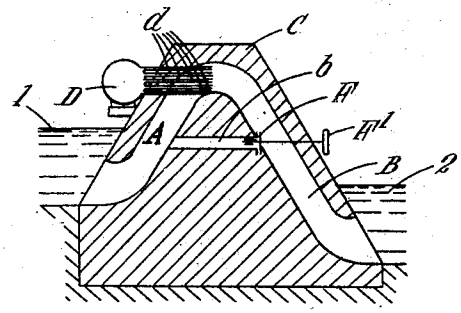
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APPARATUS FOR RAREFYING GASES

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UNITED STATES PATENT OFFICE

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APPARATUS FOR RAREFYING GASES

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This invention relates to hydraulic apparatus, working on the siphon principle, for rarefying gases. The chief object of the invention is to devise such an apparatus for use when there is available a body of water, such as a river, one portion of which is maintained at a higher level than the rest by means of a dam. The apparatus according to the invention comprises an upwardly extending supply conduit which is arranged at one side of the dam and communicates with the high level water, a downwardly extending discharge conduit which is arranged at the other side of the dam and communicates with the lower level water, said conduits communicating with each other at their upper ends and constituting a siphon, induction conduits arranged at approximately the head of this siphon, and a chamber with which said induction conduits communicate and from which gas is thereby drawn.

In order that the said invention may be clearly understood and readily carried into effect, the same will be more fully described with reference to the accompanying drawing which is a sectional view showing a constructional form of my invention.

A is the upwardly extending supply conduit communicating with the high level water 1 and B is the downwardly extending discharge conduit communicating with the low level water 2, these conduits being formed in the sides of a dam C (which separates the high level water 1 from the low level water 2) so as to constitute a siphon. D is a chamber from which gas (air for example) is to be withdrawn, and *d*, *d*—are induction pipes which communicate with the interior of the chamber D and the free ends of which are situated, as shown, at the part where the conduits A and B join each other. The portion of the dam between the two conduits is formed with one or more ports or sets of ports *b* which can be opened and closed at will and which serve by the aid of one or more doors or valves F operated by a hand wheel F′ to start the working of the apparatus. When the door or valve F is opened communication is established between the conduits A and B and therefore between the high level water 1 and the low level water 2. The water from the high level rushes through the port *b* into the lower part of the discharge conduit B and in so doing entrains a certain amount of air from the upper part of the conduit B and the chamber D, thereby creating a small and steadily increasing vacuum. This causes the water level to rise in both the conduit A and the conduit B and for an apparatus designed to give a moderate degree of vacuum in the chamber D the water level will eventually rise up to the top of the said conduits; the door or valve F is then closed and the siphon action is thus established. Consequently air or gas is sucked from the chamber D through the pipes *d*, *d*—the air or gas passing with the water down the discharge conduit B and escaping to the atmosphere at the low level. For an apparatus designed to give a greater degree of vacuum there may be two or more sets of the aforesaid ports at different levels each provided with a door or valve similar to that above described and in this case the opening of the lower set of ports brings the water level up to the next highest set of ports; the latter set of ports are then opened and the lower set of ports closed, this acting being repeated in respect of the other sets of ports (when these are provided) until the water level reaches the top of the conduits A and B.

What I claim and desire to secure by Letters Patent of the United States is:—

A hydraulic apparatus of the class described comprising a dam separating a high level body of water from a low level body of water, said dam having an upwardly extending conduit on one side thereof and communicating with the higher level water, a downwardly extending conduit arranged on the

other side of the dam and communicating with the low level water, said conduits communicating with each other at their upper ends and constituting a siphon, a gas chamber having conduits communicating with the head of the siphon, said dam having a transverse opening communicating the conduits with each other, and a valve for controlling the flow through said opening, said valve having a handle extending from one side of the dam so as to start the apparatus without the necessity of raising a vacuum by external means.

JENS ORTEN BOVING.