(No Model.)

# B. MELLOR OF MARK.

## PUMP.

No. 510,983. Patented Dec. 19, 1893.

Fig. 1.

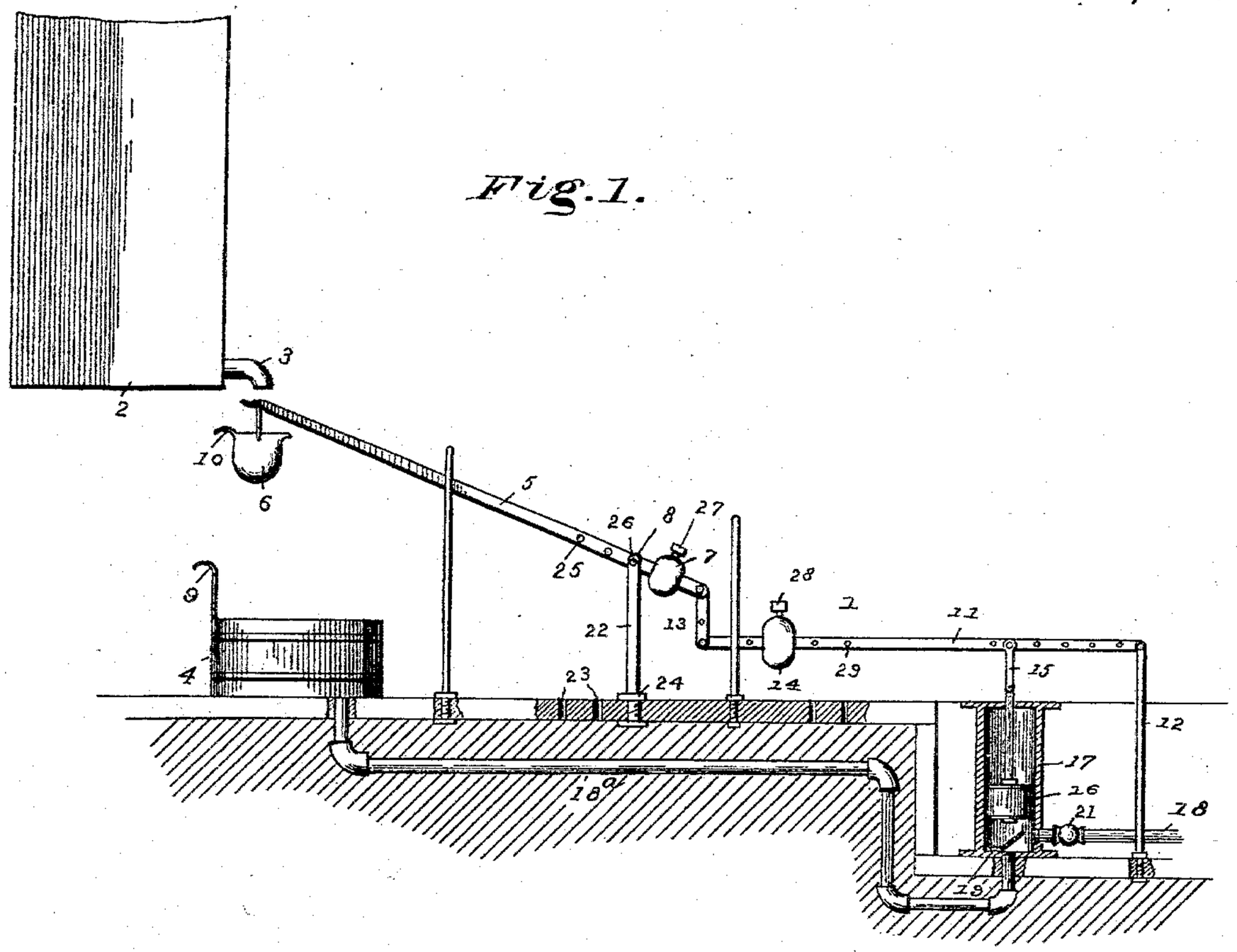
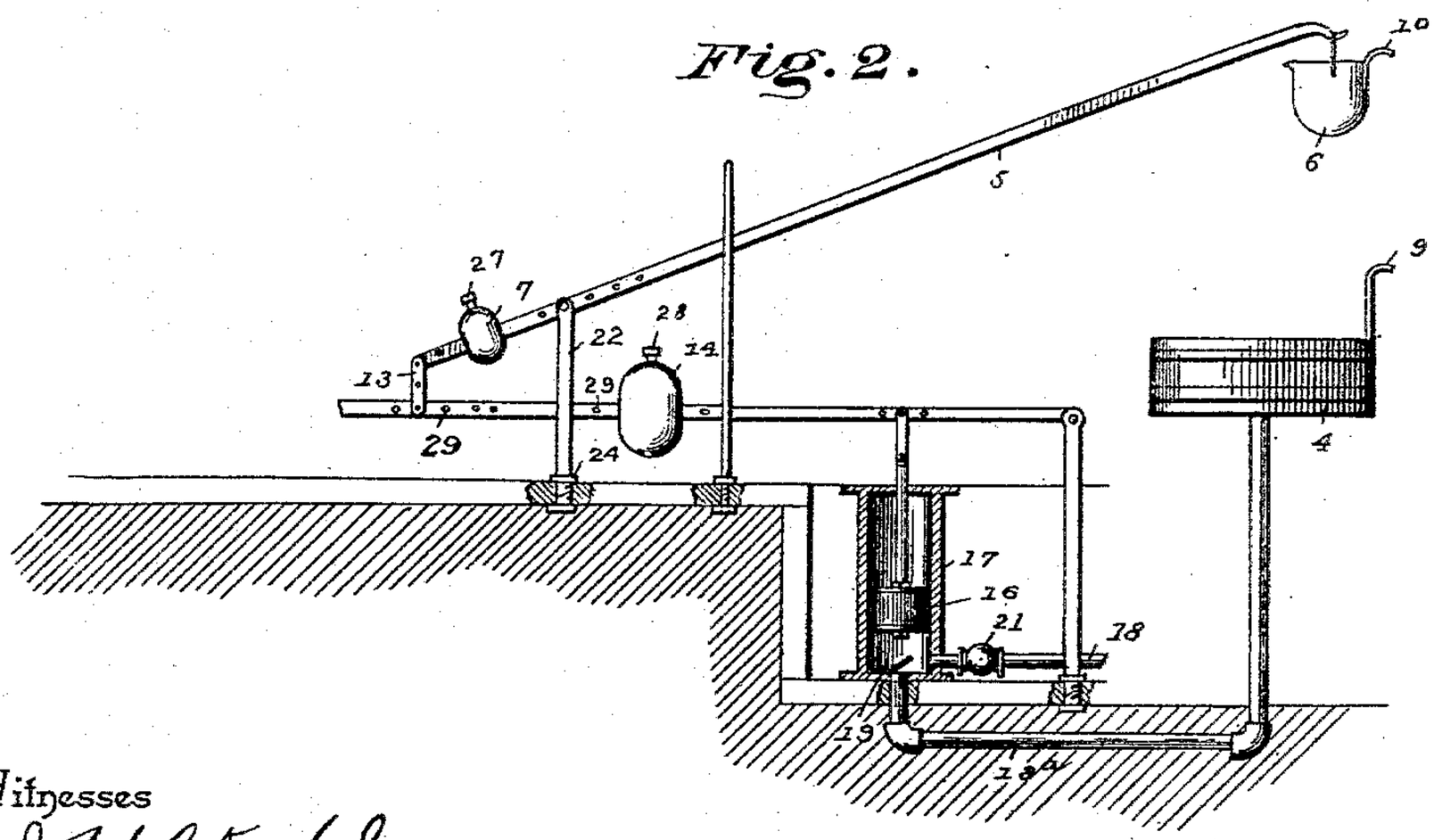



Fig. 2.

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# UNITED STATES PATENT OFFICE.

BENJAMIN MELLOR OF MARK, OF ELLICOTT CITY, MARYLAND.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 510,983, dated December 19, 1893.

Application filed July 25, 1892. Serial No. 441,173. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN MELLOR of Mark, a citizen of the United States, residing at Ellicott City, in the county of Howard and State of Maryland, have invented a new and useful Pump, of which the following is a specification.

My invention relates to improvements in pumps, and has special reference to motors for use in connection therewith, the same being adapted to be arranged to pump water from a tank, dam, or other elevated source where only a slight fall can be had, and also adapted to be arranged to pump from a well, spring, or other depressed source.

The objects of my invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings: Figure 1 is a view of my invention adapted to pump water from an elevated source. Fig. 2 is a partial view of the same, with the operating-lever reversed when it is desired to bring the pump-cylinder close to the source.

Referring to Fig. 1 of the drawings, the frame 1, is arranged in horizontal position with its rear end substantially under the source 2, which in this case is illustrated as a tank provided with a faucet or outlet 3, a receiver 4 being arranged beneath said outlet. The operating-lever 5 is fulcrumed at an intermediate point and is provided at its rear end with a depending tilting-cup 6, which, when the lever is elevated as shown in Fig. 1, is directly beneath the outlet in position to receive the water therefrom. A counter-balancing weight 7 is arranged upon the operating-lever upon the opposite side of its pivotal point 8 to normally hold the tilting cup in its elevated position. When full, the tilting cup is adapted to descend toward the receiver, and the latter is provided with a trip-arm 9, which engages a lip 10 upon the side of the tilting cup to tilt the latter and discharge its contents into the receiver. After its contents have been discharged, the counter-balancing weight elevates the cup to its normal position.

11 represents the pump-lever, fulcrumed at its end to a vertical standard 12, and connected at the opposite end by means of a link 13 to the extremity of the shorter arm of the operating-lever, whereby, as the longer arm of the operating-lever is depressed by the tilting cup when full, the longer arm of the pump-lever is elevated. An operating-weight 14 is adjustably secured to the pump-lever near its free end, the function of said weight being to depress the pump-lever after its elevation by the operating-lever, to operate the plunger-rod. The plunger-rod 15 is attached to an intermediate point of the pump-lever adjacent to its fulcrum, and the plunger 16, which is attached to the lower end of the plunger rod operates in a vertical cylinder 17, a supply-pipe 18 communicating with the lower end of the cylinder to receive the water as it is forced therefrom and convey it to the point of use. A connecting-pipe $18^a$ extends from the receiver to the lower end of the pump-cylinder to convey water from the former to the latter. An upwardly-operating valve 19 is arranged in the mouth of the connecting-pipe at the bottom of the cylinder to prevent the water from being forced backwardly therethrough.

The standard 22, upon which the operating-lever is fulcrumed, is stepped at its lower end in any one of a series of vertical perforations 23 in the frame, and is held in such position by securing-nuts 24, whereby the said standard may be adjusted toward or from the source to increase or diminish the leverage of the longer arm of the operating-lever, said lever being provided with a series of transverse perforations 25, to receive the transverse pivot-bolt 26, which is arranged in the upper end of the standard 22. The counter-balancing weight, which is secured to the shorter arm of the operating-lever, is mounted to slide thereon and is provided with an adjusting-screw 27, whereby said weight may be arranged at any desired distance from the fulcrum point of the lever. The operating weight which is attached to the pump-lever, is similarly mounted to slide thereupon, and is provided with an adjusting-screw 28, whereby it may be clamped at the desired point. The pump-lever is further provided with a series of perforations 29 to receive a transverse pin in the lower end of the connecting-link above mentioned, whereby the effective portion of said lever may be shortened or

lengthened at will. Said link is similarly perforated.

In Fig. 2 I have shown an arrangement of my invention in which the operating-lever is reversed with relation to the pump-lever, whereby the tilting cup is brought substantially over the pump-cylinder, thereby bringing said cylinder close to the receiver and shortening the connecting-pipe between said parts. This is adapted for peculiar situations in which it is impossible or impracticable to arrange the parts as shown in Fig. 1. The operation is the same in this form or arrangement of my invention as in that shown in Fig. 1.

The particular advantage of my invention lies in the fact that it may be employed to force water to a distance when the fall of water from which the power is derived is small, and such as may be derived from a dam or fall in a small stream or branch.

Further advantages of my invention are simplicity of arrangement and the small number of parts employed.

In operation, the tilting cup is filled from the source, and when full descends by gravity, thereby elevating the weighted end of the pump-lever. When the tilting cup reaches the trip, it discharges its contents into the receiver, from whence or from any preferred source of supply water is conveyed by the connecting-pipe to the cylinder of the pump, and the tilting cup being relieved of its weight, rises to its normal position, the weight upon the pump-lever meanwhile depressing the said lever and forcing the water through the supply-pipe.

It will be seen that the active operation of pumping is accomplished by the gravitating weight which is attached to the pump-lever, the operating devices which are connected to said pump-lever in each case being adapted merely to elevate said weighted lever.

It will be understood that the receiver may be provided with any suitable means for allowing the escape of the surplus water which is not carried off by the supply pipe 18ª, or such receiver may be allowed to overflow. The amount of water required for the operation of the pump mechanism has no definite relation to the amount of water which is received and discharged by the pump cylinder, and the ratio of such quantities is proportionate to the distance which the pump is required to force the water. For instance, when a definite amount of water is required to be delivered at a given point the pump mechanism will require a certain quantity of water for its operation, and if the distance through which the water must be forced is increased, the amount of water required for the operation of the pump must be correspondingly increased in order to supply the additional power. The means of adjustment of the weights and of the pivotal points of the levers enable the period or rapidity of stroke of the pump to be regulated to suit the distance through which the pump is required to force the water.

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

In a motor for pumps, the combination with the plunger-rod, of a terminally-fulcrumed pump-lever pivotally connected at an intermediate point to said plunger-rod, a constant operating weight adjustably connected to the free end of the pump-lever to vary the depression upon the plunger-rod, an intermediately-fulcrumed operating-lever having its shorter arm connected to the weighted end of the pump-lever and provided with an adjustable pivot to vary the relative lengths of the arms of the lever to suit the position of said operating-weight, a counterbalancing-weight adjustably connected to the shorter arm of the operating lever, and a variable weight connected to the longer arm of the operating-lever, said counterbalancing-weight being adjustable toward and from the pivotal point of the operating-lever to suit the position of said point and cause the longer and shorter arms of the lever to counterbalance each other at any adjustment of the pivotal point, whereby the relative avoirdupois of the constant and variable weights may be regulated irrespective of the pivotal point of the operating lever, substantially as specified.

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

BENJAMIN MELLOR OF MARK.

Witnesses:
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