

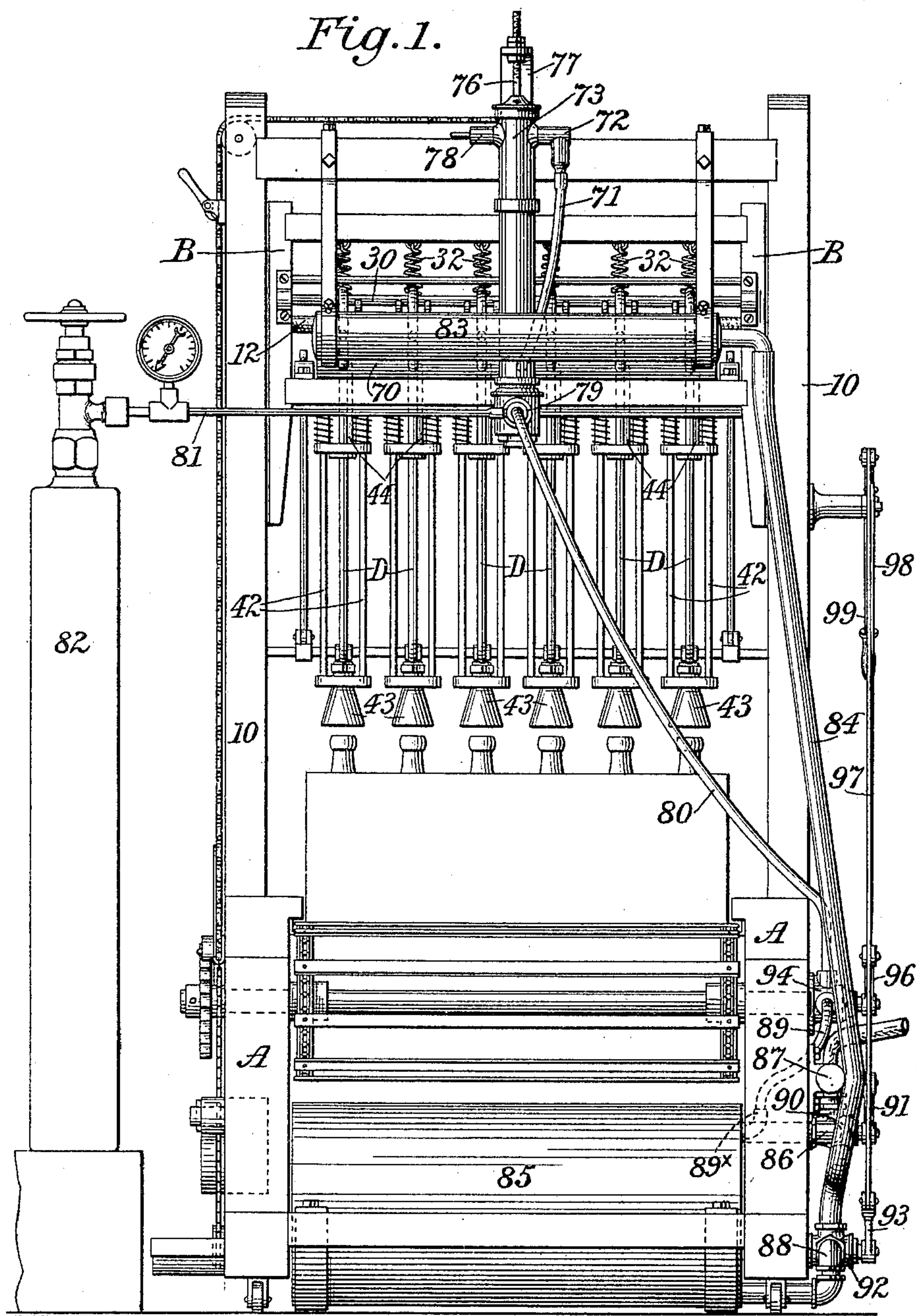
(No Model.)

4 Sheets—Sheet 1.

A. J. DONALLY.
BOTTLING APPARATUS.

No. 581,700.

Patented May 4, 1897.



Attest:

A. N. Jesbera.

Chas E. Epworth

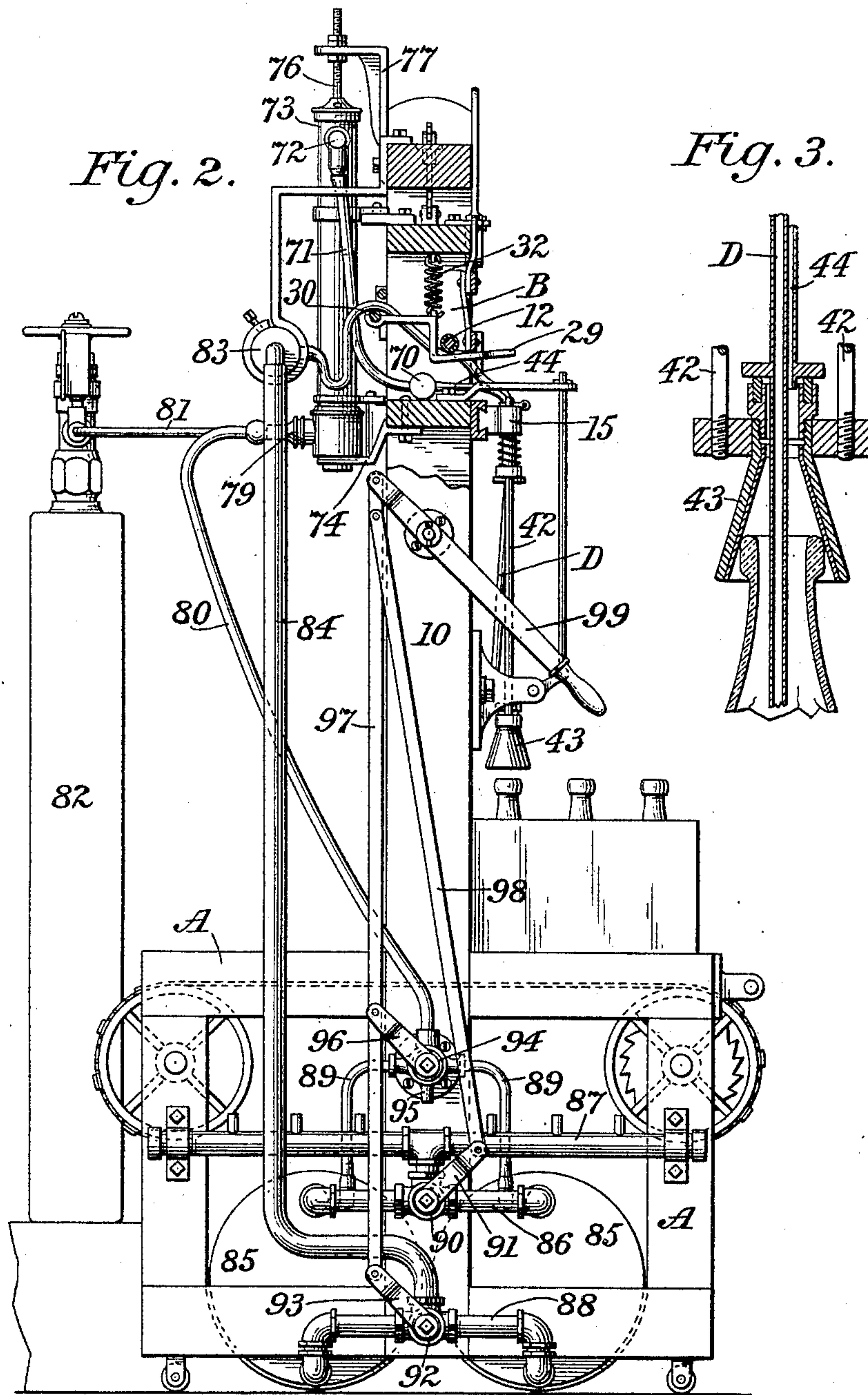
Inventor:

Alvin J. Donnelly
by Redding, Kiddle & Greeley
Attys.

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A. N. Jester.
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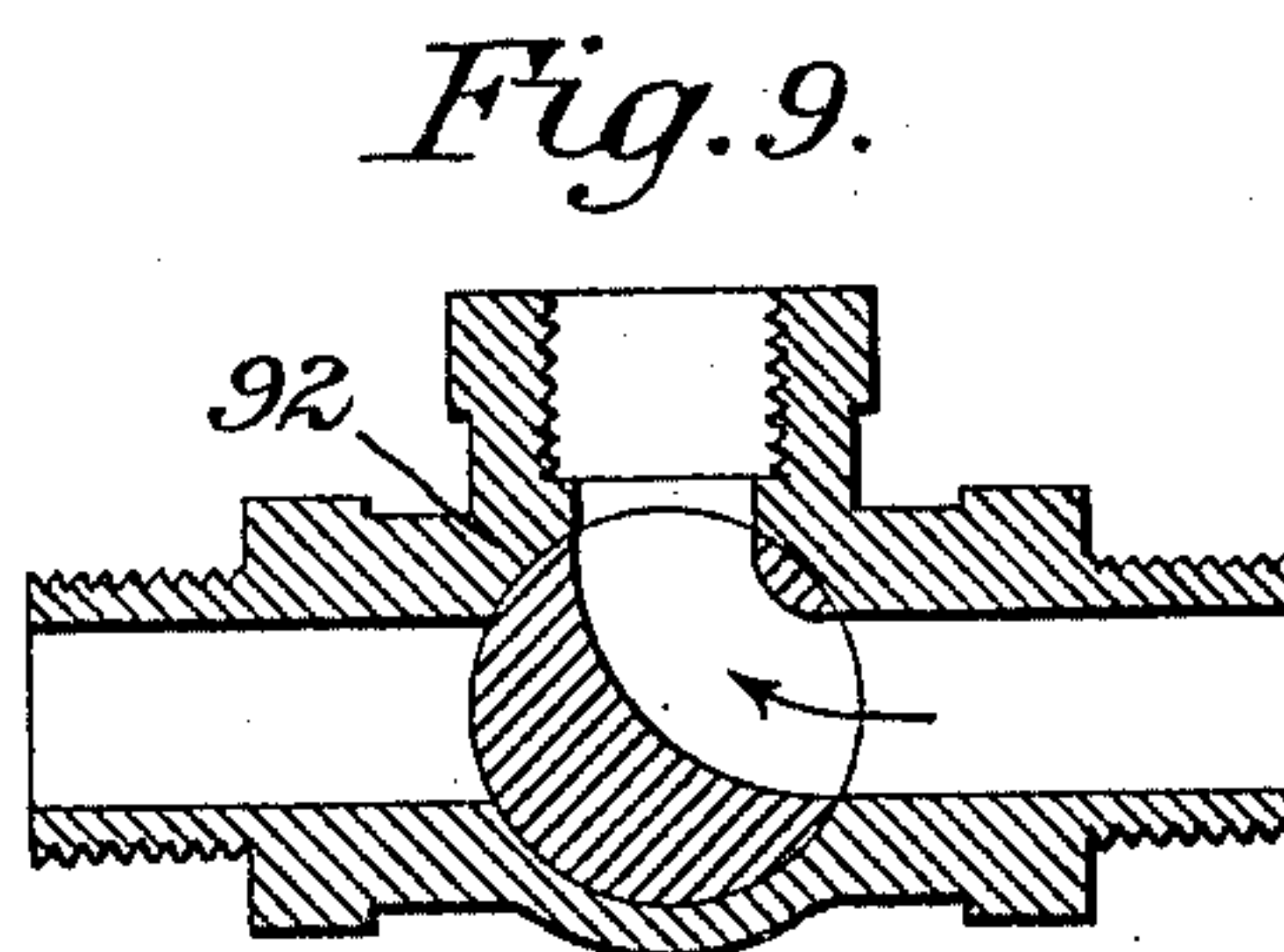
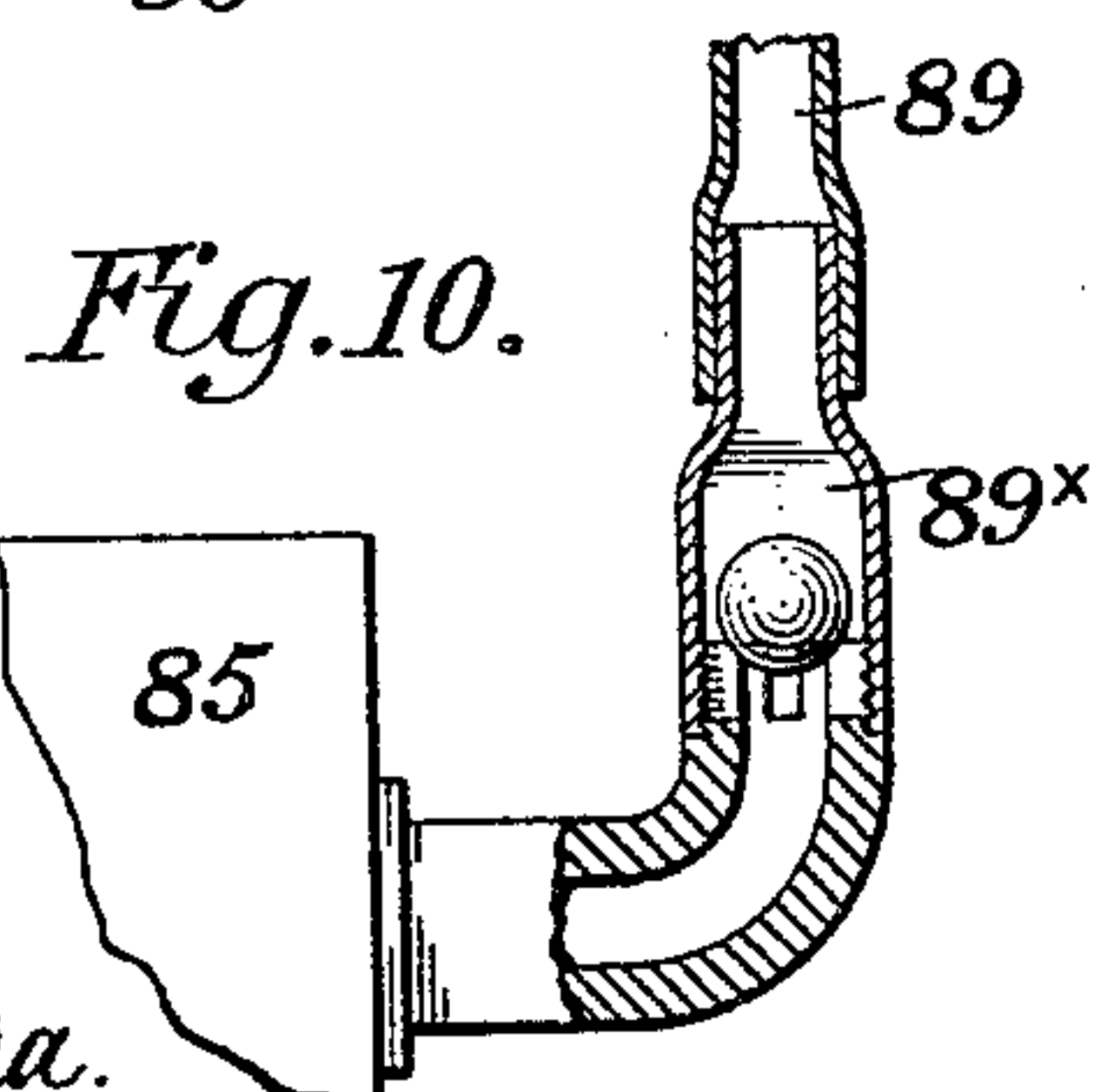
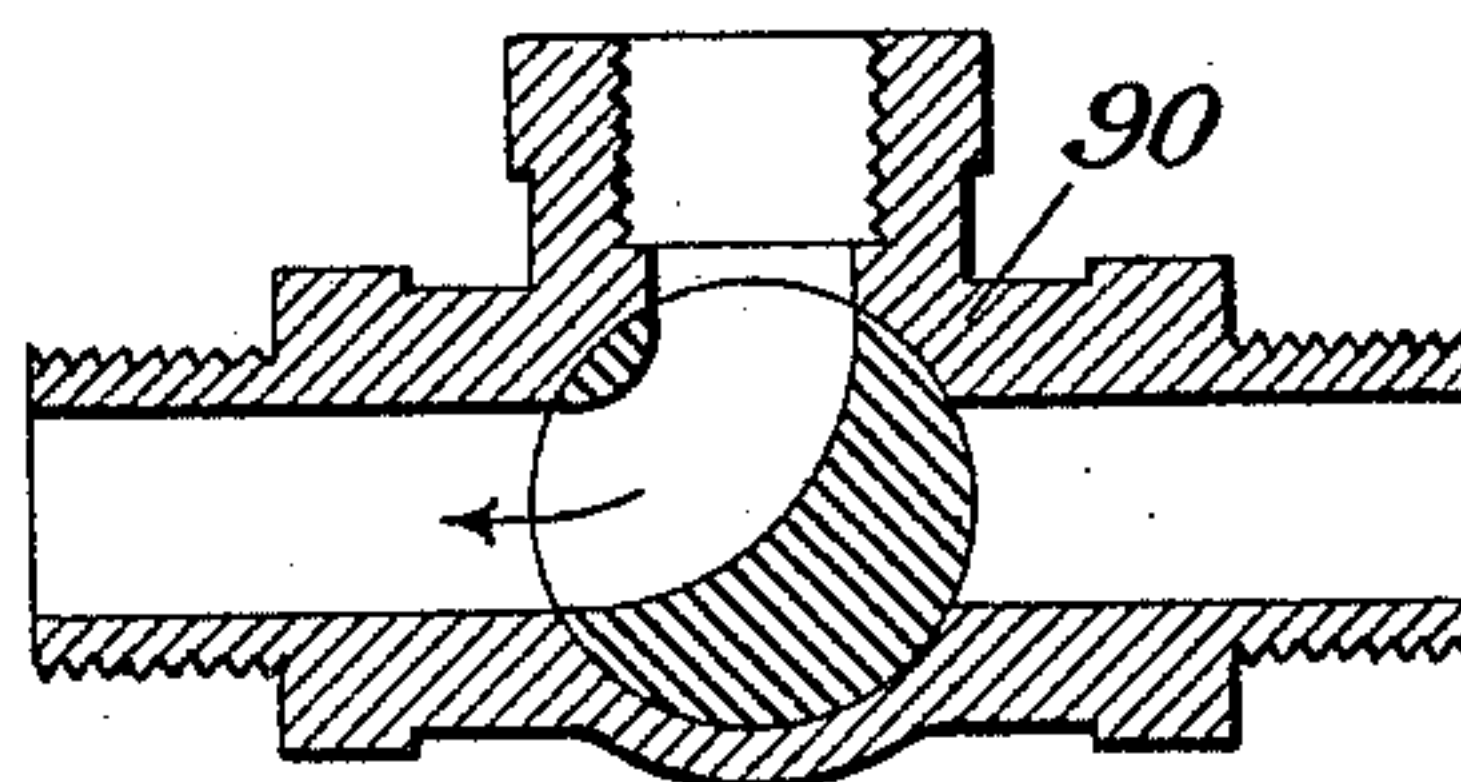
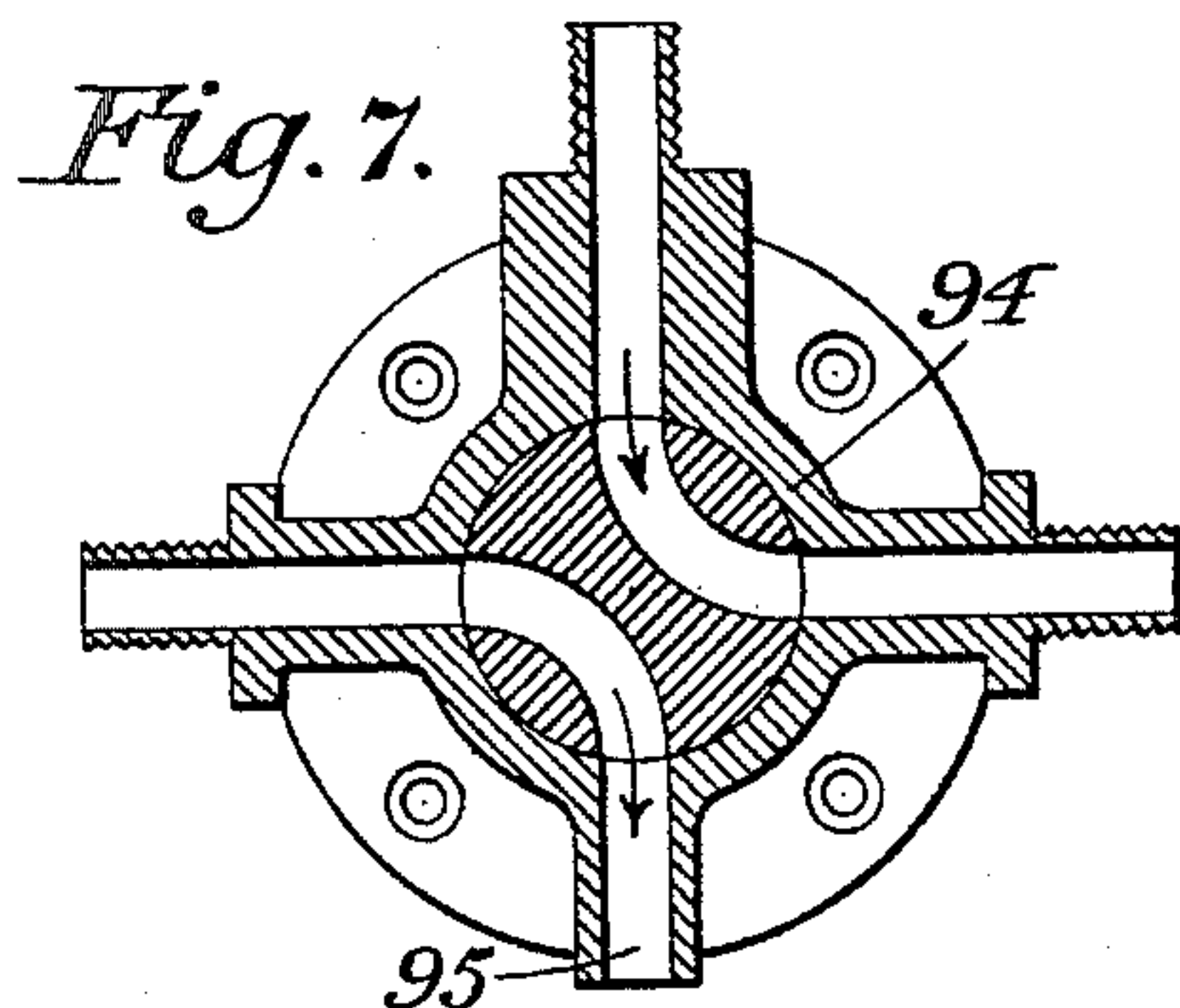
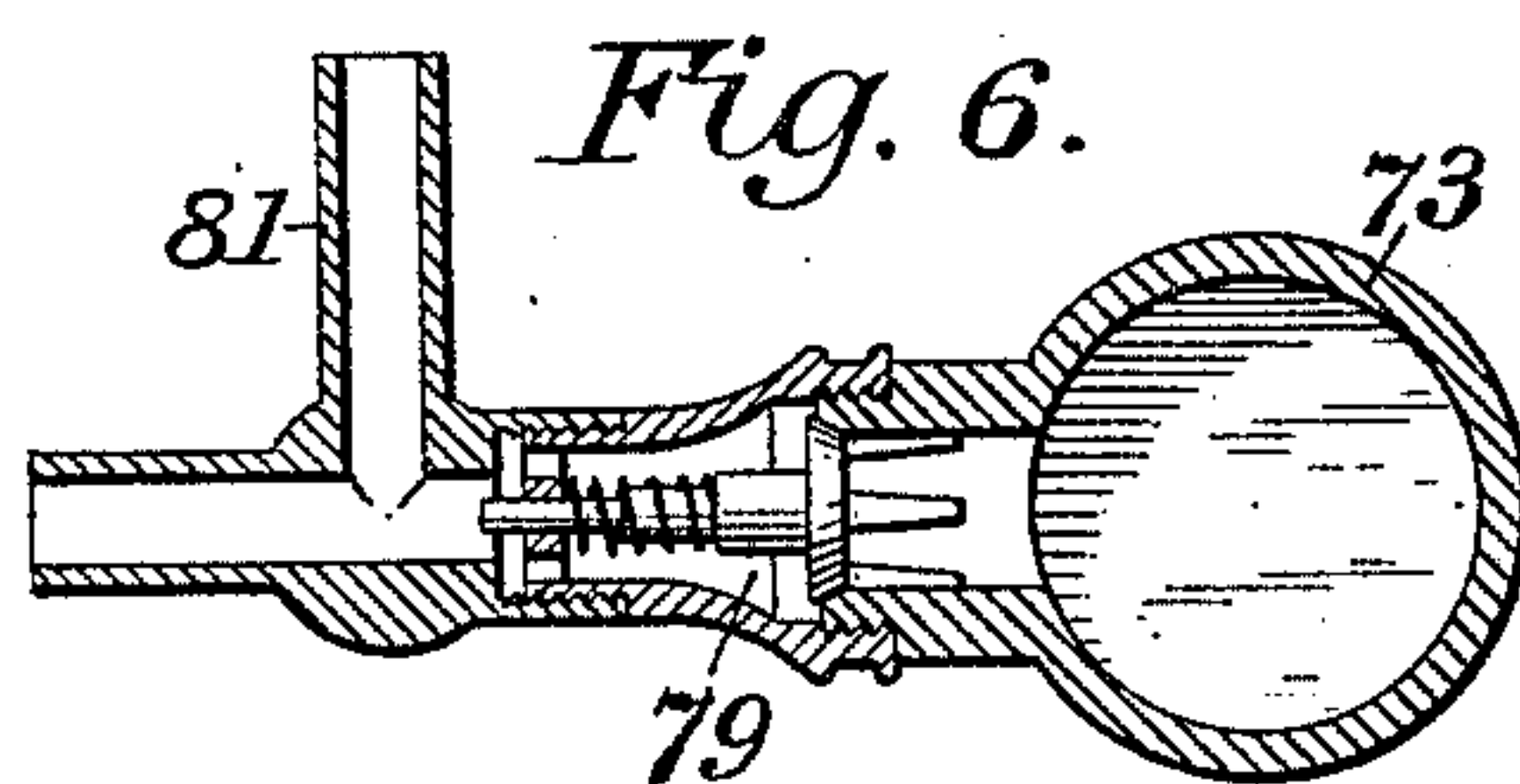
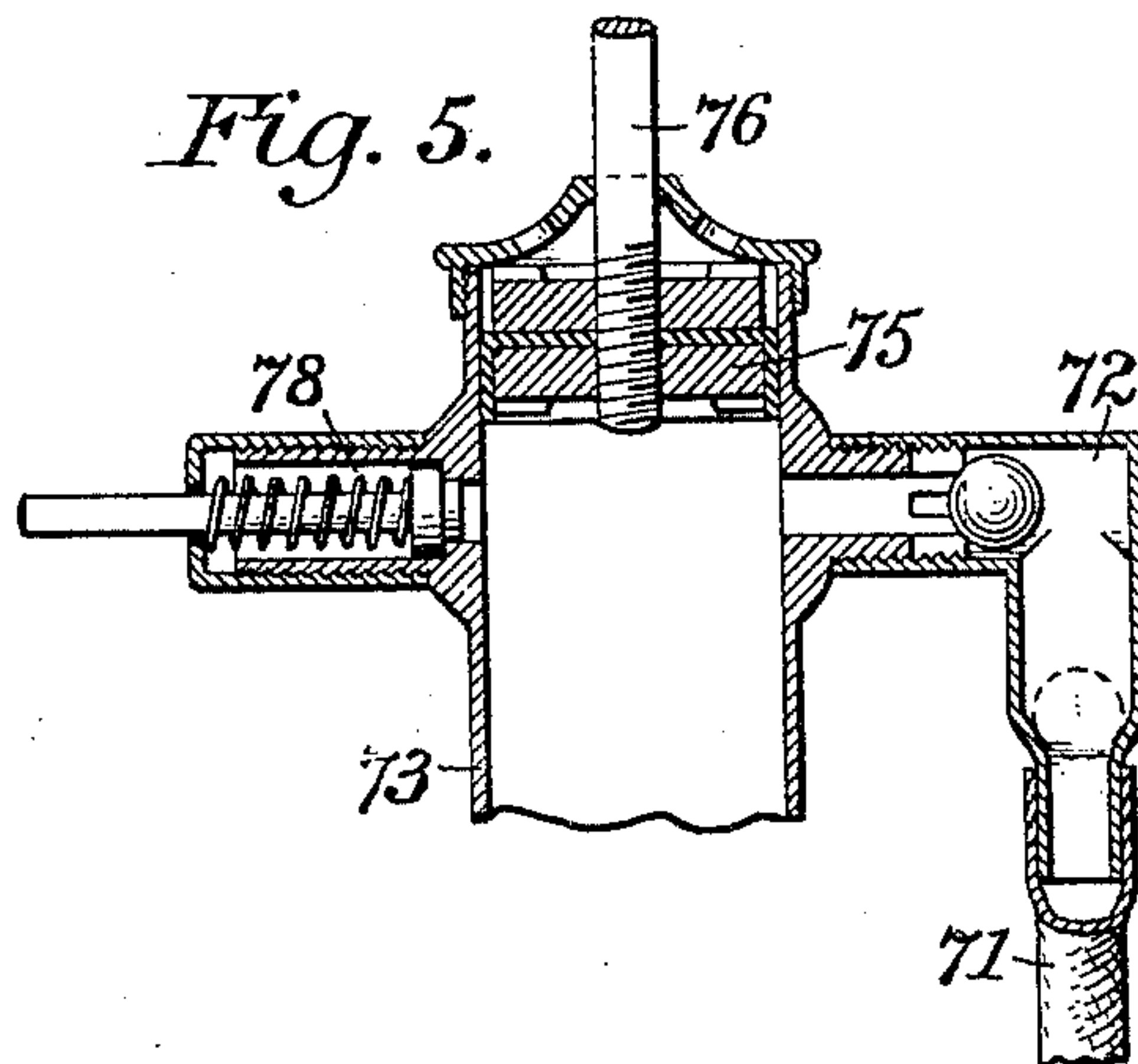
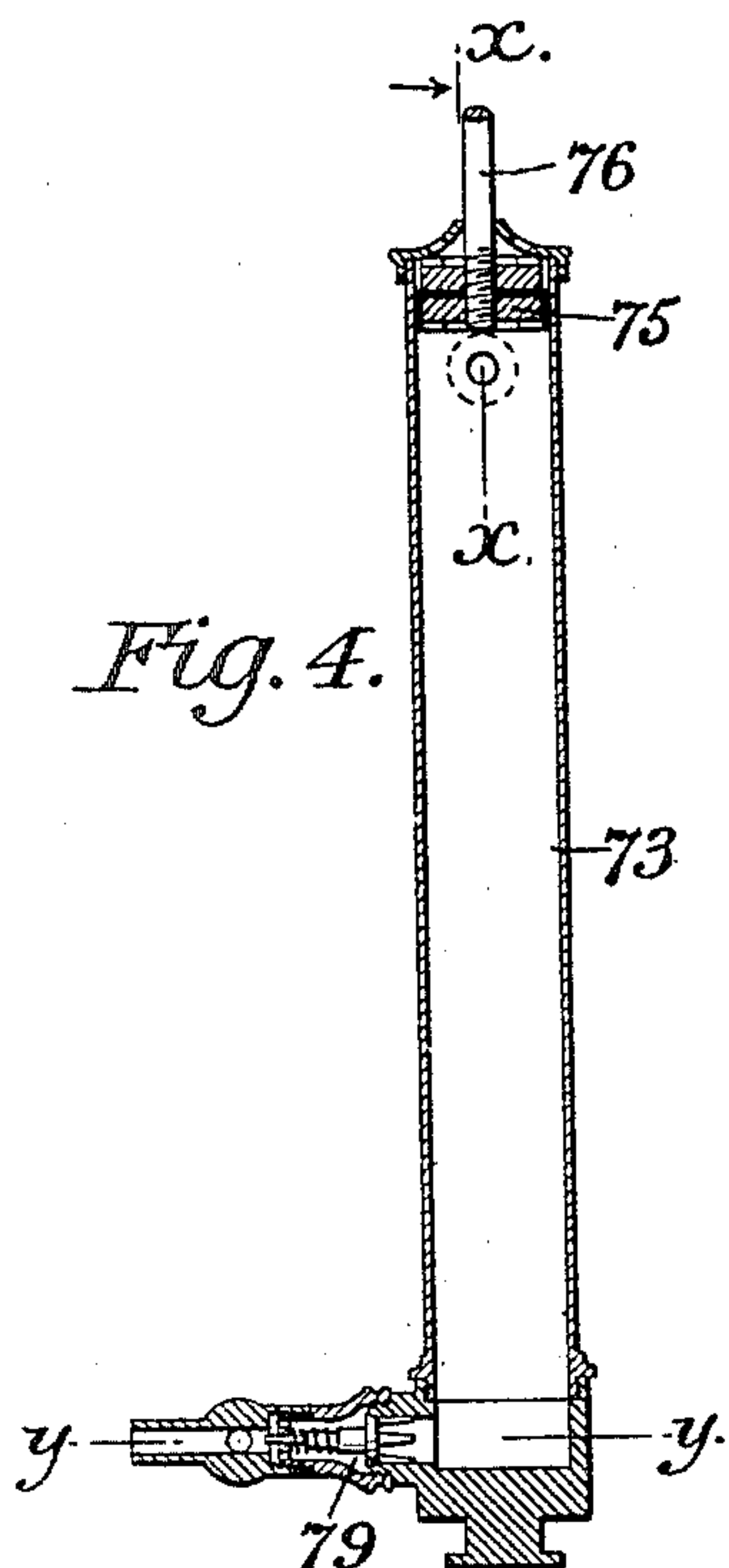
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Alvin J. Donally
Redding, Kiddle Greeley
Attys.

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Attest:

A. N. Jesbera.

Chas. E. Gwath.

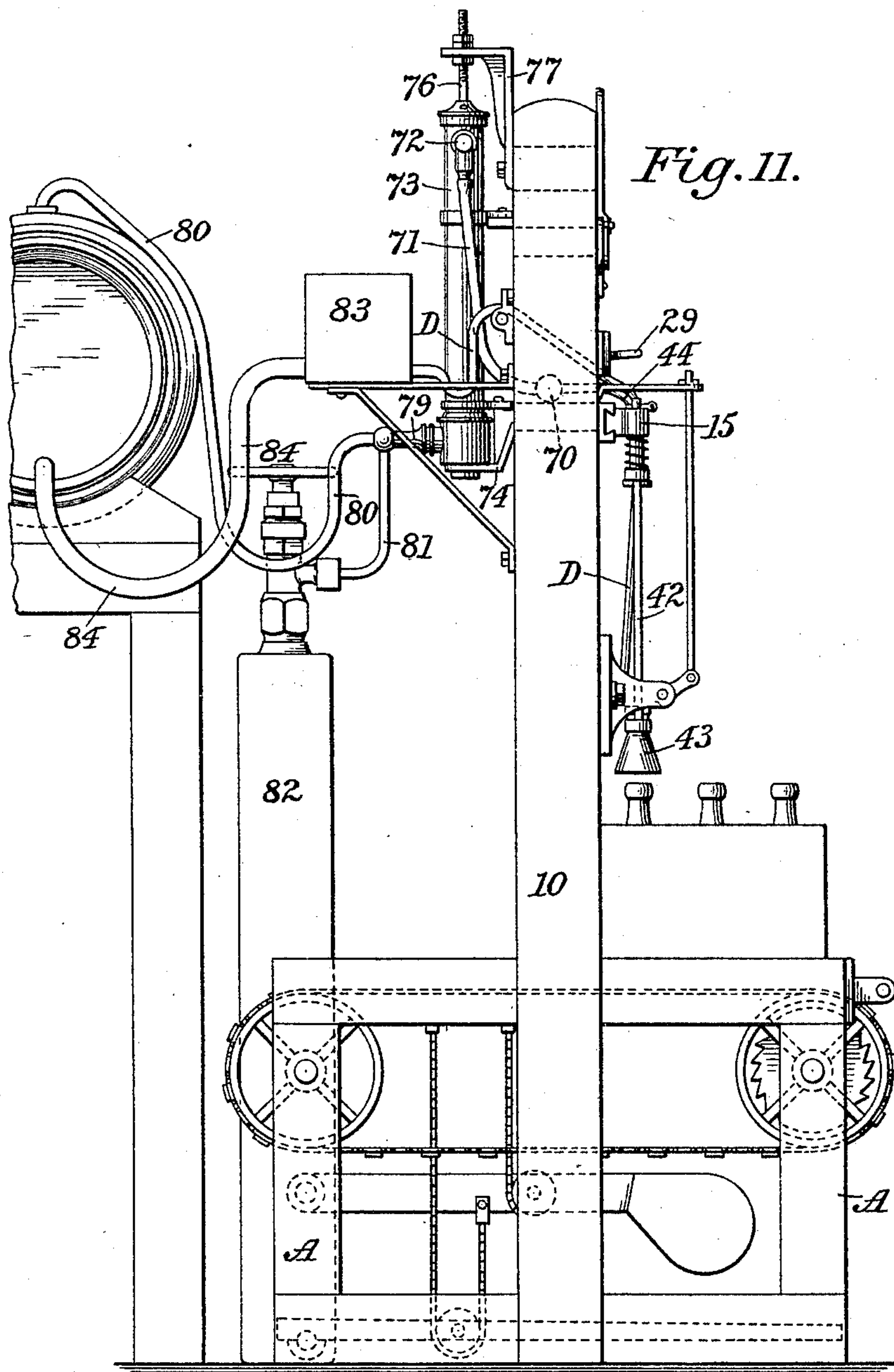
Inventor:

Alvin J. Donally
by Redding, Kiddell & Greeley
Attys.

A. J. DONALLY.
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Patented May 4, 1897.



Attest:

A. N. Jesbera.

Chas. E. Spivett

Inventor:

Alvin J. Donally
by Redding, Kiddle & Gentry
Attys.

UNITED STATES PATENT OFFICE.

ALVIN JAMES DONALLY, OF PASSAIC, NEW JERSEY.

BOTTLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 581,700, dated May 4, 1897.

Application filed October 16, 1896. Serial No. 609,047. (No model.)

To all whom it may concern:

Be it known that I, ALVIN JAMES DONALLY, a citizen of the Dominion of Canada, residing in Passaic, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Bottling Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates particularly to the bottling of beer and ale, but is generally applicable to the bottling or transfer from one vessel or receptacle to others of other liquids.

It is highly desirable in the bottling of various liquids, and more especially in the bottling of ale and beer, to maintain gas or air pressure on the liquid both for the purpose of retaining the gas of the liquid in solution and for the purpose of effecting the delivery of the liquid into the bottles under a steady pressure, so that there may not be any material variation in the rate of flow, and it is also desirable to keep the liquid as far as possible from exposure to the air of the place where the bottling is carried on. It is of course desirable also to prevent the waste of the liquid which frequently occurs through the filling of the bottles to overflowing. Some of these objects have been attained in part hitherto; but so far as I am aware no apparatus has been devised as yet which will enable all of these objects to be attained in a satisfactory manner. Thus it has been sought to maintain the pressure on the liquid and to prevent the waste of liquid by providing in addition to the filling-tube a second tube, which returns or conducts to the barrel or other supply vessel the air displaced from the bottle, but this alone is not altogether satisfactory. It has also been proposed to maintain the required pressure of carbonic-acid gas in the keg or barrel in which the liquid is delivered to the bottler. This is possible sometimes; but in some cases it happens that the keg or barrel is not capable of standing the gas-pressure which is necessary to force the liquid into the bottles. I have sought to provide in the first place for the separation in large part of the air displaced in the bottles from whatever overflow of liquid there may be, and for the escape of the air from the apparatus, and the return of the

liquid to the supply vessel. I have sought also to provide for the admission of gas to the supply vessel without interference with the escape of the air and the return of the overflow. Furthermore, I have sought to provide for the handling of the liquid under gas-pressure, in the manner already referred to, in cases where the original keg or barrel is not calculated to withstand gas-pressure and the liquid can be drawn therefrom only by gravity.

I will proceed to describe hereinafter certain convenient and practical forms of apparatus in which my invention is embodied with reference to the accompanying drawings, in which such forms of apparatus are illustrated; but it will be understood that the invention may be embodied in other forms of apparatus than those shown and described herein.

In the drawings, Figure 1 is a rear view of a complete bottling apparatus to which my improvements are applied, the said apparatus being adapted for use in connection with kegs or barrels which are not adapted themselves to withstand the gas-pressure necessary to force the liquid into the bottles. Fig. 2 is a view of the same, partly in side elevation and partly in vertical section. Fig. 3 is a detail view in section to illustrate the relation of the filling and return tubes to the bottle in the apparatus chosen for illustration. Figs. 4, 5, 6, 7, 8, 9, and 10 are detail views in section of parts of the apparatus shown in Figs. 1 and 2, Figs. 5, 6, 7, 8, 9, and 10 being on a larger scale than Fig. 4. Fig. 11 is a side view of a bottling apparatus of the same kind as that shown in Figs. 1 and 2, but adapted for use in connection with a keg or barrel which is capable of withstanding gas-pressure, so that the intermediate tanks shown in Figs. 1 and 2 can be dispensed with.

I shall herein describe my improvements as applied to a bottling-machine of the general character of that shown in Letters Patent of the United States granted to M. E. Donally July 4, 1893, No. 500,866, to which reference may be made for a detailed description and illustration of the bottling-machine.

For the purposes of this case it will be sufficient to refer briefly herein to some of the main features of the machine.

The base A of the machine is provided with standards 10, between which a frame or carrier B is adapted to reciprocate, carrying head-blocks 15, each of which is provided with a vertical central recess for the reception of a filling-tube D. The latter pass rearward under a cross bar or rod 12 of the frame B and are connected to the supply vessel, as described hereinafter.

The frame or carrier B is adapted to be raised and lowered by the operator, with the assistance of devices not necessary to be described herein, for the purpose of presenting the filling-tubes to the bottles and of withdrawing them therefrom. A series of cut-offs or compressors 29 are pivoted upon a rod 30, each being formed as a plate, bent, as clearly shown in Fig. 2, and slotted centrally for a portion of its length to receive the corresponding tube D, which is normally pinched between the compressor and the fixed rod 12 by a stout spring 32, so as to prevent the flow of liquid through the tube. Means are provided to operate all of the compressors simultaneously, so that when the movable frame is at its lowest point and the filling-tubes are inserted in the bottles the compressors shall be caused to release the tubes and permit the liquid to flow through the pipes. Rods 42, forming a frame which carries the corresponding tube D and the cap or stopper 43, are so supported by the head-blocks 15 as to introduce the ends of the filling-tubes into the bottles and to form tight joints about the mouths thereof as the frame B moves downward and to withdraw them from the bottles as said frame moves upward. An air-vent and overflow delivery-tube 44 is carried with each filling-tube D and enters but slightly within the mouth of the bottle. All of these parts thus far referred to operate in substantially the same manner as the like parts in the machine described in the Letters Patent before referred to, and for convenience they have been designated by the same reference-characters as in said Letters Patent.

I will now proceed to describe the additional features with which my invention is more particularly concerned.

In the construction illustrated in Figs. 1 and 2 and in that illustrated in Fig. 11 also the several vent and overflow tubes 44, if there are more than one, are connected to a common header 70, which is connected in turn by the single tube 71, through a check-valve 72, with a pump-cylinder 73, Fig. 4, preferably near the upper end thereof. Said pump-cylinder is supported by a bracket 74, which is carried by the movable frame B. The piston 75, which fits, preferably, somewhat loosely within the cylinder 73, is carried by a rod 76, which is secured to a bracket 77, mounted upon the fixed frame of the machine, so that in the construction shown the cylinder reciprocates while the piston is stationary. Hence when the frame B is at its lowest point and the liquid is flowing into the bottles and

the air is being displaced therefrom the piston 75 is at the highest point in the cylinder above the connection of the tube 71 therewith, so that the displaced air and whatever overflow of liquid or foam may be carried along with it pass into the pump-cylinder 73. The liquid accumulates in the bottom of the cylinder, while the air, separating therefrom, passes out through a relief-valve 78, Fig. 5, which is provided for the purpose. As the cylinder moves upward with the frame B the air therein passes by the loosely-fitting piston 75, but when the cylinder approaches its highest point so that the piston is in contact with the denser fluid in the lower portion of the cylinder the packing of the piston is at once expanded to have a snugger fit within the cylinder, and the liquid which has accumulated in the lower portion of the cylinder is forced out through the check-valve 79, Fig. 6. A tube 80 serves to conduct the liquid from the pump thus arranged to the supply vessel, and in order that the proper pressure of gas or air may be maintained in the supply vessel for the purpose of forcing the liquid to the filling-tube a connection 81 is provided, preferably, between the supply vessel and the pump, so that gas or air can be supplied from an ordinary gas-cylinder 82 or other suitable source of supply, the check-valve 79 serving to prevent the gas from passing back through the conductor formed by the pump 73 and the tube 71.

The several filling-tubes D are preferably connected to a common header 83, to which the liquid is delivered from the supply vessel through a tube 84. If the keg or barrel or other original package in which is contained the liquid to be bottled is capable of withstanding the necessary gas or air pressure, the tubes 80 and 84 may be connected directly therewith, as shown in Fig. 11, the flow of the liquid being maintained by the pressure of the gas or air which is admitted to the vessel through the tube 80.

When the original keg or barrel is not capable of withstanding the necessary gas or air pressure, or when for any other reason it is not convenient or desirable to draw directly from the original package, the apparatus is provided with the additional features of improvement shown in Figs. 1 and 2 and in detail in Figs. 7, 8, 9, and 10. In the construction there shown two tanks 85, closed to the external air and of suitable size, are represented as connected through a suitable connection 86 with a common header 87, to which several barrels or kegs may be connected, it being supposed that the latter are placed so that the liquid will run from them by gravity. The tanks are also connected through a connection-piece 88 with the tube 84, through which liquid is conducted to the filling-tubes. Furthermore, the tube 80 also communicates with the tanks 85 through a connection 89 both for the purpose of returning to said supply-tanks the overflow liquid and for the pur-

pose of permitting the gas or air pressure to be supplied from the connection at 81 to said tank, each branch of the connection-piece 89 being provided with a floating check-valve 89^x, Fig. 10, which will permit gas to pass backward, but not liquid. A three-way valve 90, Fig. 8, is located in the connection-piece 86 for the purpose of enabling either one of the tanks 85 to be connected at will with the common header 87, the spindle of said valve having an arm 91. In the connection-piece 88 is a similar but oppositely-disposed three-way valve 92, Fig. 9, its spindle having an arm 93. A four-way valve 94, Fig. 7, is located in the connection 89 and is adapted to connect the tube 80 alternately with the branches of said connection 89 and at the same time to connect the other branch with a blow-off 95, the spindle of this valve also having an arm 96. By means of links 97 and 98 the three valves 90, 92, and 94 are coupled to the lever 99, which is mounted upon the frame of the machine in a convenient position to be operated. The operation of this part of my invention will be readily understood. When the valves are in the positions represented in the drawings, the right-hand supply vessel 85 is in communication both with the tube 84 and with the gas or air supply through the tube 80 and is cut off from the header 87. The liquid in the right-hand supply vessel will therefore be forced through the tube 84 to the filling-tubes. At the same time the left-hand supply vessel 85 is in communication with the header 87, so that the liquid may flow into the same from the kegs or barrels, and is also in communication with the blow-off 95 through the valve 94, so that the gas in said left-hand supply vessel may find escape as it is displaced by the inflowing liquid. As soon as the supply of liquid in the right-hand vessel 85 is exhausted, or nearly so, the operator reverses the valves by means of the lever 99, connecting the left-hand tank 85 with the filling-tubes and the gas or air supply and the right-hand tank 85 with the kegs or barrels. In this manner the supply of liquid to the filling-tubes is constantly maintained without contact of the liquid with the atmosphere in the place where the bottling is carried on, and all of the overflow liquid is returned immediately to the supply vessel after separation from the air displaced from the bottles. Furthermore, any desired pressure may be applied to the liquid in the supply vessels 85 without regard to the condition of the kegs or barrels from which the liquid is drawn.

It will be understood, of course, that I do not intend to limit my invention to the precise construction and relation of parts which I have shown and described herein, but that the same may be varied to suit different conditions of use and different styles of bottling-machines without departing from the spirit of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a second conductor to conduct air and overflow of liquid from the bottle to said vessel, a connection in said second conductor to a supply of gas or air under pressure and a check-valve interposed in said second conductor to prevent the flow of gas or air backward through the same, substantially as shown and described.

2. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a second conductor to conduct air and overflow of liquid from the bottle to said vessel, a pump interposed in said second conductor to facilitate the return of liquid to said vessel, and a connection in said second conductor between said pump and said vessel, to a supply of gas or air under pressure, substantially as shown and described.

3. In a bottling apparatus, the combination of a closed supply vessel, a conductor and a filling-tube to deliver liquid therefrom to the bottle to be filled, means to present said filling-tube to the bottle to be filled, a second tube presented with said filling-tube to the bottle, a pump connected to said filling-tube, a conductor to deliver liquid from said pump to said vessel, and a connection in said last-named conductor, between said pump and said vessel, to a supply of gas or air under pressure, substantially as shown and described.

4. In a bottling apparatus, the combination of a closed supply vessel, a conductor and a filling-tube to deliver liquid therefrom to the bottle to be filled, a reciprocating carrier to present the filling-tube to the bottle to be filled, a second tube presented with said filling-tube to the bottle, a pump connected to said second tube and operated by said carrier, a conductor to deliver liquid from said pump to said vessel and a connection in said last-named conductor, between said pump and said vessel, to a supply of gas or air under pressure, substantially as shown and described.

5. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a second conductor to conduct air and overflow of liquid from the bottle, a pump to which said second conductor is connected, a relief-valve to permit the escape of air from said pump and a tube to deliver liquid from said pump to said vessel, substantially as shown and described.

6. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a tube to conduct displaced air and overflow of liquid from said bottle, a pump to which said tube is connected and in which the air is separated from the liquid, a relief-valve for the escape of air from said pump, a tube to conduct liquid from said pump to said vessel and a connection in said last-named tube

to a gas or air supply, substantially as shown and described.

7. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a tube to conduct displaced air and overflow of liquid from said bottle, a pump to which said tube is connected and in which the air is separated from the liquid, a relief-valve for the escape of air from said pump, a tube to conduct liquid from said pump to said vessel, a connection in said last-named tube to a gas or air supply, and a check-valve in said tube between said connection and said pump, substantially as shown and described.

8. In a bottling apparatus, the combination of a closed supply vessel, a conductor to deliver liquid therefrom to the bottle to be filled, a tube to conduct displaced air and overflow of liquid from said bottle, a pump to which said tube is connected at its upper end, a relief-valve at the upper end of said pump for the escape of air, a tube to conduct liquid from the lower end of said pump to said vessel, and a connection in said last-named tube to a gas or air supply, substantially as shown and described.

9. In a bottling apparatus, the combination of two vessels, a connection whereby liquid may be delivered to said vessels from a keg or barrel, a valve to control the delivery of the liquid to one or the other of said vessels, a filling-tube, a connection whereby the liquid may be delivered from said vessels to said filling-tube, a valve to control the delivery of liquid from one or the other of said vessels to said filling-tube, a gas or air supply, a con-

nection whereby gas or air may be delivered to said vessels from said gas or air supply, a valve to control the delivery of gas or air to one or the other of said vessels from said gas-supply, and means to operate all of said valves simultaneously whereby one of said vessels is connected to the filling-tube and the gas or air supply as the other is connected to the keg or barrel, substantially as shown and described.

10. In a bottling apparatus, the combination of two vessels, a connection whereby liquid may be delivered to said vessels from a keg or barrel, a valve to control the delivery of the liquid to one or the other of said vessels, a filling-tube, a connection whereby the liquid may be delivered from said vessels to said filling-tube, a valve to control the delivery of liquid from one or the other of said vessels to said filling-tube, a tube to return the overflow of liquid to said vessels, a valve to control the delivery of the overflow of liquid to one or the other of said vessels, means to operate said valves whereby one of said vessels is connected to the filling-tube as the other of said vessels is connected to the keg or barrel and to the overflow delivery-tube, and means to apply gas or air pressure to said vessels as each is connected to the filling-tube, substantially as shown and described.

This specification signed and witnessed this 8th day of October, A. D. 1896.

ALVIN JAMES DONALLY.

In presence of—

J. C. SPINNING,
S. M. ZIOI.