

No. 732,704.

PATENTED JULY 7, 1903.

J. BRYAN.
PUMPING SYSTEM.
APPLICATION FILED NOV. 10, 1902.

NO MODEL.

Fig. 1.

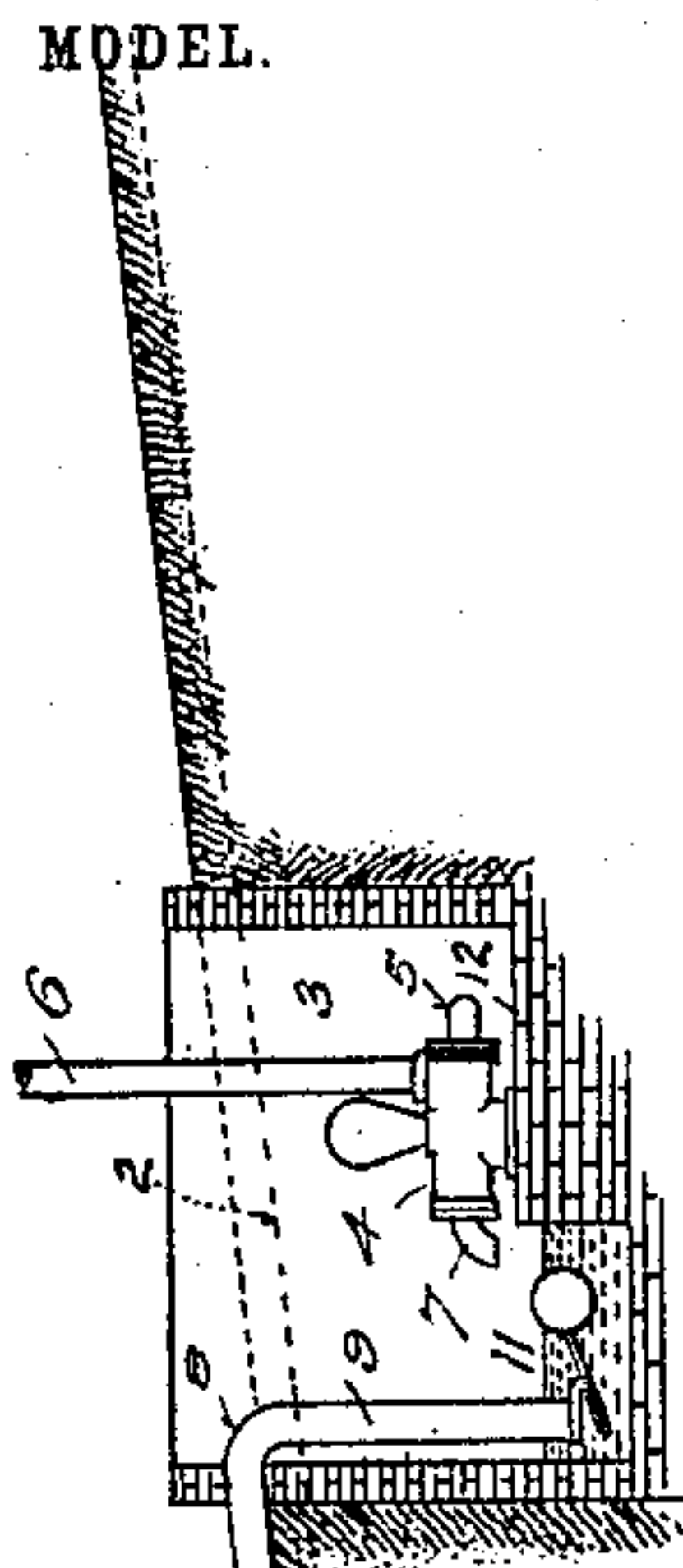


Fig. 2.

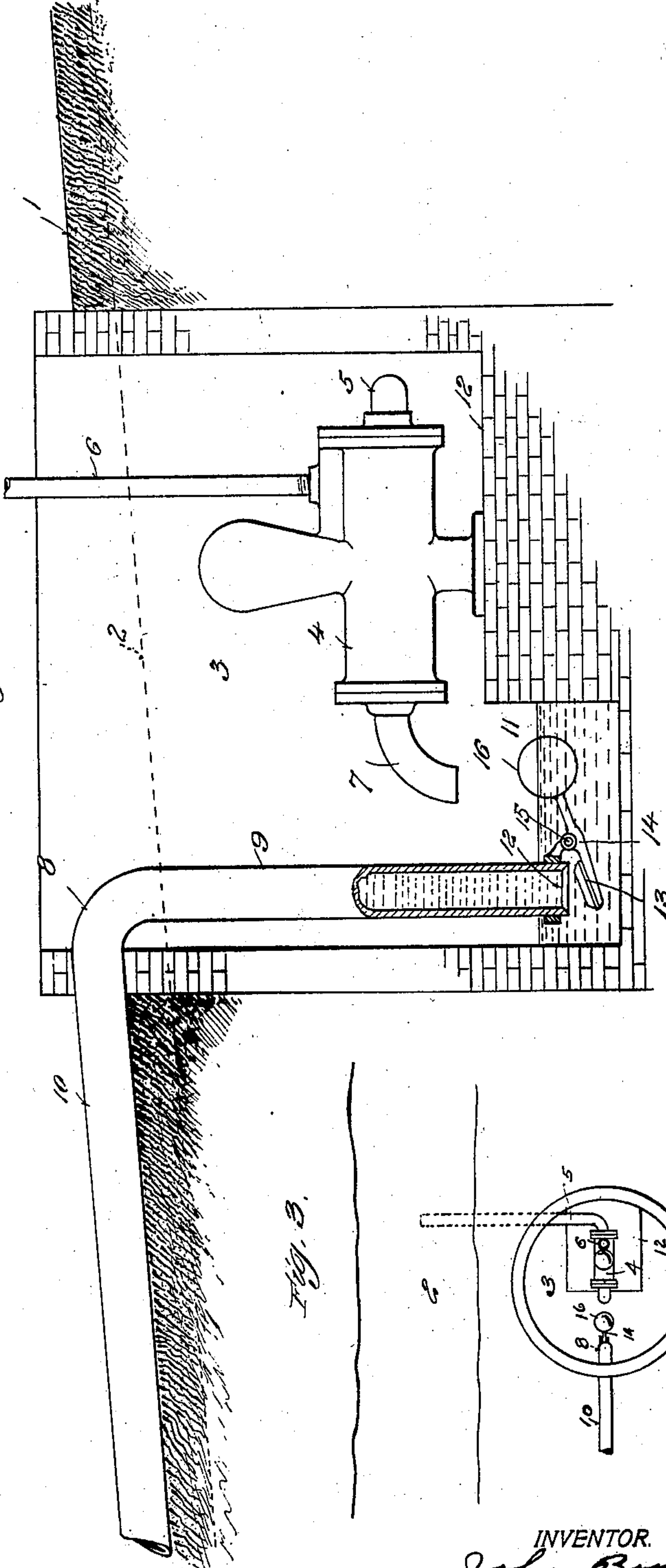
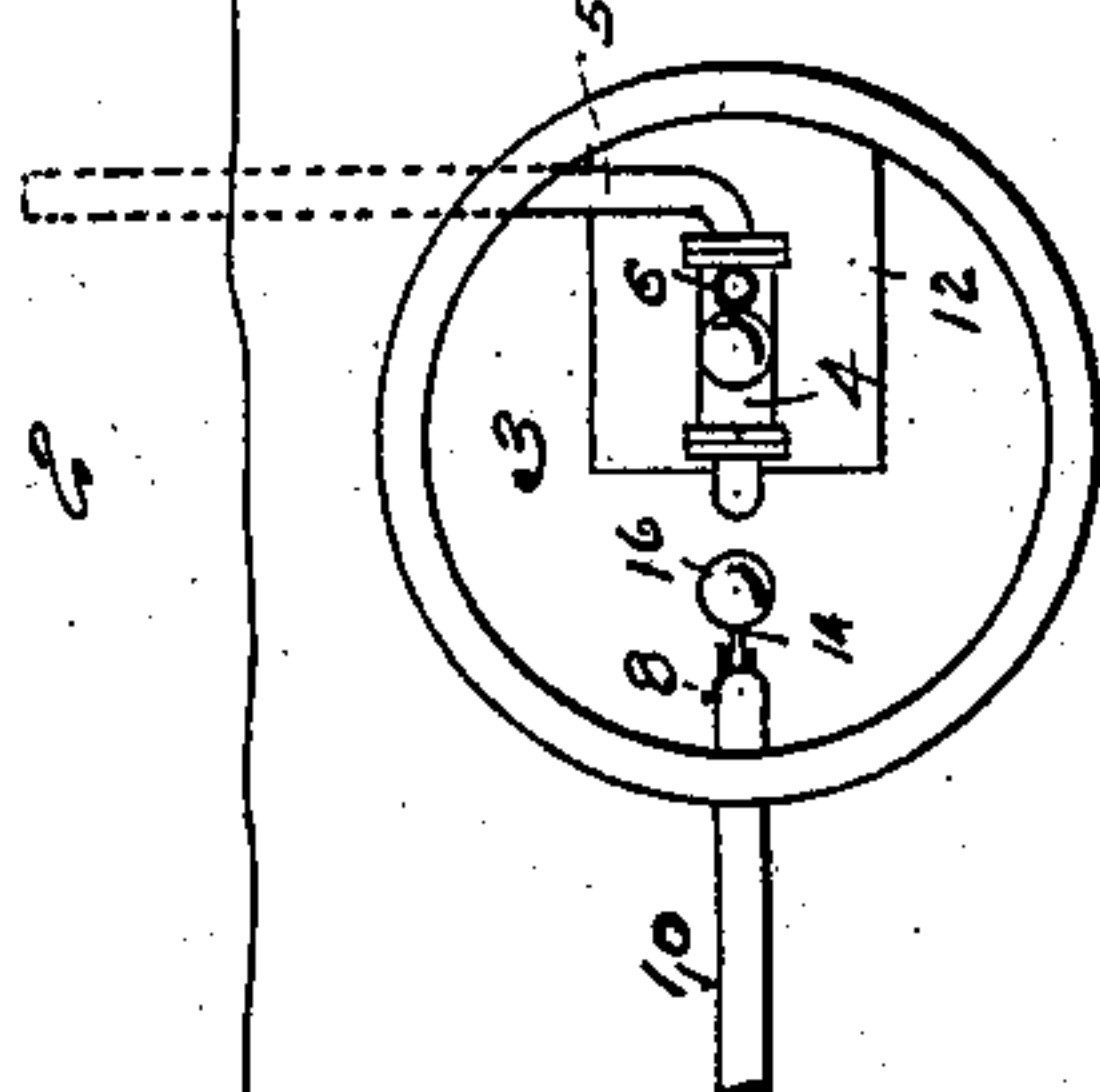


Fig. 3.



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PUMPING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 732,704, dated July 7, 1903.

Application filed November 10, 1902. Serial No. 130,723. (No model.)

To all whom it may concern:

Be it known that I, JOHN BRYAN, a citizen of the United States, residing at Yellow Springs, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Pumping Systems, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to pumping systems, and has for its object to provide a construction whereby a hydraulic ram may be utilized for the automatic elevation of water in the immediate vicinity of the source of supply, 15 such as a river, without involving the necessity of damming the same for the purpose of creating an artificial head, and thereby requiring the location of the ram at a considerable distance from the actual source of 20 supply.

To these ends my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

25 In the accompanying drawings, Figure 1 is a view illustrating one form of my apparatus. Fig. 2 is an enlarged view of a portion of the same, and Fig. 3 is a plan view of a portion of Fig. 1.

30 In utilizing hydraulic rams for the purpose of elevating water it is customary where a stream having an ordinary fall is utilized as the source of water-supply to dam the stream at some point of its course and locate the ram at some point below the dam and above the stream-surface, so that it will receive a sufficient head from the water above the dam, and the discharge of the waste water from the ram will be by gravity. This necessarily in- 40 volves a considerable initial expense and limits the field of application of the device to a considerable extent. I propose to overcome this objection and increase the field of utility of the ram by a construction which is widely 45 applicable and which does not involve the construction of dams or any interference with the usual course of the stream which supplies the water. To this end I construct, either in the immediate vicinity of the stream—as, for 50 instance, on the bank thereof—or in the body of the stream itself, a well or similar depression of a character such as to exclude there-

from the waters of the source of supply and locate therein a ram, which is depressed below the surface of the water-supply to an extent sufficient to give the necessary head to operate the ram. The waste water discharged by the ram into the well or depression is removed therefrom by means of a siphon, which extends over the wall of the well, and is thence 60 conducted over the surface of the ground to a distance sufficient to bring its discharge-mouth low enough to keep the waste water in the well below the point where it will interfere with the operation of the ram. The 65 siphon is of sufficient capacity to discharge all of the waste water as it accumulates and is preferably provided with means for keeping it properly primed, so as to operate at all times when the water is above a certain level 70 in the well. The operation of the ram and siphon being both automatic, no motor is required to dispose of the waste water, and the apparatus may be located on the bank or in the bed of the stream and the siphon-dis- 75 charge carried over the surface of the ground without necessitating any extensive excavation or underground conduits to provide for the drainage of the well in which the ram is located. 80

Referring to the accompanying drawings, Fig. 1 represents a section of the earth's surface, 1 indicating the soil, and the dotted line 2 indicating the water-level of a stream, the inclination thereof being greatly exaggerated 85 for purposes of illustration.

3 indicates a well or depression, which is preferably excavated in the soil immediately adjacent to the stream, although it may be built up within the body of the stream itself, 90 its walls extending to a height above the water-level sufficient to prevent its being filled by the water from the stream. Within this well or depression is located the ram 4, which may be of any approved construction and 95 which is located below the level of the source of supply to an extent sufficient to give the desired head. A supply-pipe 5 connects the ram with the stream, and a discharge-pipe 6 conveys the water elevated by the ram to any 100 desired point.

7 indicates the waste-water discharge of the ram, which discharges the waste or surplus water into the well or depression 3, and 8 in-

dicates a siphon, the short leg 9 of which extends down into the well or depression 3 below the mouth of the discharge-pipe 7, while the long leg 10 of said siphon is carried over the surface of the ground to a point where its discharge-mouth is sufficiently below the receiving-mouth of the short leg to render the siphon operative.

It being understood that the siphon is properly proportioned to the discharge of the ram, it will be obvious that as the waste water is discharged into the well 3 by the ram it will be carried off by the siphon, so as to prevent its interfering with the operation of the ram by flooding the same. It will further be seen that the ram may be located immediately adjacent to or in a stream of running water of any kind sufficient to provide an adequate water-supply and does not require the damming of the stream to secure an artificial head or the location of the ram at any considerable distance from such artificial head. It will also be observed that the siphon may be carried over the surface of the ground to a suitable point of discharge either in the original stream or at some other point without involving the expense of an underground system of drainage for the well or depression in which the ram is located.

We prefer to provide the well or depression 3 with a sump or depressed portion 11 to receive the waste water and keep it below the level of the ram-supporting surface, which latter is indicated at 12. Of course the receiving-mouth of the siphon extends down into the sump, and in order to keep the siphon properly sealed and primed its mouth is provided with a valve-seat 12, adapted to be closed by a valve 13, carried by a lever 14, pivotally supported at 15 between its ends and provided with a float 16, which controls said valve. It will be seen that in case of the stoppage of the ram from any cause as the water in the well is lowered by the siphon the float will descend until the valve 13 closes the mouth of the siphon, thus sealing the same and maintaining a sufficient level of water in the sump. When the ram starts again, the float will rise as the water accumulates and will again open the receiving-mouth of the siphon. In this way the float-valve serves not only as a sealing device to keep the siphon primed and ready for operation, but also as a regulating device controlling to a considerable extent the discharge of the waste water through the siphon.

While I have referred to the source of water-supply as a "stream," it is obvious that any other body of water—such, for instance, as a lake, spring, or pond—so located as to permit the construction of a siphon having a proper discharge-level may be utilized as the source of water-supply.

Various other modifications of the system, as well as modifications in the construction and arrangement of the parts, will readily suggest themselves, and I therefore do not

wish to be understood as limiting myself to the precise details of construction hereinbefore described, and shown in the accompanying drawings.

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

1. A pumping system comprising a well or depression located in immediate proximity to a stream or other body of water, a ram located within said well or depression below the water-level of said stream, a supply-pipe connecting the ram with the water-supply, and a siphon having the mouth of its short leg located within the well or depression below the discharge-level of the ram waste, the long leg of said siphon extending to a point of discharge below the level of the short-leg mouth, substantially as described.

2. A pumping system comprising a well or depression located in immediate proximity to a stream or other body of water, a ram located within said well or depression below the water-level of said stream, a supply-pipe connecting the ram with the water-supply, a siphon having the mouth of its short leg located within the well or depression below the discharge-level of the ram waste, the long leg of said siphon extending to a point of discharge below the level of the short-leg mouth, and means for maintaining the priming of the siphon, substantially as described.

3. A pumping system comprising a well or depression located in immediate proximity to the stream or other body of water, a ram located within said well or depression below the water-level of said stream, a supply-pipe connecting the ram with the water-supply, a siphon having the mouth of its short leg located within the well or depression below the discharge-mouth of the ram waste, the long leg of said siphon extending to a point of discharge below the level of the short-leg mouth, and automatic means, controlled by the waste water within the well or depression, for controlling the passage of water through said siphon, substantially as described.

4. A pumping system comprising a well or depression located in immediate proximity to a stream or other body of water, a ram located within said well or depression below the water-level of said stream, a supply-pipe connecting the ram with the water-supply, a siphon having the mouth of its short leg located within the well or depression below the discharge-level of the ram waste, the long leg of said siphon extending to a point of discharge below the level of the short-leg mouth, a valve controlling the short-leg mouth, and a float controlling said valve and itself controlled by the waste water within the well or depression, substantially as described.

5. A pumping system comprising a well or depression located in immediate proximity to a stream or other body of water and having a bottom provided with a depression or sump, a ram supported by the well-bottom above

said sump and below the water-level of said stream, a supply-pipe connecting the ram with the water-supply, a siphon having the mouth of its short leg located within the sump, 5 the long leg of said siphon extending to a point of discharge below the level of the short-leg mouth, and a lever pivotally supported within the sump and provided with a valve

controlling the siphon-mouth, and with a float, substantially as described. 10

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

JOHN BRYAN.

Witnesses:

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