

(No Model.)

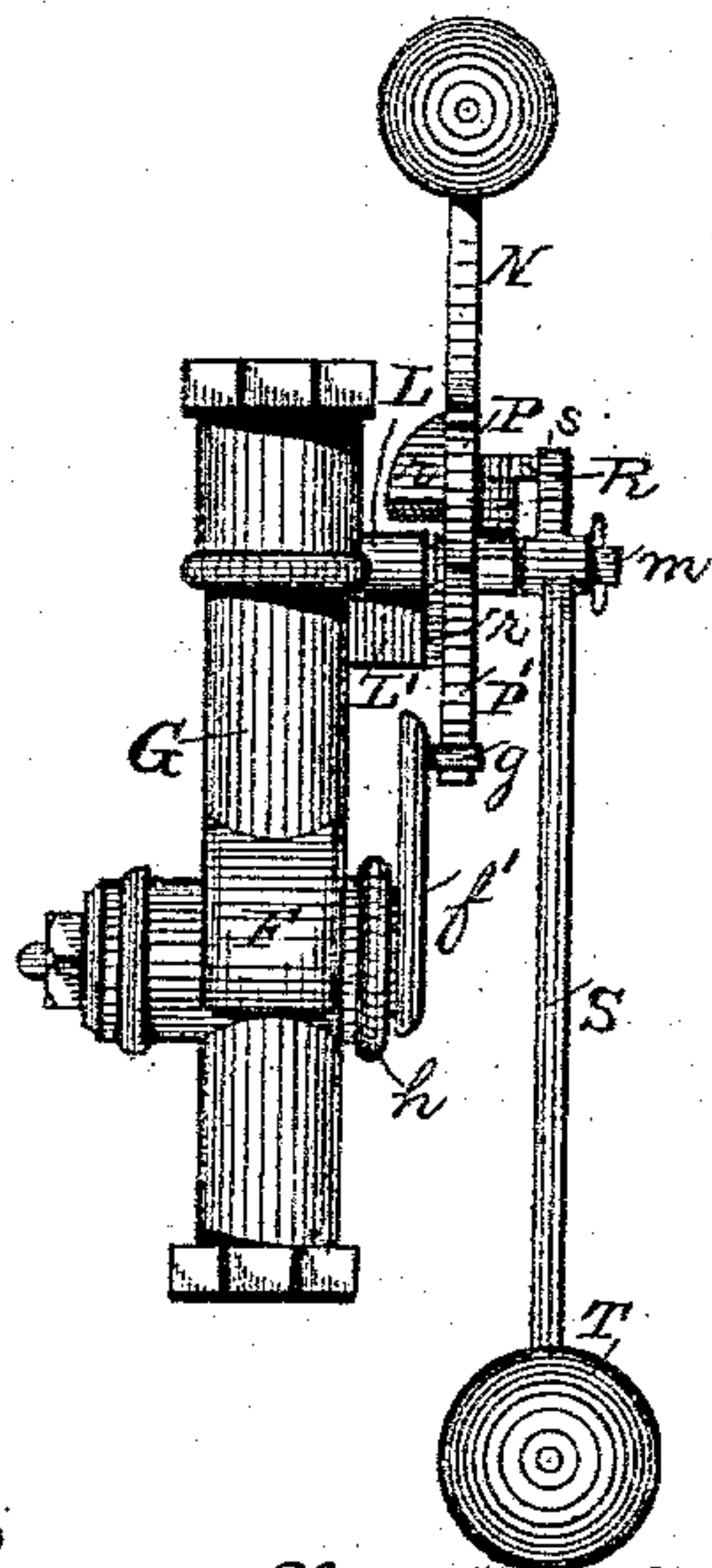
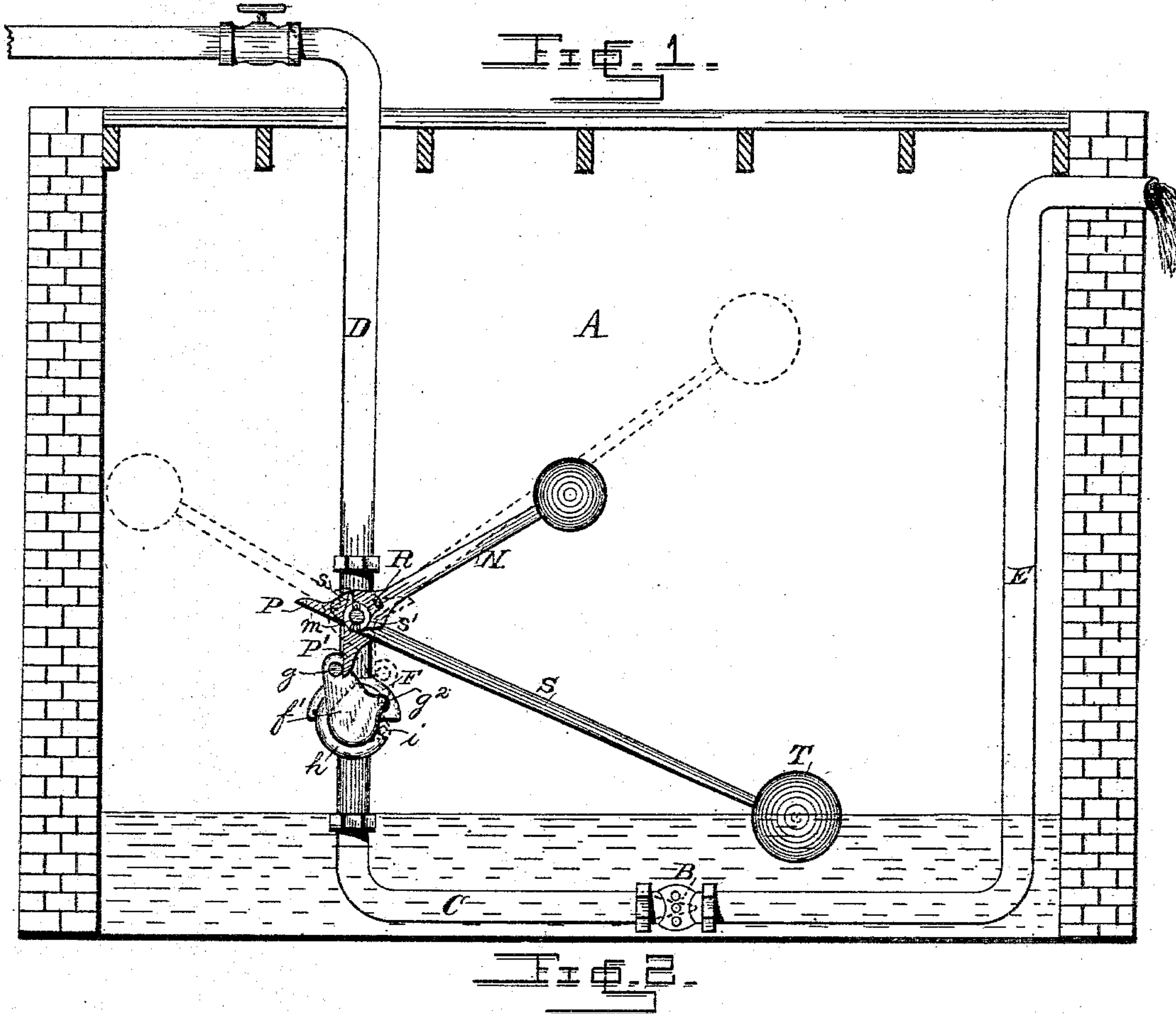
2 Sheets—Sheet 1.

C. M. & C. E. KEMP.

FLUID EJECTOR.

No. 356,647.

Patented Jan. 25, 1887.



Witnesses:
J. H. Blackwood,
R. G. Davis

Inventors
Clarence M. Kemp
& Charles E. Kemp
By their Attorney
Wm. H. Doolittle

(No Model.)

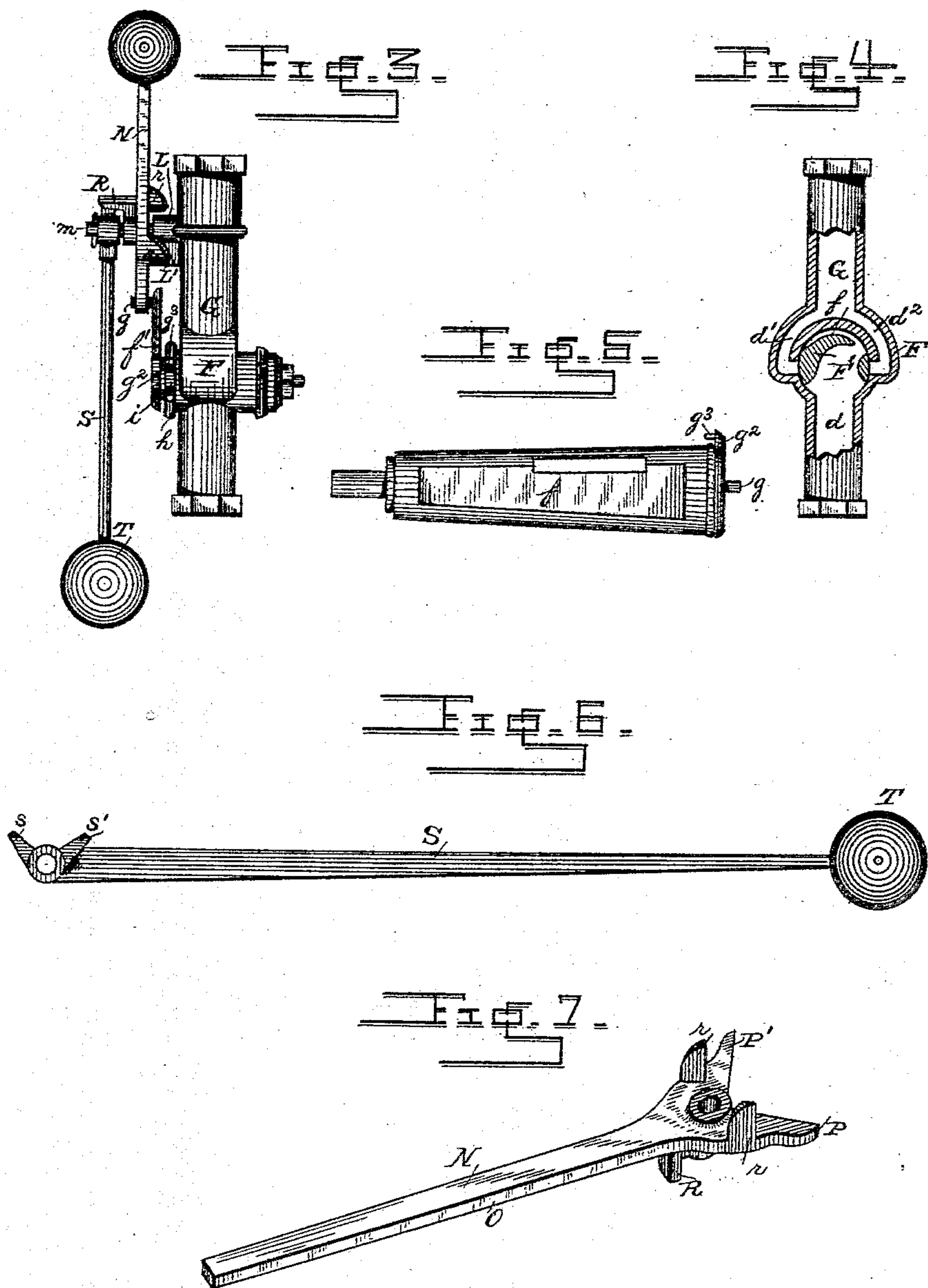
2 Sheets—Sheet 2.

C. M. & C. E. KEMP.

FLUID EJECTOR.

No. 356.647.

Patented Jan. 25, 1887.



Witnesses:
Jas. Blackwood.
R. W. Coig

Inventors
Clarence M. Kemp
& Charles E. Kemp
By their Attorney
Wm. H. Root

UNITED STATES PATENT OFFICE.

CLARENCE M. KEMP AND CHARLES E. KEMP, OF BALTIMORE, MARYLAND.

FLUID-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 356,647, dated January 25, 1887.

Application filed December 17, 1886. Serial No. 221,863. (No model.)

To all whom it may concern:

Be it known that we, CLARENCE M. KEMP and CHARLES E. KEMP, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Fluid-Ejectors; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to

10 which it appertains to make and use the same.

Our invention relates to improvements in fluid-ejectors; and it consists of parts and combinations of parts, as hereinafter described, and pointed out in the claims, whereby the valve governing the ejector is operated quickly when the fluid reaches a given height within a chamber in which the apparatus is located and closed quickly when the fluid falls, to give a sudden and effective pressure and cut-off ac-

20 tion to the ejector.

Our invention is illustrated in the accompanying drawings, in which Figure 1 is a front view of the device in connection with a well or tank, an ejector, and supply and discharge

25 pipes; Fig. 2, a side view of the valve-operating mechanism; Fig. 3, a similar view of the opposite side of the same; and Figs. 4, 5, 6, and 7, details.

In the drawings our device is shown as applied to a well or cellar for draining water therefrom, and A is a tank or box in which the apparatus is placed; but the apparatus is applicable to any receptacle from which it is desired to remove water or other liquid.

35 The device is entirely automatic in character, as will be seen by the following description of its parts and operation. B is an ejector of any ordinary form placed in the receptacle, to which is attached a pressure-supply pipe, C, connected with a water-service pipe, D, and a discharge-pipe, E, to be carried out under the pavement to the gutter or sewer, or any other point at which it is desired to discharge the water or other liquid.

45 F is a valve-seat located in a section, G, of the supply-pipe, and provided with three passages—one lower, *d*, and two side passages, *d'* *d''*. F' is a balanced plug-valve, (shown in detail in Figs. 4 and 5,) having a cut-out portion, *f*, and provided also with a cap, *f'*, having a

tappet, *g*, thereon, and an ear, *g''*, from the under side of which projects a pin, *g'''*. A head, *h*, formed on the valve-seat, and through which the valve-plug extends and against which the valve-cap *f'* bears, has a recess or cut-out portion, *i*, formed on one side thereof, in which the pin *g'''* moves and its motion limited, as hereinafter described. 55

Above the valve and on section G is formed a boss, L, and a lug, L'. To the boss L is secured a short stud, *m*. On this stud is pivoted a weighted lever, N, which is shown in detail in Fig. 7. It is composed of a long arm, *o*, to the end of which a weight may be secured in any suitable manner, and its opposite end 65 terminates in forked arms P P'. It is provided on its front face with a projecting lug, R, and on its rear face with lugs *r r*, which at the proper time bear against the lug L' on the section G. 70

The lever and all its parts, except the weight, are formed in one piece.

S is a float-lever, also pivoted on stud *m*, and at which end it is provided with short projections *s s'*, all in one piece with the lever, 75 and at the outer end with a float, T.

The operation of the device is as follows: Assuming that the supply-pipe is closed, as the water accumulates in the tank or receptacle in which the apparatus is located, it causes 80 the float T and float-lever to rise until one of the projections, *s*, reaches the lug R on the weighted lever, and thus as the float-lever continues to rise the weighted lever is brought to and finally carried beyond a perpendicular position, and, falling toward the opposite side, one of its forked arms, P, strikes the tappet *g* on the face of the valve-plug and opens the valve, so that water is suddenly and quickly admitted down the supply-pipe. The extent of the 90 movement of the weighted lever is controlled at the same time by one of the lugs, *r*, on the lever coming in contact with the lug L' on the section G. At the same time the extent of the movement of the plug is limited by 95 the pin *g'''*, extending from the back of the face-plate of the plug into the recess on the hub of the pipe, as above described, thereby allowing the valve to move only far enough to close and open completely. The valve when 100

opened permits the water to flow through it from the side passages of the seat, and thence through the bottom passage out the pipe again. The cut-out portion *f* of the valve lessens the area of frictional surface in contact with the valve-seat; also, when the valve is opened, as the water rushes with greater volume to the ejector than the latter can at once discharge, the cut-out portion equalizes the back-pressure on the valve by permitting the liquid to flow above it. Thus, by the reduction of the frictional surface of the valve, and the equal surfaces of contact being directly opposite each other, and the fluid under pressure entering through ports also so arranged, the balancing of the valve is maintained and ease and quickness of operation obtained.

It will be seen that the valve is not encumbered by any lever mechanism pivoted or keyed thereto, so that the same is free to act without the least resistance, and that in view of its balanced condition and the restrictions above described placed upon its movements and the movement of the weighted lever it is also free from all strain, jamming, and undue shock, which, when existing, soon render a valve stiff, uncertain, and inefficient in action. The ejector being thus put in action continues to eject the water from the receptacle through the discharge-pipe until the water therein recedes and is discharged and the float-lever falls, when a reverse movement of the weighted lever is produced, the opposite projections, *s'*, of the float-lever engaging with the single lug on the weighted lever, causing the latter gradually to reach the perpendicular position, then to fall back, its opposite forked arm, *P'*, engaging with the pin on the valve-plug, turning the plug, closing the valve, cutting off the supply, and stopping the operation.

In our apparatus but two levers are employed, having integral therewith all parts engaging and controlling the independent valve, thus reducing and simplifying the number of parts, decreasing the expense of construction, and increasing the efficiency of the device.

What we claim is—

1. The combination, with pressure and discharge pipes, and an intermediate ejector communicating with the cellar or receptacle to be drained, of a valve in the pressure-pipe, a weighted lever, and a float-lever, both pivoted to the pressure-pipe independent of but adapted to connect with the valve, said float-lever arranged to operate the weighted lever, whereby the valve is operated quickly when the liquid reaches a given point, substantially as described.

2. The combination, with the pressure-pipe, of a weighted lever and a float-lever, the latter arranged to operate the former, and each separately pivoted on a suitable support, and a valve in said pipe disconnected from said levers, but adapted to be operated by the weighted lever to produce a quick opening of the valve, substantially as described.

3. In a liquid-ejecting device, the supply-pipe provided with the valve-operating mechanism consisting of the weighted lever and float-lever, both disconnected from and supported independently of the valve, and each pivotally connected to said pipe, the weighted lever adapted and arranged to be operated by the float-lever, substantially as described.

4. The supply-pipe, in combination with a valve located therein, a weighted lever pivoted to said pipe and provided with a pin, *R*, and forked arms *P*, arranged to come in contact with said valve, a float-lever, also pivoted to the pipe and provided with forked arms *s*, arranged to come in contact with the pin *R* on the weighted lever, and thus operate the same, substantially as described.

5. In combination with the supply-pipe, the valve-seat formed therein and provided with a head having a recess, *i*, and a valve which is provided with a tappet, *g*, and a pin, *g'*, adapted to move in said recess, whereby the movement of the valve is limited, substantially as described.

6. In a fluid-ejecting device, the combination, with supply and discharge pipes and valve-operating mechanism, of the balance-valve provided with the cut-out portion *f*, substantially as and for the purpose described.

7. The supply-pipe provided with lug *L*, in combination with the weighted lever pivoted on said pipe, and provided with the lugs *r r'*, whereby the movement of the weighted lever is limited, substantially as described.

8. In combination with the supply-pipe provided with the stud *m*, arranged as shown, and a weighted lever, the float-lever pivoted on said stud and provided with forked arms to engage with said weighted lever, substantially as described.

In testimony whereof we affix our signatures in presence of witnesses.

CLARENCE M. KEMP.
CHARLES E. KEMP.

Witnesses:

E. F. LEIGH,
J. RIMBACH,
WM. RAINE,
F. VOLMYER.