B. W. McCLYMONT.

EJECTOR.

APPLICATION FILED SEPT. 11, 1911.

1,105,985. Patented Aug. 4, 1914.

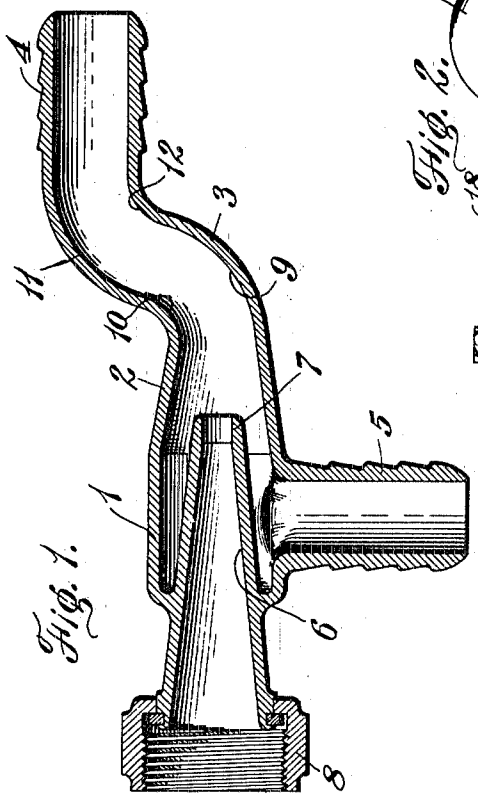


Fig. 1.

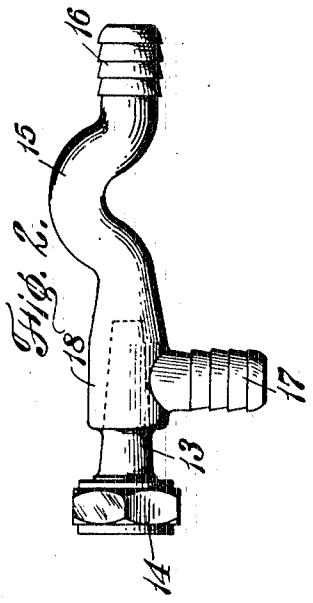


Fig. 2.

Witnesses
Chas. W. Stauffiger
Anna L. Pavlis

Inventor
Bryce W. McClymont,
By Dauthof & Heather
Attorneys

UNITED STATES PATENT OFFICE.

BRYCE W. McCLYMONT, OF DETROIT, MICHIGAN, ASSIGNOR TO PENBERTHY INJECTOR CO., OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

EJECTOR.

1,105,985. Specification of Letters Patent. Patented Aug. 4, 1914.

Application filed September 11, 1911. Serial No. 648,640.

To all whom it may concern:

Be it known that I, BRYCE W. McCLYMONT, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Ejectors, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to produce a lifting ejector capable of a more extended use as a substitute for a pump for draining excavations, cellars and the like and for domestic uses where city water is available as the motive fluid.

The older types of ejector which have the discharge arm in axial line with the power nozzle through which the motive fluid is conducted into the ejector are not adapted to lift water to any considerable height if used with city water as the motive fluid. The reason for this is that the bore of the discharge arm being larger than that of the nozzle through which the motive fluid is introduced in the form of a solid jet cannot fill the whole bore of the discharge arm on account of the comparatively low pressure of the water usually maintained in city water plants. Therefore there is a space between the wall of the discharge arm and the water jet and this space directly communicates with the suction pipe reaching down into the wall or space from which the water is to be removed. At best only a slight reduction below the atmospheric pressure can thus be obtained especially if the ejector is discharging directly into the atmosphere, where the jet disturbs only that portion of the air directly in front of the nozzle. The air at the discharge end therefore travels back into the suction pipe by reason of the difference in pressures and destroys any practical lift in an ejector having a straight discharge arm unless the discharge arm is of such excessive length as to render the manufacture of such ejector costly and impracticable.

In order to get the greatest possible lift from an ejector built within practical proportion it is necessary to use means to disperse and break up the operating jet of water issuing from the power nozzle of the ejector so that it would completely block up the discharge bore of the ejector and thus seal it against the back travel of air. I accomplish this by means of a bend in the discharge arm which compels the water issuing from the power jet to spread out and form a curtain across the discharge passage thereby sealing it against the back flow of air into the suction pipe, all as more fully hereinafter described and shown in the accompanying drawings, in which—

Figure 1 is a central longitudinal section through a preferred form of ejector embodying the invention; and Fig. 2 is an elevation of a modified form of construction.

As shown in Fig. 1, the ejector has a casing formed with a cylindrical portion 1, a conically tapering portion 2, a sinuous neck portion 3 and a cylindrical end portion 4 offset to one side from the axis of the portions 1 and 2 by the sinuous portion 3. A jet nozzle 6 projects into one end of the casing through the portion 1 and partially into the portion 2 in axial line therewith and is provided with suitable means such as the coupling member 8 for attachment to a pipe or hose for supplying it with water under pressure as the motive fluid. An arm 5 extends at right angles from the casing and leads into the space surrounding the jet nozzle; it is provided with suitable means for attachment to a hose leading into the sump or well which is to be drained.

In practice the ejector being supplied with the motive fluid, a solid jet of water will be projected from the nozzle directly against the wall 9 to 12 of the sinuous portion of the passage and then be huddled across the passage against the opposite wall 10 to 11. It thereby forms a water curtain across the discharge passage which blocks the same against any inflow of air into the space or vacuum chamber surrounding the nozzle. The power jet is thus enabled to create and maintain a strong enough vacuum to lift the water into the vacuum chamber from a considerable depth and rendering the ejector self starting.

In the modification in Fig. 2 the discharge arm is provided with a double ogee bend instead of a single ogee bend as in Fig. 1; but its construction and operation is otherwise the same as that in Fig. 1.

While the drawings show an ejector integrally formed in one piece, it may be built

up of separate parts and the proportion of the parts may be altered to suit different conditions of use.

What I claim is:—

In a lifting ejector, the combination with a power jet, of a casing forming a vacuum chamber around said jet and extending beyond the same in a direction parallel to said jet to provide a discharge arm forming a discharge passage, said passage being provided within striking distance of the jet with an ogee bend having coöperating deflecting surfaces, one being in the inner end of said discharge arm and alining with the jet and the other being in the bend of said arm and disposed substantially at right angles to the line of discharge from said jet, whereby a single aqueous air excluding curtain is formed intermediate the ends of the discharge passage.

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

BRYCE W. McCLYMONT.

Witnesses:

LEWIS E. FLANDERS,

OTTO F. BARTHEL.