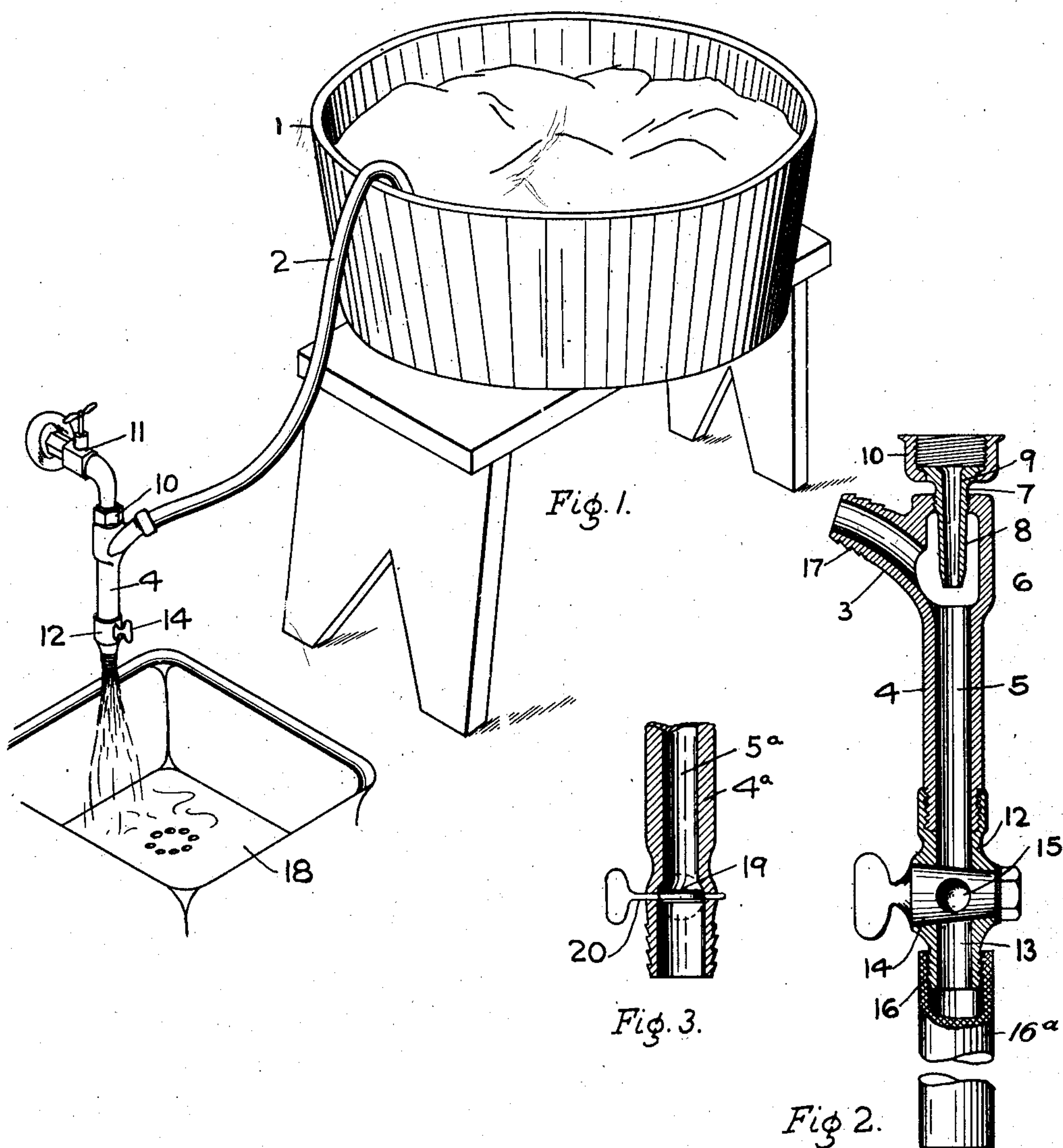


E. LANGFORD.
 DEVICE FOR FILLING AND EMPTYING VESSELS.
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905,818.

Patented Dec. 1, 1908.



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UNITED STATES PATENT OFFICE.

EDWIN LANGFORD, OF LAKEWOOD, OHIO.

DEVICE FOR FILLING AND EMPTYING VESSELS.

No. 905,818.

Specification of Letters Patent.

Patented Dec. 1, 1908.

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To all whom it may concern:

Be it known that I, EDWIN LANGFORD, a subject of the King of Great Britain, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Devices for Filling and Emptying Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to devices for filling and emptying vessels of liquid, the invention working upon the principle of an ejector and having for its object the production of a device which shall be efficient and rapid in its operation, convenient in usage and inexpensive in construction.

In the drawings forming a part hereof, Figure 1 is a general perspective view showing my invention in use for emptying a tub of water or other liquid; Fig. 2 is a longitudinal section through the center of the invention; and Fig. 3 is a fragmentary sectional view showing a somewhat modified form of my invention.

Taking up a detailed description by reference to the drawings, 1 represents a tub, or any other vessel that is to be filled and emptied. 2 is a flexible pipe, which may be an ordinary hose-pipe, that is adapted to be inserted at one end into the tub, the opposite end of which is attached to a curved tubular projection 3 on the outer ejector member 4. This ejector member has a longitudinal opening 5 extending therethrough, said opening being expanded at 6 opposite the tubular extension 3. Above the enlarged portion 6, the outer member 4 is closed at 7, except for a comparatively small central aperture which is threaded for the reception of the nozzle 8 which screws into said aperture. This nozzle has a central longitudinal opening extending throughout its length and gradually diminishing in size toward its inner end. At its outer end the nozzle is provided with a flange or head 9 for engaging with a nut or union 10, by means of which the nozzle and the ejector may be attached to an ordinary cock or spigot 11, said spigot being connected in the usual way with a source of fluid supply.

At its lower end, as shown in Fig. 2, the outer ejector member 4 is screw-threaded, and to the said end there is screwed a valve casing 12 having an opening 13 there-through in axial alinement with the opening

5 in the outer ejector member. Journaled within the valve casing is a valve 14, having a passage 15 therethrough, which is adapted to be turned so as to open or close the passage 13 in the usual manner. The lower end of the casing 12 is provided with ratchet corrugations 16 so as to adapt the same for holding a hose pipe which may be attached thereto. Similar ratchet corrugations 17 are also formed on the tubular extension 3 for holding the hose pipe 2. The nozzle 8 projects into the enlarged part 6 of the central bore of the member 4 and extends substantially to the lower portion of the passage through the tubular extension 3.

From the above description it will be understood that when the valve 14 is closed and the valve in the spigot 11 is open, the water or other liquid will pass into the ejector member 4 through the nozzle 8 and thence upwardly through the tubular extension 3 and the hose pipe 2 into the tub or vessel 1, thus filling the vessel. When it is desired to empty the tub, it is only necessary to open the valve 14 and the valve in the spigot 11, when the liquid will rush through the nozzle 8 and through the valve casing, thereby drawing by suction the liquid from the tub through the hose 2 and the tubular extension 3. It will be seen, therefore, that by simply opening and closing the valve 14 I am enabled to control the direction of flow of the liquid in the hose pipe 2 and to thus fill or empty the tub 1 as desired. The suction produced by the flow of the liquid through the nozzle is sufficient to lift the water through the pipe 2 for a considerable distance, so that the relative positions of the ejector and the vessel may be varied through wide limits. In the drawing I have shown the tub 1 as elevated above the ejector; and, by so placing these parts, I am enabled to secure the advantage of a siphonic action through the hose pipe, it being necessary merely to start the liquid to flowing through this pipe by the ejector, after which the valve in the spigot 11 may be closed when the liquid will flow out through the pipe as a siphon. A hose pipe 16^a may be attached to the lower end of the valve casing 12 and the liquid led away to any suitable place, but in Fig. 1 I have shown the ejector directly over a catch basin 18, in which position no pipe is used on the lower end of the casing 12. It will be evident, however, that the pipe 16^a will lower the ultimate

outlet from the vessel, and that the siphonic action will be increased by the use of such a pipe.

The valve shown in Fig. 2 is the ordinary form of tapered cylindrical valve. In Fig. 3 I have shown a somewhat modified form of construction, in which 4^a represents the lower part of the outer ejector member and 5^a the opening therethrough. At its lower end the said opening is of larger diameter in order that a flat disk-valve 19 may be inserted through the lower end of the member 4^a and held in position by a pivot rod 20, this valve and rod being similar in construction and operation to the ordinary rotary damper used in stove pipes. In Fig. 3 the full lines represent the valve in closed position, its open position being indicated by broken lines. Such a valve possesses the advantage of cheapness of manufacture over the valve shown in Fig. 2, and while there may be a slight leakage of liquid about the valve, this is not regarded as a serious matter, especially in case water is employed for operating the ejector.

I claim:

1. The combination with a vessel that is to be filled with or emptied of a liquid, of a pipe leading to said vessel, an ejector to which the outer end of the pipe is attached, and means for closing the ejector beyond its connection with said pipe, whereby the liquid flowing into the ejector may be forced through the pipe into the vessel.

2. The combination with a vessel that is to be filled with or emptied of a liquid, of a pipe leading to said vessel, an ejector to which the outer end of the pipe is attached, and a valve for closing the ejector beyond its connection with said pipe, whereby the liquid flowing into the ejector may be forced through the pipe into the vessel, or, by opening the valve, the liquid may be drawn from the vessel.

3. The combination with a vessel to be filled with or emptied of a liquid, of a pipe having one end projecting into said vessel, an ejector member to which the opposite end of the pipe is attached, an ejector nozzle projecting into said member, means for attaching said nozzle to a source of fluid supply, and means for closing the said ejector member beyond the point at which the said pipe is attached, whereby when the said closing means is opened the liquid will pass through the ejector and draw the liquid by suction from the vessel and when the said closing means is closed the liquid will be forced through the said pipe into the vessel.

4. The combination with a vessel to be filled with or emptied of a liquid, of a pipe leading to said vessel, an ejector member below the said vessel to which the opposite end of the pipe is attached, an ejector nozzle projecting into said member, means for at-

taching said nozzle to a source of fluid supply, and means for closing the said ejector member beyond the point at which the said pipe is attached, whereby when the said closing means is opened the liquid will pass through the ejector and draw the liquid by suction from the vessel to start the flow, after which the source of fluid supply may be cut off to permit the flow to continue by siphonic action, and when the said closing means is closed the liquid will be forced through the said pipe into the vessel.

5. In an ejector, an outer member having a longitudinal opening therethrough, a tubular extension on said member having an opening therethrough communicating with the opening in the ejector member, a nozzle projecting into the ejector member substantially opposite the tubular extension, means for attaching the said nozzle to a source of fluid supply, and a valve for closing the opening in the ejector member, whereby liquid may be drawn into the ejector through the tubular extension or may be forced outwardly therethrough.

6. In an ejector, an outer member having a longitudinal opening therethrough, a tubular extension on said member extending at an angle thereto and having an opening communicating with the opening in the ejector member, a nozzle projecting into the ejector member substantially opposite the tubular extension, means for attaching the said nozzle to a source of fluid supply, and a valve for closing the opening in the ejector member, whereby liquid may be drawn into the ejector through the tubular extension or may be forced outwardly therethrough.

7. The combination with a vessel that is to be filled with or emptied of a liquid, of a hose pipe leading to the vessel, an ejector member having a longitudinal opening therein, a tubular extension on said member having an opening extending therethrough and connecting with the opening in the said member, said tubular extension being adapted for attachment to the hose pipe, a nozzle secured to said member and extending within the opening therein to a point substantially opposite the inner end of the tubular extension, a water-cock or spigot, means for attaching the nozzle to said cock or spigot, and a valve for closing the opening through the ejector member beyond the end of the nozzle, whereby, when the valve is opened, the water from the spigot will draw the liquid from the vessel, and, when the valve is closed, the water will be forced into the vessel.

8. The combination with a vessel that is to be filled with or emptied of a liquid, of a hose pipe having an end that is adapted to be inserted into the vessel, an ejector member having a longitudinal opening therein, a tubular extension on said member having an

opening extending therethrough and connecting at an angle with the opening in the said member, said tubular extension being adapted for attachment to the hose pipe, a
5 nozzle screwing into said member and extending within the opening therein to a point substantially opposite the inner end of the tubular extension, a water-cock or spigot, means for attaching the nozzle to
10 said cock or spigot, and a valve for closing the opening in the ejector member beyond

the end of the nozzle, whereby when the valve is opened, the water from the spigot will draw the liquid from the vessel, and, when the valve is closed, the water will be 15 forced into the vessel.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

EDWIN LANGFORD.

Witnesses:

S. E. FOUTS,
A. J. HUDSON.