

L. BARBAS.
 APPARATUS FOR FORCING LIQUID OUT OF RESERVOIRS.
 APPLICATION FILED JUNE 20, 1908.

959,694.

Patented May 31, 1910.
 2 SHEETS—SHEET 1.

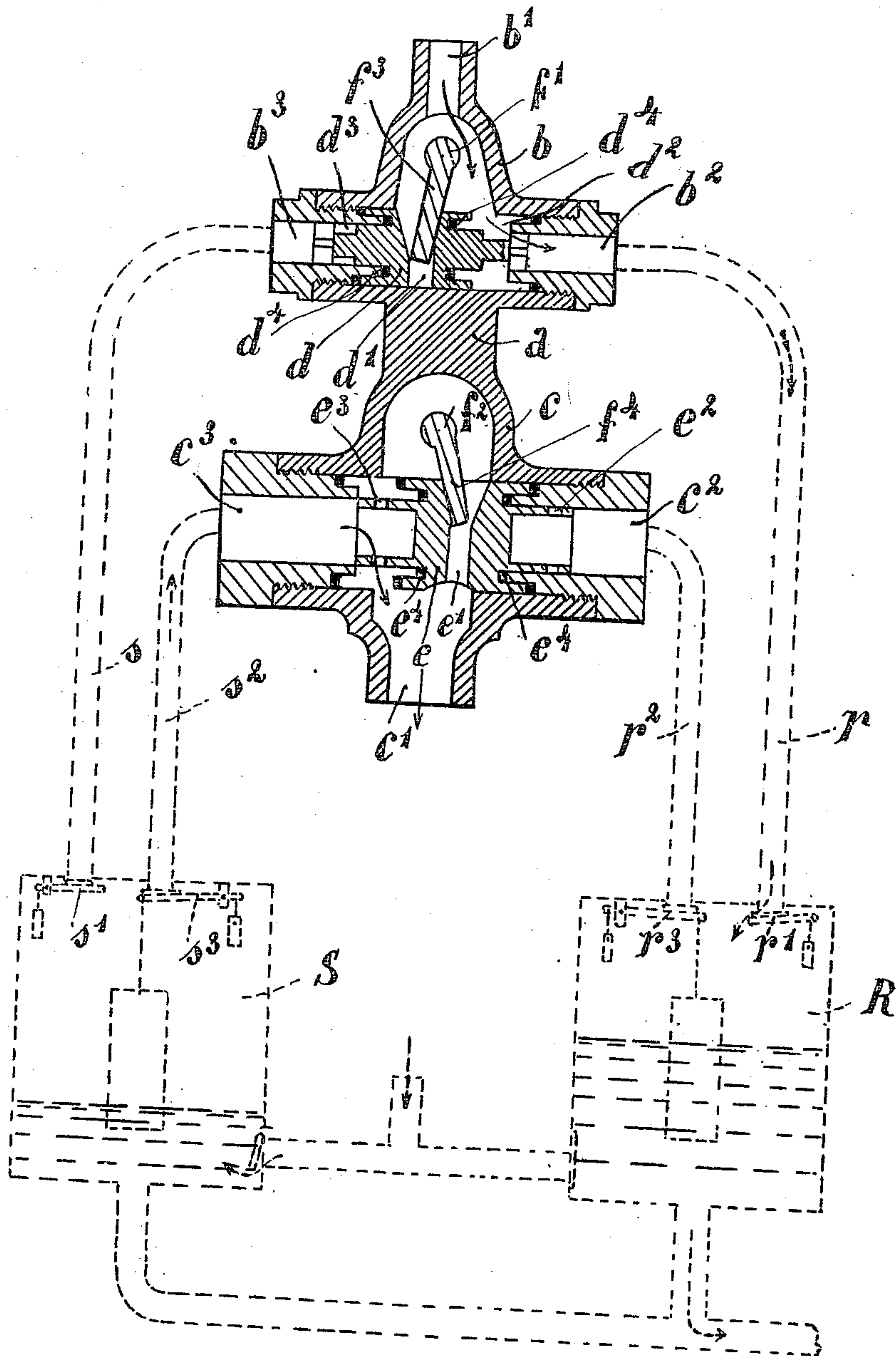


Fig. 1

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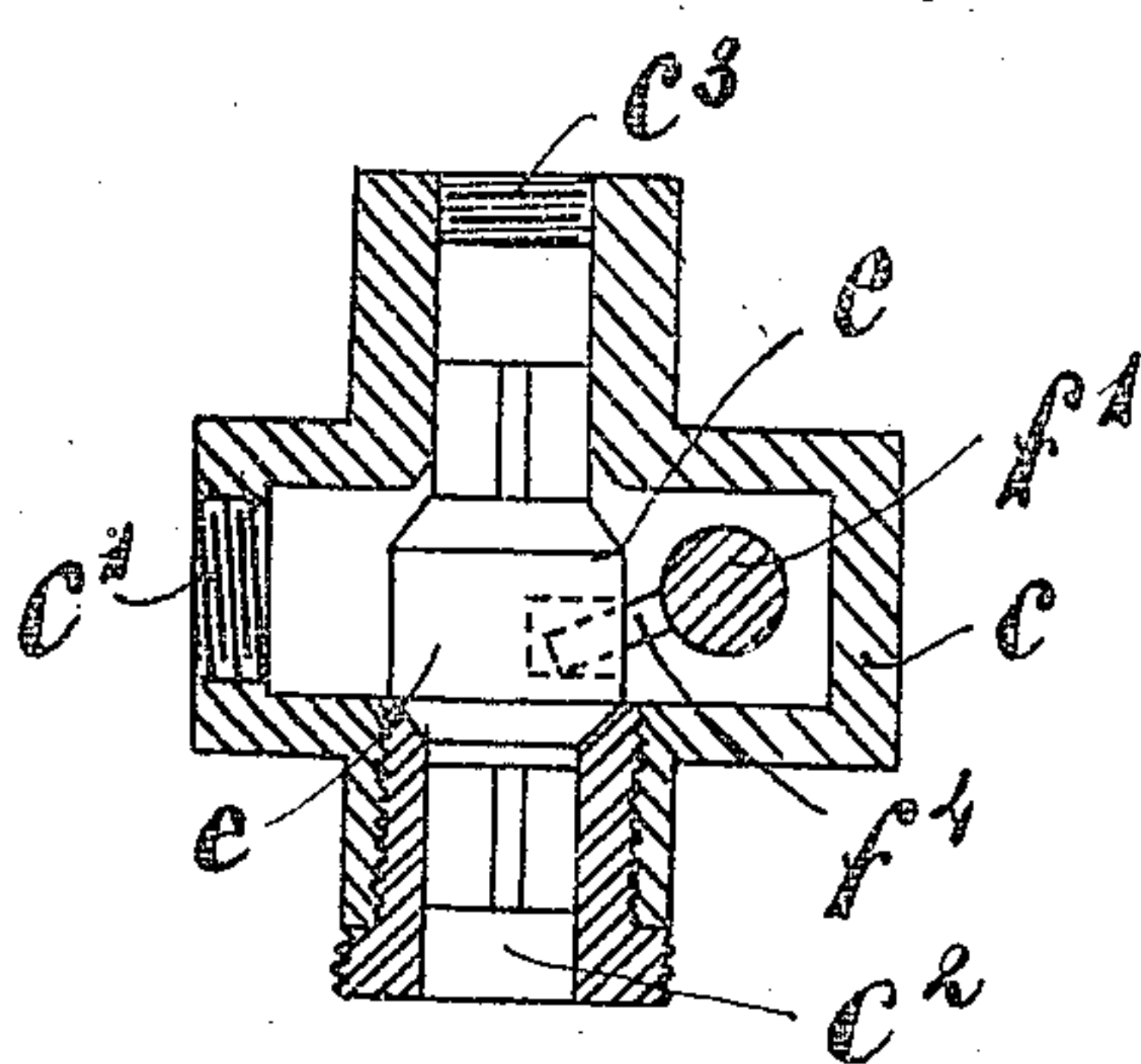
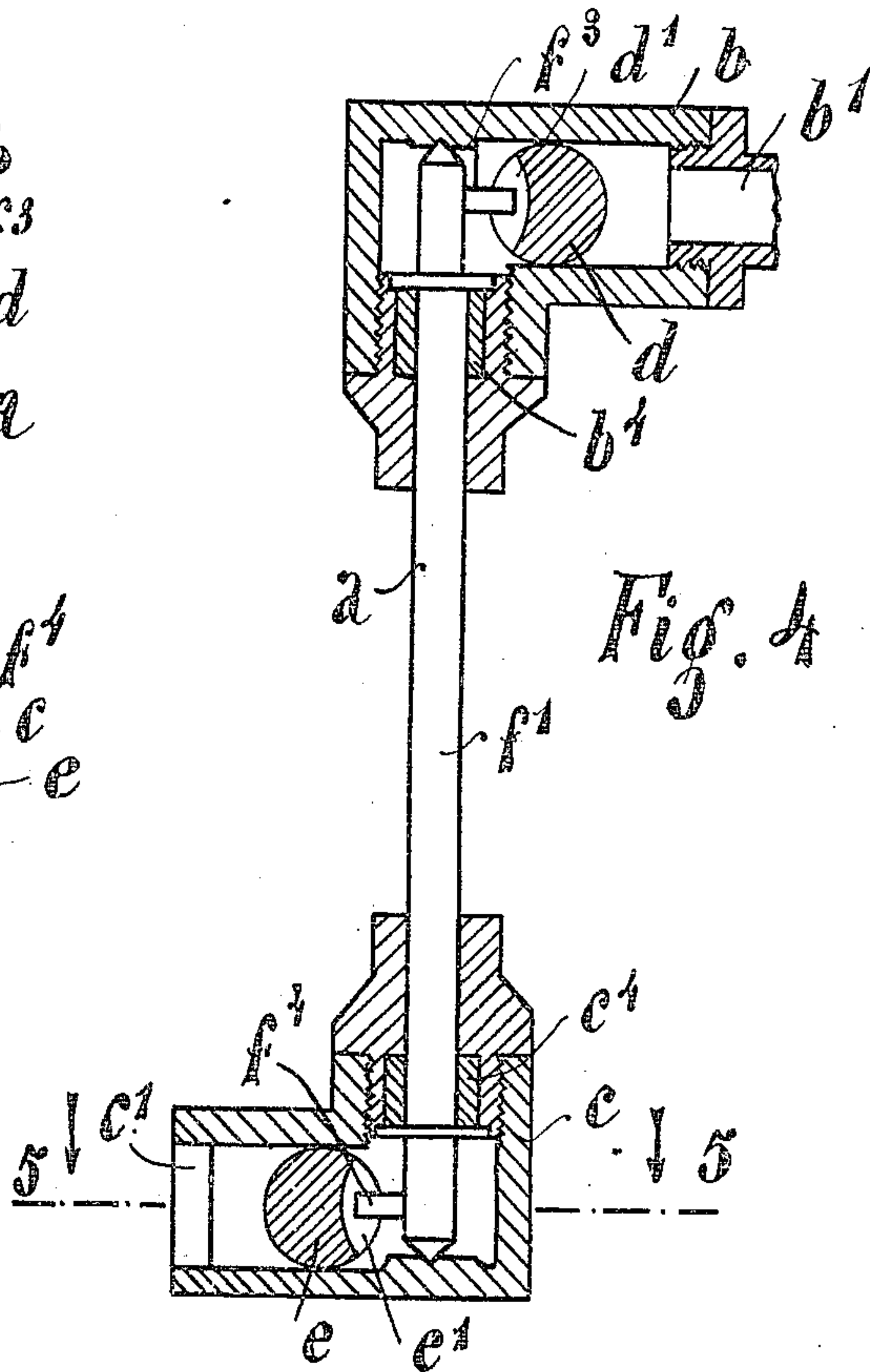
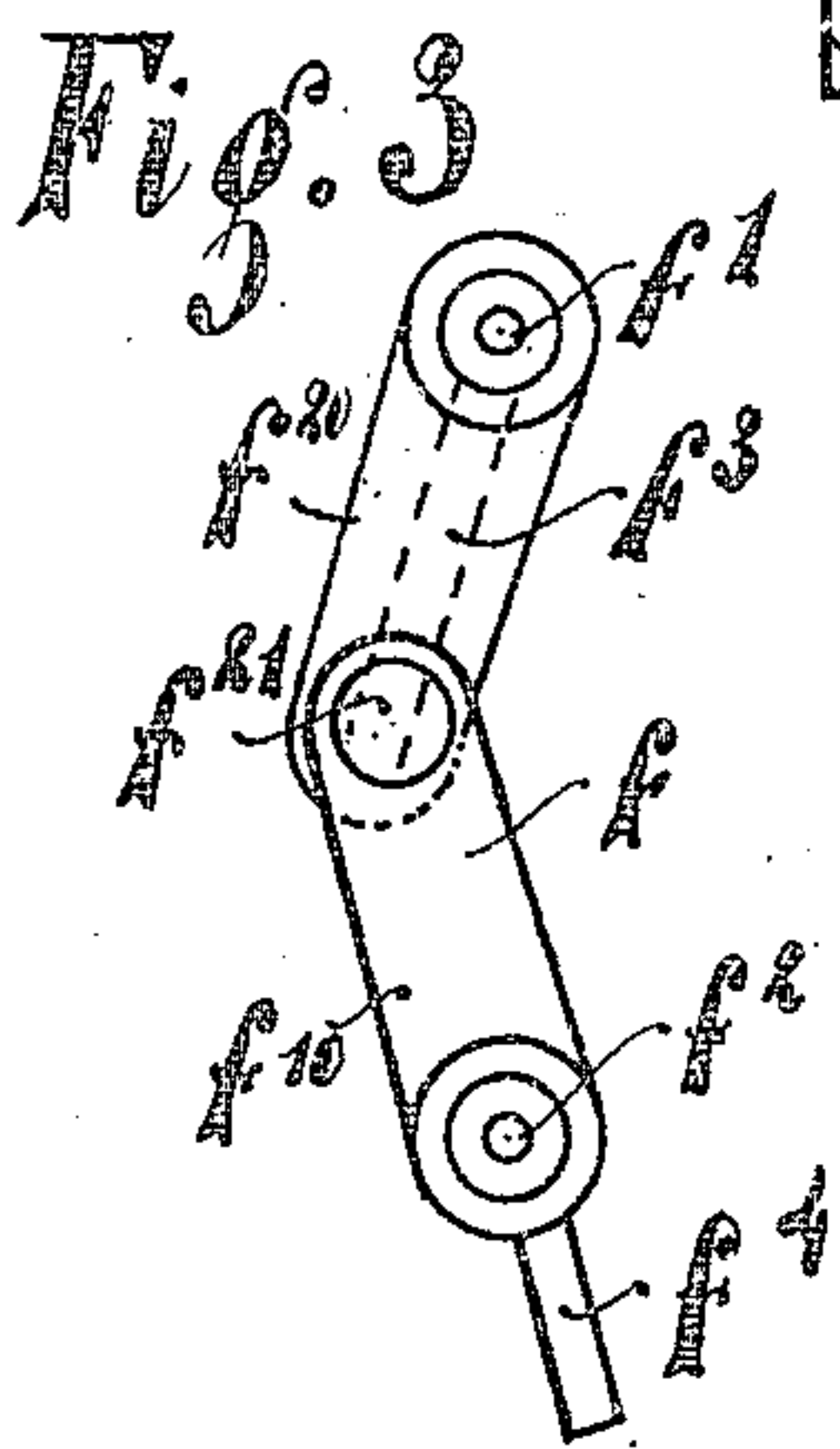
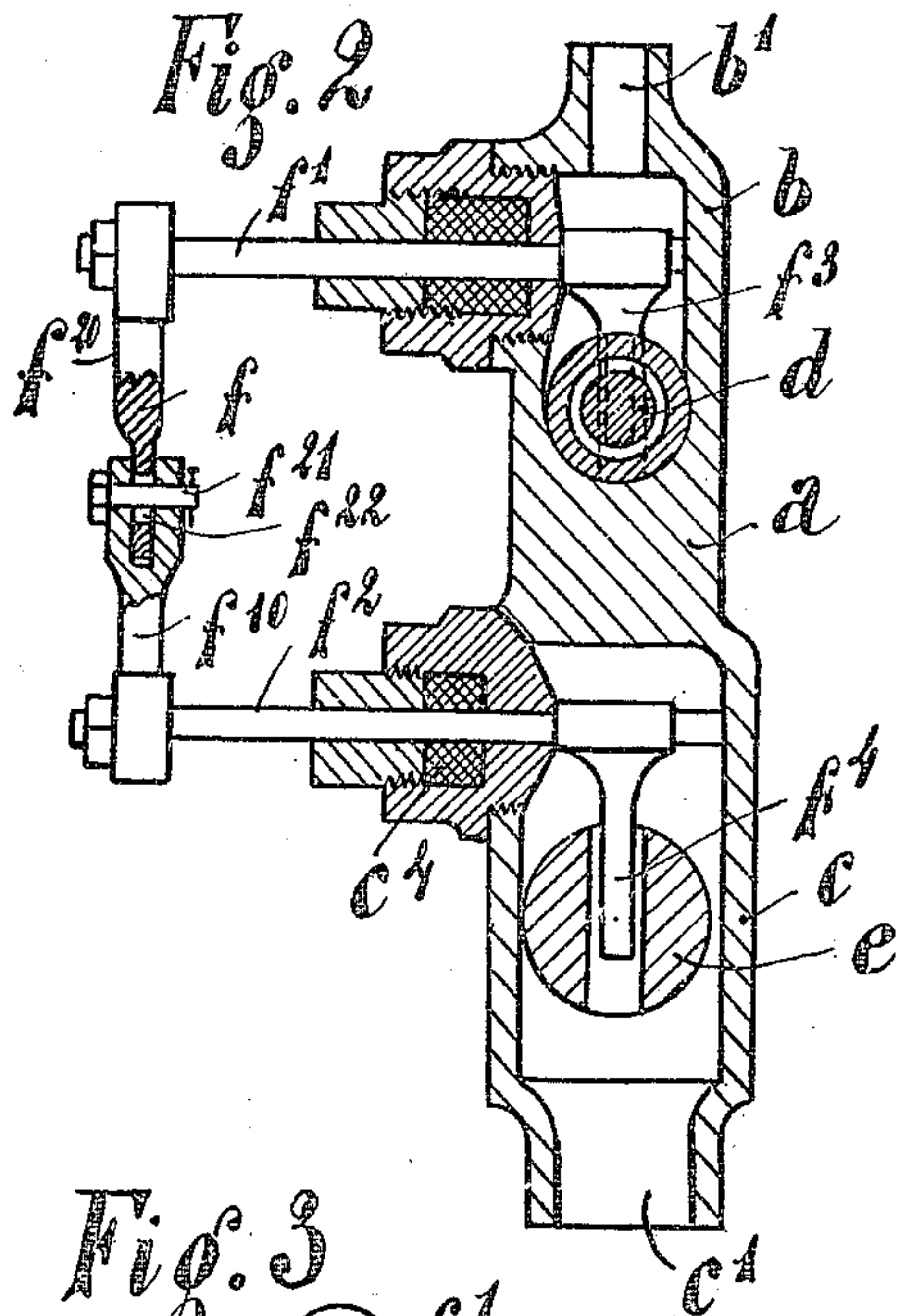
Inventor
 L. Barbac

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 In witness whereof
 H. H. H. H.

Inventor.
 L. Barbas

UNITED STATES PATENT OFFICE.

LÉONARD BARBAS, OF PARIS, FRANCE.

APPARATUS FOR FORCING LIQUID OUT OF RESERVOIRS.

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Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, LÉONARD BARBAS, a citizen of the French Republic, and resident of Paris, France, have invented new and useful Improvements in Apparatus for Forcing Liquid Out of Reservoirs, of which the following is a specification.

This invention relates to an apparatus for distributing gas or steam under pressure for forcing liquids out of vessels. The liquid may be of any kind and the fluid under pressure is supposed to be air under pressure.

The apparatus is essentially composed of a six-way cock separated in two parts, each part having a piston, one of which serves as motor piston and the other as distributing piston.

In the accompanying drawings the device is shown.

Figure 1 represents in section the distributing device connected with two tanks which contain the liquid. Fig. 2 is a transverse section through the distributing device. Fig. 3 represents in ground plan the connecting links. Fig. 4 shows in section a modified construction of the distributing device. Fig. 5 is a section on line 5—5 of Fig. 4.

According to Fig. 1 of the drawings the distributing device is mounted upon two tanks or reservoirs which may be of any suitable construction, having floats of convenient construction which however have nothing to do with the present invention. It is obvious that the distributing device could work without reservoirs as will be hereinafter explained.

The distributing device is composed of a casing *a* which is formed of two separate parts *b*, *c* of which each has three tubular joints *b*¹, *b*², *b*³ and *c*¹, *c*², *c*³ respectively, which are alternately closed or opened by means of pistons *d*, *e* which are connected the one with the other by the connecting links *f* whose pivots *f*¹, *f*² are mounted in the two parts *b* *c* respectively of casing *a* as shown in Figs. 1, 2 and 3. Each pivot *f*¹ and *f*² has an arm *f*³ and *f*⁴ respectively which arms penetrate into the slots *d*¹, *e*¹ of the pistons *d*, *e*, guiding thus said pistons in their casings.

The pistons *d*, *e* are of cylindrical shape and they are destined to alternately open, according to the position which they assume, the orifices of the tubular joints *b*² and *b*³ by the intermediary of the ring-shaped channels *d*² or *d*³ and of the tubular joints *c*² and *c*³ by the intermediary of the passages *e*² and

*e*³, in order to permit the inflow of the air under pressure into the reservoirs, and the escape of the air from said reservoirs. To insure the automatic working of the device the piston which serves as motor has a slightly larger section than the distributing piston. India-rubber rings *d*⁴, *e*⁴ serve as packings for said pistons. The pivots *f*¹ and *f*² are guided in the stuffing-boxes *b*⁴ and *c*⁴ which keep the same tight and they are connected at their outer ends by the connecting link *f* which consists of two links *f*¹⁰ and *f*²⁰ whose inner ends are connected by means of a pin *f*²¹ fixed upon the link *f*¹⁰ and guided in a slot *f*²² of link *f*²⁰.

The device operates as follows:—Suppose the valve pistons *d* and *e* are in the positions shown in Figs. 1, 2 and 3; the air under pressure arrives through the tubular joint *b*¹ of the part *b* of the distributor to flow through the channel or openings *d*² and through the tubular joint *b*² and pipe *r* into the reservoir R in opening the valve *r*¹. A second pipe *r*² closed by a float valve *r*³ leads from the reservoir R to the tubular joint *c*² of part *c* of the distributing device. The valve *r*¹ opens under the action of the air pressure and the liquid contained in reservoir R is forced out into the outflow pipe of the reservoir until the valve *r*³ is automatically opened by the float, so that now the air under pressure flows directly through pipe *r*² and tubular joint *c*² and pushes the valve piston *e* to the left so that the air under pressure can escape through the channel or openings *e*² and the tubular joint *c*¹. The valve piston *e* in moving to the left has taken along the arm *f*⁴ which communicating a revolving motion to the pivot *f*² revolves the pivot *f*¹ by means of the links *f*¹⁰, *f*²⁰ whereby the arm *f*³ is inversely moved and pushes in its turn its piston *d* in the opposite direction, so that the air under pressure is shut off from reservoir R. Said reservoir being in communication with the outer air through the tubular joint *c*¹ is filled again with liquid until the float *r*³ being gradually lifted by said liquid closes again its valve. The air under pressure flows now in through the channel *d*³ of valve piston *d* and pipe *s* into the reservoir S, the valve *s*¹ of said pipe opening automatically under the pressure exerted by the air so that the liquid contained in said reservoir S is forced out until the float opens its valve *s*³ so that the air under pressure can escape through the pipe

s^2 to flow into the distributing device by means of tubular joint c^3 to push aside the valve piston e whereby the tubular joint e^3 is brought in communication with pipe s^2 and the air under pressure flows out of the device. The reservoir S fills again as described with reference to reservoir R and the arm f^4 reverses again the piston d bringing thus the reservoir R again in communication with the supply of air under pressure. Thus, while one of the reservoirs is emptied, the other fills and vice versa, the reciprocating motion of the valve pistons d, e being effected automatically.

Figs. 4 and 5 represent a modified construction of the device, which is however based upon the same principle. The link connection is dispensed with and the two valves b and c are mounted upon the same axle f^1 . The casing b which is mounted upon the upper end of axle f^1 has three tubular joints b^1, b^2, b^3 which serve for distributing the air under pressure in connection with the valve piston d which has its slot d^1 with which engages the arm f^3 projecting from the axle f^1 . The casing c is mounted upon the lower end of axle f^1 and comprises the same parts as described and shown in Figs. 1, 2 and 3, that is to say, the tubular joints c^1, c^2, c^3 , the valve piston e having the slot e^1 and the arm f^4 projecting from the axle f^1 . The device operates in

the same manner as described with reference to Figs. 1 and 2, with the exception however, that axle f^1 directly shifts the two valve pistons d, e .

I claim:

A distributing device for gas, steam or air under pressure destined to force a liquid out of reservoirs comprising in combination: a valve casing with six tubular joints of which three serve for the motor part and the three others for the distributing part of the device, a piston for each set of three tubular joints having each a central slot and passages at both ends, and seats, each seat engaging the joint at that end of the piston toward which it faces, means for keeping the seats of said pistons tight, an axle for each piston revolvably mounted in the valve casing so that its outer end projects from the same, an arm upon the inner end of each axle engaging with the slot of the corresponding piston, and means for connecting the outer ends of said axles with one another so that the rectilinear motion of one piston is inversely transferred to the other piston, substantially as described and shown and for the purpose set forth.

LÉONARD BARBAS.

Witnesses:

HENRI BOETTCHER,
 H. C. COXE.