No. 745,791. PATENTED DEC. 1, 1903.

J. W. COONEY.

SEWAGE EJECTOR.

APPLICATION FILED OCT. 2, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

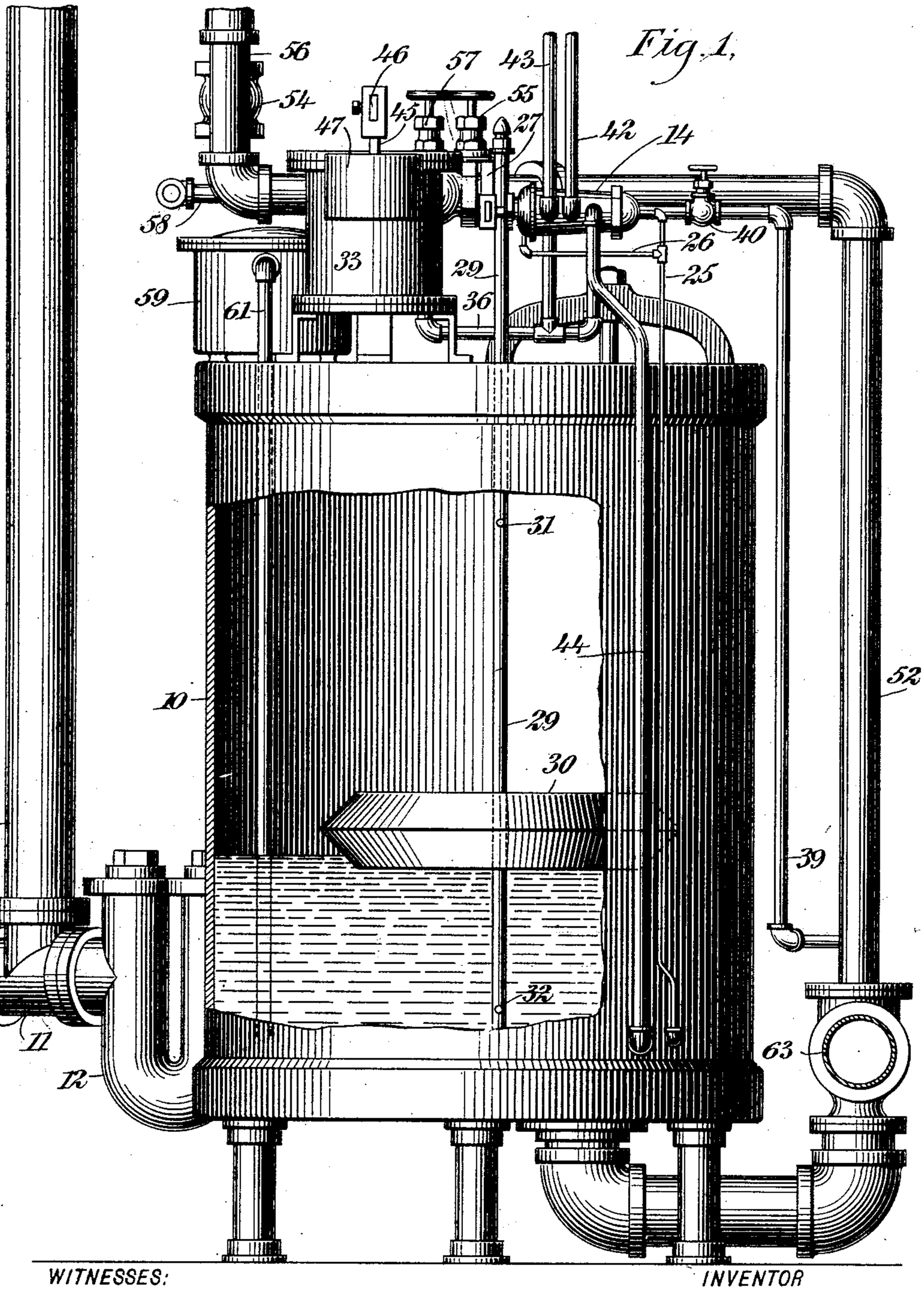

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Fig. 2.

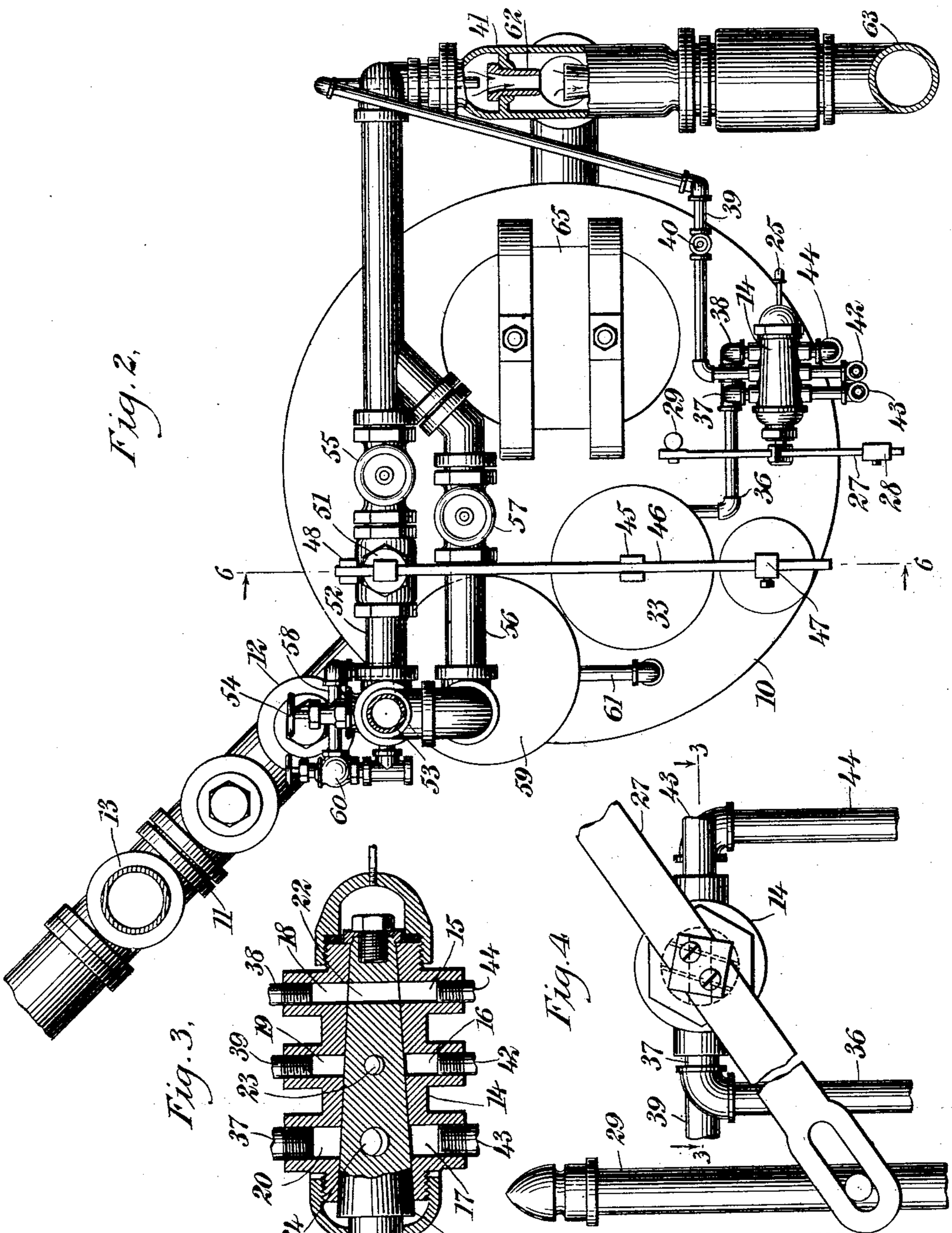

Fig. 3.

Fig. 4.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5,

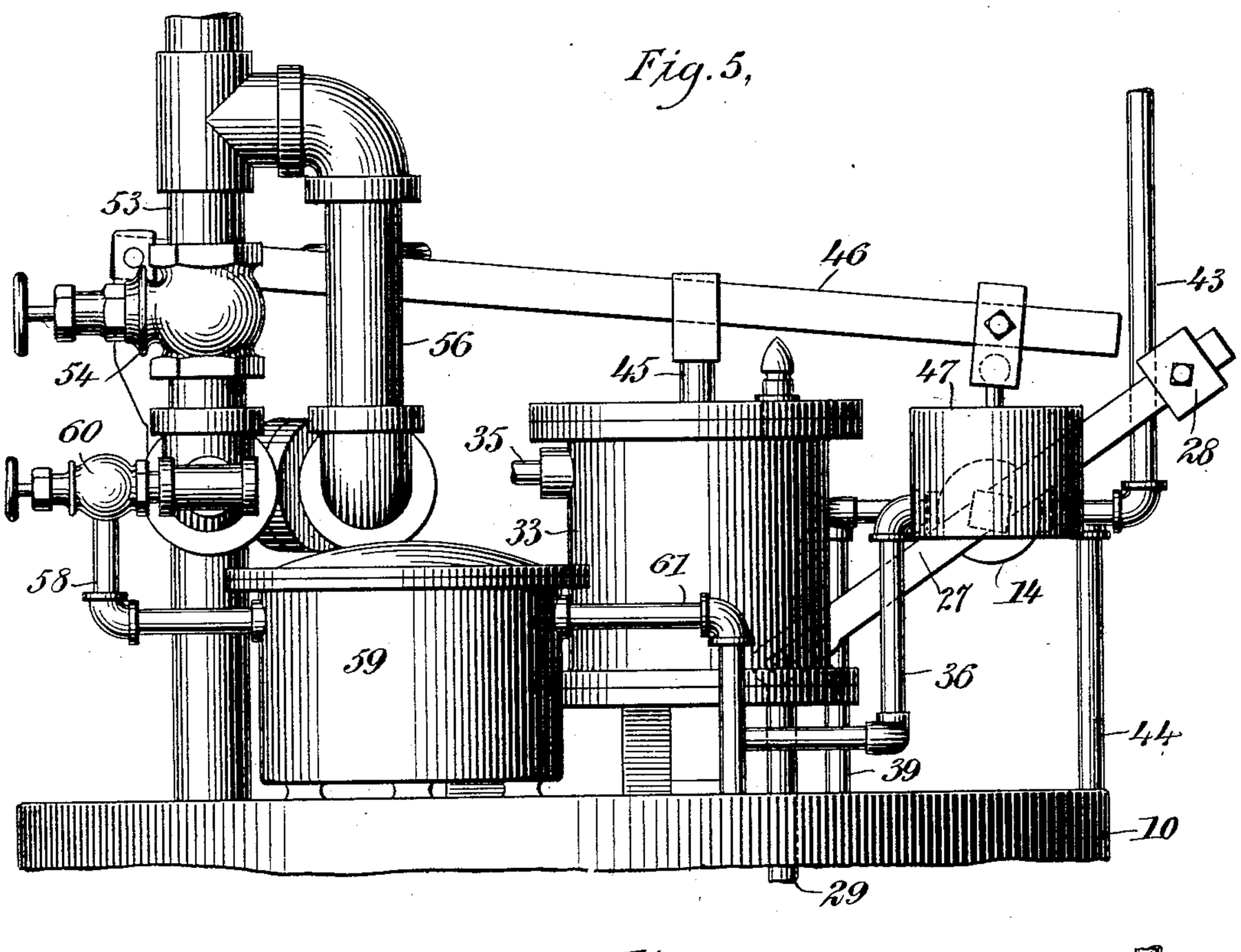
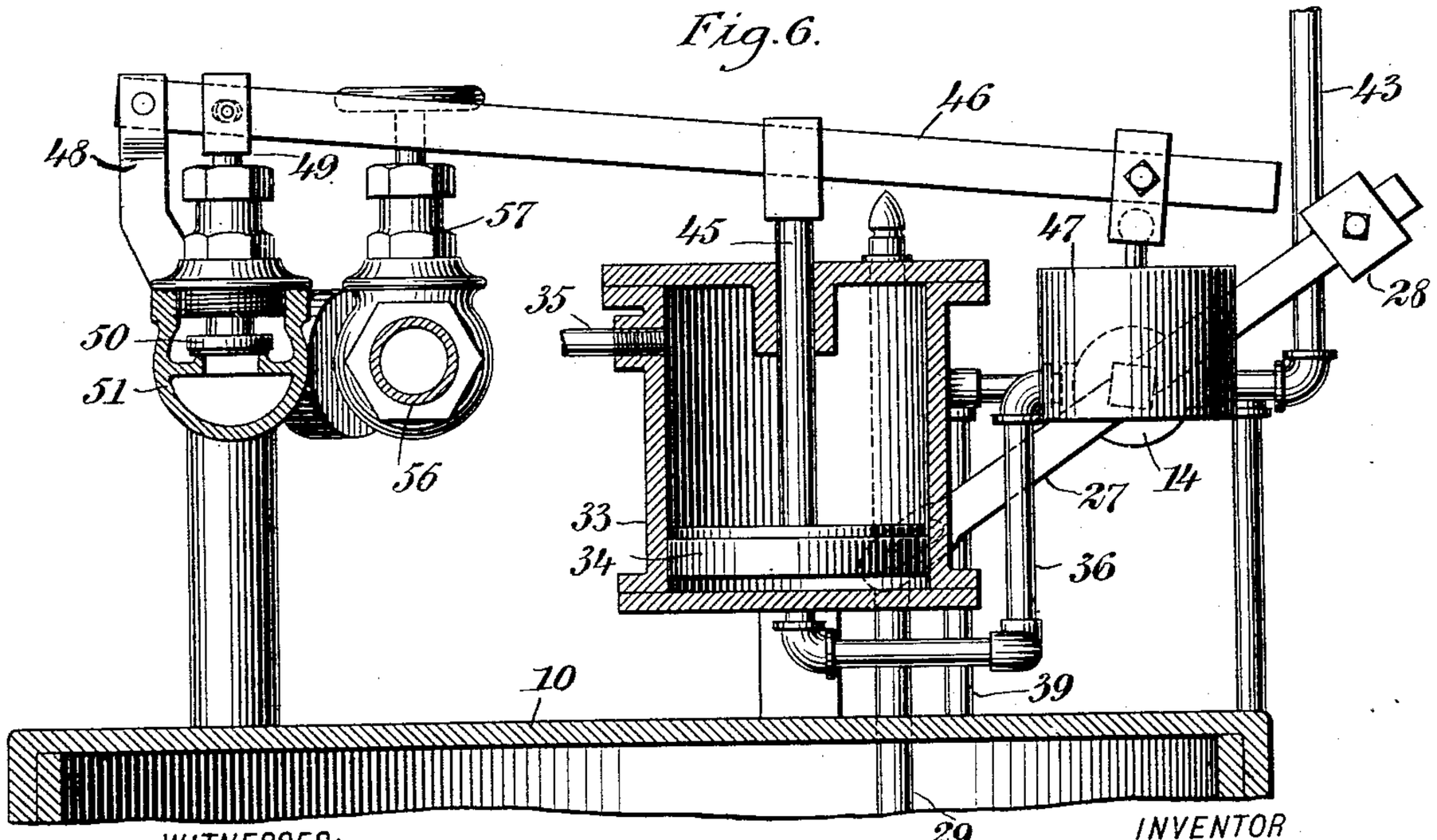


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN W. COONEY, OF NEW YORK, N. Y.

SEWAGE-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 745,791, dated December 1, 1903.

Application filed October 2, 1903. Serial No. 175,453. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. COONEY, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Sewage-Ejector, of which the following is a full, clear, and exact description.

This invention relates to improvements in devices for raising sewage or the like from a low level, such as the basement of a building, to a sewer-main on a higher level, an object being to provide a device of this character that will be practically automatic in its operation.

I will describe a sewage-ejector embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, of a sewage-ejector embodying my invention. Fig. 2 is a plan view thereof. Fig. 3 is a section on the line 3 3 of Fig. 4, showing a controlling-valve employed. Fig. 4 is a detail showing the valve-operating mechanism. Fig. 5 is a side elevation of the upper portion of the device at right angles to Fig. 1, and Fig. 6 is a section on the line 6 6 of Fig. 2.

Referring to the drawings, 10 designates a sump or sewage-tank receiving the sewage through a pipe 11, provided with a trap 12, and from this pipe 11 an air-pipe 13 extends to a suitable place of discharge—such, for instance, as the roof of a building.

Arranged on the top of the tank 10 is a valve-casing 14, having inlet-ports 15 16 17 and opposite outlet-ports 18 19 20. Operating in this valve-casing is a plug-valve 21, having a port 22 for providing communication between the ports 15 and 18, a port 23 for placing the ports 16 and 19 in communication, and a port 24 for connecting the ports 17 and 20. It will be noted that the port 22 is at right angles to the ports 23 24, and therefore when said port 22 is in operative position the ports 23 24 will be turned out of operative position.

To permit the valve 21 to move easily in its seat or casing, it is somewhat loose, and any water that may pass into the ends of the casing will discharge through a drain-pipe 25, leading to the lower portion of the tank 10. This pipe 25 connects directly with one end of the valve-casing, and the other end is connected thereto by means of a branch 26.

Connected to the stem of the valve 21 is a lever 27, on one end of which is a weight 28, and the other end is connected to a rod 29, passing downward through the top of the tank 10 and to the bottom thereof. This rod 29 has vertical movement through a portion of a float 30, surrounding the rod and movable thereon in the tank. Near its upper portion within the tank the rod 29 is provided with a pin 31, with which the float will engage to move the rod upward, as will be hereinafter described, and the float is limited in its downward movement by means of a pin 32 on said rod.

Arranged on the tank is a piston-cylinder 33, in which a piston 34 operates. Above the piston the cylinder is provided with an overflow 35, through which any water that may pass above the piston may escape. A pipe 36, leading from the bottom of the cylinder 33, has a branch connection 37 with the port 20, and it also has a branch connection 38 with the port 18. From the port 19 a water-pipe 39, provided with a valve 40, leads downward and into an ejector-shell 41. Water-supply pipes 42 43 lead, respectively, into the ports 16 17, and a discharge-pipe 44 leads from the port 15 into the lower portion of the tank 10.

The stem 45 of the piston 34 connects with a lever 46, on one end of which is a weight 47, while the other end is pivoted to a standard 48 and is connected to the stem 49 of a valve 50, arranged in a valve-casing 51 in a steam-supply pipe 52, which receives steam through a pipe 53, provided with a valve 54. At the outlet end of the valve-casing 51 the steam-pipe 52 is provided with a cut-off valve 55, and from a point above the valve 54 a by-pass pipe 56 leads from the pipe 53 to a connection with the pipe 52 at the outlet side of the valve 55, and this by-pass is provided with a cut-off valve 57. A drain-pipe 58 leads from the steam-pipe for discharging condensation into a trap or tank 59, and in this pipe 58 is a controlling-valve 60. From the upper portion of the tank 59 a pipe 61 dis-

charges into the tank 10, said discharge-pipe 61, as clearly shown in Fig. 1, extending to the bottom of said tank. The steam-pipe 52 communicates with the ejector-casing 41, in which is an ejector-nozzle 62, the end of the pipe 39 being close to the inlet end of said nozzle. From the ejector the sewage is forced through the stand-pipe 63 to the point of discharge.

In the operation as the tank 10 fills the float 30 will be carried upward until it engages with the pin 31. Then by a still further movement the rod 29 will be forced upward, raising the lever 27, so as to turn the plug-valve, permitting water from the pipe 43 to pass through the pipe 36 into the cylinder 33 against the under side of the piston. This pressure of water will elevate the piston, moving the lever 46 upward and permitting the lever 46 to raise the valve 50 from its seat, allowing the passage of steam through the pipe 52 to the ejector, it being understood that at this time the valve 57 is closed and the valve 55 open. At the same time water will pass through the pipe 39 into the ejector and mingling with the steam will cause a suction to draw the sewage from the tank 10 and force it upward through the stand-pipe. As the float lowers and engages with the pin 32 the rod 29 will be moved downward, and thus move the lever 27 to cause the closing of the ports 23 and 24 in the valve and opening the port 22 to the ports 15 and 18, permitting the water to discharge from the cylinder 33 into the tank. The by-pass 56 is designed particularly for use should the automatic mechanism become inoperative—that is, by opening the valve 57 and closing the valves 54 and 55 the steam-pressure will pass through said by-pass and thence to the ejector. The top of the tank 10 is provided with a manhole, which has a cover 65.

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

1. A sewage-ejector comprising a tank for sewage, an ejector arranged at one side of the tank, a steam-pipe leading into said ejector, a valve in said steam-pipe, a piston-cylinder, a piston therein, a lever engaging with the piston-stem and having connection with the stem of said valve, a water-supply leading into the cylinder, a float in the tank, and means operated by said float for controlling the water-supply.

2. A sewage-ejector comprising a tank, an ejector arranged at one side thereof, a discharge-pipe providing communication between the ejector and tank, a steam-pipe leading to said ejector, a steam-controlling valve in said pipe, a piston-cylinder on the tank, a piston therein, a lever having connection with the piston and connecting with the stem of said valve, a valve-casing, a pipe connection between said valve-casing and the said cylinder, water-supply pipes leading into said valve-casing, a pipe leading from said valve-casing to the ejector, a controlling-valve having a rotary movement in said valve-casing, a rod movable vertically in the tank and having connection with said valve, and a float movable on the rod within the tank.

3. A sewage-ejector comprising a tank, an ejector arranged at one side thereof and communicating therewith, a steam-pipe communicating with the ejector, a valve in said steam-pipe, a piston-cylinder supported on the tank, a piston therein, a lever having connection with the piston and connecting with the steam-controlling valve, a valve-casing, a branch pipe providing communication between said casing and the cylinder, water-supply pipes leading into the valve-casing at opposite sides of the branches of said pipes, a discharge-pipe leading from said casing into the tank, a pipe leading from said casing into the ejector, a rotary valve in the valve-casing, a lever attached to the stem of said rotary valve, a rod movable vertically in the tank and having communication with said lever, stops on said rod, and a float movable on the rod between said stops.

4. A sewage-ejector comprising a tank, an ejector arranged at one side thereof, a steam-supply pipe leading into said ejector, a valve in said supply-pipe, a valved by-pass pipe connected with the said supply-pipe, and a water-pressure-actuated mechanism for controlling the valve in the supply-pipe.

5. A sewage-ejector comprising a tank, an ejector at one side thereof, a steam-supply pipe leading into said ejector, a water-supply pipe leading into the ejector, and automatically-actuated means for controlling the supply of steam and water.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. COONEY.

Witnesses:
JNO. M. RITTER,
C. R. FERGUSON.