

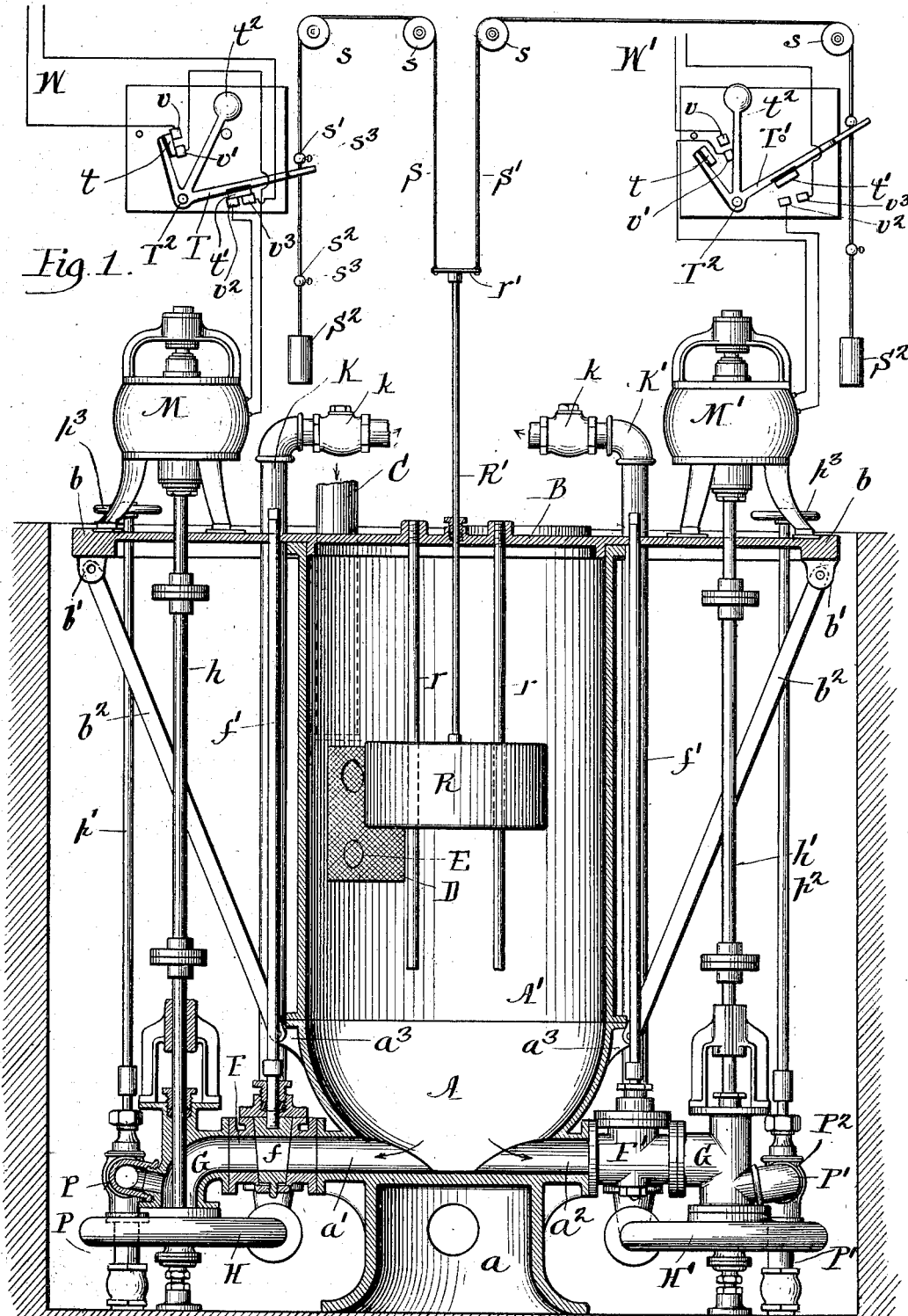
E. YEOMANS.

AUTOMATIC SEWAGE EJECTOR.

APPLICATION FILED MAY 5, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
 Fred [unclear]
 [unclear]

Edw. [unclear] Inventor.
 By [unclear] Attorneys.

E. YEOMANS.
AUTOMATIC SEWAGE EJECTOR.

NO MODEL.

APPLICATION FILED MAY 5, 1902.

2 SHEETS—SHEET 2.

Fig. 2.

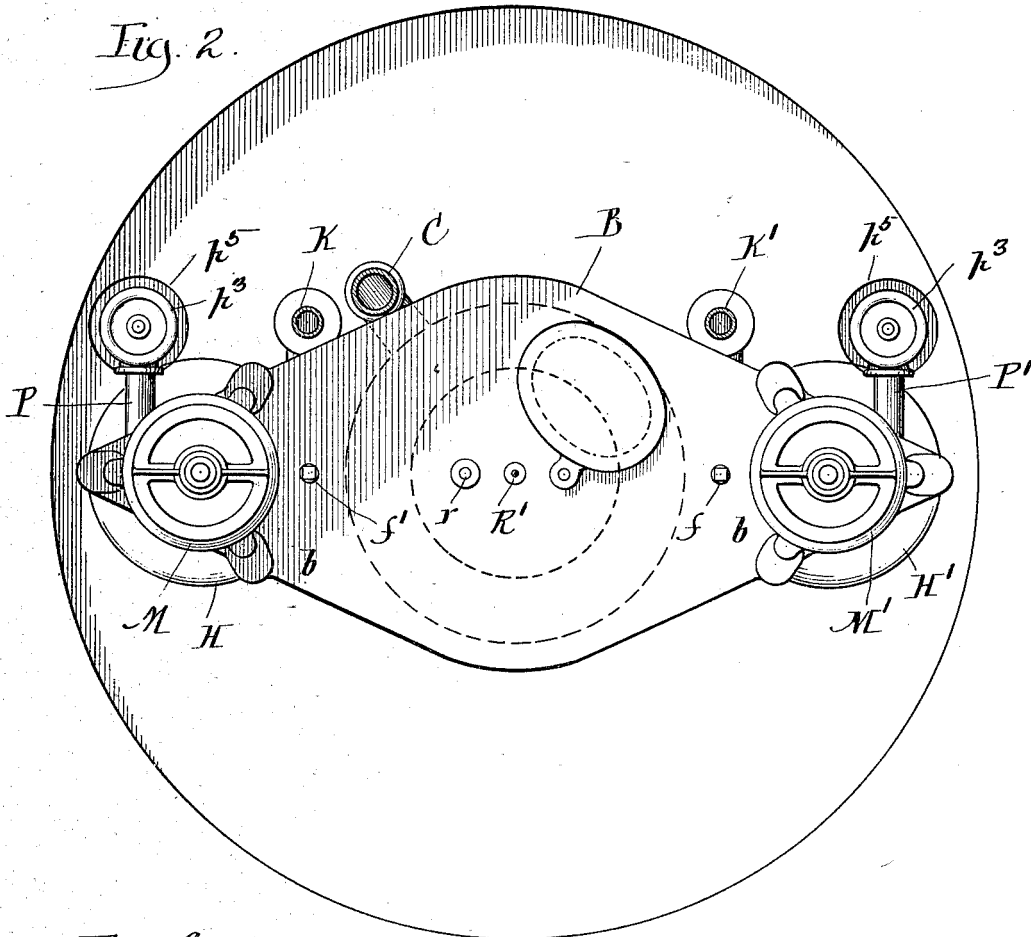
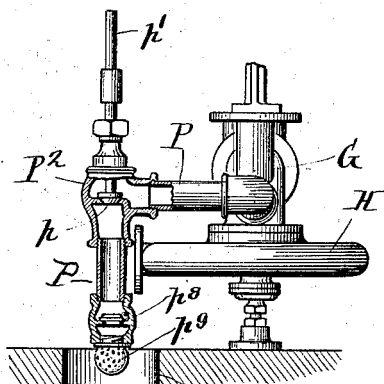
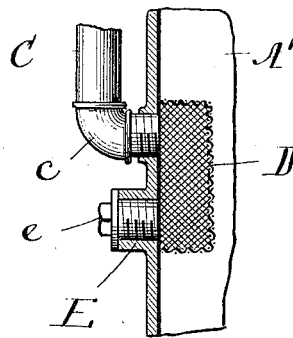


Fig. 3.



Witnesses:
Fred Grilard
Doris Hoffords

Fig. 4.



Inventor:
Edward Yeomans
 By *Price & Fisher*
 his Attorneys.

UNITED STATES PATENT OFFICE.

EDWARD YEOMANS, OF CHICAGO, ILLINOIS.

AUTOMATIC SEWAGE-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 735,430, dated August 4, 1903.

Application filed May 5, 1902. Serial No. 105,899. (No model.)

To all whom it may concern:

Be it known that I, EDWARD YEOMANS, a citizen of the United States, residing at Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Sewage-Ejectors, of which the following is declared to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention is designed to provide an improved apparatus which while susceptible of use in other situations is more especially intended for pumping sewage from buildings having basements below the level of the sewer.

The invention consists in the novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view in central vertical section, parts being shown in elevation, through an apparatus embodying my invention. Fig. 2 is a plan view, certain parts being omitted. Fig. 3 is a detail view, partially in elevation and partially in vertical section, of one of the centrifugal pumps located at the base of the apparatus and adjacent parts. Fig. 4 is a detail view in vertical section of a part of the main tank or reservoir at the point at which the sewage will be admitted thereto.

The apparatus is shown in the accompanying drawings as set within a pit or chamber in the basement of the building from which the sewage is to be removed, this arrangement of the apparatus being preferable for many reasons. The sewage-receiving tank or reservoir is formed of a base-section A and a cylindrical body A', over which extends a cover B. The sections A and A' have abutting flanges whereby the sections will be securely bolted together, and the cover B may be held in place in any convenient manner. As shown, the cover B is formed with lateral extensions *b*, whereon rest the electric motors whereby the pumps are driven, and the ends of the extensions *b* are formed with depending lugs *b'*, to which are connected the upper ends of the brace-rods *b²*, the lower ends of these rods being bolted to lugs *a²*, that project from the sides of the base-section A of

the reservoir. A pedestal or support *a* is shown as cast in piece with the section A, and from the bottom of the section A, which is of conoidal shape, leads the discharge-pipes *a'* and *a²*, through which the sewage will be discharged from the reservoir.

C designates the induction-pipe, by which sewage will be admitted to the reservoir. As shown in Fig. 4, this pipe C is connected to the reservoir by a threaded elbow *c*, and over the mouth of the elbow and within the reservoir is placed a foraminous or wire hood or screen D, adapted to arrest any large bodies or matter that might otherwise tend to clog the reservoir or the pumps through which the sewage is discharged. In the side of the reservoir is formed a hand-hole E, normally closed by a plug *e*, this hand-hole serving to permit the removal from the hood or screen D of any matter that may have lodged therein.

In the preferred form of the invention the reservoir is formed, as shown, with two discharge-pipes at its bottom, and with each of these pipes is connected a pump, the purpose of this construction being to enable the discharge from the reservoir to be effected through either one or both of the discharge-pipes, as circumstances may require. The pumps, valve mechanism, &c., shown at each side of the reservoir are the same.

To the discharge-pipes *a'* and *a²* are connected, respectively, the valve-casings F and F', each of these valve-casings being provided with a valve *f*, adapted to control the flow of sewage through the pipe with which the corresponding valve-casing is connected. From the valves *f* lead upwardly the rods *f'*, that preferably pass through the extensions *b* of the cover B, the ends of the rods *f'* being squared to permit them to be readily turned when the valves *f* are to be opened or closed. To each of the valve-casings F and F' is connected an elbow-casting G, through which the sewage will be conducted to the corresponding centrifugal pump H or H'. The peripheries of the pumps H and H' are connected by suitable elbows or couplings to the discharge-pipes K and K', respectively, through which the sewage will be carried away to the sewer. Suitable check-valves within check-valve casing *k* will be interposed in the discharge-pipes K and K' to prevent the back-

flow of the sewage. From the pumps H and H' lead upwardly the shafts h and h' , whereby the pumps will be driven, the upper ends of these shafts h and h' passing through suitable holes in the cover B and being directly coupled to the shafts of the electric motors M and M', respectively, so that, in effect, the centrifugal pump and motor are mounted upon the same shaft. To the elbow-castings G are connected, respectively, the pipes P and P', in the sections of which pipes are interposed valve-casings P², the ports of which are controlled by valves p . From the valves p lead upward the valve-rods p' and p'' , that pass through the extensions of the cover B and are fitted with hand-wheels p^3 , whereby the rods may be turned to effect the opening and closing of the valves p . The lower ends of the pipes P and P' are turned downwardly and toward the pockets p^5 in the base of the pit wherein the apparatus is set in order to enable the pipes to withdraw from the pit any water that may accumulate therein. The ends of pipes P and P' are provided, preferably, with check-valves p^8 and strainers p^9 , the purpose of the check-valves being to hold sufficient water within the pipes P and P' to "prime" the centrifugal pumps when it is desired to withdraw water through the pipes P and P'.

The motors M and M' may be of any suitable type or construction, although I prefer to employ electric motors and to mount them upon the extensions of the cover B and directly above the pumps H and H', as shown. Within the reservoir is placed a float-valve R, that consists, preferably, of a closed sheet-metal drum through which passes the guide-rods r , that depend from the cover B. To the float R is connected a rod or stem R', having a cross-head r' , to which are connected the cables S and S', that pass around pulleys s and have weights S² connected to their ends. Upon the cables S and S' are mounted the adjustable stops s' and s'' , these stops consisting, preferably, of metal balls through which the cables S and S' pass, the balls being formed with threaded openings to receive the set-screws s^3 . The cables S and S' pass through the arms of the switches T and T', respectively, these arms being arranged between and in the path of travel of the stops or balls upon the cables. Each of the switches T and T' is pivoted, as at T², and is furnished with two contact-plates t and t' and preferably also with a weighted arm t^2 . The contact-plates t are adapted to connect for passage of current the electric terminals v and v' , while the contact-plates t' are adapted to connect the terminals v^2 and v^3 , these several terminals being located in the electric circuits W and W', that lead to the motors M and M', respectively.

From the foregoing description the operation of my improved apparatus will be seen to be as follows, it being assumed that the stops or balls upon the cables S and S' have

been adjusted to relative positions shown in the drawings. Sewage having been delivered into the reservoir, the float R will rise, thereby causing the ball or stop s' to contact with the arm of the switch T and rock the switch to the position shown in Fig. 1 of the drawings, at which time the contact-plates t and t' of the switch will close the electric terminals interposed in the circuit W. Current will then pass to the motor M, causing the motor to effect revolution of the centrifugal pump H, and sewage will then pass from the discharge-pipe a' through the pump H and up through the discharge-pipe K to the sewer. It will be understood, of course, that at such time the valves p of the valve-casings P², that are interposed in the pipes P and P', will be closed. If the amount of sewage delivered to the reservoir is in such quantity as not to exceed the capacity of the pump H, the pump will continue to operate until the float R descends to such extent as to cause the stop or ball s^2 on the cable S to engage the arm of the switch T and swing the switch to a position opposite that shown in Fig. 1 of the drawings, thereby breaking the connection between the electric terminals that are interposed in the circuit W, that leads to the motor M. When this occurs, the motor M and the pump H will cease to operate. If, on the other hand, the supply of sewage delivered to the reservoir be in excess of the capacity of the pump H, then the float R will continue to rise within the reservoir until the uppermost stop or ball on the cable S' engages with the arm of the switch T' and moves said switch from the open to the closed position. When the switch T' is thus moved, electric current will pass to the motor M', and this motor will bring into action the centrifugal pump H', thereby causing sewage to be withdrawn from the reservoir also by the pump H', whence it will be discharged by the pipe K' to the sewer.

In the event of an accumulation of water in the basement of the building or in the pit wherein the reservoir is located the operator will turn either or both of the valve-rods f' , so as to close communication between one or both of the pumps H and H' and the reservoir and will then turn the valve-rods p' or p'' , or both, so as to open the valve or valves p . If now the switch T or T' be in closed position, the corresponding motor M or M' will operate the corresponding centrifugal pump and will cause the water to be drawn from the pit into the centrifugal pump or pumps at such time in action, whence it will pass by the discharge pipe or pipes to the sewer.

An advantage of my present invention is that a comparatively small pump driven by an electric motor requiring but a small amount of current may be used for discharging the normal accumulation of sewage from the reservoir, while in cases of emergency the second pump will be brought into operation to relieve the reservoir from any excess amount of sewage that may be delivered thereto.

Another advantage of the invention is that in event of any accumulation of water within the basement or pit wherein the reservoir is contained the pump or pumps may be at once
5 utilized to effect the discharge of such water into the sewer.

A still further object of the invention is that the apparatus, being self-contained, can be set up at any convenient location and without the necessity of building cisterns of masonry or the like to receive the sewage.

It is obvious that the precise details of construction above set out may be varied without departing from the spirit of the invention and that features of the invention may
15 be employed without its adoption as an entirety. It will be seen also that while the apparatus is especially designed for the removal of sewage it may be utilized for other
20 purposes.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus of the character described
25 comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, mechanism for driving said pumps and means controlled by the height of liquid within
30 the reservoir arranged to automatically and successively start and stop said pumps.

2. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, mechanism for driving said pumps, a float within said reservoir, independent devices for starting and stopping said pumps, and connections leading from said float arranged to successively actuate said independent
40 starting and stopping devices.

3. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, individual motors for actuating said pumps, starting and stopping devices for said motors and means controlled by the height of liquid within the reservoir arranged to
50 successively actuate said starting and stopping devices.

4. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, mechanism for driving said pumps, a float within said reservoir, independent devices for starting and stopping said pumps, and connections leading from said float for
55 actuating said independent starting and stopping devices, said connections being provided with adjustable devices whereby the relative operation of said pumps may be accurately controlled.

5. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, indi-

vidual pumps connected to said discharge-pipes, mechanism for driving said pumps, independent starting and stopping devices for
70 said driving mechanism, a float controlled by the liquid within said reservoir and connections leading from said float and provided with stops or projections for engaging said independent starting and stopping devices. 75

6. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, individual electric motors for driving
80 said pumps, circuit-controlling switches for said motors, a float within said reservoir and independent connections leading from said float and arranged to shift said circuit-controlling switches. 85

7. An apparatus of the character described comprising a reservoir having an induction-pipe and having plural discharge-pipes, individual pumps connected to said discharge-pipes, independent electric motors for driving
90 said pumps, independent circuit-controlling switches for said motors, a float within said reservoir and individual cables connected to said float and provided with adjustable stops or projections for actuating said
95 switches.

8. An apparatus of the character described comprising a reservoir having an induction-pipe and having a discharge-pipe at its bottom, a horizontally-disposed centrifugal pump
100 located at the bottom of but outside of said reservoir and connected to said discharge-pipe, a vertically-disposed shaft leading upwardly from said centrifugal pump to a point adjacent the top of the reservoir and upon
105 which shaft said centrifugal pump is mounted, a superposed electric motor coupled to the upper end of said shaft and means controlled by the height of liquid within said reservoir for automatically starting and stopping said
110 pump.

9. An apparatus for the discharge of sewage or the like comprising a closed metal reservoir adapted to be set within a pit, an induction-pipe opening into said reservoir, a discharge-pipe leading from the bottom of said
115 reservoir, a centrifugal pump located outside said reservoir at its bottom, a vertically-disposed shaft connected to said pump and leading upward to a point adjacent the top of the
120 reservoir, an electric motor mounted on said pump-shaft, a switch controlling the circuit through said motor, a float within said reservoir and connections between said float and the switch whereby said switch is directly
125 controlled by said float.

10. An apparatus of the character described comprising a reservoir adapted to be set within a pit, said reservoir having an induction-pipe and having plural discharge-pipes at its
130 bottom, individual pumps located outside said reservoir and adjacent its bottom and connected respectively to said discharge-pipes, shafts extending vertically from said indi-

vidual pumps, electric motors arranged above said pumps and coupled directly to said shafts and means controlled by the height of liquid within the reservoir for automatically starting and stopping said motors.

11. An apparatus for ejecting sewage from points below the sewer-level comprising a metal reservoir adapted to be set within a pit, said reservoir having an induction-pipe and having at its bottom plural discharge-pipes, individual centrifugal pumps located outside said reservoir but adjacent its bottom, each of said pumps being connected to a corresponding discharge-pipe, individual superposed motors connected to said individual pumps, individual valves arranged in the discharge-pipes intermediate between the bottom of the reservoir and the pumps and means for controlling the action of the individual pumps by the height of liquid within the reservoir.

12. An apparatus for ejecting sewage from points below the sewer-level comprising a reservoir adapted to be set within a pit, said reservoir having an induction-pipe and having a discharge-pipe at its bottom, a centrifugal pump located outside of said reservoir but adjacent its bottom and connected to the discharge-pipe of the reservoir, a valve for controlling the flow of liquid from said reservoir into said pump, a supplemental pipe adapted to connect said pump with the lower part of the pit wherein the reservoir is placed, a valve for controlling the flow of liquid through said supplemental discharge-pipe and a superposed motor for driving said centrifugal pump.

13. An apparatus of the character described comprising a reservoir adapted to be set within a pit, said reservoir having an induction-pipe and having at its bottom plural discharge-pipes, individual pumps located outside of said reservoir at its bottom, said pumps being connected to said discharge-pipes, shafts leading upwardly from said pumps to the top of the reservoir, and individual motors connected to said shafts.

14. An apparatus for ejecting sewage from points below the sewer-level comprising a reservoir adapted to be set within a pit, said reservoir having an induction-pipe and having at its bottom individual discharge-pipes, individual pumps located outside of said reservoir at its bottom, said pumps being connected to said discharge-pipes, individual superposed motors whereby said pumps are driven, a supplemental discharge-pipe leading from one of said pumps to a point outside of said reservoir, individual valves for controlling the flow of liquid from the reservoir to the pumps, a valve for controlling the flow of liquid through said supplemental discharge-pipe to the pump and superposed mechanism for driving said pumps.

15. An apparatus of the character described comprising a reservoir formed of a base-section having a discharge-pipe and a pedestal cast therewith and having a body-section secured thereon, a cover extending over said reservoir and having a lateral extension, a motor mounted upon said cover extension, a rotary pump located at the base of said reservoir and connected with its discharge-pipe, and a shaft leading upward from said pump through said cover extension to said motor.

16. An apparatus of the character described comprising a reservoir formed of a base-section having a pedestal and discharge-pipes cast in piece therewith, a body-section secured to said base-section, a cover extending over said body-section and provided with lateral extensions, and brace-rods connecting said cover extensions to said reservoir.

17. An apparatus of the character described comprising a reservoir, an induction-pipe opening into said reservoir, a foraminous hood within said reservoir and extending over the opening of said induction-pipe, a hand-hole in the wall of said reservoir opening into said hood and a plug for closing said hand-hole.

EDWARD YEOMANS.

Witnesses:

GEO. P. FISHER, Jr.,
ALBERTA ADAMICK.