

No. 616,199.

Patented Dec. 20, 1898.

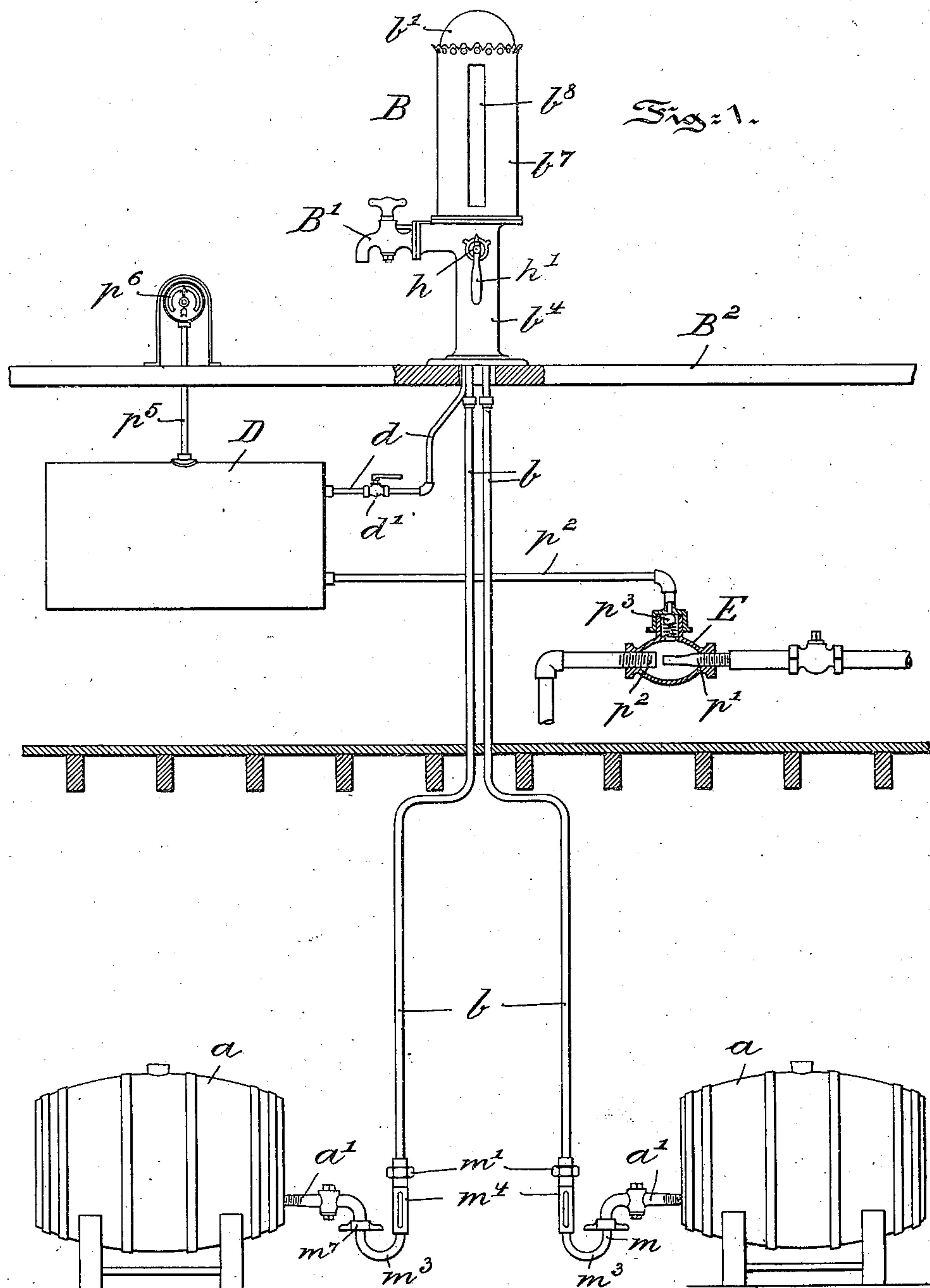
W. A. F. McCALLUM.

VACUUM LIFTING APPARATUS FOR MALT OR OTHER LIQUORS.

(Application filed Mar. 31, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Thomas M. Smith.
Richard C. Maxwell.

Inventor:
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by J. Walter Douglass,
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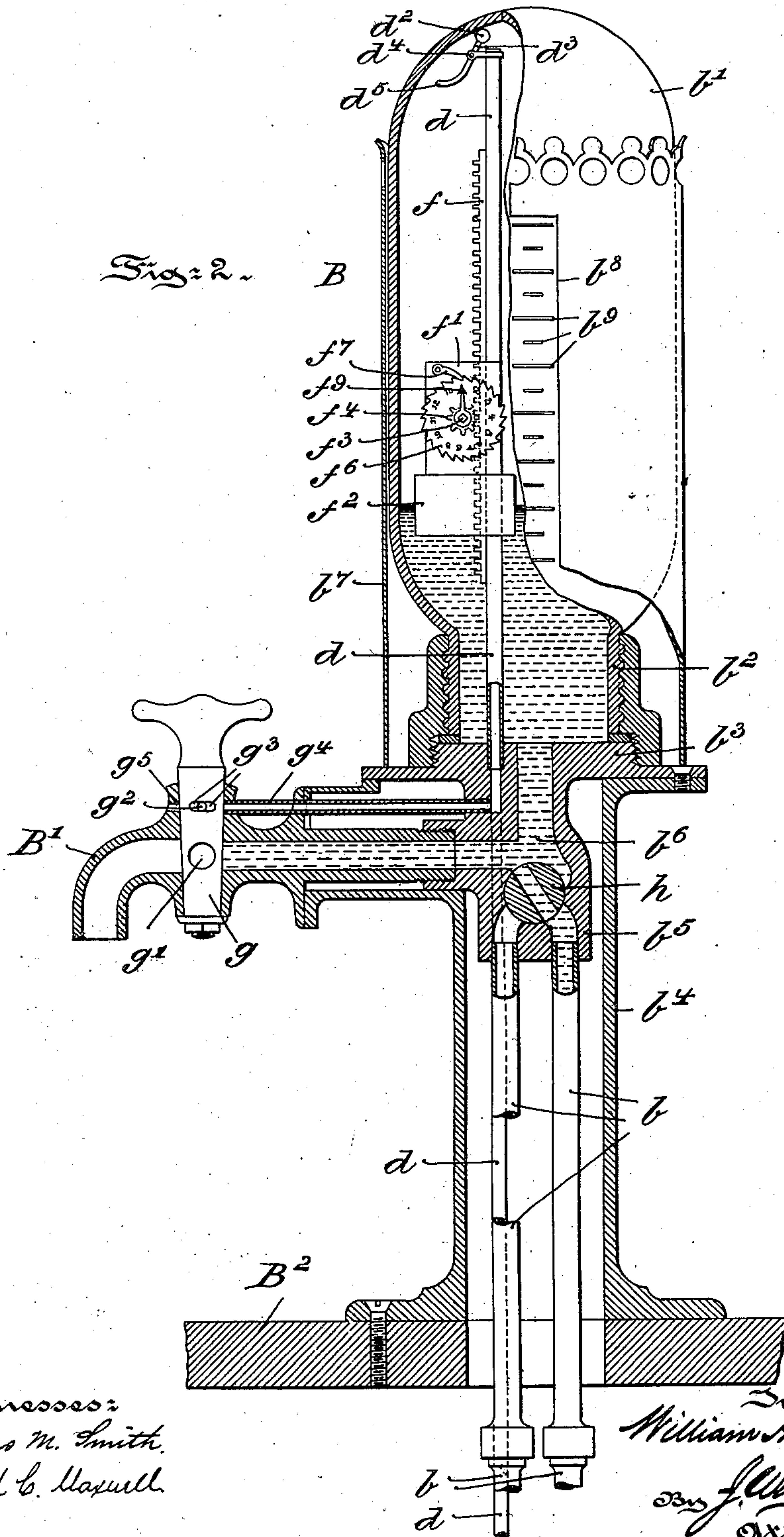
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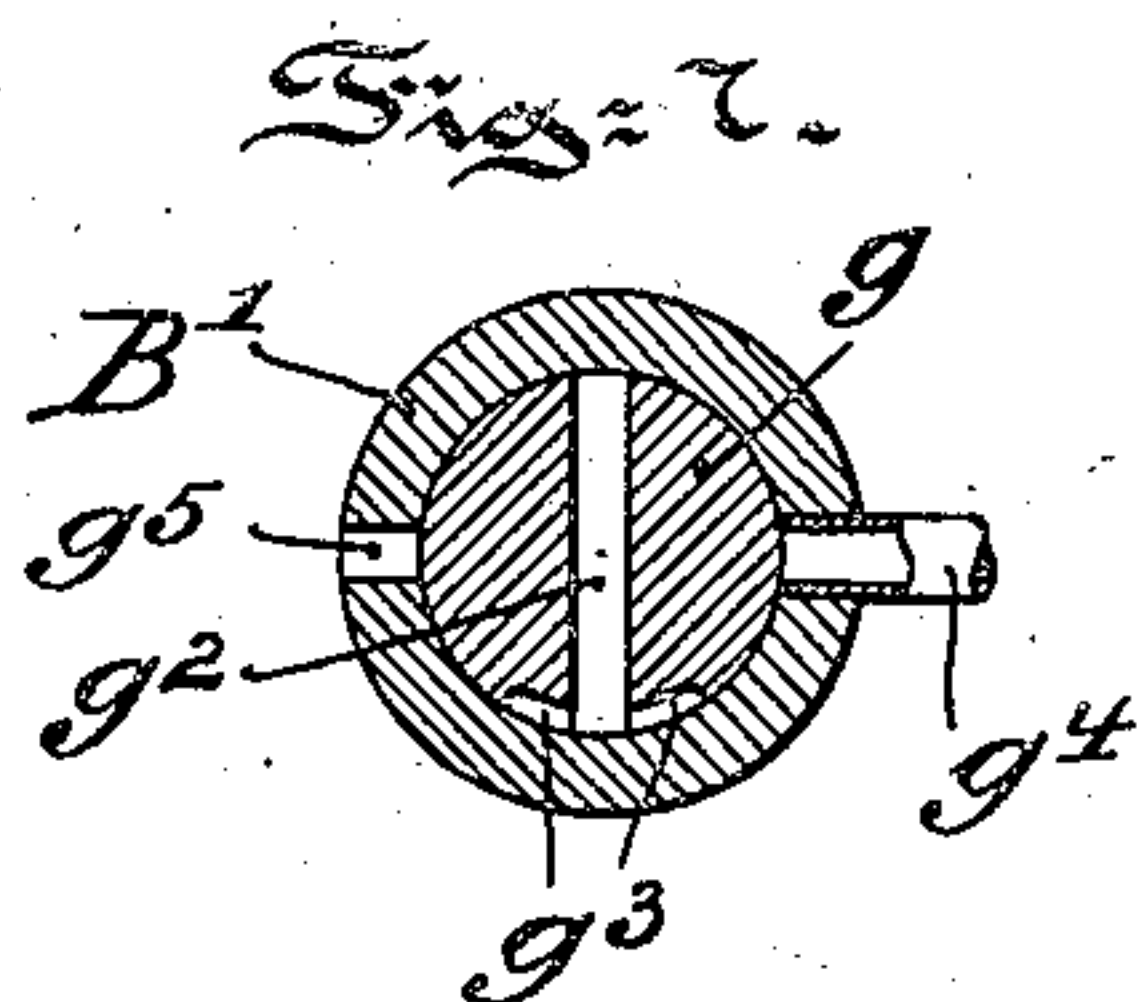
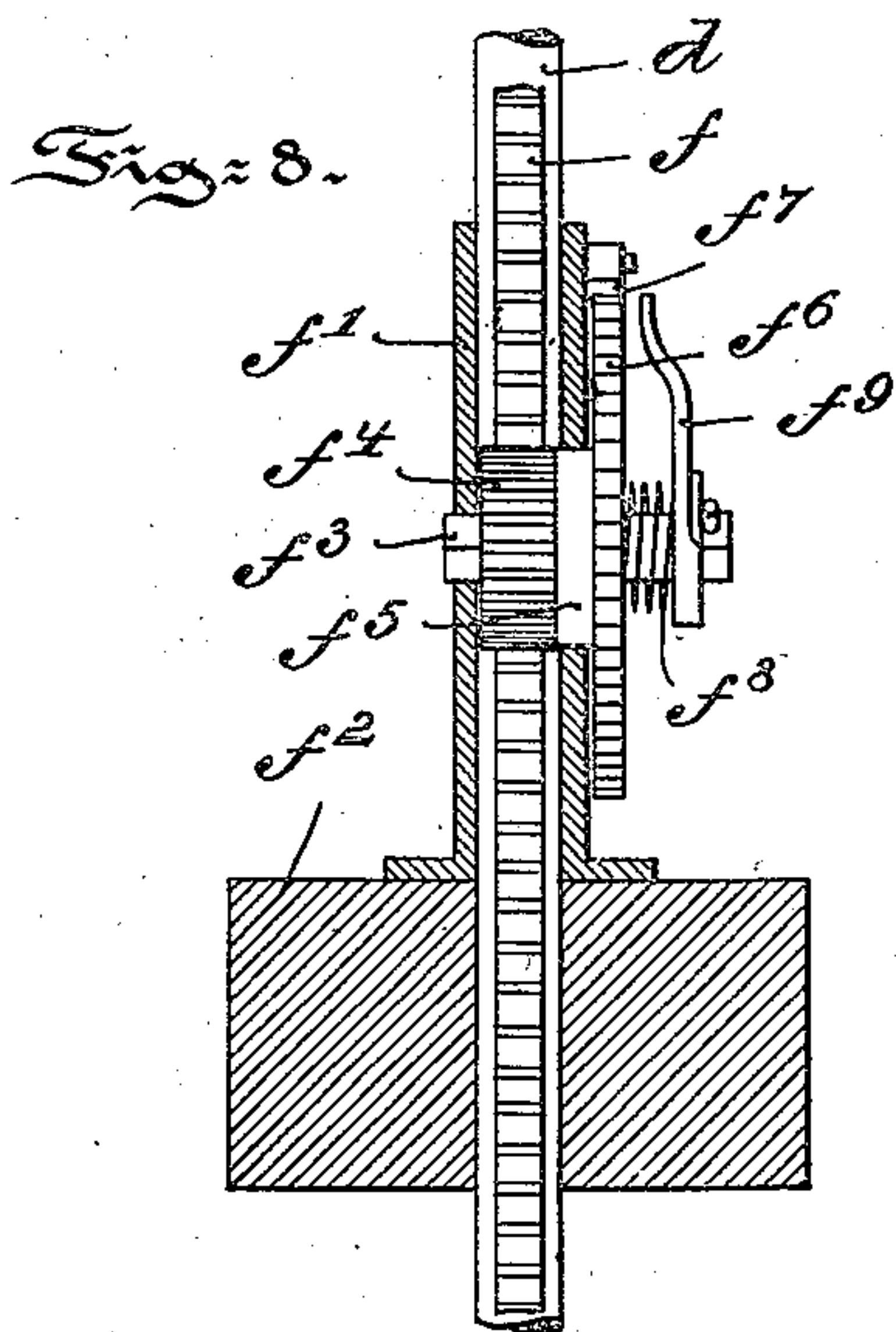
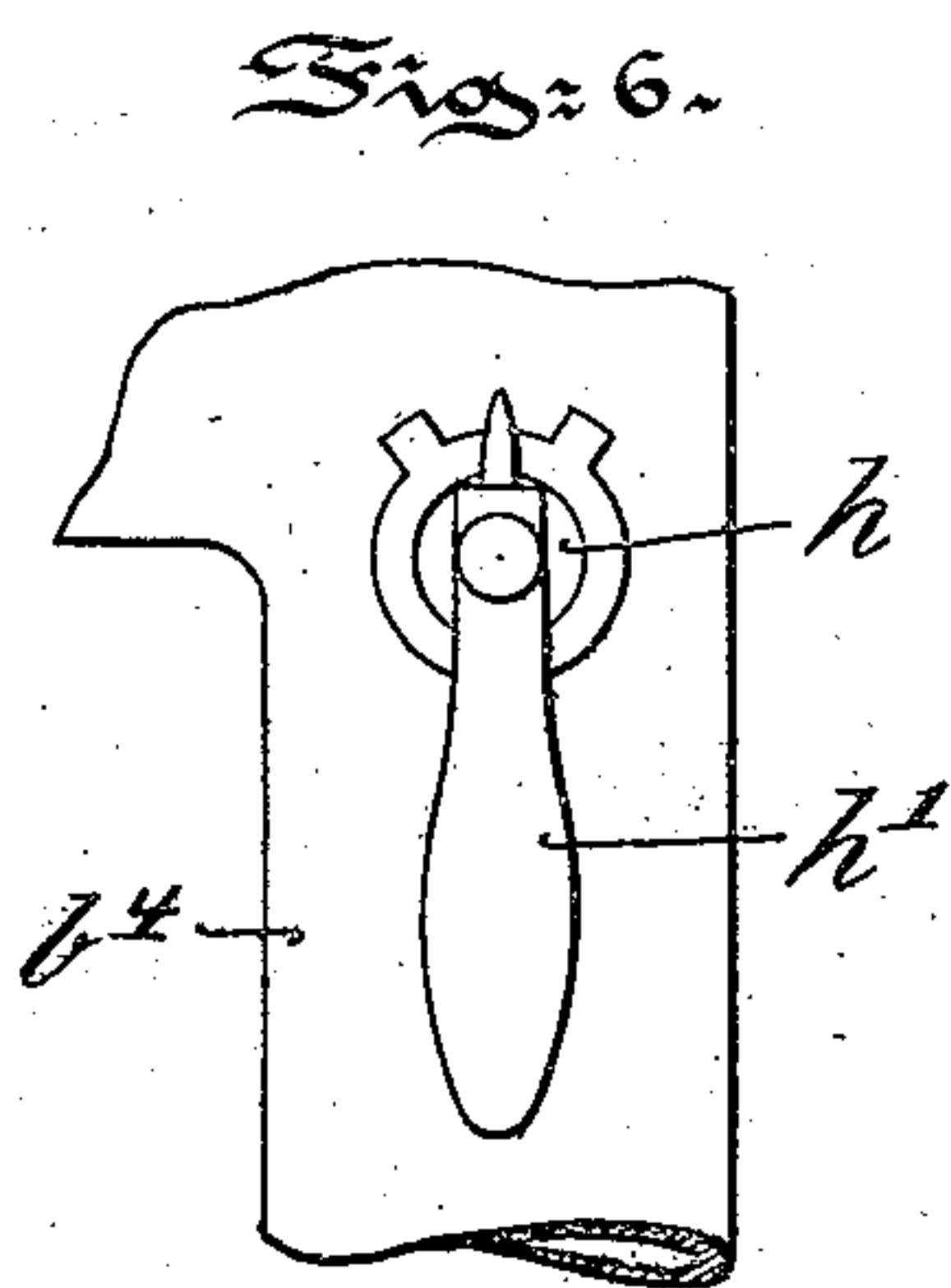
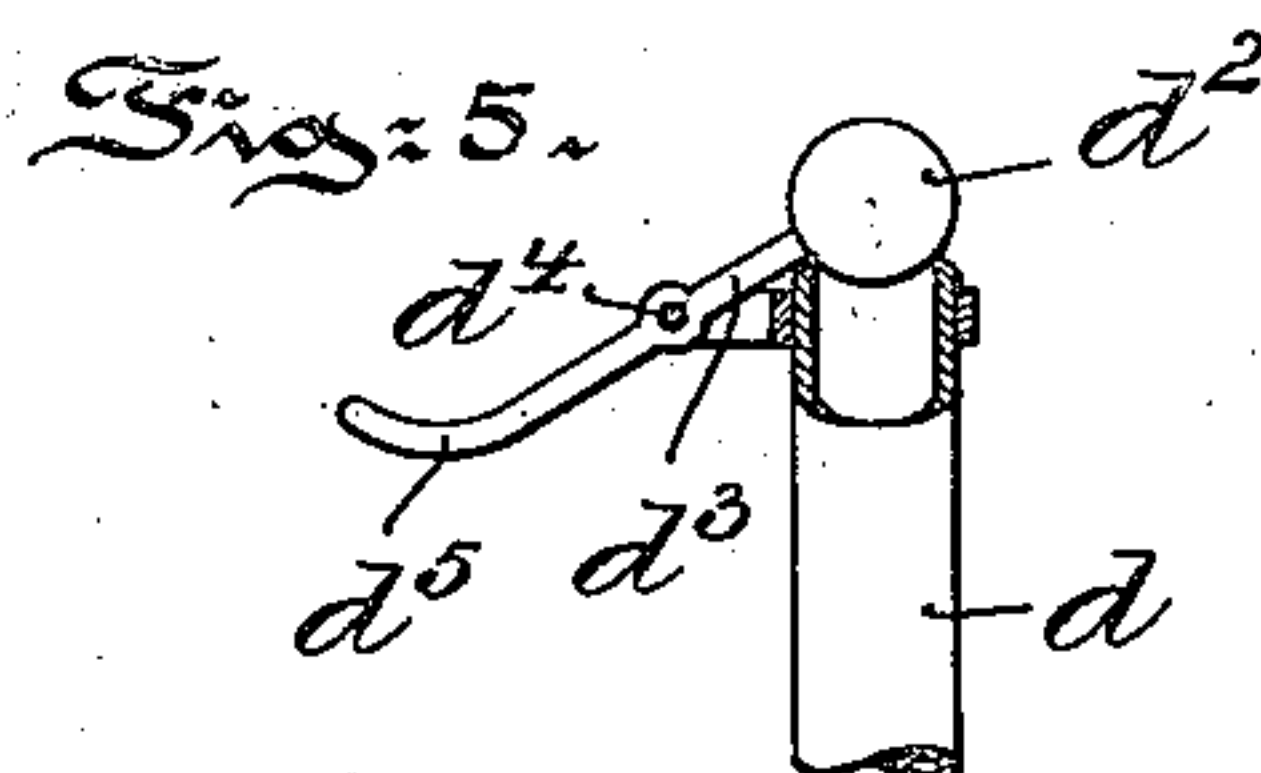
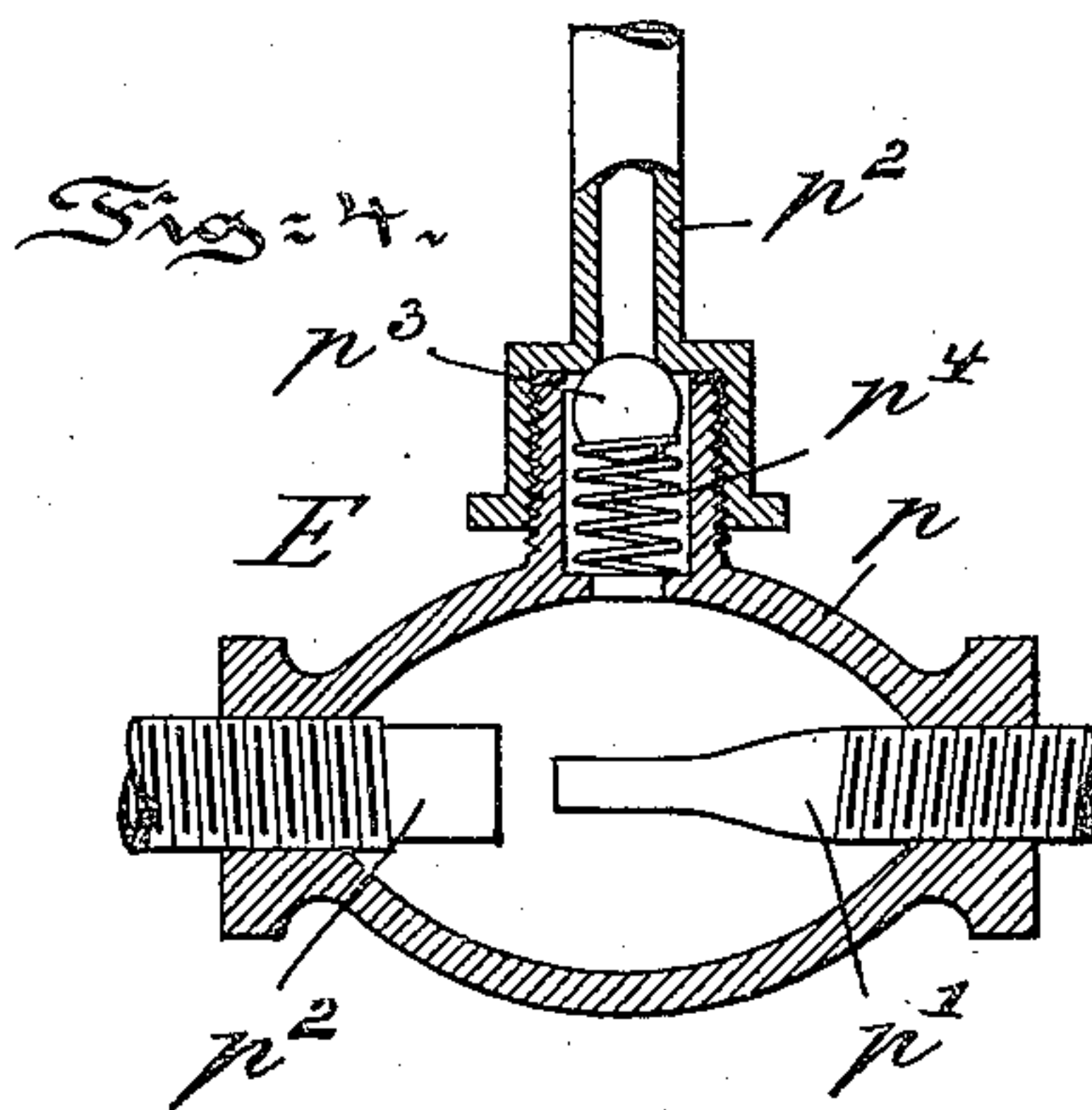
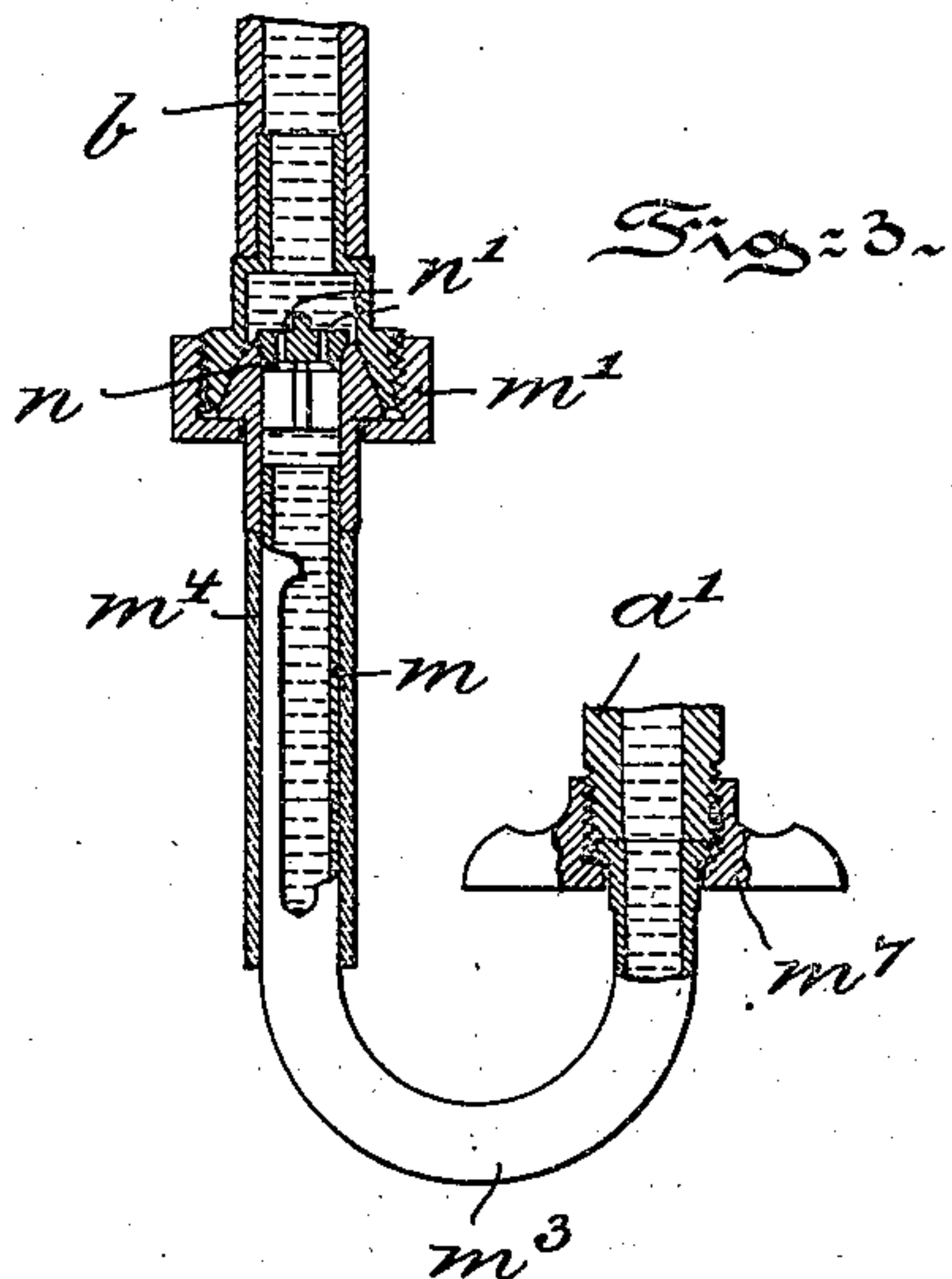
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UNITED STATES PATENT OFFICE.

WILLIAM A. F. MCCALLUM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO JAMES A. GRIFFITHS, OF SAME PLACE.

VACUUM LIFTING APPARATUS FOR MALT OR OTHER LIQUORS.

SPECIFICATION forming part of Letters Patent No. 616,199, dated December 20, 1898:

Application filed March 31, 1898. Serial No. 675,856. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. F. MCCALLUM, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Vacuum Lifting Apparatus for Malt or other Liquors, of which the following is a specification.

My invention has relation to an apparatus for elevating ale, beer, and other malt liquors by means of a vacuum and to that type of apparatus wherein the liquid is elevated directly to the dispensing apparatus without passing through the vacuum-creating apparatus, and in such connection it relates particularly to the construction and arrangement of such an apparatus.

The principal objects of my invention are, first, to provide a simple and effective apparatus for the elevation by a vacuum of ale, beer, or similar malt liquid from a cask or barrel to the dispensing apparatus without passing the liquid through the vacuum-creating apparatus and without affecting in a material or appreciable manner the freshness of the liquid; second, to provide in such an apparatus, in connection with the receiver, a registering device whereby the amount of liquid drawn and dispensed may be easily determined; third, to provide in such an apparatus means whereby when the receiver is full the vacuum-pipe is automatically closed to prevent the overflow of the liquid into said pipe; fourth, to provide in such an apparatus a dispensing-spigot having an outlet for the liquid and an air-inlet, said air-inlet having an extension or slot, so that it will admit air into the receiver just prior to the withdrawal of liquid, whereby air is prevented from rushing up the outlet and foaming of the liquid obviated; fifth, to provide in such an apparatus a vacuum apparatus comprising a tank or receptacle, a pipe leading therefrom and controlled by a check-valve, and a water-injector connected to said pipe below the valve and adapted to exhaust air from said pipe and tank, and, sixth, to provide in such an apparatus a coupling between the cask-spigot and the pipe leading to the receiver,

said coupling having a sight-tube to determine the height of liquid in the cask and having also a vertically-perforated check-valve to prevent the rapid return of liquid from the receiver-pipe to the cask.

My invention, stated in general terms, consists of an apparatus for the elevation of ale, beer, and similar malt liquids constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a diagrammatic view, partly sectioned, of an apparatus embodying main features of my invention. Fig. 2 is an enlarged detail view, partly sectioned, of the dispensing portion of the apparatus. Fig. 3 is an enlarged side elevational view, partly sectioned, of the coupling between a cask and a pipe leading to the receiver. Fig. 4 is an enlarged vertical sectional view of the water-injector or vacuum-creating apparatus and its check-valve. Fig. 5 is an enlarged detail view of the valve for automatically closing the upper end of the vacuum-pipe. Fig. 6 is a side elevational view, enlarged, of the cock for bringing one of two casks alternately into communication with the receiver. Fig. 7 is a horizontal sectional view, enlarged, taken through the air-inlet of the dispensing faucet or spigot; and Fig. 8 is a transverse view of the float and registering device illustrated in side elevation in Fig. 2.

Referring to the drawings and particularly to Fig. 1, *a a* represent the casks containing the liquid and usually located in the cellar. These casks *a a* are connected by pipes *b b* with a receiver B, which is also connected by a pipe *d* with a reservoir D, from which air is exhausted by any suitable means, but preferably by the water-injector E. The receiver B is provided with a dispensing spigot or faucet B'. The details of construction of the receiver B, its spigot or faucet B', and the necessary pipe connections are clearly illustrated in Fig. 2. The receiver consists of a bell or jar *b'*, inverted and having its

mouth b^2 screwed or otherwise secured by an air-tight joint to a nozzle b^3 , secured to and carried by a standard b^4 , which is itself supported by preferably the shelf B^2 , which, as shown in the drawings, is supposed to be the bar behind which the attendant stands. Within the standard or stand-pipe b^4 is supported a block b^5 , having an opening or passage b^6 for the passage of liquid, which passage is in communication at its lower end with the pipes b and at its upper end with the jar b' of the receiver B. The passage b^6 is also in communication with the faucet B' . The jar b' of the receiver B is surrounded by a casing b^7 of preferably sheet metal, which has a vertically-arranged slot b^8 , through which the interior of the jar b' may be viewed, said jar being preferably made of glass. The jar at that portion opposite the slot b^8 of the casing b^7 is provided with a scale b^9 , preferably etched into the glass. Within the jar b' extends the vacuum or exhaust pipe d , terminating near the upper end of the jar. Inside the jar b' is located the registering device, preferably arranged as shown in detail at Figs. 2 and 8. This preferred arrangement consists of a rack f , secured to or formed integral with the vacuum-pipe d . Surrounding the pipe and rack and guided thereby is a box or bracket f' , supported upon a float f^2 . In the box f' is fixed a shaft f^3 , on which rotates a pinion f^4 , in mesh with the rack f . The pinion f^4 has a face or plain disk f^5 , against which rests in frictional contact a toothed disk f^6 , the movement of which in one direction is prevented by a pawl f^7 . This toothed disk or ratchet f^6 is provided on its outer face with a series of numerals "1," "2," "3," &c., and is held in frictional contact with the face f^5 of the pinion f^4 by a spring f^8 . On the fixed shaft f^3 is secured a fixed pointer f^9 , under which the ratchet f^6 revolves to bring succeeding numerals in alinement with the pointer. From this description it will be understood that as liquid rises in the jar b' the float f^2 and pinion f^4 will move upward on the rack f , and the pinion and ratchet f^6 will turn in one direction together a distance determined by the position assumed by the numerals on the ratchet f^6 with respect to the pointer f^9 . As liquid is drawn off the float and pinion f^4 will fall and the pinion f^4 will be turned back by the rack. Inasmuch as the pawl f^7 prevents reverse movement to the ratchet f^6 the numeral on the ratchet will indicate what height the float ascended. In the same manner each time the float ascends the ratchet moves, adding up by means of the numerals and pointer the various amounts of liquid entering the jar. By comparing the amount which has entered, as indicated on the ratchet f^6 , with the amount remaining, as determined by the sight-scale b^9 , the amount drawn off can be readily and accurately ascertained. As before stated, the pipe d is connected with a suitable apparatus E for creating a vacuum. The upper end of this

pipe extends to near the top of the jar b' , so as to create the vacuum in said jar at that point. As a result of the vacuum so created the liquid will be elevated from the cask a to the receiver B. The pipe d is controlled by a cock d' , which when open permits of the exhaust through the pipe to a tank or reservoir D of air from the reservoir. Should the cock d' and a cock h , hereinafter fully described, remain always open, the receiver will speedily be filled, and if the cock d' is not closed at the proper time by reason of neglect or accident the liquid in the receiver B would ordinarily overflow into the pipe d and thence through the reservoir D to the vacuum apparatus E. To prevent this overflow, the pipe d is provided at its top with an overflow-valve consisting of a ball d^2 of rubber or other suitable material carried at one end of an arm or lever d^3 , pivoted, as at d^4 , to the pipe and having the other end weighted, as at d^5 , so that the ball d^2 will normally be held away from the opening of the pipe d . The weighted end d^5 of the arm d^3 is arranged in the path of the float f^2 and box f' , so that in rising the box f' will strike against and raise said end d^5 to thereby throw the ball d^2 down upon the opening of the pipe d and effectually close or seal the same. When the float descends again, the weighted end d^5 will fall, lifting the ball from the pipe d .

The dispensing spigot or faucet B' , as illustrated in detail in Figs. 2 and 7, has a plug g , provided with a straightway-outlet g' , controlling the outlet of liquid from the reservoir B. The plug g is also provided with an air-inlet g^2 , the rear of which is enlarged or slotted, as at g^3 , and adapted to register with a pipe g^4 , leading to the exhaust or vacuum pipe d . This inlet g^2 at its unenlarged or unslotted end communicates, when the plug is turned to open the outlet, with an opening or vent g^5 for the entrance of air.

The construction above described is adapted to prevent foaming of the liquid as it escapes from the faucet of the receiver for the following reason: As the plug is turned to permit of the drawing off of the liquid the air-inlet, by reason of its enlargement or slot g^3 , is brought into alinement with and opens the pipe g^4 , leading to the pipe d , a short interval of time prior to the discharge of liquid through the outlet g' . Air will therefore enter through the air-inlet and the pipes g^4 and d into the receiver B before the liquid escapes, and hence air will not be sucked through the outlet g' when the same is opened. In this connection it should be noted that inasmuch as the area of the outlet g' is greater than that of the air-inlet g^2 if said air-inlet were not first opened the exhaust in the receiver B would suck air through the outlet g' in preference to the air-inlet g^2 , thus causing foaming of the liquid as it leaves the faucet.

In the drawings the apparatus is shown for use with two casks. In such case it is obvi-

ous that the pipes *b b* leading from said casks must be provided with means whereby one or the other may at will be brought into communication with the receiver. This is accomplished, preferably, as illustrated in Figs. 2 and 6 of the drawings, by means of a two-way valve *h*, operated by a handle *h'* in such manner that the valve may be turned to open communication with either of the two pipes *b b* or to entirely close both pipes.

In the drawing of ale and similar malt liquors from casks or barrels, and for which the present invention is especially applicable, it is desirable that the contents of the casks be not disturbed too violently, inasmuch as stringy mucous formations are deposited in the cask, which will readily mix with the decanted liquid, rendering the same cloudy and unsalable. Thus, for instance, if the liquid in the receiver B be permitted to flow violently back into the cask it will at once become turbid, or if the attendant should desire to ascertain the amount of liquid in said cask and, as usual, should tap the same with a mallet the shock thus occasioned would cause the deleterious effect above mentioned. To obviate these difficulties, an arrangement is made use of substantially as illustrated in Figs. 1 and 3, whereby the pipe *b* and spigot *a'* of the cask are connected by a U-shaped bend or coupling-pipe *m*. This pipe *m* has one end secured to the pipe *b* by a screw-collar *m'* and the other end similarly secured to a spigot *a'* by a screw-collar *m''*. The bend *m* of the pipe *m* extends on a line with the base of the cask *a*, and the pipe *m* is provided, as at *m''*, with a sight-glass, by means of which the attendant can readily see when the liquid is nearly exhausted without striking the cask. To permit slow drainage or return of liquid from the pipes *b b* and the receiver B to the casks, so that the liquid will not remain in the pipes and become stale, the couplings *m* are each provided with a check-valve *n*, having one or more vertically-arranged perforations *n'*, through which the liquid above the check-valve may slowly drain into the cask without disturbing the contents of said cask.

In Figs. 1 and 4 is illustrated a preferred form of apparatus for creating a vacuum in the receiver B. It consists, essentially, of a water-injector E, comprising a casing *p*, in one end of which enters the reducing-nozzle *p'* or water-inlet, and in the other end is located the expanded outlet *p''*, in alinement with the nozzle *p'*. From the casing *p* leads the pipe *p''*, connecting the casing with the reservoir D. The pipe *p''* as it enters the casing *p* is normally closed by a check-valve consisting of a ball *p'''*, normally held to close the pipe *p''* by means of the spring *p''''*. This construction prevents the drawing of water from the casing *p* into the pipe *p''* whenever the vacuum in the reservoir D becomes too great. A pipe *p''''* and gage *p'''''*, connected with the

reservoir D, serve to indicate the vacuum in said reservoir.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, a receiver under a vacuum and in direct communication with the source of liquid-supply, a float located in said receiver, a rack fixed in said receiver, a pinion carried by said float and in mesh with said rack, a ratchet in frictional contact with said pinion and a disk provided with numerals on one face, carried by said ratchet, said disk and ratchet adapted to be turned in one direction by said pinion when the float rises in said receiver, substantially as and for the purposes described.

2. In an apparatus of the character described, a receiver in direct communication with the source of liquid-supply, a pipe extending through the receiver and adapted to create a vacuum at the upper end thereof, a float located in said receiver, a box secured to said float and guided by said pipe, a rack secured to said pipe, a pinion adapted to rotate in said box and in mesh with said rack, a ratchet frictionally held in contact with said pinion and adapted to move in one direction therewith, a pawl adapted to prevent reverse movement of said ratchet, a pointer fixed to said box and beneath which the ratchet is adapted to move, and numerals carried by the face of said ratchet and adapted in connection with said pointer to form a register to determine the upward movements of said float, substantially as and for the purposes described.

3. In an apparatus of the character described, a receiver comprising a transparent jar and a metallic casing surrounding the same, a vertical slot formed in said casing and a scale carried by the jar and registering with the slot, in combination with a float located in the jar, a rack fixed within said receiver, a pinion carried by said float and in mesh with said rack, and an indicator-disk in frictional contact with said pinion and movable in one direction therewith, substantially as and for the purposes described.

4. In an apparatus of the character described, a receiver, an exhaust-pipe traversing the same and adapted to create a vacuum at its upper end, a float located within the receiver, and a weighted valve normally out of contact with the upper end of the exhaust-pipe and adapted to be operated by the float to close said exhaust-pipe, substantially as and for the purposes described.

5. In an apparatus of the character described, a receiver under vacuum, a pipe leading thereto, a vertically-perforated check-valve controlling said pipe, a U-shaped coupling connecting said pipe with the cask or liquid-receptacle, the bend of said coupling being at or near the bottom of said cask, and

a sight-glass located on said coupling, substantially as and for the purposes described.

6. In an apparatus of the character described, in combination with a receiving-chamber under vacuum and provided with a dispensing faucet or spigot, of a cask having a spigot or faucet and located below the receiving-chamber, a pipe leading from the receiving-chamber, a vertically-perforated check-valve controlling said pipe, and a U-shaped coupling connecting said pipe with the spigot

of said cask, the bend of said coupling being at or near the bottom of said cask, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WILLIAM A. F. MCCALLUM.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.