

A. BAIRD, SR.

PUMP.

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936,076.

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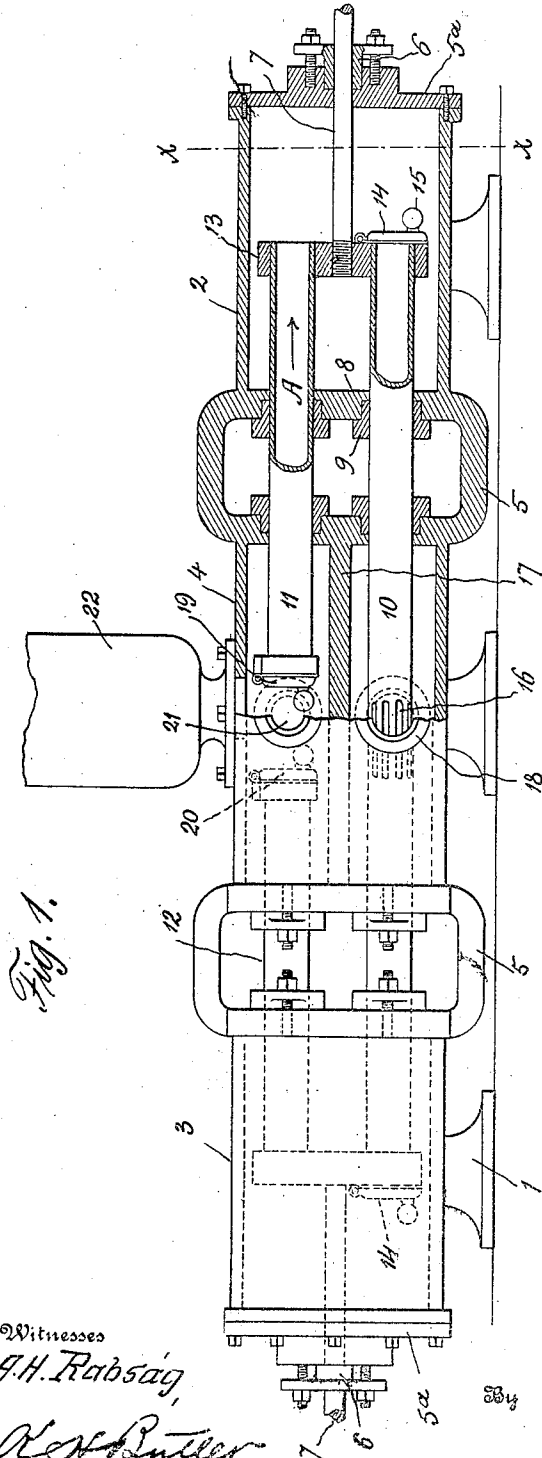


Fig. 1.

Fig. 3.

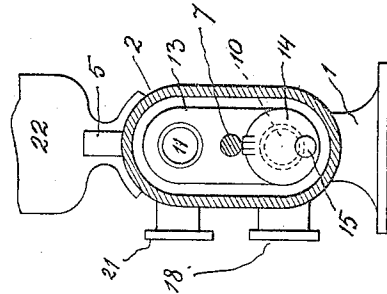
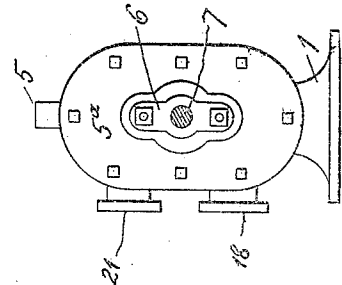


Fig. 2.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALEXANDER BAIRD, SR., a citizen of the United States of America, residing at Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to pumps, and the object of my invention is to provide novel gravity flap valves which will insure a positive operation of the pump.

My gravity flap valves are particularly designed for that type of reciprocatory pump wherein tubular pistons are employed for pumping water, this type of pump being common to water works and similar pumping stations.

It has been the practice heretofore to use spring-pressed valves in connection with the above type of pump and by reason of sticks and such foreign matter entering the pump, the operation of the spring-pressed valves has been retarded, rendering the pump ineffective for the purpose for which it is intended.

My invention aims to obviate the above defects by providing a gravity flap valve with which sticks and such foreign matter cannot interfere or prevent the valves from operating.

The detail construction entering into my invention will be hereinafter described and then specifically claimed.

Referring to the drawings:—Figure 1 is a side elevation of a pump partly in section equipped with my improved valve, Fig. 2 is an end view of the same, and Fig. 3 is a cross sectional view taken on the line X—X of Fig. 1.

In the accompanying drawings, 1 designates bed plates supporting a cylinder, which comprises integral end sections 2 and 3 and an intermediate section 4, said sections being coupled together by yokes 5. The sections 2, 3 and 4 of the cylinder are oval in cross section with vertical flat sides, and the outer ends of the cylinders 2 and 3 are closed by detachable heads 6 having a stuffing box 6 for piston rods 7, said rods being reciprocated by the usual well known type of steam engine. The yokes 5 are provided with openings 8 and glands 9, and extending through said openings and glands are tubular pistons

11 and 12 arranged above the tubular piston 10 with the combined length of the tubular pistons 11 and 12 approximately that of the tubular piston 10. The outer ends of the tubular pistons 10 to 12 inclusive are mounted in piston heads 13 which are connected to the piston rods 7, said heads being adapted to freely move within the end sections 2 and 3 of the pump.

Pivotally connected to the heads 13 at the ends of the tubular piston 10 are flap valves 14 having weights or knobs 15 which normally maintain said valves in a closed position closing the ends of the tubular piston 10. This piston intermediate the ends thereof is provided with a plurality of longitudinally disposed inlet ports 16, and separating said piston from the pistons 11 and 12, within the intermediate section 4, is a partition 17, whereby water admitted to the section 4 through the inlet opening 18 thereof will pass directly into the tubular piston 10. The confronting ends of the tubular pistons 11 and 12 are provided with flap valves 19 and 20, similar to the flap valve 14, and the section 4 above the partition 17 has a water outlet opening 21. This opening can communicate with a reservoir 22 arranged above the pump or with any suitable tank (not shown). Water admitted through the opening 18 passes through the tubular piston 10, opens the valves 14 and enters the sections 2 and 3 of the pump. Assuming that the tubular pistons are moving in the direction of the arrow A, Fig. 1, the water within the section 2 will be compressed and discharged through the tubular piston 11 and the opening 21, while water is accumulating in the section 3 for compression by a return stroke of the tubular pistons 10 and 11.

It is apparent that it will be impossible for sticks and foreign matter to prevent the valves 14, 19 and 20 from closing, and consequently a positive operation of said valves is insured and the efficiency of the pump considerably increased.

Having now described my invention what I claim as new, is:—

In combination, a cylinder comprising end sections and an intermediate section, yokes connecting the sections, said intermediate section being provided with an inlet and an outlet compartment, a hollow piston having its end disposed in the end sections extending through the inlet compartment, said

piston being provided with longitudinally extending peripherally spaced inlet ports, flap valves controlling the outer ends of the inlet piston, hollow discharge pistons disposed parallel of the inlet piston operating in the cylinder, means connecting the adjacent ends of the inlet piston and the discharge piston, and weighted flap valves con-

trolling the outer ends of the discharge pistons.

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

ALEXANDER BAIRD, Sr.

Witnesses:

MAX H. SROLOVITZ.

A. J. TRIGG.