

March 17, 1925.

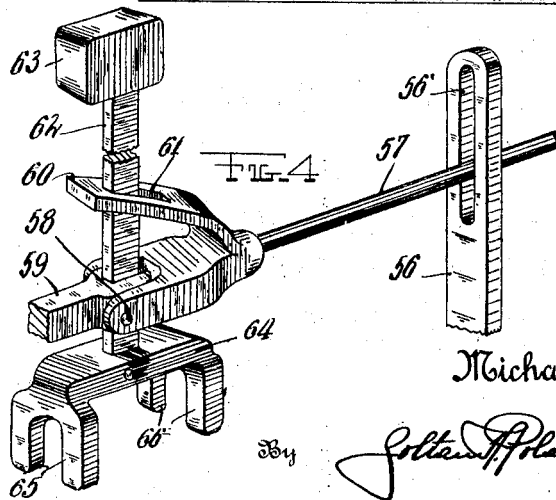
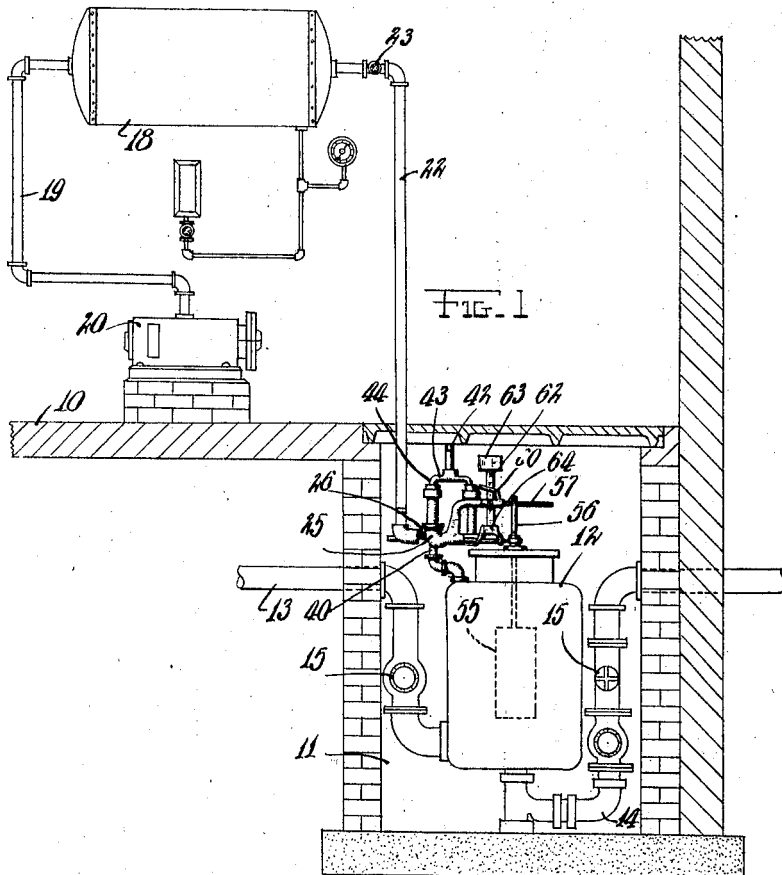
1,530,197

M. J. O'BRIEN

SEWAGE EJECTOR

Filed Aug. 21, 1923

2 Sheets Sheet 1



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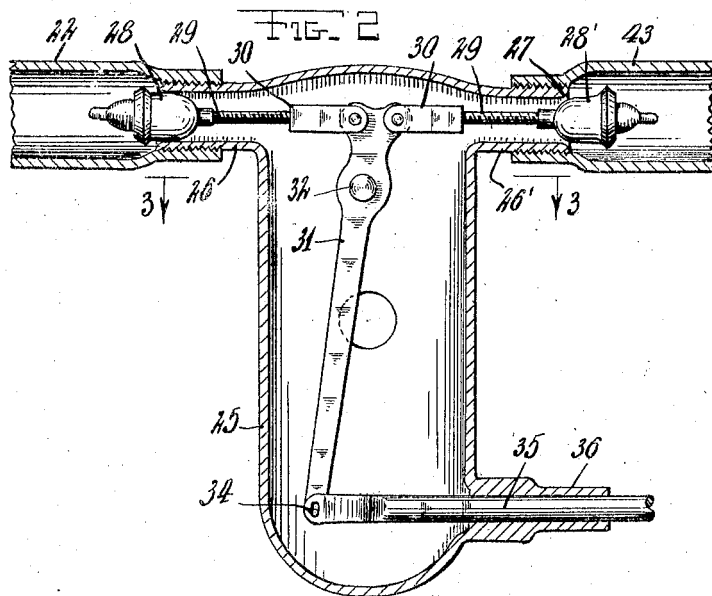
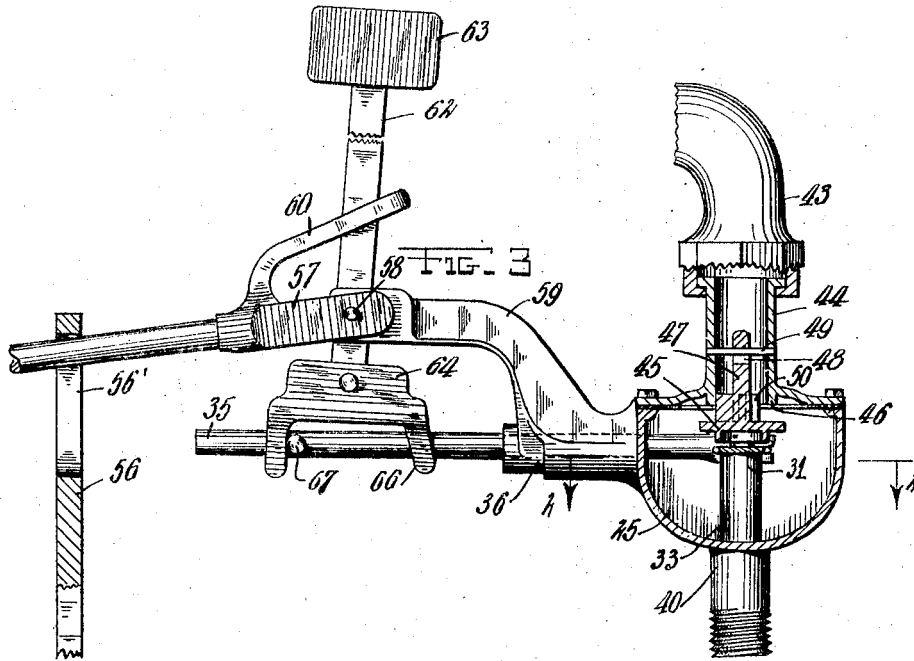
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SEWAGE EJECTOR

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

MICHAEL J. O'BRIEN, OF NEW YORK, N. Y.

SEWAGE EJECTOR.

Application filed August 21, 1923. Serial No. 658,519.

To all whom it may concern:

Be it known that I, MICHAEL J. O'BRIEN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Sewage Ejectors, of which the following is a specification.

This invention relates to a sewage ejector adapted to be used at points where the sewage must be lifted in order to pass into the main sewer, the invention having for an object the provision of an automatically acting sewage ejector characterized by simplicity of construction and efficiency of operation, a further object relating to the provision of an economical operating valve which will function with a minimum of attention.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

Fig. 1 of the drawings is a diagrammatic elevation showing the improved sewage ejector complete, with air compressor and storage tank.

Fig. 2 is a horizontal sectional view of the control valve, this view being taken on the line 2—2 of Fig. 3.

Fig. 3 is a transverse sectional view of the control valve, this view being taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail perspective view of the valve control mechanism.

Referring now to Fig. 1 of the drawings the reference numeral 10 indicates the floor of any structure in which it may be desired to install the ejector, such for instance as an underground toilet station. Below this floor a well 11 is sunk and contains a closed receptacle 12 into which the sewage to be ejected flows from the toilets, or other devices, through a pipe 13. Leading from the bottom of this receptacle is a discharge pipe 14 which leads upwardly to connect the sewer into which the waste material is to be discharged. These pipes have one-way valves 15 of ordinary construction therein.

The waste material collected in the receptacle 12 is adapted to be discharged therefrom by compressed air, the air being delivered to the said receptacle from a storage tank 18 which is charged, through a pipe

19, from an air compressor 20 of ordinary construction. The air to eject the material from the receptacle is conducted from the tank through a pipe 22, this pipe leading to an automatic valve of novel construction, and having a hand valve 23 thereon.

This automatic valve comprises an elongated casing 25 having a pair of aligned nipple extensions 26, 26' projecting from one end thereof, and respectively at opposite sides thereof. At their outer ends the bores of these nipple extensions are flared as at 27 to form seats for valves 28, 28' whose stems 29 are screwed into forked pieces 30 which are pivotally connected at adjacent ends with one end of a lever 31 fulcrumed near the said end as at 32 on a boss 33 formed in the casing 25. The opposite end of this lever has a slot and pin connection 34 with one end of a plunger rod 35 which passes outwardly through a hollow boss 36 extending from the end of the casing opposite that on which the nipples 26 are formed and parallel to the latter, movement of this rod serving to operate the valves 28, 28' as will be apparent.

The discharge end of the air pipe 22 leading from the tank 18 connects to the nipple 26 so that the valve 28 controls the passage of air into the casing 25. Upon the bottom of the casing 25 another nipple element 40 is formed and to this nipple is connected one end of a pipe 41 which leads to the receptacle 12. This pipe 41 serves both to conduct the compressed air to the receptacle at certain times to eject the material therein, and also as an air vent from the receptacle whereby communication is made from the said receptacle to an air vent pipe 42 leading upward to a suitable point. This pipe 42 is divided at its lower end into two branches 43 one of which communicates with the nipple 26' and is therefore controlled by the valve 28' and the other of which connects with another nipple 44 formed on the top of the casing. In this nipple is a one-way valve 45 which seats upward on its seat 46 and is formed with a stem 47 which projects upward into the nipple and has a transverse slot 48 through which extends a pin 49 fixed at its ends in the walls of the nipple 44, this pin serving to support the valve 45 normally in open position. Formed on the stem 47 are guide lugs 50 which engage the bore of the nipple 44.

Referring now to the means for shifting

the plunger rod 35, a vertically elongated float 55 is positioned in the receptacle and is formed with an upwardly projecting stem 56 which extends through the top of the receptacle 12 and is adapted to engage at certain times a lever arm 57 fulcrumed as at 58 on an extension 59 from the casing, the lever arm extending through a slot 56' in the stem 56. This lever arm 57 is formed with an offset 60 in which is a longitudinal slot 61 through which extends a bar 62 fulcrumed near its lower end coaxially with the lever and having a weight 63 on its upper end. Pivotaly connected to the lower end of this bar is a block 64 having downwardly projected pairs of fingers 65 and 66 at its opposite ends which straddle the rod 35 and are adapted to engage a cross pin 67 on the rod to move the latter.

In the operation of the improved sewage ejector the valve 28 remains normally closed and the valves 28' and 45 normally open, while the bar 62 is substantially upright. As the material accumulates in the receptacle 12 the float 55 gradually rises until finally the stem 56 thereon engages the lever arm 57 and raises the latter, the offset 60 on this arm bearing on the bar 62 and swinging the latter slightly from its vertical position, this movement being continued under the influence of the weight 63, moving the plunger rod 35 and opening the valve 28 and simultaneously closing the air vent valve 28'. The air from tank 18 then enters the receptacle 12 and ejects the material therefrom. When the material in the receptacle has reached a sufficiently low level the weight of the float 55 overbalances the counterweight 63 and the bar 62 is restored to its original position, closing valve 28 and opening valve 28'. The device thus functions automatically.

Having thus described my invention what I claim as new and desire to protect by Let-

ters Patent of the United States is as follows:

1. A sewage ejector comprising a receptacle to receive the sewage, a float in said receptacle, a stem on said float projecting upward from said receptacle, a lever arm having an approximately horizontal inclination and being arranged to be engaged and moved by said stem, a bar having an approximately vertical disposition and being fulcrumed a short distance from its lower end and being provided with a weight on its upper end, an offset from said lever arm projecting above the body of the latter and formed with a longitudinal slot through which said bar projects, a block carried by the lower end of said bar, a plunger rod positioned to be engaged and moved by said block, a valve casing into which said plunger rod extends, a pipe leading from said casing to said receptacle, a valve in said casing to which said plunger rod is operatively connected, and a compressed air conduit leading to said casing and controlled by said valve.

2. A sewage ejector comprising a receptacle to receive the sewage, a valve casing, a pair of alined pipes connected to opposite sides of the casing, one of said pipes being a compressed air conduit and the other providing an air vent, valves controlling the said pipes and being arranged for operation inversely in unison, stems on said valves extending toward one another into said casing, a lever fulcrumed between its ends in said casing and having said stems connected to one end thereof, a float in said casing, and means whereby an operative connection is established between the said float and the said lever to rock the latter when the float rises to a certain point.

In testimony whereof I have affixed my signature.

MICHAEL J. O'BRIEN.