

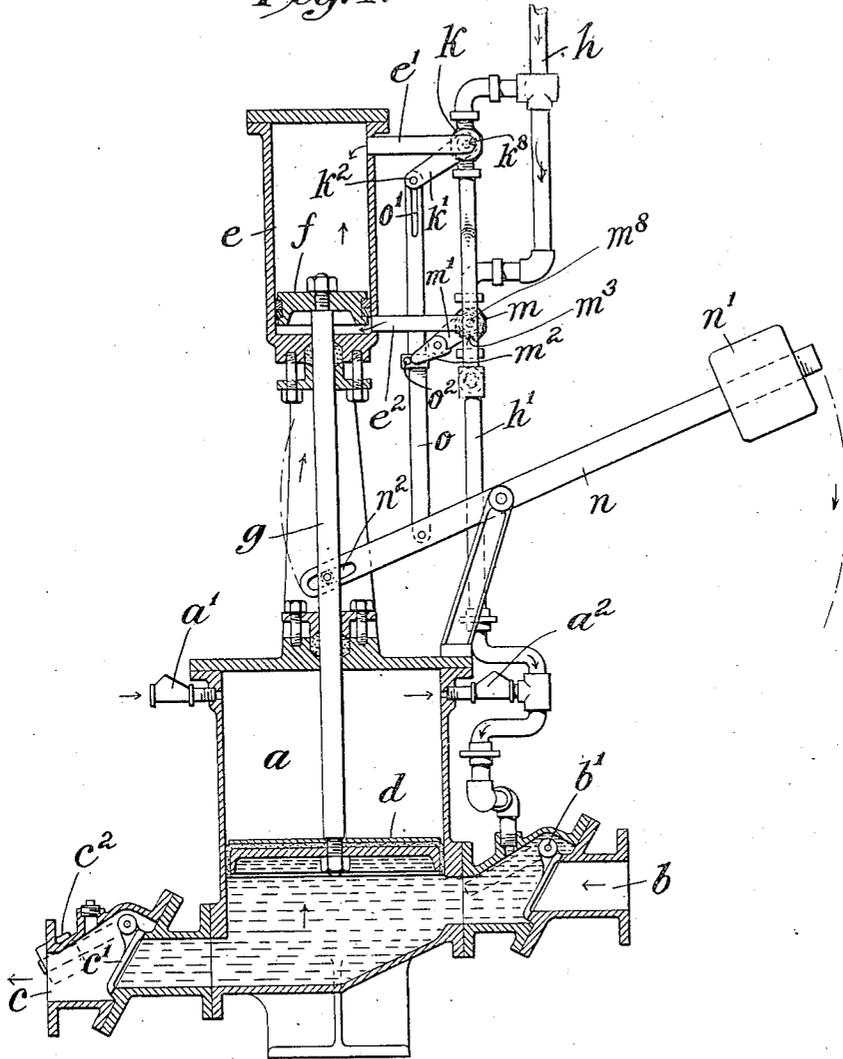
J. F. QUINN.
 AUTOMATIC DISCHARGER FOR SEWAGE, &c.
 APPLICATION FILED JAN. 26, 1906.

968,263.

Patented Aug. 23, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

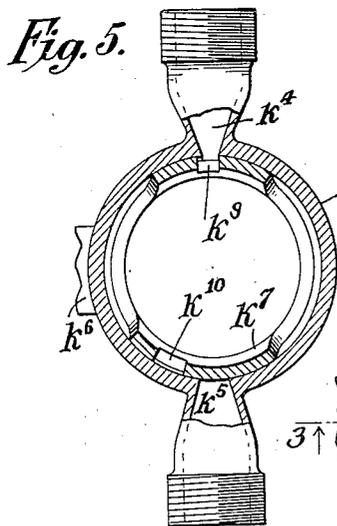
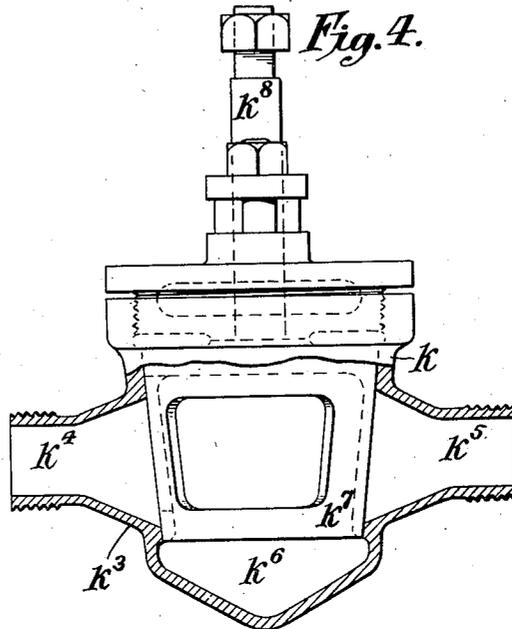
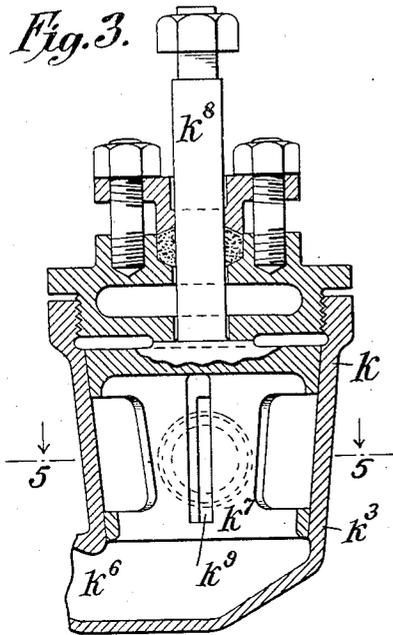
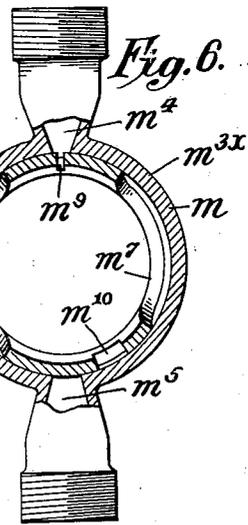
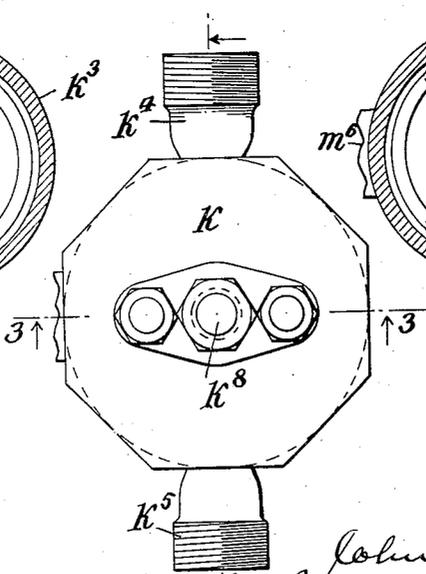


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN F. QUINN, OF WASHINGTON, DISTRICT OF COLUMBIA.

AUTOMATIC DISCHARGER FOR SEWAGE, &c.

968,263

Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed January 26, 1906. Serial No. 297,932.

To all whom it may concern:

Be it known that I, JOHN F. QUINN, a citizen of the United States, residing in the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Automatic Dischargers for Sewage, &c., of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to devices for discharging sewage or other fluid or semi-fluid substances against pressure as from a low point to a relatively higher point, as, for example, from the hold of a vessel to a point above or below the water line, or from the basement of a building to the sewer level, and has for its object to provide a device of this character which shall be automatic in operation, its action being determined by the accumulation of the fluid or semi-fluid mass in a receptacle provided therefor, shall be certain and reliable, shall be practically noiseless, shall be simple in construction, and shall involve no waste of power.

In accordance with the invention there is provided at a suitable point a receptacle into which the fluid or semi-fluid mass to be discharged is permitted to flow and from which it is ejected by the action of a piston driven by steam, water or air pressure from any suitable source or other powers, the movement of such piston as it rises with the accumulation of the sewage or other substance in the receptacle and as it falls under the application of the steam, water or air pressure to a power piston directly connected therewith determining the operation of the valves which control the admission of the steam, water or air to the power cylinder.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated in a convenient and practical form of apparatus, and in which,

Figure 1 is a view in vertical, central section of the improved apparatus; Fig. 2 is a view in elevation, on a larger scale, of one of the controlling valves; Fig. 3 is a view in vertical, central section of the valve shown in Fig. 2; Fig. 4 is a view of the same partly in elevation and partly in vertical,

central section on a plane at right angles to the plane of section of Fig. 3; Fig. 5 is a view in horizontal section on the plane indicated by the line 5—5 of Fig. 3; Fig. 6 is a view similar to Fig. 5, but illustrating another valve.

In the embodiment of the invention represented in the drawings, a tank or reservoir or receptacle *a*, placed at a suitable point to receive the sewage or other fluid or semi-fluid substance to be ejected, is provided with an inlet *b*, having an inwardly opening flap valve *b'*, and an outlet *c* having an outwardly opening flap valve *c'*, the latter being provided with a weighted arm *c²* which serves to prevent the accidental opening of the valve or the opening of the same except during the discharge of the contents of the reservoir or receptacle as hereinafter described. The reservoir is preferably cylindrical in cross section, although it might be otherwise formed if desired, and is provided near its top with an inwardly opening check valve *a'* and an outwardly opening check valve *a²*, for the purpose of venting the upper portion of the reservoir above the piston *d* which is arranged to move in the reservoir and is suitably packed.

In line with the reservoir *a* is mounted a power cylinder *e* having a piston *f* which is connected with the piston *d* by a rod *g*. The cylinder *e* is provided at its upper and lower ends respectively with ports and connections *e'* and *e²* through which air or steam or other fluid under pressure may be admitted to the cylinder and exhausted therefrom, the fluid under pressure being supplied from a suitable source through a common pipe *h*, while the exhaust from the cylinder *e* is discharged through a common exhaust pipe *h'* into the inlet of the reservoir *a*. The admission of the motive fluid to the upper end of the cylinder *e* for the purpose of driving it down and ejecting the fluid from the reservoir, and the exhaust from said cylinder as the piston rises is controlled by a valve *k*. It may not always be necessary to provide means for controlling the admission of the motive fluid to the lower end of the cylinder *e* and its exhaust therefrom, but there may be also a valve *m* for this purpose. The valve *k*, and the valve *m* also, if it be employed, are op-

erated by the movements of the piston rod g and for this purpose there is mounted upon a suitable support a lever n , sufficiently weighted, as at n' , to counterbalance the weight of the rod g and pistons d and f . The lever n has a pin and slot or other suitable engagement with the rod g , as at n^2 , and carries a link o to impart movement to the valves k and m through arms k' and m' secured to the stems of the valves k and m respectively. To permit the valve k to remain closed during the upward movement of the piston d and to provide for the opening thereof as the piston approaches the upward limit of its stroke, the link o may be slotted, as at o' , to engage a pin k^2 in the arm k' . To permit proper movement of the valve m , as hereinafter described, the arm m' may have a pivoted toe, as m^2 , to be operated by a projection o^2 carried by the link o . A spring m^3 , if desired, may also be applied to the stem of the valve m for the purpose of moving it in one direction.

A suitable internal construction of the valve k is shown in Figs. 2, 3, 4 and 5. As there shown, the valve shell or casing k^3 is provided with an inlet k^4 , an outlet k^5 , and a port k^6 for communication with the upper end of the cylinder e through the connection e' . Within the cylindrical body of the shell is mounted a rotatable, chambered valve plug k^7 , secured to the stem k^8 , to which the arm k' is secured. The wall of the chambered valve plug is provided with an inlet port k^9 and an outlet port k^{10} for coöperation with the inlet k^4 and outlet k^5 respectively. The valve m , if employed, likewise consists of a shell or casing m^8 having in the wall of its cylinder body an inlet port m^4 and an outlet port m^5 and a connection through its end, as at m^9 , with the port e^2 in the lower end of the cylinder e . The rotatable, chambered valve plug m^7 is likewise provided with an inlet port m^9 and an outlet port m^{10} , its open end communicating with the passage m^6 . It will be understood that the chambered valve plug m^7 is secured to the stem m^8 to which the arm m' is attached.

In the position of the parts represented in Fig. 1, with the pistons d and f at their lowest points, the accumulated contents of the receptacle a have been discharged. The valve k is then in such position as to place the upper end of the cylinder in communication with the exhaust h' , the valve m being then similarly positioned. As the sewage or other fluid or semi-fluid accumulates in the tank a , below the piston d , the latter rises, lifting the piston f , so that during its upward movement both parts e' and e^2 should be open to the exhaust to permit the displacement of the contents of the cyl-

inder e . The slot o' in the link o and the pivoted toe m^2 of the arm m' therefore permit the upward movement of the link o with the rod g , through the connection of the arm n , without disturbing the positions of the valves, but as the pistons approach the limit of their upward movement the lower end of the slot o' engages the pin k^2 in the arm k' and opens the valve k to admit steam or air or other fluid under pressure to the upper end of the cylinder e . The piston f is therefore driven down by the motive fluid, driving down with it the piston d and discharging the contents of the tank a through the valve e' . The position of the valve k during this movement, or during the first part thereof, is clearly indicated in Fig. 5. At a suitable point in the downward movement of the link o , with the pistons, the upper end of the slot o' engages the pin k^2 in the arm k' and shifts the valve k to place the port k^{10} in communication with the exhaust port h^5 . During most of the downward movement of the piston f , the valve m , if it be employed, maintains communication between the lower end of the cylinder e and the exhaust. But in case it should be desirable to cushion the downward movement of the parts, the valve m is moved into the position indicated in Fig. 6, with the port m^8 in communication with the inlet m^4 , by the action of the projection o^2 of the link o on the toe m^2 of the arm m' , so that a limited amount of the motive fluid is admitted to the lower end of the cylinder. The projection o^2 slips by the toe m^2 as it continues its downward movement, permitting the valve to be returned by the spring m^3 to exhaust position, in readiness for the upward movement of the piston. As the projection o^2 rises by turns the toe m^2 upon its pivot and the valve is therefore not affected.

It will now be understood that the improved device or apparatus is not only simple in construction but is certain and direct in operation, that it requires practically no attention and that it will continue to operate automatically in proportion to the accumulation in the tank of material to be ejected, so long as the necessary motive fluid is supplied. It will also be obvious that various changes in details of construction and arrangement can be made without departing from the spirit of the invention.

I claim as my invention:

A discharger for sewage, etc., comprising a receptacle having a valved inlet and a valved outlet, a discharge piston movable in said receptacle, a power cylinder, a piston in said cylinder connected to the piston in the receptacle, a controlling valve at the upper end of said cylinder, means operated

by the movements of the discharge piston to
actuate said valve, a second controlling
valve at the lower end of said cylinder, and
means operated by the movements of the
5 discharge piston to open said valve to ad-
mit the motive fluid to the lower end of the
cylinder to cushion the piston.

This specification signed and witnessed
this 18 day of January, 1906.

JOHN F. QUINN.

Signed in the presence of—

J. M. THOMAS,
W. F. JONES.