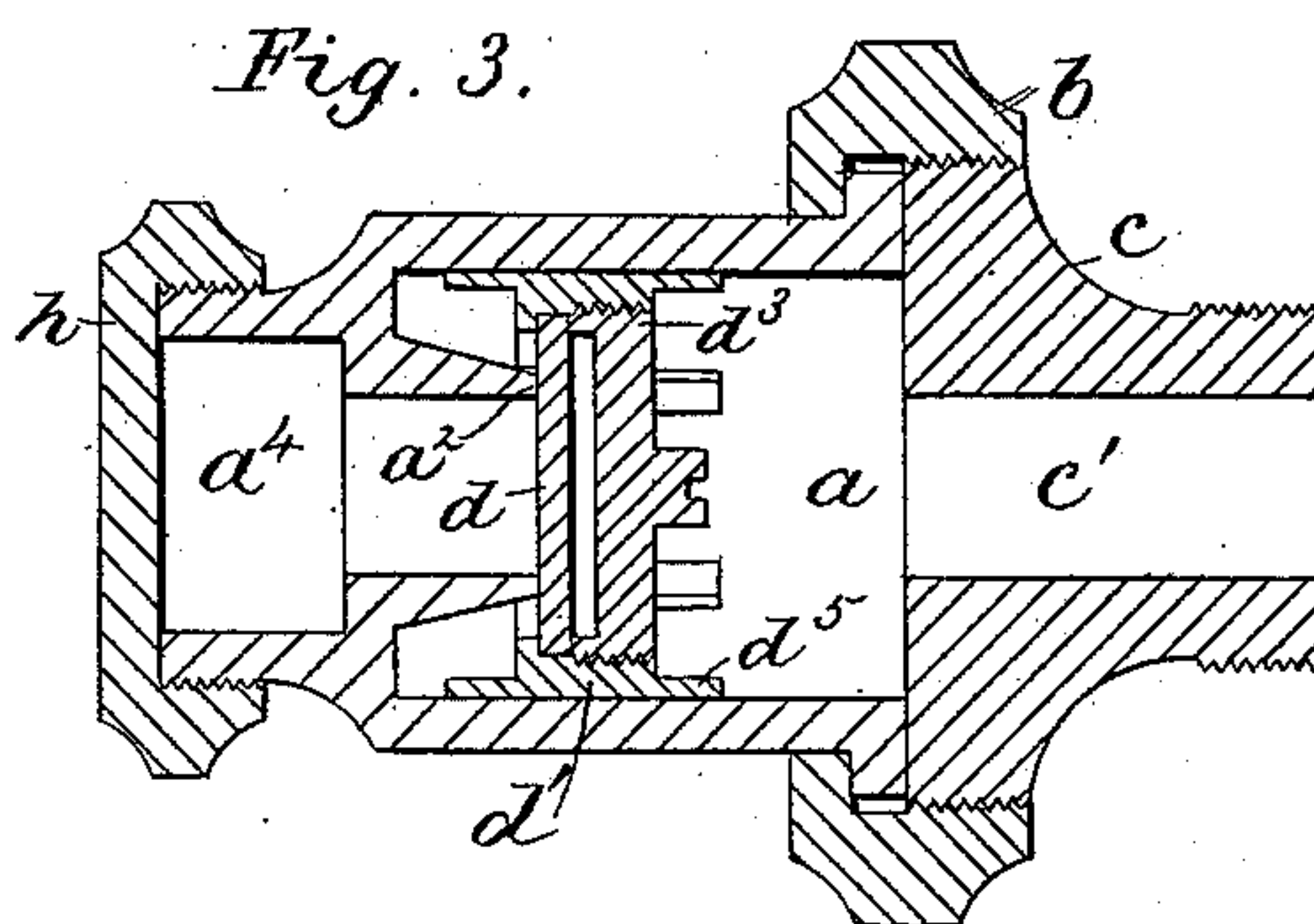
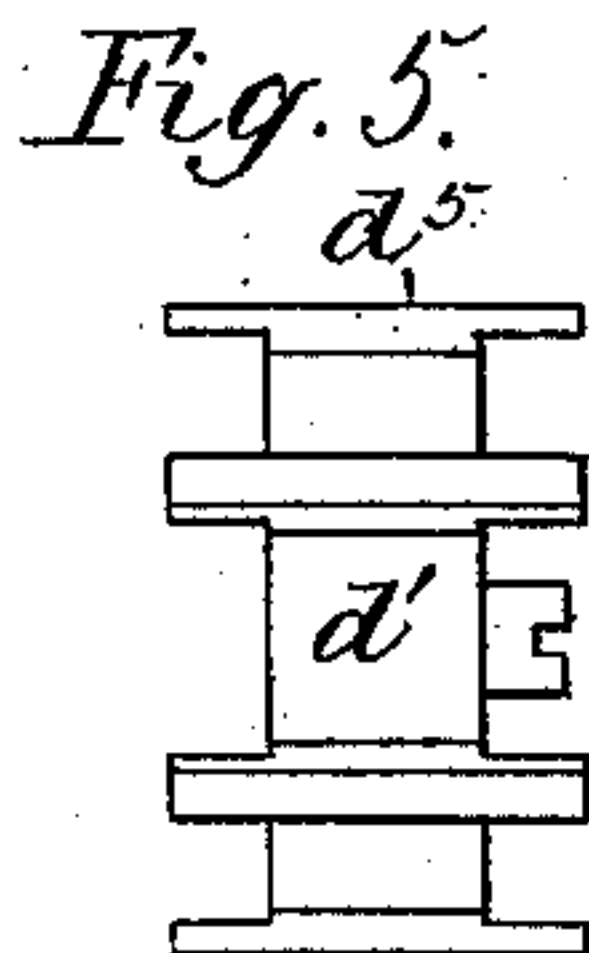
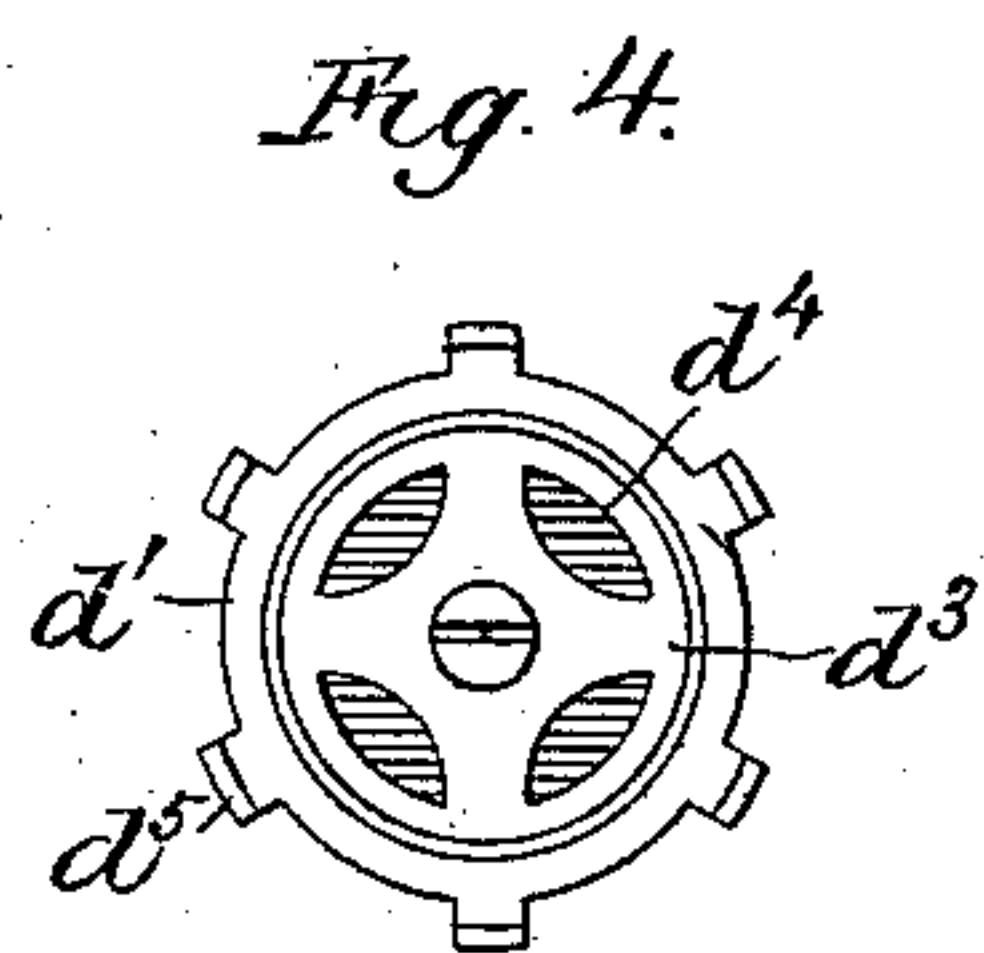
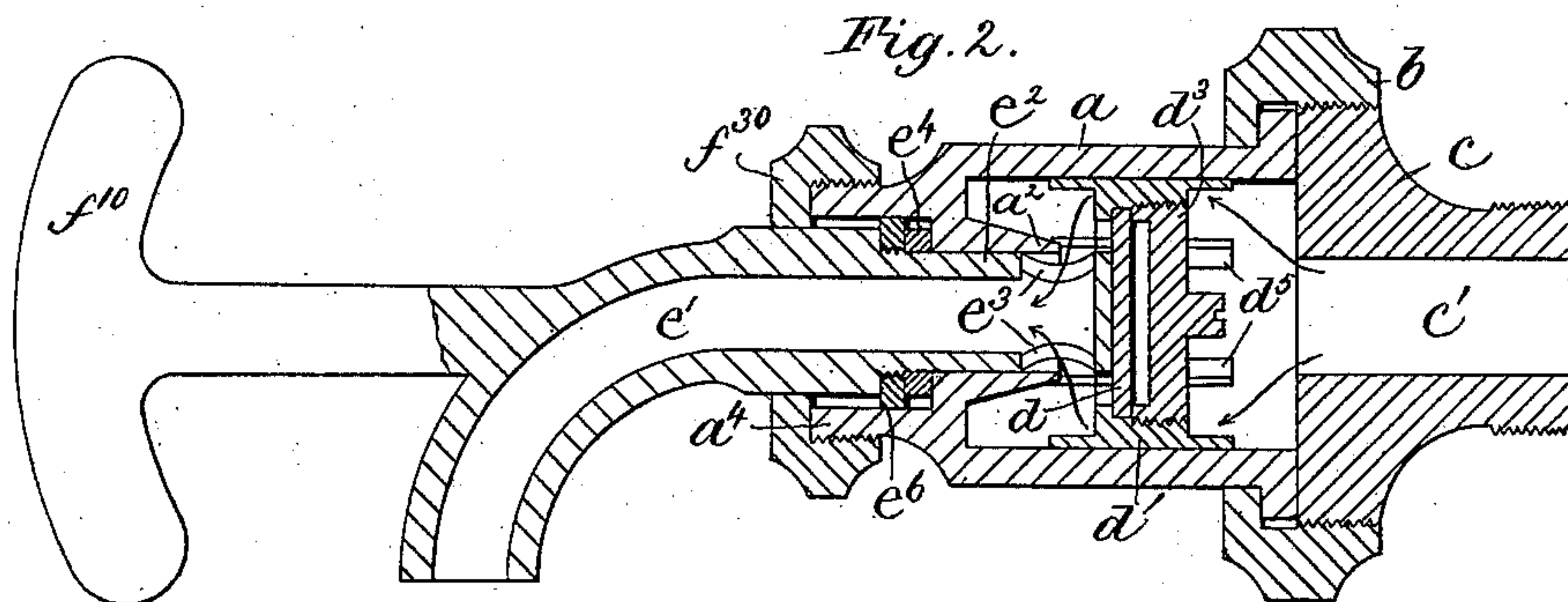
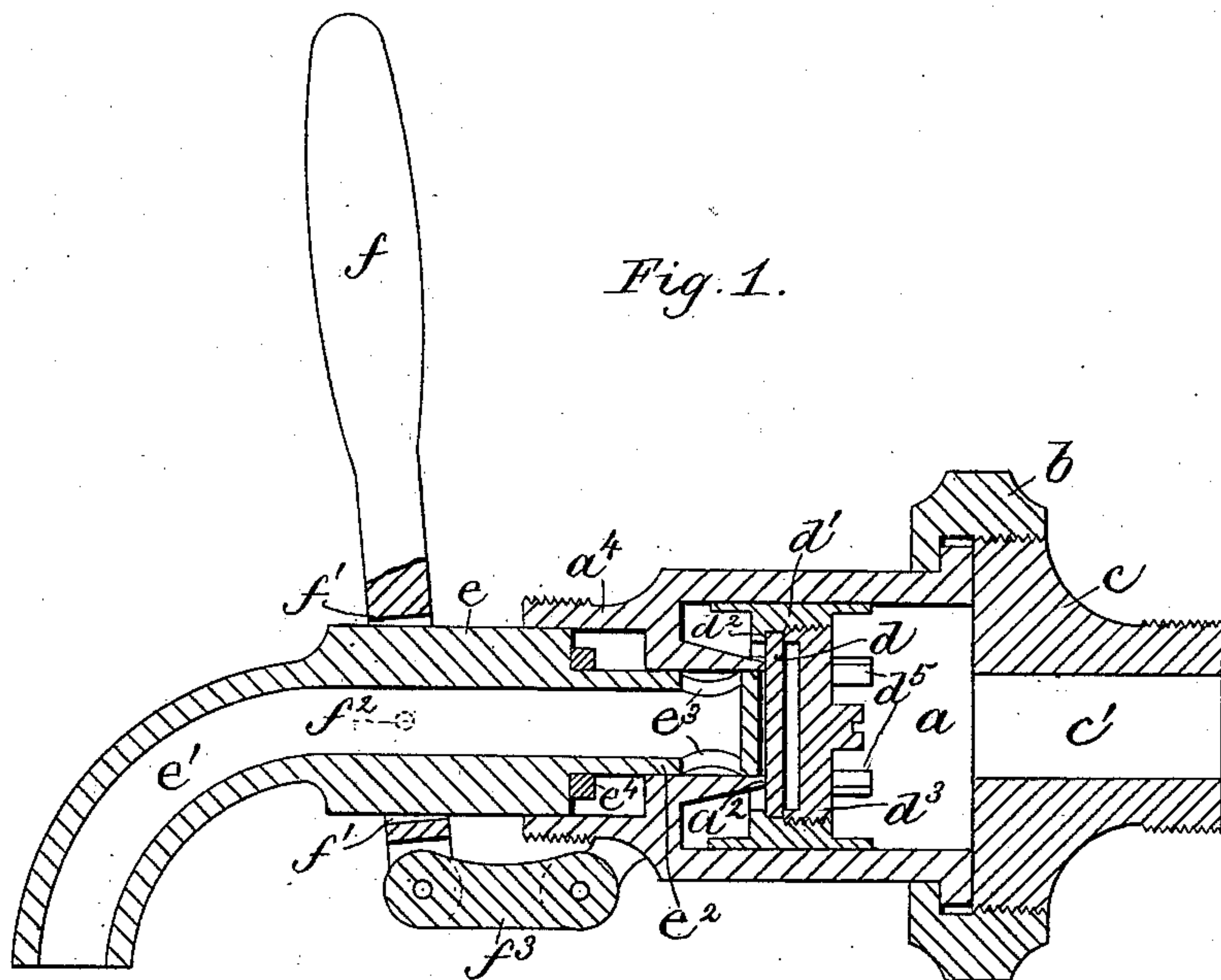


(No Model.)

W. T. MESSINGER.
FLUID DISCHARGING APPARATUS.

No. 351,453.

Patented Oct. 26, 1886.



Witnesses,
Jas. J. Maloney
Jos. P. Bates

Inventor,
William T. Messinger,
by *Jos. P. Livemore*
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM T. MESSINGER, OF CAMBRIDGE, MASSACHUSETTS.

FLUID-DISCHARGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 351,453, dated October 26, 1886.

Application filed October 12, 1885. Serial No. 179,623. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. MESSINGER, of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Fluid-Discharging Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to a fluid-discharging apparatus adapted to be used in connection with water or other pipes or receptacles from which a fluid is to be drawn.

The invention is embodied in an apparatus consisting, essentially, of a valve-chamber containing an inwardly-projecting valve consisting of a flexible disk confined at its edges in a frame provided with guide-arms co-operating with the walls of the chamber, the said disk being exposed to the pressure of the fluid in the chamber and seat, and valve movable toward and from said seat, its movement toward the seat being in the direction of the outflow of fluid, and a movable faucet, which also constitutes the valve-actuating device and co-operates with the said valve to unseat the latter. When the valve is unseated by the movement of the faucet, the fluid, which is permitted to flow, passes through the delivery-passage in the faucet, which thus forms a guide for the said escaping fluid. As soon as the valve is released or disengaged by the movement of the faucet it is seated by the flow of the fluid, and remains held on its seat by the pressure of the said fluid, and the faucet may then be wholly removed from the apparatus, leaving the valve closed and inaccessible, so that the fluid cannot be withdrawn by unauthorized persons.

The invention consists in various details of construction by which the efficiency and durability of the apparatus is increased.

Figure 1 is a longitudinal section of a fluid-controlling apparatus embodying this invention, especially adapted for use in connection with water-pipes, the valve being shown as seated or closed; Fig. 2, a longitudinal section of a modification thereof, intended to be used in connection with a receptacle for wines or other liquids which it may be desirable to make inaccessible to unauthorized persons, the valve being shown as unseated or open; Fig. 3, a longitudinal section of the fluid-con-

trolling apparatus with the faucet removed, and Figs. 4 and 5 end and side elevations, respectively, of the valve detached.

The apparatus comprises a valve-chamber, *a*, adapted to be connected by a coupling-nut, *b*, with a neck or fitting, *c*, which may be connected with the pipe or receptacle from which the fluid is to be delivered, and which closes or forms one end of the valve-chamber *a* when the latter is connected therewith, the said fitting *c* having an inlet-opening, *c'*, to the said valve-chamber, which is provided with a valve-seat, *a'*, projecting inward from the end of the chamber opposite the said fitting, and a guide-passage in said seat for the removable faucet which receives and discharges the liquid leaving the said valve-chamber.

The flow of fluid from the valve-chamber *a* is controlled by a valve, *d*, shown in this instance as composed of a disk or diaphragm of rubber or other yielding material confined at its edges in a ring or frame, *d'*, having a shoulder, *d''*, (see Fig. 1,) upon which the said disk is fastened by a nut or cap, *d'''*, provided with openings *d''''*, (see Fig. 4,) through which the fluid may pass, so as to press directly upon the diaphragm *d*, and thus hold the latter tightly upon the seat *a'* without necessity of grinding or packing. The ring *d'* is provided with a series of guide-arms, *d''''*, which fit loosely within the chamber *a*, so that the said valve can travel freely back and forth toward and from the seat *a'* in the said chamber, there being a sufficient space between the arms *d''''* and the outer wall of the ring *d'* and inner wall of the chamber *a* for the flow of fluid through the said chamber around the valve when the latter is unseated, as shown in Fig. 2. The guide-arms *d''''* are also longer than the width of the ring *d'*, and thus constitute a stop, limiting the movement of the valve toward the inlet-passage *c'*, so that it cannot close or obstruct the said passage. The valve *d*, if acted on only by the fluid flowing into the chamber *a* from the passage *c'*, will be moved up to and held pressed against the seat, thus preventing the escape of fluid from the valve chamber and reservoir or source of supply communicating therewith through the passage *c'*.

In order to actuate the valve for the purpose of opening the same, and also to receive and

guide or control the fluid which may escape from the valve-chamber when the valve is open, the apparatus is provided with a faucet, *e*, which also constitutes the valve-actuating device, and has a suitable delivery-passage, *e'*, and a portion, *e²*, adapted to enter and move longitudinally in the guide-passage in the valve-seat *a²*. The said faucet *e*, when pressed inward toward the valve-chamber *a*, engages the valve *d* and moves the latter from its seat, so that the fluid may flow into the portion *e²* of the faucet, which is provided with lateral ports *e³*, through which the fluid passes from the valve-chamber *a* into the delivery-passage *e'*, as shown by the arrows, Fig. 2, out of which it flows in the usual manner.

The piece or casting forming the chamber *a* is shown as provided with an external extension, *a¹*, serving as an additional guide for the faucet *e*, which moves longitudinally therein. In order to prevent leakage or escape of the fluid around the outside of the faucet *e* when the valve is opened the said faucet may be provided with a yielding washer or packing-ring, *e⁴*, which, when the said faucet is pressed inward, as shown in Fig. 2, comes to a seat around the outer end of the passage in the valve-seat and prevents the escape of fluid through the said passage, except by passing through the delivery-passage *e'*.

The faucet *e* may be operated or pressed inward, to open the valve, in any desired manner. As shown in Fig. 1, it is provided with an operating handle or lever, *f*, having an opening, *f¹*, which surrounds the said faucet, the said handle or lever being pivoted to the said faucet, as shown at *f²*, and being connected by a link, *f³*, with the guide portion *a¹* of the valve-chamber. Thus by pressing the handle *f* toward the valve-chamber the faucet *e* is moved inward, opens the valve, and permits the fluid to escape through the ports *e³* into the passage *e'*; and as soon as it is desired to stop the flow of the fluid the handle may be moved forward or merely released, when the pressure of the fluid will, in most cases, be sufficient to move the valve and faucet both forward until the valve is seated and prevents the further escape of liquid. The apparatus thus made forms an efficient self-closing faucet for water-pipes or other similar purposes, the fluid being permitted to escape only as long as the operator holds the valve open.

While the valve is seated the faucet has no function to perform, and may be wholly removed from the apparatus, as shown in Fig. 3, and when the apparatus is to be used for controlling the flow of a valuable liquid, or one which it is desirable to protect from unauthorized persons, the faucet *e* may be wholly removed from the apparatus and retained in possession of the person who is authorized to draw the fluid. When intended to be used in this manner, the handle may be rigidly connected with the faucet, as shown at *f¹⁰*, Fig. 2, and the latter may be merely inserted in the extension or guide passage *a¹* of the piece or

casting forming the valve-chamber *a* when it is desired to draw the fluid and removed therefrom as soon as sufficient fluid is withdrawn. If desired, however, the faucet constructed as shown in Fig. 2 may be retained in connection with the valve-chamber by a coupling-nut, *f³⁰*, connected with the guide projection *a¹*, and adapted to engage a shoulder, *e⁶*, upon the said faucet. The guide projection *a¹* preferably is provided with external threads to receive the coupling-nut *f³⁰*, or, if desired, to receive a protecting-cap, *h*, as shown in Fig. 3, which may be screwed tightly upon it after the faucet has been removed, so as to prevent tampering with the valve or with the fluid controlled by unauthorized persons not provided with a proper faucet. In case the flow or pressure of the fluid should not be sufficient to seat the valve, a spring may be placed between the valve and the fitting *e*, tending to seat the valve, and an apparatus operating upon the same principle as that described in the present application, provided with such a spring, will be shown and described in another application for Letters Patent, Serial No. 179,625, filed October 12, 1885.

It will be seen that the faucet which constitutes the fluid-discharging and valve-actuating device and its operative mechanism is wholly outside of the valve-chamber and beyond the valve, so that there are no joints or passages to work loose and cause leakage, and, furthermore, the valve cannot be forced against its seat so as to injure the face of the valve or seat, as frequently happens in faucets in which the valve is positively pressed against its seat by a valve-stem or other actuating device.

I claim—

1. In a fluid-discharging apparatus, a valve-chamber provided with inlet and outlet openings, and a valve-seat surrounding the said outlet-opening and projecting into the valve-chamber, combined with a valve working in the said valve-chamber between the inlet and outlet openings thereof, the said valve consisting of a flexible disk and supporting-frame therefor, having guide-arms co-operating with the walls of the valve-chamber, the said disk being confined at its edges in the frame and having its entire surface exposed to the pressure of the fluid in the valve-chamber, and a movable faucet working in the outlet-opening of the valve-chamber, being disconnected from the valve, but engaging and unseating the same in its movement toward the valve-chamber, substantially as described.

2. The valve-chamber provided with inlet and outlet openings and a valve-seat surrounding the said outlet-opening and projecting into the valve-chamber, combined with a valve consisting of a flexible disk and supporting-frame therefor, having guide-arms co-operating with the walls of the chamber, the said disk being confined at its edges in the frame and having its entire surface exposed to the pressure of the fluid in the valve-chamber, and a movable faucet working in the outlet-

opening of the valve-chamber, disconnected from the valve, but engaging and unseating the same in its movement toward the valve-chamber, and a handle-lever pivoted upon said faucet and connected by a link with the valve-chamber, substantially as described.

3. The valve-chamber provided with a valve-seat having a guide-passage therein, and the extension of the said chamber beyond the said valve-seat, combined with a valve movable in the said valve-chamber and guided wholly by the walls thereof, and a movable faucet working in the said extension and having a projecting portion of smaller diameter working in the guide-passage in the valve-seat, the said faucet being disconnected from said valve and movable independently thereof, but engaging and unseating the valve in its movement through the guide-passage, the shoulder at the end of the said projecting portion of the faucet constituting a stop, limiting the movement of the faucet toward the valve-chamber, substantially as described.

4. The combination of the main cylindrical valve-chamber *a*, provided at one end with an inwardly-projecting seat, *a'*, having a guide-passage therethrough, and a coupling-piece, *c*, and coupling-nut connecting the chamber therewith, the said coupling-piece forming one end of the chamber and having an inlet thereto, combined with a valve consisting of a flexible diaphragm and supporting-ring therefor working in the said valve-chamber, and the movable faucet *e*, working in the guide-passage of the valve-seat, disconnected from the said valve and movable independently thereof, and an operating device connected with said movable faucet, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. T. MESSINGER.

Witnesses:

JOS. P. LIVERMORE,
H. P. BATES.