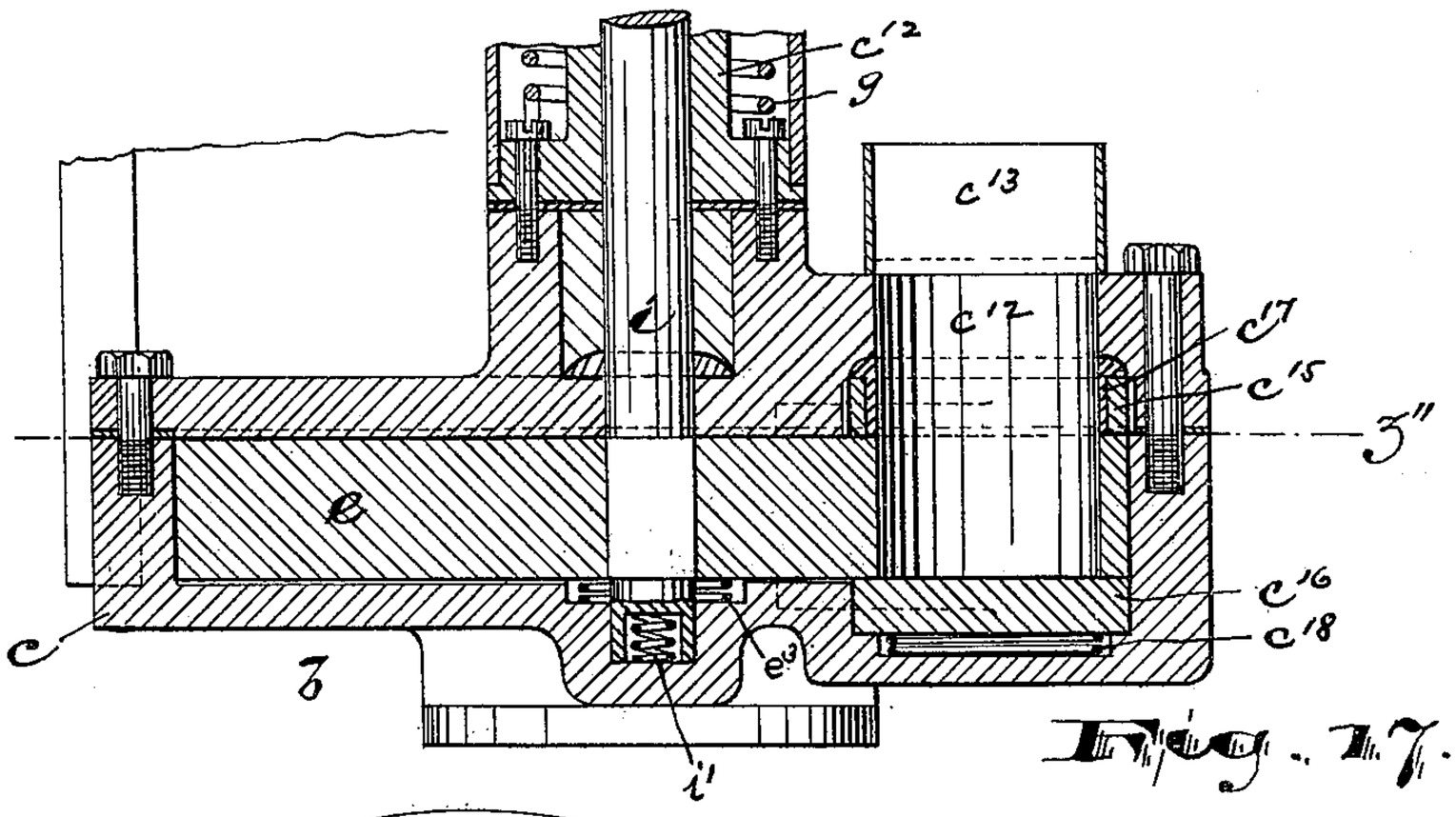


Fig. 17.

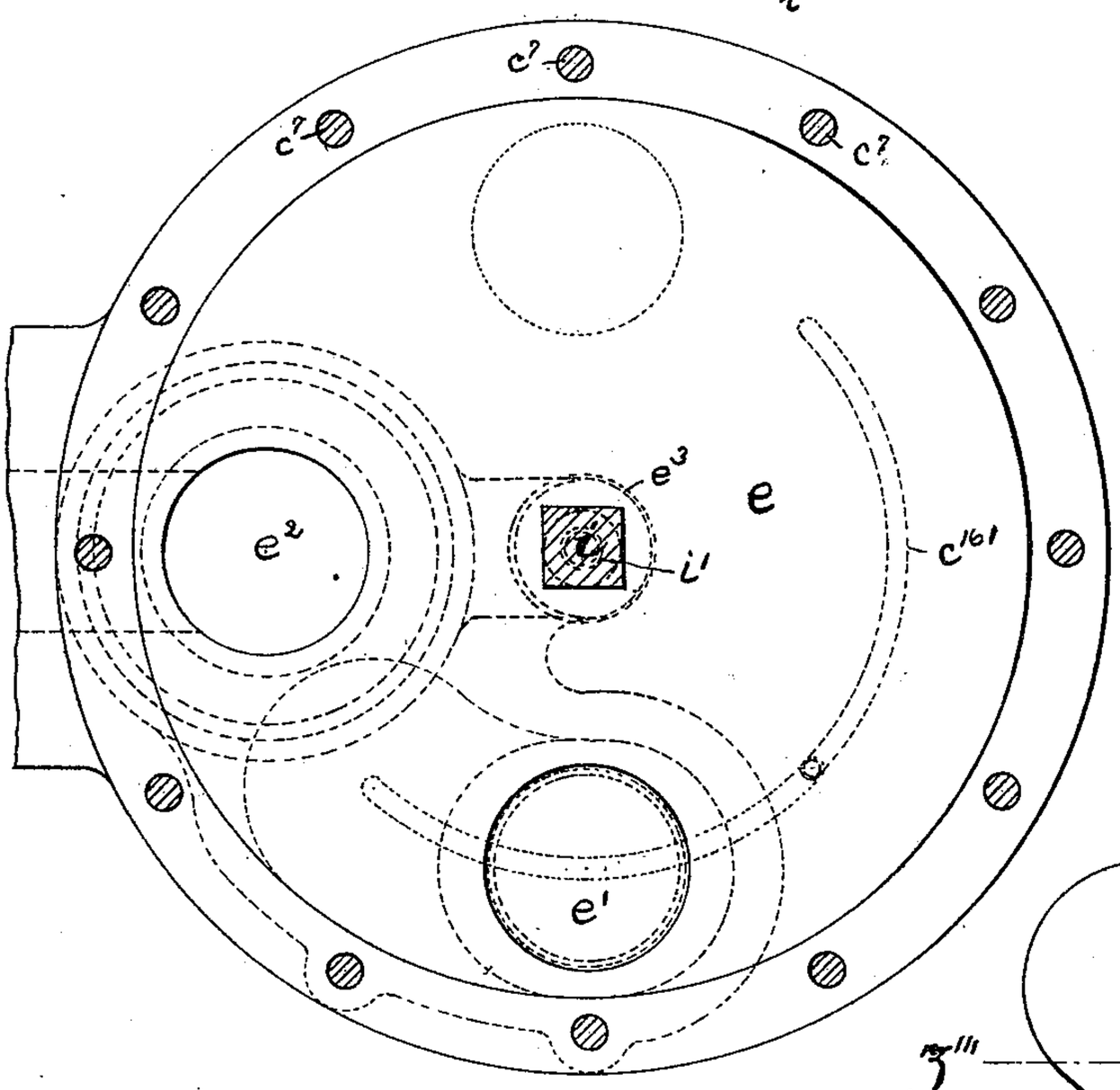


Fig. 18.

Fig. 19

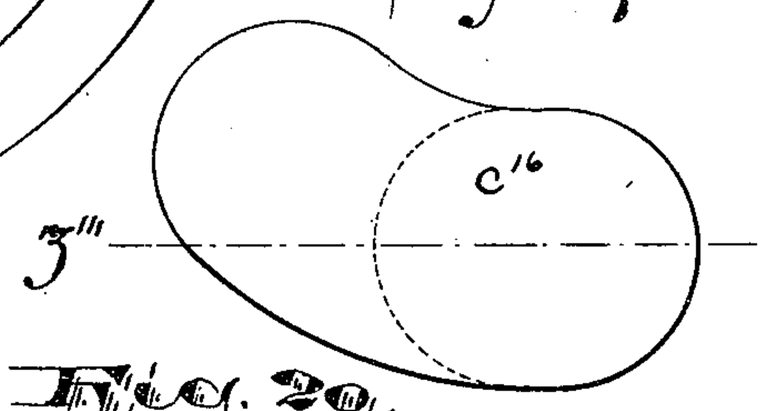
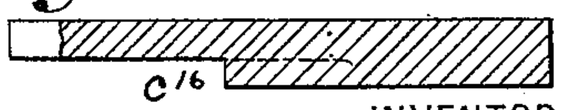


Fig. 20.



WITNESSES:

A. R. Krausse

Russell M. Everett.

INVENTOR:

Dillon Beebe,

BY Drake & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

DILLON BEEBE, OF NEWARK, NEW JERSEY.

BARREL FILLING OR RACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,618, dated November 7, 1899.

Application filed July 19, 1898. Serial No. 686,348. (No model.)

To all whom it may concern:

Be it known that I, DILLON BEEBE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Barrel Filling or Racking Machines; and I do hereby 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 letters and numerals of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in that class of barrel filling or racking machines represented by the one shown in my prior patent, dated July 12, 1898, No. 607,328, the objects of the present improvements being to obtain certain detailed advantages and results, some of which will be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved barrel filling or racking machine and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and numerals of reference indicate corresponding parts in each of the figures, Figure 1 is a general side elevation of the improved machine. Fig. 2 is an enlarged longitudinal section in detail, showing certain improvements in the valved lower end of the filling-tube. Fig. 3 is a cross-section of the same, taken at line x, Fig. 2. Fig. 4 is a front view of the said machine. Fig. 5 is a sectional detail view of the upper end of the piston-like filling-tube carrier and a valve and cylinder for controlling the inflow of compressed air for driving and cushioning the said piston-like rod or carrier. Fig. 6 is a detail view of certain hand-shafts and connections for controlling the operation of the barrel-operating device. Fig. 7 is a section of the same on line y, Fig. 6. Fig. 8 is a detail view showing a system of levers and coöperating means for automatically controlling the gas-duct valve which opens to permit the escape of air or gas from the barrel as the same is being filled and under certain conditions permits the inflow of gas into the barrel. Fig. 9 is a front view of the same. Fig. 10 is a sectional view taken through line z, Fig. 9. Fig. 11 is a sectional view taken through line z', Fig. 8. Fig. 12 is a detail plan of a certain bung-feed device. Fig. 13 is a section on line y', Fig. 12. Fig. 14 is a section on line x', Fig. 12. Fig. 15 is a detail plan of a certain oscillating bung-feeding plate of said feed device. Fig. 16 is a section of the same on line x''. Fig. 17 is a detail sectional view of the bung-feed casing or receptacle and its oscillating plate, taken through line y'', Fig. 12. Fig. 18 is a sectional view taken through line z'' of Fig. 17. Fig. 19 is a detail plan of a certain supplemental plate employed in connection with the oscillating valve-plate above referred to; and Fig. 20 is a section of the same taken on line z''', Fig. 19.

In my prior device, described in the case above referred to, the bung-feed therein disclosed was effective in producing valuable results, but because of a certain oscillating plate therein not completely filling the chamber within its casing or receptacle a quantity of liquid was entrapped in the said receptacle and connections, which was open to objection. In the present case I form the chamber within the casing round, as indicated in Fig. 18, and closely fit within said casing a discous oscillating bung-feed plate and employ other detail improvements which render the bung-feed more perfectly efficient. Again, in my prior construction the filling-tube and bung-driver at its lower end were so constructed that should a particle of solid matter get between the valve-bearings it was apt to prevent a perfect closure of the valve. By the present construction this objection is avoided and I secure a more reliable closing of the valve when desired. Again, in the prior device the inlet-passage for the bung-driving fluid, preferably compressed air, was so disposed in its piston-cylinder that the movements of the inflowing air were directed sidewise against the piston, especially at the beginning of its movement, and thus the propulsive force of the said air was lost to some extent and the piston and driving-tube did not quickly respond to the action of opening

the air-valve, as desired. In the present case to secure a more prompt action of the compressed air I so form the inlet passage or passages that the inflowing air is directed downward against the end of the piston, the air thus moving in the axial line of said piston being more effective in securing the desired quick action. Again, the barrel-manipulating device previously shown though efficient in quickly arranging the barrel to bring the bung-hole beneath the barrel-filling and bung-driving tube, yet the hand-operating means for working said barrel-manipulating apparatus were disposed apart distant from one another, involving a loss of time and lack of convenience in manipulating said means. By my improved apparatus these objections are largely overcome and hand means for moving the barrel endwise and for turning the barrel axially are arranged close together and in a position enabling the operator to clearly see the operation of the barrel while conveniently manipulating the said hand-operating means. Again, in my prior device in the means by which I control the outflow of air or gas from the barrel as the latter is being filled the connections between the valve-rod and the filling-tube carrier were positive, so that all parts worked necessarily together. In the present case in the train of connections I employ parts having frictional connection with one another, whereby there is permitted an independence of movement which is effective in securing certain valuable results hereinafter detailed.

In the drawings before referred to, *a* indicates the standard or frame, upon which are arranged the working parts. This standard or frame is similar in general construction to the one shown in my previous patent, above referred to. At a point above the floor convenient to permit a convenient arrangement of the barrel or package beneath is formed a vertical slideway, upon which is arranged a sliding packing-head *b*, adapted to rest down upon the barrel or package at the bung-hole thereof and form, with said package, an impervious joint through which the liquid entering said package cannot escape. Forming a part of or in connection with said packing-head *b* I employ a bung-feed casing *c*. (Shown more clearly in detail in Figs. 12, 14, 17, and 19.) The said casing *c* comprises, preferably, two sections c' c^5, the lower one of which on the under side provides a receptacle for the elastic packing b' and on the upper side is suitably cored or worked out to provide a receptacle for a certain oscillating bung-feed plate. The packing-receptacle is furnished with undercut walls to receive the flanges b^2, Fig. 14, integrally formed on said packing. At one side of said section c', a little above the receptacle for the elastic packing, I provide a passage c^2 for the air or gas to escape from the barrel as the same is being filled, the said section thereat being provided with a suitable seat to receive a gas-pipe connection *d*. (Shown in Fig. 4.) The said duct or passage c^2 is in open communication with the filling-tube opening c^3.

On the upper side of the lower section c' of the casing the same is provided with a round and shallow receptacle or chamber c^4, above referred to, to receive a discous bung-feed plate *e*, the said chamber being closely the size of the said discous plate, so that when the latter is placed in position therein it will nicely fill said chamber and leave little or no room for fluid, the filling, however, being such as will allow an easy working of the plate. Suitable spiral springs e^3 i' are employed to support the plate *e* and shaft *i*. Above said sections c' is fastened the upper section c^5 of the bung-feed casing, which rests down upon the raised edges of the section c' and upon the bung-feed plate, as shown in Fig. 14, the joint between the sections being suitably packed with a rubber gasket c^6 or otherwise to secure an impervious joint. The sections are preferably joined by means of screws c^7. The upper section c^5 on the upper side is provided with a tubular extension c^8, which is in line with the filling-tube opening c^3, the said extension c^8 being enlarged, as at c^9, at its upper end to form a packing-box and receive the gland c^{10}, by means of which the packing in said box is made to form and maintain an impervious joint around the filling-tube *f*. In line with the axis of the discous bung-feed plate *e* the said upper section is provided with a second upward extension c^{11}, on which is secured a supplemental extension c^{12}, which forms a center piece for a spring *g*, the said spring being suitably fastened at its lower end to said supplemental piece or extension c^{11} and at its upper end to the handle *h*. The said handle *h* is somewhat enlarged and recessed on the under side at its point of connection with the axial rod *i* to receive a tubular casing *j*, which incloses and protects the said spring *g*. The said spring serves to keep the bung-storage opening e' of the bung-feed plate normally in line with the openings c^3 and filling-tube extension c^8. Above the casing *c* is formed or secured a curved catch-arm *k*. This at its projecting end is provided with a wedge-shaped catch projection k' and on the under side has an angular piece k^2, Fig. 13, which forms, with said catch-arm, a groove k^3 to receive the extremity of the releasing-lever k^4. The said releasing-lever is hinged or fulcrumed, as at k^5, Fig. 14, to or upon the handle *h*, so as to be turned therewith, and by grasping the handle ends of the parts *h* k^4 and drawing the same together the spring-arm *k* is forced at its hooked or catching end out of engagement with the handle, so that the latter is free to be turned forward away from the extremity of the arm *k*, whereby the plate *e* is turned either by the action of the spring *g* or by the power of the hand to bring the bung-feed opening e' into the desired coincidence with the opening c^3. When it is desired to bring the filling-tube into coin-

cidence with the filling-tube opening or the bung-feed plate *e* into coincidence with the opening c^3, the handle *h* is pressed or forced toward the catch-arm *k*, when the wedge-shaped extremity of the said arm will enter between the parts *h* k^4 and movement be stopped by engagement with limiting projection k^6, the said stop being so disposed as to bring the said openings or passages e^2 c^3 into the desired coincidence. The movement of the handle away from the catch-arm *k* is limited by a suitable pintle or stop k^7 of the casing, the inwardly-projecting end of which lies in a concentric groove c^{161}, formed in the bung-feed plate. The movements of this plate may be limited and controlled in any other suitable manner, so that said plate will merely be permitted to oscillate on its axis to bring the bung-storage opening *e'* from the opening c^{12}, Fig. 12, receiving the bung from the bung-guide c^{13}, to the filling-tube opening c^3. The upper section c^5 is also provided integrally with a seat, bearing, or flange c^{14}, by means of which the said casing is firmly secured to the packing-head slide *l*, Fig. 1, to move vertically therewith. Said slide is operated by a screw substantially as described heretofore by me in my prior patent above referred to or in any suitable manner.

To secure greater impermeability at the bung-feed opening, so that the fluid cannot escape from the bung-entrance c^{12}, I have provided packing-plates c^{15} c^{16}, Fig. 17, the upper one of which, c^{15}, is centrally perforated to permit of the passage of the bung and is provided with an elastic gasket c^{17}, adapted to take up any slight wear that there may be upon the handle packing-plate, and thus maintain perfect impermeability. The lower plate c^{16} is engaged by a helical spring c^{18} to take up such wear. These packing-plates c^{15} c^{16} closely engage the plate *e*, so that no liquid can enter the bung-feed passage c^{12} through the joints above and below said plate *e* should the plate not absolutely fill the chamber. The plates c^{15} c^{16} are preferably segmental, as indicated in Fig. 19, and are arranged concentric with the axis of the plate *e*, so as to secure the desired result without presenting to the plate *e* a large surface by which friction is increased when turning said plate *e*. Said plate *e* and its openings are so arranged in their relations to the packing-plates and casing *c* and the passages or openings therein as that the bung-feed opening *e'* in said plate *e* when said opening *e'* is turned out of coincidence with the filling-tube opening will immediately enter between the packing-plates, and the latter will close said opening *e'*, and the fluid from the bung-feed opening will be prevented from leaking therein, and the bung-feed passage and its contents will be brought back to the bung-feed passage of the casing. Thus little or no opportunity is given for leakage fluid to enter the bung-perforation in the bung-feed plate to interfere with the insertion of the bung or be otherwise objectionable.

Upon the upper part of the frame *a*, which is provided with a vertical slideway to receive the same, is arranged a filling-tube carrier *m*, similar in general construction and arrangement to the one shown in my prior patent. This is counterbalanced more or less perfectly by a weight *m'* and is raised and lowered by hand-operating means of any suitable kind, preferably such as I have described in my prior patent. The filling-tube carrier is furnished with a cylinder m^2, in which works a piston and its rod m^3. To the lower end of this piston m^3 is secured a cylinder m^4, to which in turn is fastened the valved filling-tube *f*. The cylinder m^4 contains a piston (not shown) for operating a valve-rod *n*, the said piston being shown and fully described in my prior patent. In the former case referred to the valve at the lower end of said rod *n* because of its construction was liable to become clogged by the sediment or solid matter within the fluid, which, entering between the seat and valve, occasioned a leakage. In the present improved construction I have provided a valve which avoids the above inconvenience and disadvantage. This novel construction is shown more clearly in Figs. 2 and 3, where the filling-tube *f* is provided with a horizontal seat *f'* at its extremity adapted to take the force of the hammer-like blow in driving the bung. A valve-rod *n* is arranged in said filling-tube extending therethrough to the lower extremity of the filling-tube, where it is provided with a valve-head *n'*, which serves both to close the filling-tube and as a hammer-head in driving the bung. The inner edge of the filling-tube at its lower extremity is rounded or beveled, as at f^2, Fig. 2, and the valve-head *n'* is centrally cored out at its upper side to receive the guide n^3, which latter comprises three arms adapted to fit the sides of the tube and slide thereagainst to hold the valve in proper relation to the seat. The said arms are connected in a single casting, which is perforated to receive the end of the valve-rod, said piece or casting being fastened upon the lower extremity of the valve-rod *n* by upsetting the lower end of the valve-rod, as shown, or in any other manner. The valve-head on its upper side is centrally recessed, the inner walls being stepped. The sides of the deeper central part of the recess are threaded, as at n^4, to receive a downward threaded extension n^7 of the guide-casting. Outside of the deeper central recess on the raised step n^8 is formed a seat for an elastic packing *o*. After the parts are screwed together the head *n'* is more firmly fastened to the valve-rod and guide-casting by means of a set-screw n^5. The packing *o* projects upward from the upper and outer part n^6 of the recess and is adapted to enter the filling-tube where the same is rounded or beveled. The action of the projecting

packing when the valve is being closed is to rub against the rounded end walls of the filling-tube, so as to clear the same of solid matter, such as hop-leaves, and thus, even though the said solid matter should be caught between the abutting horizontal end surfaces necessary to secure a firm bearing of the valve-head upon the filling-tube and to provide a suitable resistance for the hammer-like action in the operation of driving the bung, yet the valve-joint will be perfectly closed against leakage of liquid when the valve-rod is operated in driving the bung, &c., in the manner I have described in the earlier patent. The impermeability of the closed valve is further maintained by liquid-pressure upon the elastic packing. This is obtained by means of perforations o' through the guide-casting n^3. These perforations communicate with an annular chamber o^2, formed at the interior of the upward extension of the elastic packing. Thus when the valve is closed the pressure of the fluid within the filling-tube and annular chamber is exerted against the said upward extension to cause the latter to hug the inner walls of the filling-tube and form the desired impervious joint, as will be understood.

The means for operating the filling-tube f are substantially such as I before described, and the general relation of said filling-tube f to the other working parts of the machine is similar to those already described, excepting as hereinafter noted, and further description is deemed to be unnecessary. The exception referred to appertains to the means for applying the compressed air for driving the filling-tube. The object of the improvement is to secure a more prompt action or movement of the said filling-tube after opening the compressed-air valve. This feature of improvement is shown more clearly in Figs. 4 and 5. In Fig. 5, p indicates a three-way cock controlling the inflow and exhaust of the compressed air, said cock being automatically operated by means heretofore described in my patent and suitably arranged in a portion of the filling-tube carrier m, the latter being provided with air-passages p' p^2, alternately acting as inlet and exhaust passages for the air. In my prior construction when the piston m^3 and its rod m^{30} were at the upper limit of their stroke ready to receive the compressed air preliminary to being driven down against the bung the air entered at one side of the piston, and as a result the movement of the said piston was slow. In the present construction I provide a supplemental air-passage p^3, which extends up from the passage p' to a part of the cylinder-chamber immediately above the piston formed by the chambered cylinder-head q, so that the air entering said cylinder-head chamber will be directed more positively against the end of said piston to drive the same downward promptly and with force, the downward movement being continued and facilitated by the air entering afterward through the side air-passage p', preliminary to the striking of the blow.

To prevent a too-free exhaust of the air from the cylinder upon the return movement of the piston and prevent said piston from hammering against the end of the cylinder, I have provided a valve q', adapted to close off communication of the cylinder-head chamber with the passage p^3, so that at or near the upward terminal of the movement of the piston the air is caught in the main cylinder and an air-cushion formed. This valve q', however, is not made absolutely impermeable to air, said valve being fitted so as to allow a slight leakage, the air being permitted to escape from the air-cushion slowly, and the piston is then allowed to gain its upward seat or position.

At the lower part of the frame a I form a barrel receiver or holder similar to the one shown in the previous patent. This is adapted to receive the empty barrel to be filled and enable the operator to quickly and conveniently turn the same axially or carry it either laterally or lengthwise in either direction to bring the bung-hole into line with the filling-tube and packing-head or to throw the filled barrel out from the machine. Said barrel receiver or holder comprises four arms 60, preferably adjustable on their fulcrumal supports in their relation to one another to accommodate variously-sized barrels or packages. Means are provided for operating said arms, as will be briefly described. At their upper extremities said arms are provided with rollers 61 and at their opposite ends are provided with segmental arms 63, the arms 60 and 63 together forming bell-crank levers which are fulcrumed on shafts 65 of the frame 66. Said shafts are turned by means of a handle-lever 67, having hand-catches 68, which engage a notched segment 69, formed on an arm 70, attached rigidly to a central shaft 71, also forming a part of the frame 66. By turning the hand-lever 67 one of the shafts 65 is turned thereby and with it the arms 60 thereon. These arms at their toothed segmental extensions 63 intermesh with the opposite segmental and toothed levers on the second shaft 65. Thus the opposite arms 60 60 in each pair are caused to move in opposite directions simultaneously and at the same rate of speed, maintaining their relative distances from the intermediate center line of the filling-tube. Upon the shaft 71 is arranged a sleeve or roller 72, upon which the barrel is adapted to rest, the rollers 61 being rather guides or supporting-stays for holding the package centrally upon said roller. Said sleeve or roller 72 is adapted to be rotated upon its shaft 71 to turn the package resting thereon axially for the purpose of bringing the bung-hole in line with the filling-tube after the barrel has been moved endwise into the vertical transverse plane of said filling-tube. The rotation of said sleeve 72 is effect-

ed by means of a hand-shaft 73, bevel-gears 74, a shaft 75, and a pinion 76, which last intermeshes with a cogged extremity of said sleeve. Thus by turning the hand-wheel 78 the desired rotation of the sleeve or roller 72 is effected. These parts are described in my prior patent, the present construction being generally the same, as I have already described.

To obtain a more convenient operation of said parts, I have constructed the hand-operating means as follows: Instead of operating the sliding shaft 71 by means of a lever stationed at a distance from the hand-shaft 73 I have constructed said hand-shaft 73 hollow or tubular, and in and through said tubular shaft I have arranged a hand-shaft 79. The said shaft 79 at its lower end is provided with a cog-wheel or pinion 80, which engages a rack 88, fastened upon the shaft 71, so that by turning said pinion the said rack and the shaft attached thereto are moved longitudinally to cause the barrel-carrying frame 66 to move the barrel thereon in a line parallel with the axis of said barrel, as will be understood. The hand-wheel 81 of the shaft 79 and the hand-wheel 78 of the tubular shaft 73 are thus axially in line and closely near one another and both at a point that will enable the operator to stand near to the barrel in full view thereof while one of his hands is engaged in operating one or the other of the said wheels, thus simplifying and rendering more easy the manipulation of said parts.

To secure a more perfect automatic action and a better timing of movements and to prevent foaming of the fluid as it is fed into the barrel, I have so arranged and timed the parts as that after the forming of an impervious joint around the bung-hole by means of the packing-head and at the beginning of the downward movement of the filling-tube the back-pressure gas-duct valve is caused to automatically open and permit an entrance of the compressed air through the passage c^2 into the barrel or package to promptly establish therein prior to the opening of the filling-tube valve a gas-pressure within the barrel such as will prevent a foaming of the inflowing fluid upon the opening of the filling-tube valve. After the entrance of the valve n of the filling-tube through the bung-hole into the barrel and the gaining of said valve n a position near to the bottom of the lower side of the barrel the valve opens automatically and the fluid issues from the filling-tube against the gas-pressure obtained by the introduction of compressed air through the passage c^2. As the barrel or package fills this gas within the barrel is forced back, the flow pressure through the filling-tube being greater than the back pressure through the passage c^2 and tube 14, Fig. 4, and through the observation-glass 15 to the reservoir 16, from which it escapes when the pressure rises above the desired standard. A suitable automatic escape-valve (not shown) is provided for regulating the pressure.

Upon examination of Fig. 14 it may be noted that the passage c^3 in the casing c is somewhat larger in diameter than the filling-tube f, so that a passage is formed around the filling-tube when said tube is lowered through said casing, permitting a flow of the air back and forth around the filling-tube to and from the passage c^2.

To secure the desired movements automatically by which the results above described are obtained, I provide the detailed construction shown in Figs. 8, 9, 10, 11, and more or less clearly in Figs. 1 and 4. Upon the descent of the filling-tube carrier m, to the lower portion of which is attached a friction-rod 20, Figs. 1, 8, and 9, said friction-rod is forced longitudinally downward. The said friction-rod is provided with a series of perforations 21, by means of which it is adjustably bolted or otherwise fastened to the said filling-tube carrier. At the lower end of the said friction-rod 20 the same enters through a spring friction-clutch 211, (shown more clearly in detail in Fig. 11,) the friction of the clutch on the rod being regulated and controlled by means of springs 22 and adjusting-bolts 23. The friction-blocks 24 25 of the clutch 211 are suitably fitted to one another to maintain a proper frictional arrangement and engagement with the rod 20 and are pivoted, as at 27, to the prongs or forks 28 of a lever 29, the pivoted blocks permitting a change of angle or inclination of the friction-rod 20 and lever 29 without binding, as will be understood. Immediately upon the downward movement of the filling-tube and its carrier and the rod 20 therewith, because of the frictional relation of said rod to the lever 29, the latter is caused to turn on its fulcrum 30, formed on a bracket 31, fastened to the packing-head b and raising and lowering therewith. The said lever 29 is allowed but a limited movement on its fulcrum, and thus when the gas-duct valve 32 is opened the further movement of the lever 29 is stopped; but the rod 20 and its connections are permitted to continue their downward movements through the rod sliding in the clutch until the filling-tube has arrived at the limit of its movement. The lever 29 is connected to the valve-piston 33 by means of a link or links 34. A spring 35 serves to take the weight of the longer arm of the lever. The valve 32 is held normally closed by a spring 36 within the barrel 37 of the said valve, and thus upon the release of the pressure due to the rod 20 the said spring 36 acts to close said valve, the said spring being more free to act because of the spring 35 serving to overcome the weight of the moving parts.

The friction-rod 20 is made slightly tapering, the taper being of such limited degree as not to appear in the drawings. The tapering serves to reduce the friction of the clutch at

the upper limit of movement of the filling-tube rod.

To prevent an opening of the gas-duct valve prematurely or when there is no package in place to receive the filling-tube upon its descent, and to thus prevent premature opening of the back-pressure valve and the loss of gas from the reservoir 16, I have provided a safety device consisting of a lever 40, fulcrumed at 41 upon a bracket 42, attached to the packing-head, one arm of which lever is adapted to engage the barrel or package, being thereat provided, preferably, with a roller 43, and at the opposite end extending up into engagement with the lever 29, the upward arm 44 of said lever preferably being turned and adapted to enter at its end between the bracket 31 and said lever, thus preventing the turning of said lever and the opening of the valve. The said lever-arm 44 is normally held in its staying position by a spring 46 and is only unlocked by the engagement of the lower end of the lever with the barrel when the packing-head is lowered. By this construction the back-pressure gas-valve can only open after the packing-head has formed its impervious joint.

Having thus described the invention, what I claim as new is—

1. In a barrel-filling machine, the combination with the valve-filling tube, means for operating the valve, means for raising and lowering the tube from and into the barrel and means for driving said tube against the bung, of a bung-feed device comprising a casing having a packing on the under side to engage the barrel at the bung-hole, means for raising and lowering the bung-feed device to and from the barrel, the said bung-feed device comprising a casing and an oscillating plate having two separate perforations and supplemental packing-plates for imperviously packing said oscillating plate at the perforations, substantially as set forth.

2. In a barrel-filling machine, the combination with the filling-tube, of the packing-head having a bung-feed casing and oscillating plate, and plates c^{15}, c^{16}, arranged within the casing and engaging the opposite sides of the said oscillating plate, substantially as set forth.

3. In a barrel-filling machine, the combination with the filling-tube, of the packing-head having a bung-feed casing and oscillating plate and plates c^{15}, c^{16}, arranged within said casing and engaging the opposite sides of the said oscillating plate and a spring adapted to press one of said plates against the oscillating plate, substantially as set forth.

4. The combination in a barrel-filling machine, of a packing-head, a filling-tube and its carrier, and means for operating the same to and from the barrel and means for forcing said filling-tube in its bung-driving operations, a back-pressure air-reservoir and a gas-duct leading from the packing-head to said reservoir, a valve arranged in said duct and a lever carried by said packing-head and operated by the filling-tube carrier to effect an opening and closing of the back-pressure valve, the said valve being immediately opened upon the lowering of the filling-tube at the beginning of the lowering movement, a friction-clutch and a sliding rod working with the filling-tube carrier whereby the latter is permitted a continued independent movement after the back-pressure valve is opened, substantially as set forth.

5. The combination with the packing-head, back-pressure reservoir, duct, and valve and a filling-tube carrier and filling-tube and means for operating the same, of a rod 20, attached to said filling-tube carrier, a clutch 211, pivoted on a lever 29, said lever 29, fulcrumed on a bracket attached to the packing-head, said packing-head and means for operating the same, a link 34, connecting said lever 29, to the back-pressure valve and a spring 36, all said parts being arranged and adapted to operate, substantially as set forth.

6. The combination with the packing-head, filling-tube carrier, and filling-tube, of the back-pressure reservoir duct and valve, the last being arranged in connection with the packing-head, said packing-head having a bracket 42, a lever, sliding rod 20, clutch 21, lever 29, link 34, a valve-rod 33, a spring for automatically closing the valve, all said parts being arranged and combined, substantially as set forth.

7. The combination in a barrel-machine, with a filling-tube and its valve, back-pressure reservoir and its valve, and means in connection with said filling-tube for opening said back-pressure valve at the beginning of the downward movement of said filling-tube, a safety-stop adapted to engage the barrel and be released thereby from holding engagement with the valve connection, the said safety-stop serving when not released to prevent the opening of the back-pressure reservoir, substantially as set forth.

8. In a barrel-filling machine, the combination with the bracket 42, attached to the packing-head, said packing-head and means for raising and lowering said packing-head, a filling-tube working in said packing-head, a filling-tube carrier, and means for raising and lowering the same, of a lever fulcrumed upon said bracket and adapted at one end to engage the barrel upon the descent of the packing-head and at the other end serving as a stop for locking the back-pressure valve, and holding the same closed when the packing-head is detached from the package, substantially as set forth.

9. The combination in a barrel-machine, with the frame thereof, a filling-tube carrier and means for raising and lowering the same from and toward the package and a filling-tube, a packing-head through which the filling-tube passes, and a back-pressure reservoir, a valved duct leading from said reservoir to said packing-head and a train of mech-

anisms extending from the filling-tube carrier to the said back-pressure valve and adapted to transmit the motion of the said filling-tube carrier to the valve of said duct to open the same upon the descent of the filling-tube carrier and a lock-lever fulcrumed upon the packing-head and adapted to engage the train of valve-operating devices to prevent an opening of the valve, substantially as set forth.

10. In a barrel-filling machine, the combination with the filling-tube and its carrier, a packing-head having an air or gas passage adapted to open into the package, a back-pressure reservoir opening into said passage, a valve 32, a train of devices in connection with the filling-tube carrier and transmitting movement from said carrier to said valve to open the same, and a lock in connection with the packing-head, adapted to lock said valve normally closed and adapted to be unlocked automatically upon the descent of the packing-head into engagement with the barrel, substantially as set forth.

11. In a barrel-filling machine, the combination with the filling-tube and its carrier, a packing-head having an air or gas passage opening into the filling-tube passage of said packing-head, the diameter of said filling-tube passage being at its lower end larger than the diameter of the filling-tube, a filling-tube and means for operating the same, a back-pressure reservoir, valve and duct the last communicating with said air or gas passage, means connecting the back-pressure valve, with the filling-tube, operating means whereby the filling-tube serves in transmitting power to said valve to open the same and a valve-lock, substantially as set forth.

12. In a barrel-filling machine, the combination with the filling-tube and its carrier, a packing-head having an air-passage and filling-tube passage therein, means for raising and lowering the packing-head, a back-pressure reservoir, duct and valve, the last being arranged in connection with the packing-head, a train of valve-operating devices adapted to be operated automatically to open the valve upon the descent of the filling-tube and a lock bracketed on the packing-head and adapted to engage the barrel or package, substantially as set forth.

13. In combination, in a barrel-filling machine, with the filling-tube and its carrier and operating means, the packing-head and operating means, of the rod 20, attached to the filling-tube carrier, the forked lever 29, bracketed upon the packing-head, a clutch 211, pivoted between the forks of the lever and receiving said rod and a back-pressure valve and its piston locked to said lever, substantially as set forth.

14. In combination in a barrel-filling machine, with the filling-tube and its carrier and operating means, the packing-head and operating means, of the rod 20, attached to the filling-tube carrier, the lever 29, pivoted clutch having blocks 25 and 24, and springs 22, a spring 35, supporting the longer arm of the lever, a link 34, and gas-duct valve 32, the valve 32 and lever 29, being each in connection with the packing-head, substantially as set forth.

15. In a barrel-filling machine, the combination with the frame, of a vertically-sliding filling-tube carrier, having a cylinder m^2, attached, a piston m^3, having a second cylinder m^4, with a filling-tube attached, a piston and a valve-rod extending from said second cylinder through said filling-tube and at the end of the said filling-tube having a valve-head and an elastic packing seated thereon, the said valve-head abutting against the end of the filling-tube and the elastic packing extending up into said tube and effecting a rubbing contact with the walls of said tube when closing into impervious relation to said tube, and operating means for said parts, substantially as set forth.

16. In a barrel-filling machine, the combination with the frame, of a vertically-sliding filling-tube carrier, having a cylinder attached, a piston working in said cylinder and having a second cylinder at its lower end, a filling-tube attached to said second cylinder, a piston and a valve-rod in said second cylinder and extending out therefrom through said filling-tube and at its lower end having a guide-casting, with a valve-head fastened thereon, the valve-head and guide-casting providing a seat therebetween for a packing-ring and said packing-ring arranged to engage the inside of the filling-tube, and means for operating said parts, substantially as set forth.

17. In a barrel-filling machine, the combination with the filling-tube and means for operating the same, a valve for closing said tube and means for operating the same, said valve having a head adapted to abut against the extremity of the filling-tube and serving as a hammer in driving the bung and a packing seated in a recess on the upper side of said head and projecting into said tube, the inner side of said packing being open to the fluid within said filling-tube and adapted to be pressed thereby against the walls of said filling-tube to effect an impervious joint, substantially as set forth.

18. In a barrel filling machine, the combination with the filling-tube and means for operating the same, a valve at the lower end of said filling-tube and means for operating the same, a valve-head abutting against the end of said filling-tube and adapted to be driven thereby against the bung, a guide-piece carrying said head and directing its movements to and from the extremity of said tube and a packing, all arranged and adapted to operate, substantially as set forth.

19. In a barrel-filling machine, the combination with the filling-tube and means for operating the same, a valve at the lower end of said filling-tube and means for operating the same, a valve-head abutting against the end

of said filling-tube, a guide-piece having arms projecting up into said filling-tube and engaging the walls of said tube to direct the movements of the valve, said guide-piece having perforations or openings therebetween to permit access of fluid to the packing and said packing held in place by said guide-piece and valve-head and at its upper end adapted to engage the inside of the filling-tube and be pressed by the fluid into impervious contact with said tube, and operating means, substantially as set forth.

20. In a barrel-filling machine, the combination with the frame, of a vertically-sliding filling-tube carrier having a cylinder attached, a piston working in said cylinder and having a second cylinder at its lower end, a filling-tube attached to said second cylinder, a piston and valve-rod working in said second cylinder and extending out therefrom through said filling-tube and at its lower end having a guide-piece having a threaded body portion with upwardly-extending arms fitting the interior of the filling-tube, a recessed valve-head screwed upon said guide-piece and an elastic packing arranged around said guide-piece within said recess and adapted to engage the side walls of the filling-tube, substantially as set forth.

21. In a barrel filling or racking machine, the combination with the filling-tube and means for operating the same, of a barrel supporting and operating frame having arms 60, fulcrumed on shafts 65, a shaft 71, having a sleeve for turning the barrel, a hollow shaft 73, and hand-wheel 78, in connection with means for turning said sleeve on said shaft 71, a rack 88, pinion 80, and shaft carrying a hand-wheel and said pinion 80, and arranged in said tubular shaft, substantially as set forth.

22. In a barrel filling or racking machine, the combination with the filling-tube and means for operating the same, of a barrel supporting and adjusting frame having arms 60, with rollers at the upper ends to engage the barrel, said arms being provided with toothed segmental arms, the latter intermeshing as described, fulcrumal shafts 65, a hand-lever for turning said arms on said fulcrumal shafts, a central shaft 71, having a cogged sleeve for turning the barrel on its axis, a pinion engaging said cogged sleeve and a train of mechanism for turning said pinion, a tubular hand-shaft for actuating said train of mechanism, and a hand-wheel 78, a rack attached to the center shaft 71, for giving lateral movement to said shaft and the frame of which it forms a part, a pinion 80, arranged on a hand-shaft 79, said hand-shaft 79, arranged within the tubular hand-shaft and extending above the hand-wheel thereof and thereat provided with a hand-wheel 81, substantially as set forth.

23. In a barrel-filling machine, the combination with the filling-tube and packing-head and means for operating the same, of an oscillating bung-feed plate and handle for turning the same, a stop k^7, for limiting the movement of the said plate in one direction and a catch-arm k, for engaging the said handle and limiting the movement of the handle in the opposite direction, substantially as set forth.

24. In a barrel-filling machine, the combination with the filling-tube and packing-head and means for operating the same, an oscillating bung-feed plate and handle for turning said plate, and a curved catch-arm k, having a wedge-shaped catch projection and an angular piece k^2, and a releasing-lever k^4, fulcrumed upon said handle, substantially as set forth.

25. In a barrel-filling machine, the combination with the filling-tube, of an oscillating plate with two openings or passages therein, one to receive the bung and hold it while said plate is carrying said bung to the bung-hole of the package and the other to permit the flow of fluid into the said package, means for oscillating said plate and a casing for said plate having corresponding openings or passages adapted to coincide with those in the oscillating plate, said oscillating plate having its oscillating movements within said casing limited to effect a coincidence of the bung-passage of the plate with that of the casing and the fluid-passage of said plate with that of the casing, at the end of one oscillation or stroke and effect a coincidence of the bung-feed passage of the plate with the fluid-passage of the casing and a location of the fluid-passage of the plate between the walls of the casing out of coincidence with perforations or passages therein at the end of the reverse oscillation or stride, and a packing making impervious joints around the bung-feed passages when the two are in coincidence, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of July, 1898.

DILLON BEEBE.

Witnesses:
CHARLES H. PELL,
C. T. A. H. WIEDLING.