

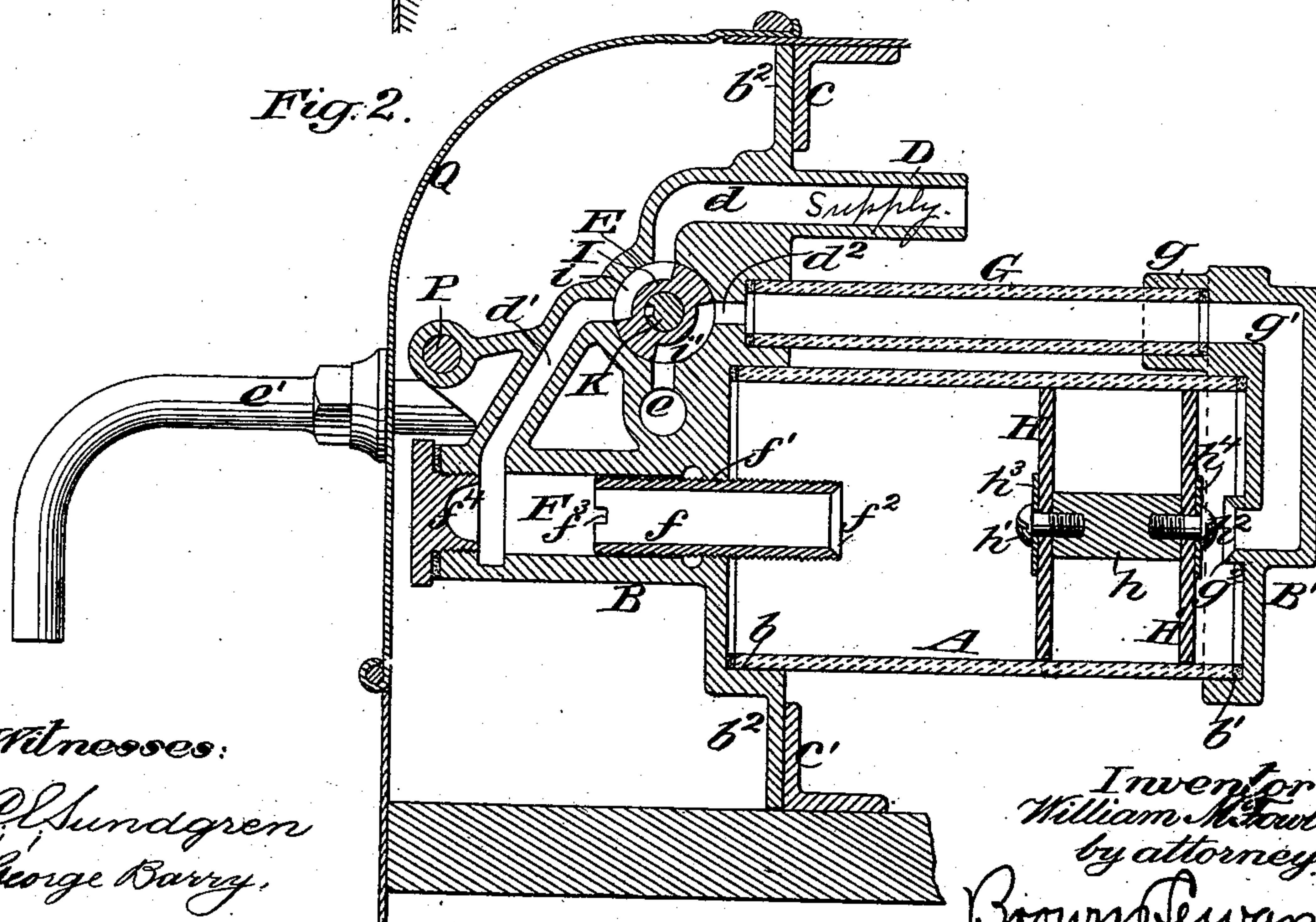
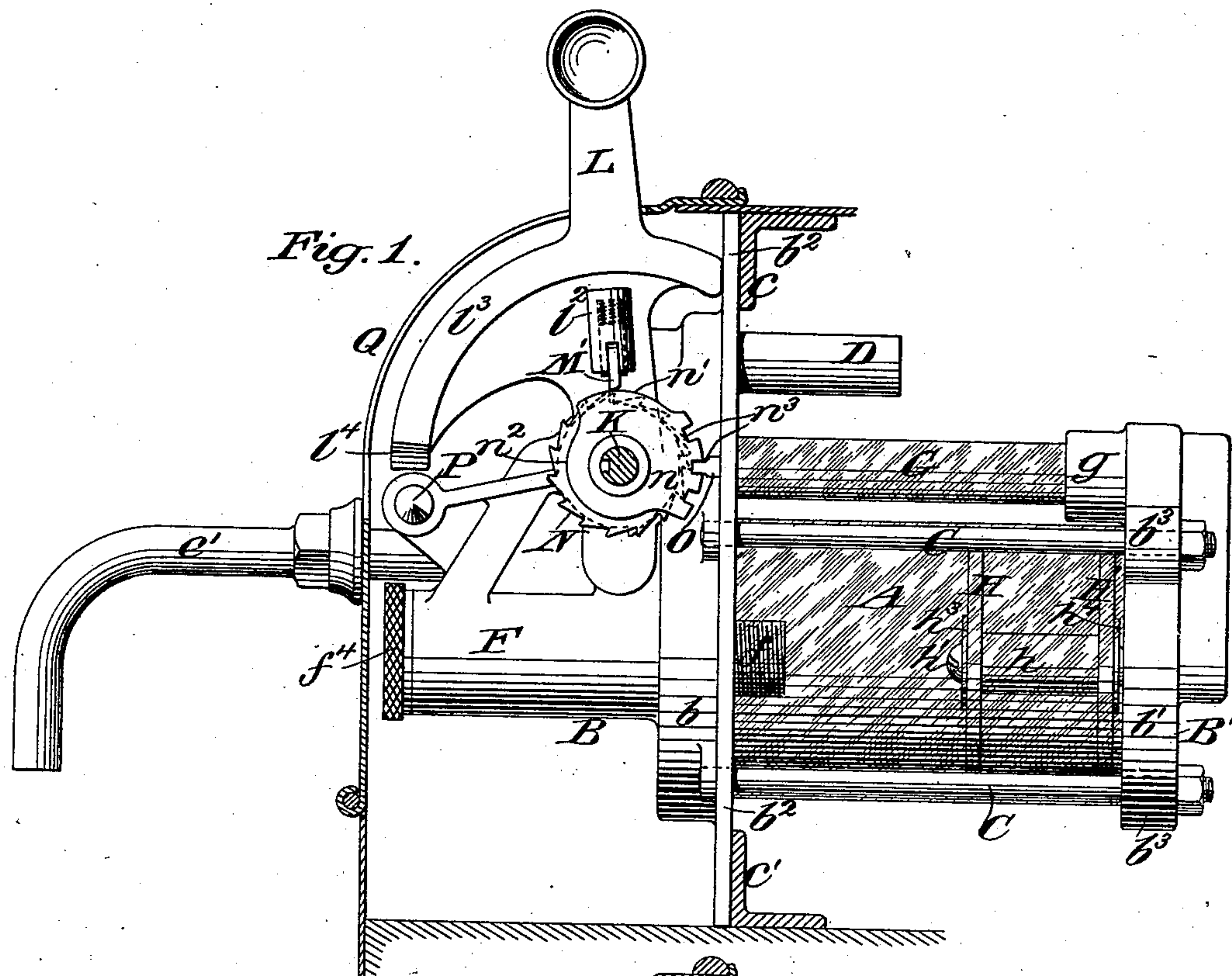
(No Model.)

2 Sheets—Sheet 1.

W. M. FOWLER.
LIQUID DISPENSING APPARATUS.

No. 507,316.

Patented Oct. 24, 1893.



Witnesses:

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George Barry.

Inventor:
William Fowler
by attorneys

Brown & Teward.

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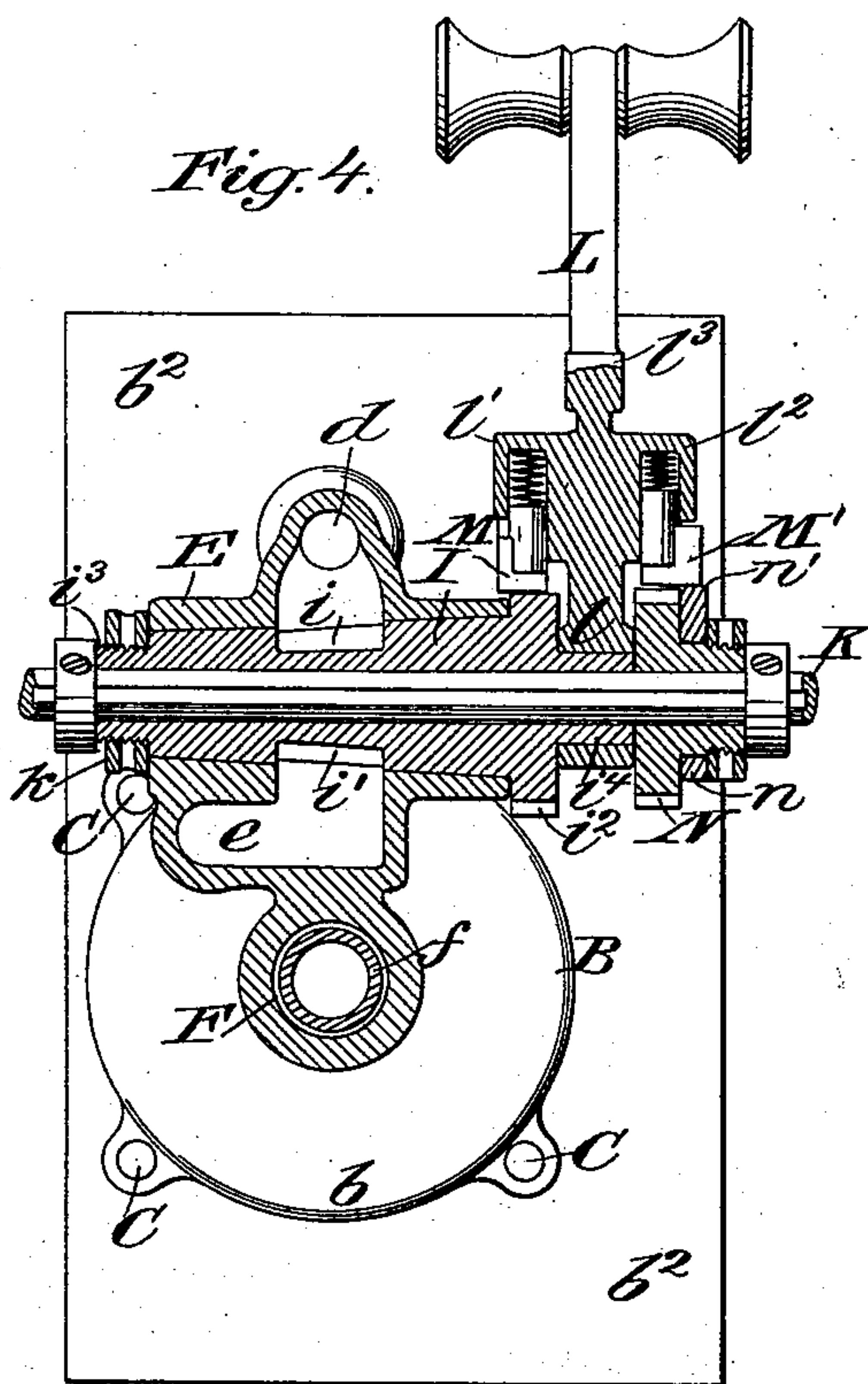
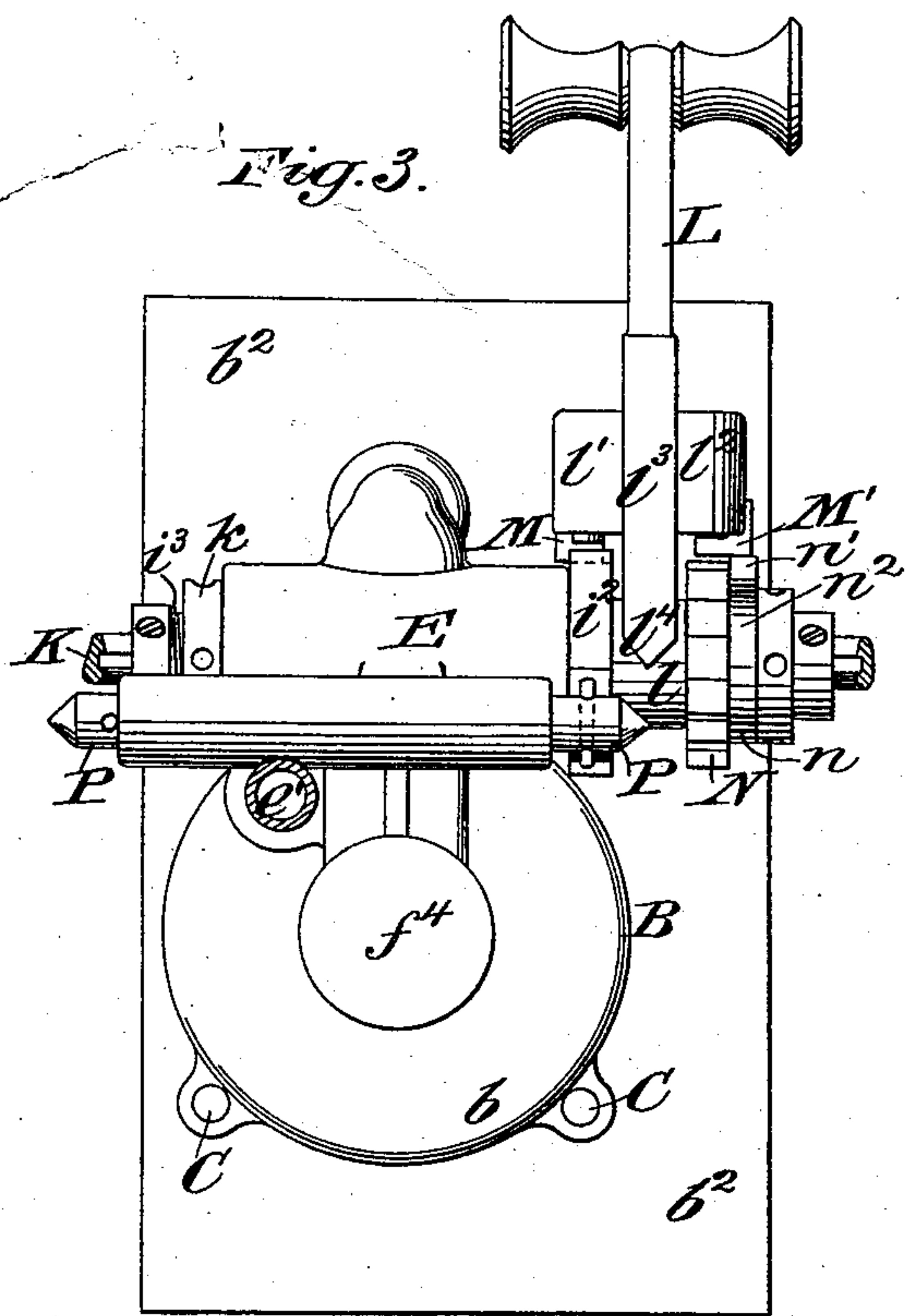


Fig. 5.

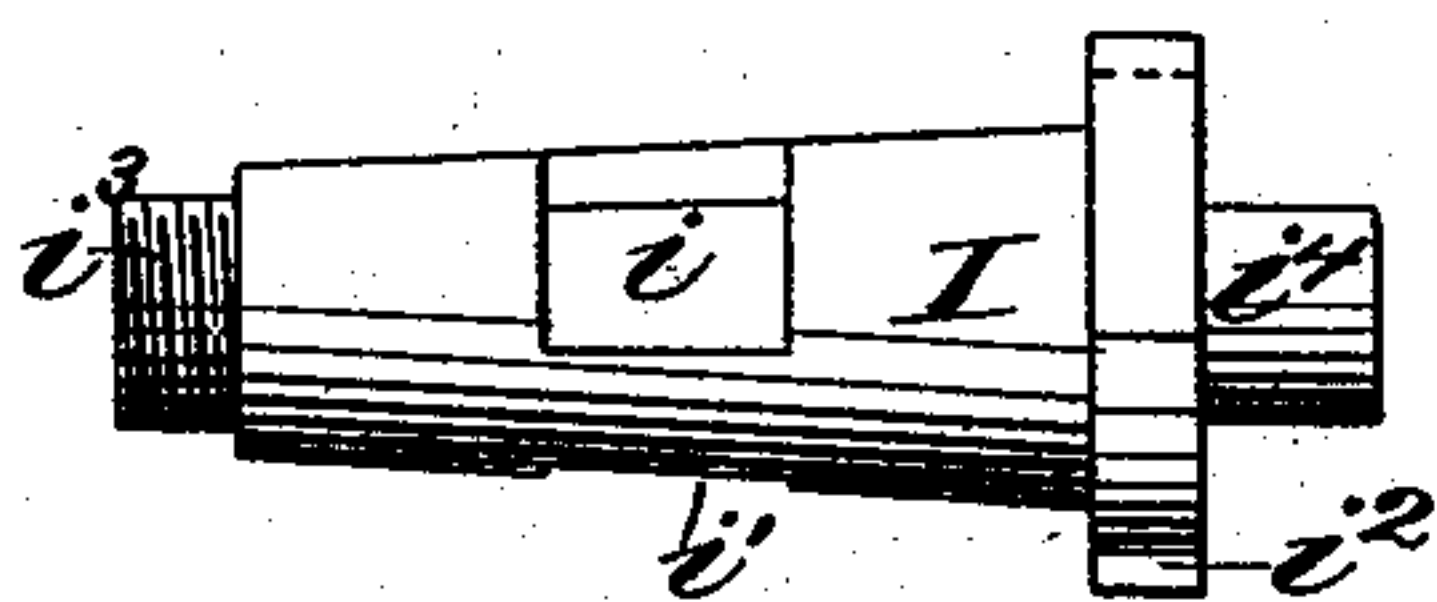
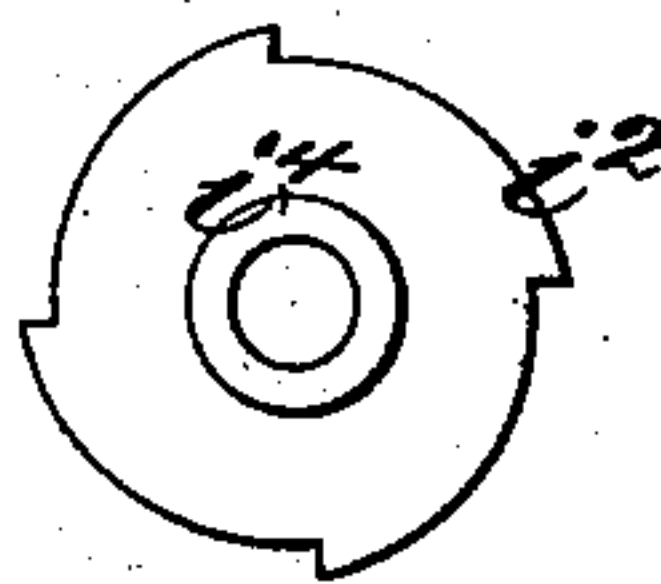


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM MILES FOWLER, OF MILFORD, CONNECTICUT.

LIQUID-DISPENSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 507,316, dated October 24, 1893.

Application filed May 23, 1893. Serial No. 475,206. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MILES FOWLER, of Milford, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Liquid-Dispensing Apparatuses, of which the following is a specification.

My invention relates to an improvement in liquid dispensing apparatuses in which provision is made for passing liquid from a general supply to the glass or other receptacle from which it is to be used and measuring the liquid during its passage from the supply to the receptacle to determine the quantity which shall be dispensed.

My invention relates more particularly to the measuring receptacle and the parts co-acting immediately therewith whereby the liquid is passed to and from the measuring receptacle without the necessity of a vent and without any lost motion by the operating parts.

A practical embodiment of my invention is represented in the accompanying drawings in which—

Figure 1 is a view of the measuring receptacle and parts immediately connected therewith, in side elevation, the inclosing casing being shown in section. Fig. 2 is a vertical sectional view from front to rear through the measuring receptacle and the parts adjacent thereto. Fig. 3 is a view in front elevation. Fig. 4 is a view in vertical section, taken in the plane transverse to the measuring receptacle and in the longitudinal plane of the axis of the operating lever and turn-plug, and Figs. 5 and 6 represent respectively views in detail of the turn-plug in side and end elevation.

In the form which I have chosen to illustrate my invention, the body portion A of the measuring receptacle is formed of transparent material, such for example as glass, and is of cylindrical tubular form, its ends being inserted and secured in suitable sockets b and b' formed in front and rear end castings B and B' respectively. The front casting B is provided with a flange b^2 extending laterally therefrom through which the casting at the front end is secured to the casting at the rear end by bolts or tie-rods C extending through the flange b^2 and through correspond-

ing lugs b^3 projecting from the rear end casting B'. The said flange b^2 also serves as a convenient means for securing the measuring receptacle and its operating mechanism to fixed brackets c and c' at the top and bottom.

A tube D projecting rearwardly from the upper portion of the front casting serves to receive the end of a rubber hose or other suitable supply pipe or tube leading from a general source of supply under pressure or head and not shown herein. From the tube a passageway d , forming a continuation of the interior of the tube D, extends through the front casting to a tapered turn-plug chamber E and thence by branch passages or ports d' and d^2 to passageways leading to the front and rear of the measuring receptacle A respectively. The port d' leads to a tubular chamber F here shown as in axial alignment with the measuring receptacle A having seated within it an exteriorly screw-threaded tubular plug f , having a screw-threaded engagement with a portion f' of the interior wall of the chamber F for the purpose of adjusting the plug f so that it shall extend more or less within the receptacle A, as may be desired. The interior end of the plug f is beveled to an edge f^2 for a purpose which will hereinafter appear. The outer end of the plug f is provided with a notch f^3 for convenience in introducing a screw-driver or other suitable implement for turning the plug f . The outer or front end of the tubular chamber F is provided with a screw cap f^4 and with suitable packing for forming an air and liquid tight closure for the end of the chamber. The port d^2 connects with a pipe section G, here shown as of transparent material such as glass, which extends to a socket g formed in the front face of the rear casting B' and the passageway through the tube G is continued by the passageway g' in the casting B' into the end of the receptacle A preferably at its middle portion, and where the passageway g' enters the receptacle A, it is surrounded by a wall reduced to an edge g^2 for a purpose which will hereinafter appear. From the taper turn-plug chamber E a port leads to a passageway e which communicates with a discharge spout e' .

Within the measuring receptacle A there is located a piston free to move back and forth

within the chamber according as there is excessive pressure upon one side or the other of it. In the present instance the piston consists of two disks H, H' connected by a stem h to the opposite ends of which the disks are secured by means of screws h' , h^2 . The same screws which connect the disks with the ends of the stem also secure elastic washers h^3 , h^4 with the outer faces of the disks. The elastic washers h^3 and h^4 serve in connection with the edges f^2 and g^2 , which determine the limits of the movement of the piston back and forth, to form a quick and perfect cut-off for the liquid escaping through the plug f or through the passageway g' , as may be.

Within the taper chamber E the turn-plug I is fitted, having upon opposite sides the ports i and i' which are so located that when the plug is turned in one position, that shown in Fig. 2, the port i will form a connection between the passageway d and port d' leading to the interior of the receptacle A at its front end, while the port i' will at the same time form a connection between the passageway d^2 and the passageway e leading to the discharge spout, and hence open the communication through the passageway g' at the rear end of the receptacle and tube G to permit the liquid to be discharged from the rear end of the receptacle into the discharge spout. When the said turn-plug I is given a quarter turn, it will bring the port i into position to connect the port d' with the passageway e and hence to the discharge spout and at the same time will throw the port i' into position to connect the inlet passage d with the port d^2 , tube G, passageway g' and hence with the interior of the receptacle through its rear end. A second quarter turn will bring the turn-plug into position with its ports i and i' in the position just the reverse from that shown in Fig. 2, and hence with the same effect in making connections of the passageways as that shown in Fig. 2; while the third quarter turn will connect the rear end of the receptacle with the supply reservoir and the front end with the discharge spout and the fourth quarter turn will bring the parts again into the position which they are shown as occupying in Fig. 2. To effect the quarter turns of the turn-plug hereinabove referred to, the turn-plug is provided with a toothed rim i^2 the teeth of which are clearly shown in Fig. 6 and located one-quarter of the periphery apart. Through the turn-plug I and through the casting adjacent thereto at the front end of the receptacle, extends a shaft K which, after passing through one or several of the measures herein described and arranged in series, passes on to a registering and recording mechanism, such for example as that shown, described and claimed in Letters Patent No. 490,823, granted to me January 31, 1893. The shaft K of my present application corresponds to the shaft lettered D in said patent hereinabove referred to. As such registering and recording mechanism forms no

part of my present invention, I have omitted the illustration and description of the same in connection herewith. One end of the turn-plug I is provided with a screw-threaded extension i^3 for the reception of a nut k to hold the plug in its seat and the opposite end of said turn-plug is provided with a projecting cylindrical portion i^4 on which the hub l of the operating lever L is loosely mounted. The operating lever is provided upon opposite sides of its central plane of motion with sockets l' and l^2 , in the former of which a spring actuated dog M is located in position to engage the teeth on the rim i^2 of the turn-plug and in the latter of which a spring actuated dog M' is located in position to engage a toothed wheel N, fixed to rotate with the shaft K. The engagement of the dog M' with the toothed wheel N and hence the distance which it is permitted to rotate the shaft K for every downward stroke of the lever L, is regulated by means of a disk n mounted to turn on the hub of the wheel N between the face of the dog M' and the hub of the wheel N, a portion n' of said disk (see Fig. 1) being at such a radial distance from the center as to hold the dog entirely out of engagement with the toothed wheel. Another portion n^2 of the periphery of said disk is of a less radial distance from the center so that when it comes between the dog and the hub of the wheel N, the dog will be permitted to engage the teeth on the wheel N and hence will rotate the shaft K. The disk n is provided with several notches n^3 on one side, with any one of which a stop O may be engaged to hold the disk n in such rotary adjustment on the hub of the wheel N as to permit the dog M' to engage the teeth on the wheel N at an earlier or later point during its downward stroke as the case may be. This arrangement for determining the distance which the shaft K, which runs a recorder and register, shall be turned to register different prices, is quite similar in its general principle to that shown, described and claimed in my Letters Patent above referred to, such differences as exist between the two being limited for the most part to the structure. The operating lever L carries on it a segment l^3 having a beveled nose l^4 for engaging a longitudinally sliding locking bar P to prevent the movement of a companion lever while the lever just operated is down, in a manner quite similar in principle to that shown and described in said Letters Patent above referred to. The mechanism, with the exception of the operating handle on the lever L and the projecting spout, may be housed by the casing Q; access to the interior of which may be had only by a person holding a key to unlock it, the lock and the means for opening the casing being of any well known or suitable construction.

In operation, suppose the parts to be in the position shown in Figs. 1 and 2, the liquid from the general supply under head of press-

ure, will have flowed into the receptacle A, forcing the piston therein toward the rear end of the receptacle. If now, it be desired to dispense a quantity of liquid equal to the contents of the receptacle A between the piston and the end of the plug *f*, the operating lever L may be drawn down to the limit of its downward stroke. This will turn the plug I one-quarter of a revolution and will thereby open the rear end of the receptacle A to the general supply and at the same time will open the front end of the receptacle A to the discharge in the manner hereinabove particularly set forth and the piston will be forced forward, driving the contents of the receptacle out through the discharge spout until the piston reaches the end of the plug *f* against which it will seat, its elastic washer *h*³ forming with the edge at the end of the plug a prompt and perfect cut-off. The return of the lever to its upper position, shown in Fig. 1, will have no effect upon either the turn-plug or the recording mechanism. If now, it be desired to dispense another measure of liquid, the operating lever may be again brought to the limit of its down stroke which movement will turn the plug I another quarter revolution, opening the front of the receptacle A to the general supply and at the same time opening the rear end of the receptacle to the discharge spout and the piston will be forced rearwardly into contact with the edge *g*² surrounding the end of the passageway *g*¹. In the above manner, the piston may be forced back and forth within the receptacle A, each time filling a measure and discharging a measure without a vent being established and without the lost motion commonly required. The quantity may be regulated with the greatest precision by the adjustment of the plug *f* into or out of the re-

ceptacle A while the flow of the liquid within the receptacle A and through the pipe G may be readily observed from the outside.

What I claim is—

1. In combination, a measuring receptacle, a piston free to move back and forth therein under the pressure of inflowing liquid, means for admitting liquid to and discharging it from the receptacle, and a stop for the piston, the stop having an adjustment into and out of the receptacle to diminish or increase the movement of the piston, substantially as set forth.

2. The combination with the measuring receptacle, its piston and the conduits for admitting liquid to and discharging it from the receptacle, of the rotary cock, the shaft leading to a recorder, the toothed wheel keyed to the shaft, the notched eccentric disk mounted to rotate independently of the toothed wheel and shaft, the stop for holding the disk in the desired adjustment, the operating lever and the dogs carried by the lever in position to engage the cock, toothed wheel and disk, substantially as set forth.

3. The measuring receptacle, comprising the tubular body portion and the ends fitted thereto, and having passageways leading through the ends from the interior of the receptacle, to points at one side of the body portion a tube connecting the passageway at one end with the passageway at the opposite end, a supply conduit common to the two end passageways, a discharge conduit common to the two end passageways and a cock seated in one of the ends for opening and closing the passageways, substantially as set forth.

WILLIAM MILES FOWLER.

Witnesses:

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