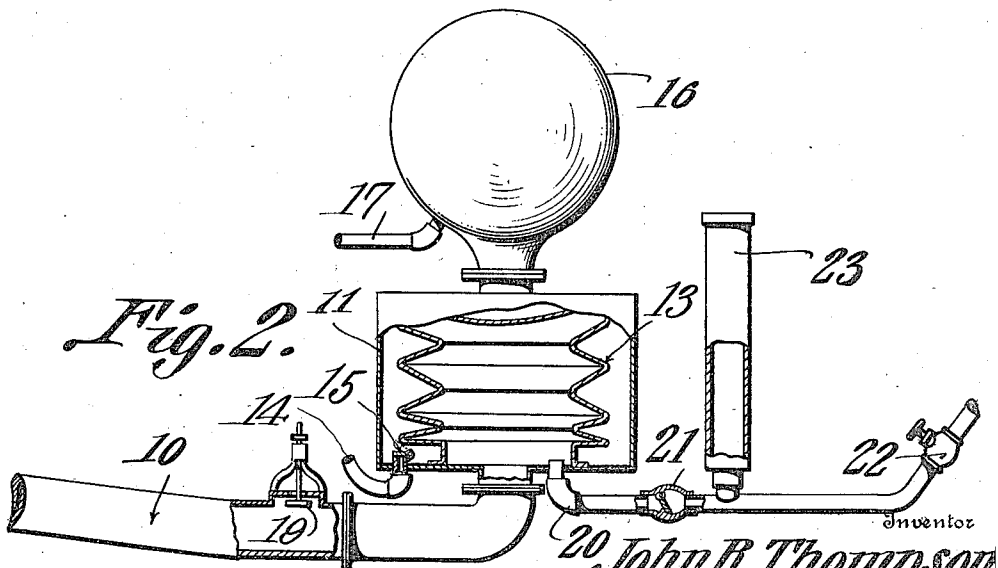
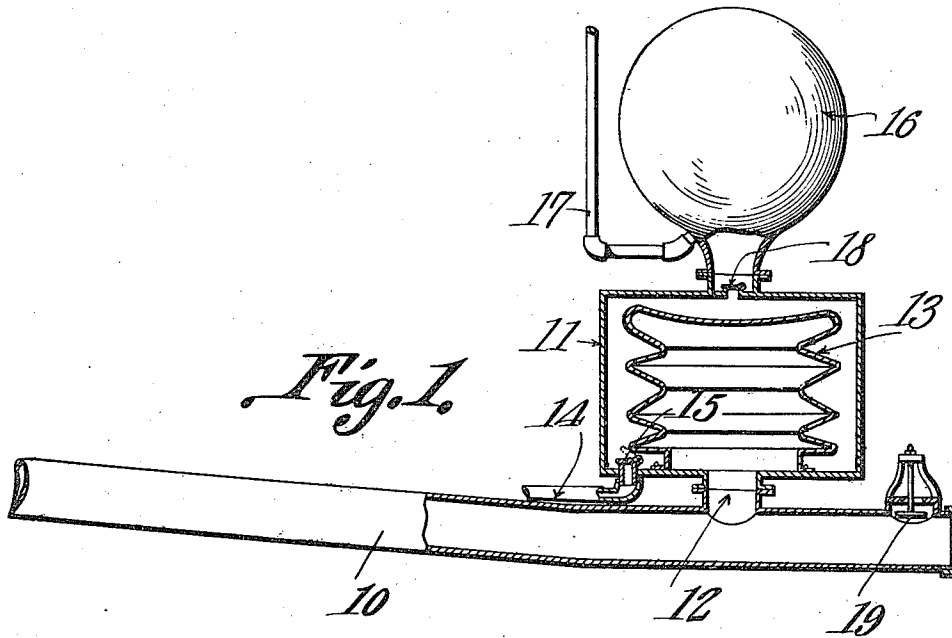


J. R. THOMPSON.
HYDRAULIC RAM.
APPLICATION FILED FEB. 23, 1910.

974,724.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

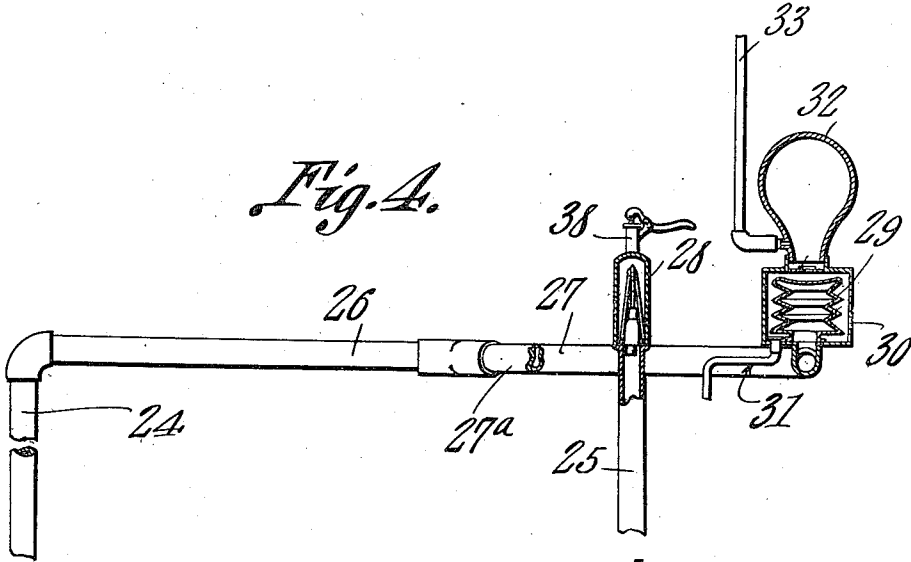


Fig. 3.

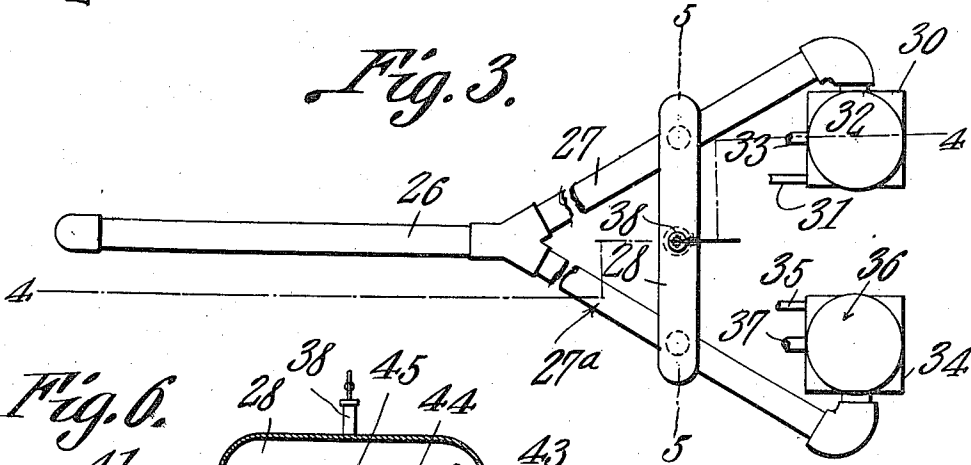


Fig. 6.

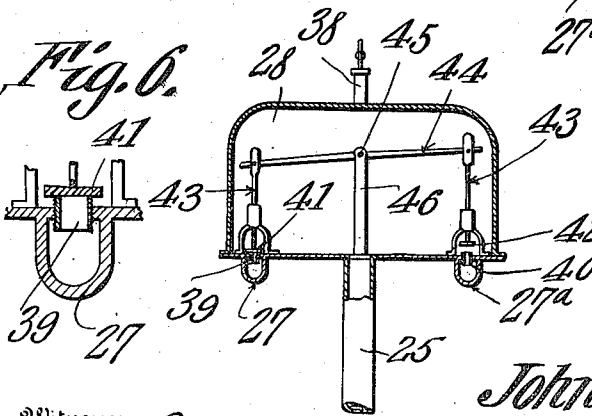


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN R. THOMPSON, OF FLOMATON, ALABAMA.

HYDRAULIC RAM.

974,724.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed February 23, 1910. Serial No. 545,460.

To all whom it may concern:

Be it known that I, JOHN R. THOMPSON, a citizen of the United States, residing at Flomaton, in the county of Escambia and State of Alabama, have invented a new and useful Hydraulic Ram, of which the following is a specification.

This invention relates to a hydraulic ram designed more particularly for elevating water from a source different from that of the water employed for driving the ram, in order that water which is unfit for use may be employed to elevate pure water from another source.

The invention consists, essentially, in a ram of peculiar construction which is connected to a flexible bag or the like mounted in a closed chamber connected to a source of pure water supply. The operation of the ram serves to alternately distend and contract the bag, thereby causing water to be drawn into and expelled from the chamber.

The invention also has for its object to provide an improved form of waste valve, together with a structure which enables the ram to be connected to a siphon.

With the herein stated objects in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are vertical sectional views of two slightly different forms of the invention. Fig. 3 is a plan view of another form of ram. Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a cross section on the line 5—5 of Fig. 3. Fig. 6 is an enlarged section of one of the valves shown in Fig. 5.

Referring more particularly to Figs. 1 and 2 of the drawings, 10 denotes, in each instance, the drive pipe of the ram. In the apparatus shown in Fig. 1, a closed chamber 11 is connected to the drive pipe by a short branch pipe 12. Within the chamber 11 is located a flexible bag 13, the mouth of which is firmly secured to the bottom of the chamber over the branch 12 so that the water flowing in the drive pipe may enter the bag. A fluid tight joint is provided between the bag and the chamber, in order that none of the water of the ram may enter the chamber.

The chamber 11 is entered by a pipe 14 leading to a spring or other source of pure water supply. The discharge end of this pipe is provided with a check valve 15.

The discharge from the chamber 11 is

through the top thereof into an air chamber 16, from which a pipe 17 leads to the place of use of the water. Return flow of the water from the air chamber is prevented by an ordinary check valve 18 as usual.

The drive pipe 10 is provided with the usual waste valve 19 located adjacent to the chamber 11.

In operation, the pipe 14 will be connected to a spring or other source of pure water supply as already stated. The drive pipe 10 may be connected to any other source of supply having a suitable head to insure the proper operation of the ram. The water for operating the ram proper need not be pure water as no part of it enters the chamber 11. It is therefore possible to operate the ram with dirty water.

The operation is as follows: When the valve 19 is closed, the water in the drive pipe 10 backs up in the bag 13 and distends the same, which forces the water out of the chamber 11 into the air chamber 16, from which it flows through the pipe 17 to the place of use. When the valve 19 opens, the water flows out of the bag 13, and the latter therefore contracts, which produces suction in the chamber 11, whereupon the valve 15 opens, and lets water from the pipe 14 into the chamber.

If it is desired to use some of the dirty ram water, the arrangement illustrated in Fig. 2 is provided. The structure is the same as the one already described, with the exception that a pipe 20 enters the mouth of the bag 13, this pipe extending through the bottom of the chamber 11. A fluid tight joint is provided in order that none of the water in the bag 13 may escape into the chamber 11. The pipe 20 leads to the place of use of the water, and is provided with a check valve 21 for preventing the water from flowing back into the bag 13. The pipe 20 is also provided with a valve 22 for shutting off the water when not needed. To the pipe 20, between the check valve 21 and the valve 22, is connected a stand pipe 23, which serves as an air chamber to maintain a steady and uniform flow in the pipe 20.

The operation of the form of apparatus just described, is the same as the apparatus shown in Fig. 1, with the exception that some of the water from the ram entering the bag 13, is also elevated to a place of use.

In the form of apparatus illustrated in Figs. 3 to 5, the ram is interposed in the

apex of a siphon, the flow through the siphon serving to operate the ram. The short leg of the siphon is indicated at 24, and the long leg at 25, these two legs being
 5 connected by a pipe 26 connected by two branches 27 and 27^a respectively, to a chamber 28. The long leg 25 of the siphon leads from this casing. The pipe 27 is also continued so as to discharge into a flexible bag
 10 29 located in a chamber 30 which is entered by a pipe 31 leading to a source of pure water supply, the arrangement being the same as in Figs. 1 and 2. The chamber 30 discharges into an air chamber 32, from
 15 which a pipe 33 leads the water to the place of use, as before. The pipe 27^a is also continued so as to enter a flexible bag mounted in a chamber 34 connected by a pipe 35 to a
 20 source of pure water supply, and discharging into an air chamber 36, from which a pipe 37 leads to the place of use of the water. The chamber 28 is made air tight, and a pump 38 is connected thereto for exhausting the air, to start the siphon.
 25 In the bottom of the chamber 28 are openings in which are screwed sleeves 39 and 40 respectively, communicating with the pipes 27 and 27^a. The upper end of the sleeve 39 forms the seat of a valve 41, and the corresponding end of the sleeve 40 forms the seat
 30 of a valve 42. These valves operate alternately, they being connected by stems 43 to an oscillating beam 44 pivoted intermediate its ends as indicated at 45 to a standard 46
 35 mounted in the chamber 28, the stems 43 being connected to the respective ends of the beam. It will be evident that by this connection between the valves they will be caused to operate alternately, one of said
 40 valves closing, while the other is opening. The water therefore flows into the chamber 28 from the pipes 27 and 27^a alternately. The sleeves are adjustable to regulate the strokes of the valves.
 45 In operation, the chamber 28 is exhausted to start the siphon. As already stated the valves 41 and 42 operate alternately, and the water flows from the short leg 24 of the siphon into the long leg 25 by the way of
 50 the chamber 28, the water being conducted

into the chamber by the branch pipes 27 and 27^a, these pipes discharging into the chamber alternately. When the valve 41 is closed, the water in the branch pipe 27 flows into the flexible bag 29 and distends the
 55 same, thus expelling the water from the chamber 30. When the valve 41 opens, the water in the pipe 27 flows into the chamber 28, and the bag 29 also empties, thereby creating suction in the chamber 30 and causing the latter to fill through the pipe 31. The same action takes place in the mechanism connected to the branch pipe 27^a.
 60

By the arrangement last described, a double acting ram and pump is had which delivers a large supply of water in a steady stream.
 65

What is claimed is:

1. The combination with a ram having a branched drive pipe, of flexible bags into
 70 which said branches discharge, a chamber inclosing each of said bags, and connected to a source of water supply, and each of said chambers having an outlet, a second chamber with which the branch pipes com-
 75 municate, said chamber having an outlet, and alternately operating valves for controlling the flow from the branch pipes into the last mentioned chamber.

2. The combination with a ram having a
 80 branched drive pipe, of a flexible bag connected to each of said branches, a chamber inclosing each bag, and connected to a source of water supply, and each of said chambers
 85 having an outlet, a second chamber in communication with the branches of the drive pipe, said chamber having an outlet, a standard mounted in the last mentioned chamber, an oscillating beam pivoted to the standard,
 90 and valves carried by the respective ends of the beam for alternately opening the branches of the drive pipe to the last mentioned chamber.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature
 95 in the presence of two witnesses.

JOHN R. THOMPSON.

Witnesses:

J. N. JOHNSON,

JAMES A. THORNTON.