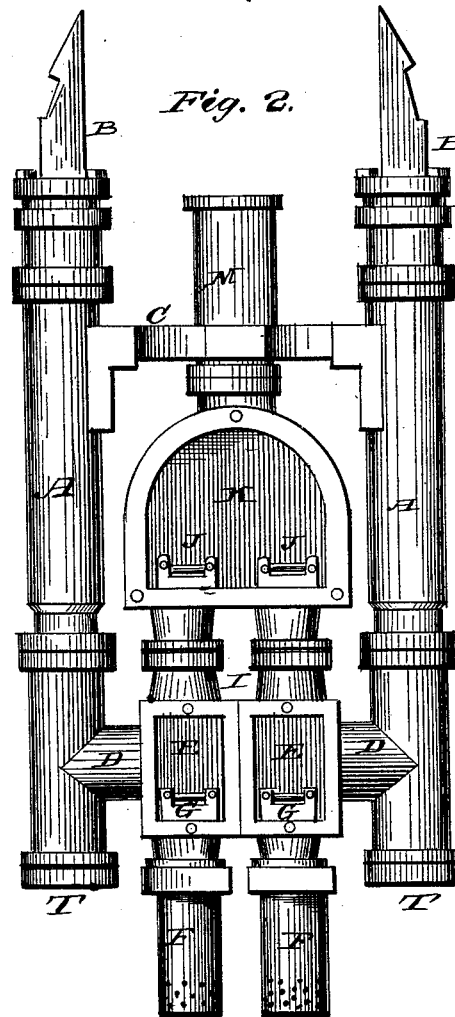
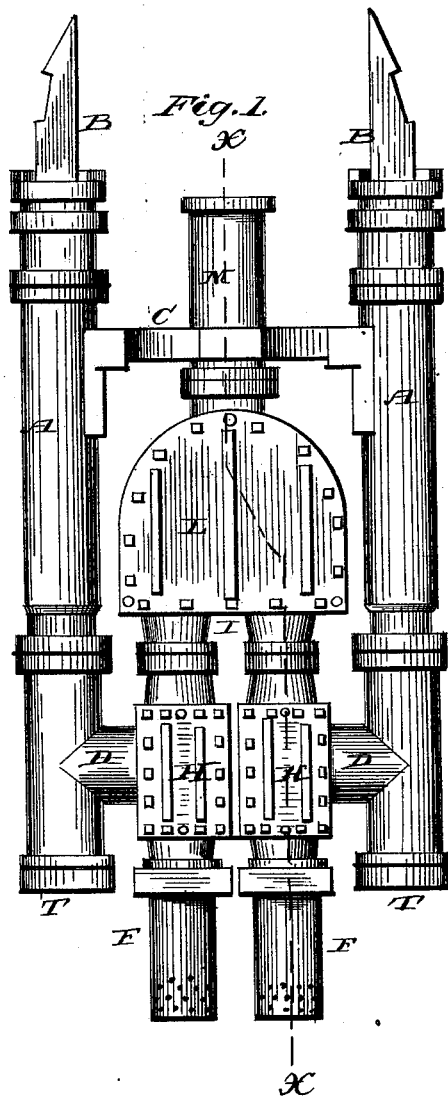


W. RODDA.
Double-Acting Pump.

No. 213,776.

Patented April 1, 1879.



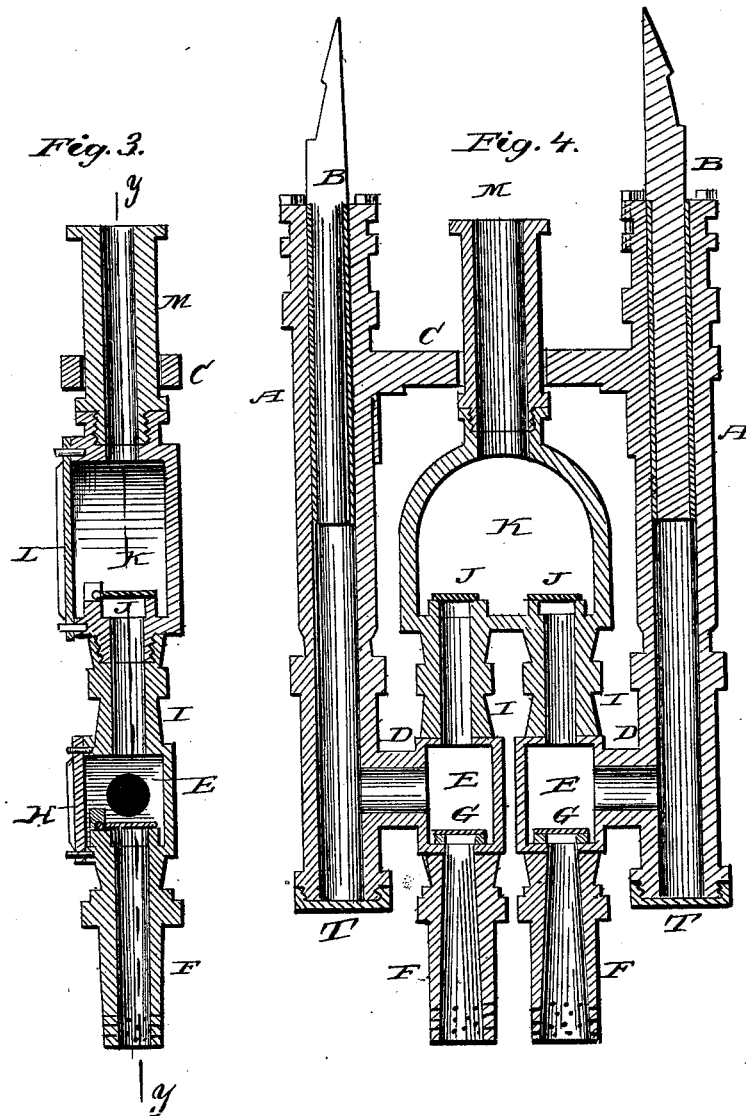
Witnesses
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Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM RODDA, OF BENNINGTON FURNACE, PENNSYLVANIA.

IMPROVEMENT IN DOUBLE-ACTING PUMPS.

Specification forming part of Letters Patent No. **213,776**, dated April 1, 1879; application filed December 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM RODDA, of Bennington Furnace, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Double-Acting Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front view of my improved pump. Fig. 2 is a similar view, the covers of the valve-chambers having been removed. Fig. 3 is a section on the line *x x*, Fig. 1; and Fig. 4 is a section on the line *y y*, Fig. 3.

Corresponding parts in the several figures are denoted by like letters of reference.

This invention relates to double-acting pumps; and its object is to provide a pump especially adapted for mining use, which shall be powerful, durable, and so constructed as to be readily cleaned of the mud, clay, &c., which almost invariably accumulates in pumps used in mines.

It consists in the improved arrangement and combination of parts, which will be hereinafter more fully described, and particularly pointed out in the claim.

The cylinders *A A* of my improved pump are arranged parallel to but independent of each other, they being connected by a cross bar or brace, *C*. The pistons *B*, which may be operated by any suitable mechanism, slide, in the usual manner, in the cylinders, the lower ends of which are closed by screw-caps *T*, which may be readily removed, so as to enable the cylinders to be easily and quickly cleaned of any accumulations of mud, &c.

Branch tubes *D*, extending laterally from the cylinders *A*, open into the valve-chambers *E E*, which are arranged over the ends of the suction-pipes or wind-bores *F F*, which are closed by valves *G G*, opening upward into the valve-chambers. Said valve-chambers and suction-pipes are arranged, as shown, parallel with, between, and in a plane with the cylinders *A*. The valve-chambers are provided in front with removable covers *H H*, which, owing to the construction just de-

scribed, are easily accessible, and may be readily removed for the purpose of cleaning said valve-chambers.

Pipes or tubes *I I* project upwardly from the valve-chambers *E E*, and are provided with valves *J J*, opening into a chamber, *K*, which, like chambers *E E*, is provided in front with a removable cover, *L*. The top of the chamber *K* is semicircular in shape, and the eduction-pipe *M* projects upwardly from its central portion through a perforation in the cross-bar *C*, by which it is held securely.

The semicircular shape of the top of chamber *K*, I have found to obviate, to a great extent, the accumulation of dirt and mud, there being no sharp corners to retain such matter, which, instead, is carried off by the current of water passing through the chamber.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation of my invention will be readily understood.

By the operation of the pistons the water is drawn through the wind-bores into the valve-chambers *E E*. From thence it is forced, through tubes *I I*, upwardly into the chamber *K*, and finally out through the eduction-pipe *M*.

It will be perceived that, the valve-chambers *E E* being separate, the operation of either piston may be discontinued without affecting the operation of the pump. This is an important advantage, not only in cases of breakage or accident to parts of the machinery, but especially because, when it is necessary to clean the pump, one of the pistons may be thrown out of action, and the covering-plate of the valve-chamber with which the cylinder in which it works is connected may then be removed, as well as the screw-cap at the bottom of the cylinder, for the purpose of cleaning these parts, the operation of the other piston being in the meantime continued without interruption.

When it is necessary to clean out chamber *K*, the pump must of course be stopped; but this is scarcely ever necessary, because, owing to the semicircular shape of the top of chamber *K*, as above described, dirt cannot accumulate in said chamber in sufficient quantities to interfere with the operation of the pump.

I do not broadly claim the detachable cov-

ers to the valve-chambers, nor do I claim the arrangement shown in the double-acting pump patented to John Ross, January 22, 1867; but,

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

As an improvement in double-acting pumps, the parallel independent cylinders A A, having pistons B B and detachable bottom screw-caps T T, wind-bores F F, valve-chambers E E, having in front detachable covers H H, tubes I I, valve-chamber K, having curved semicircular top, eduction-pipe M, and perfo-

rated cross-bar C, connecting the cylinders A A, and embracing the eduction-pipe, the whole arranged and operating substantially as herein described, for the purpose shown and specified.

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

WILLIAM RODDA.

Witnesses:

THOMAS MCNEILL,
GRIFFITH BONNER.