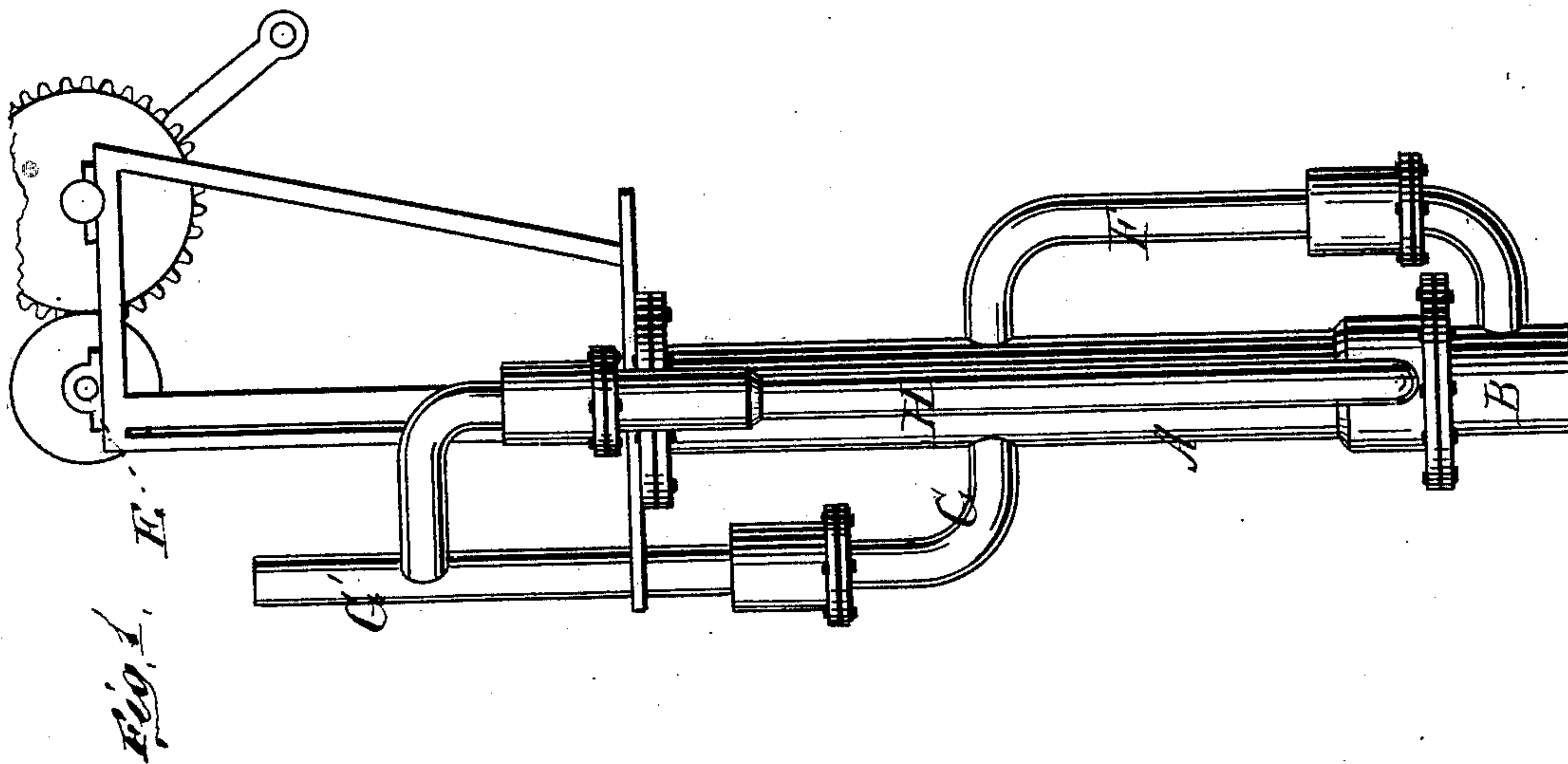
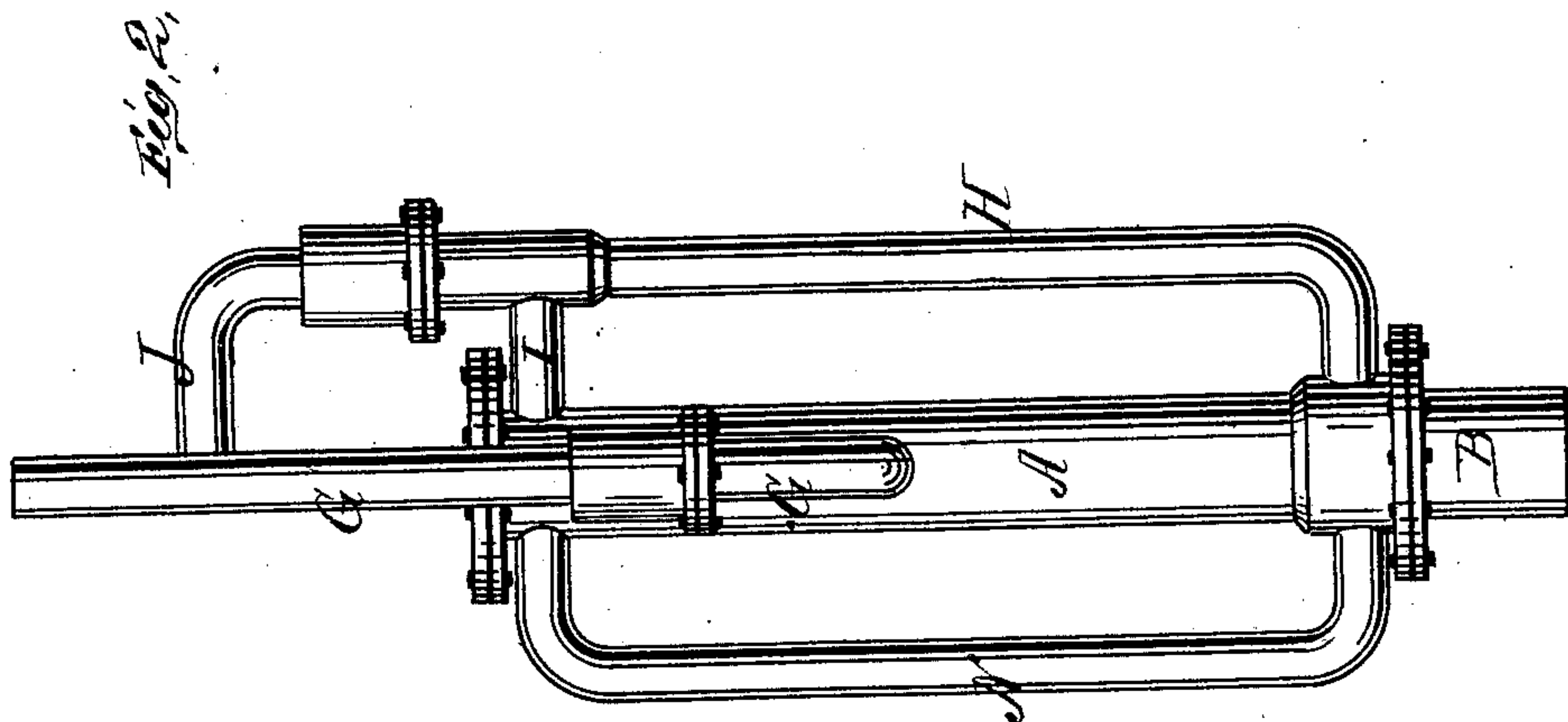


W. M. WHITELEY.
Pump.

No. 205,935.

Patented July 9, 1878.



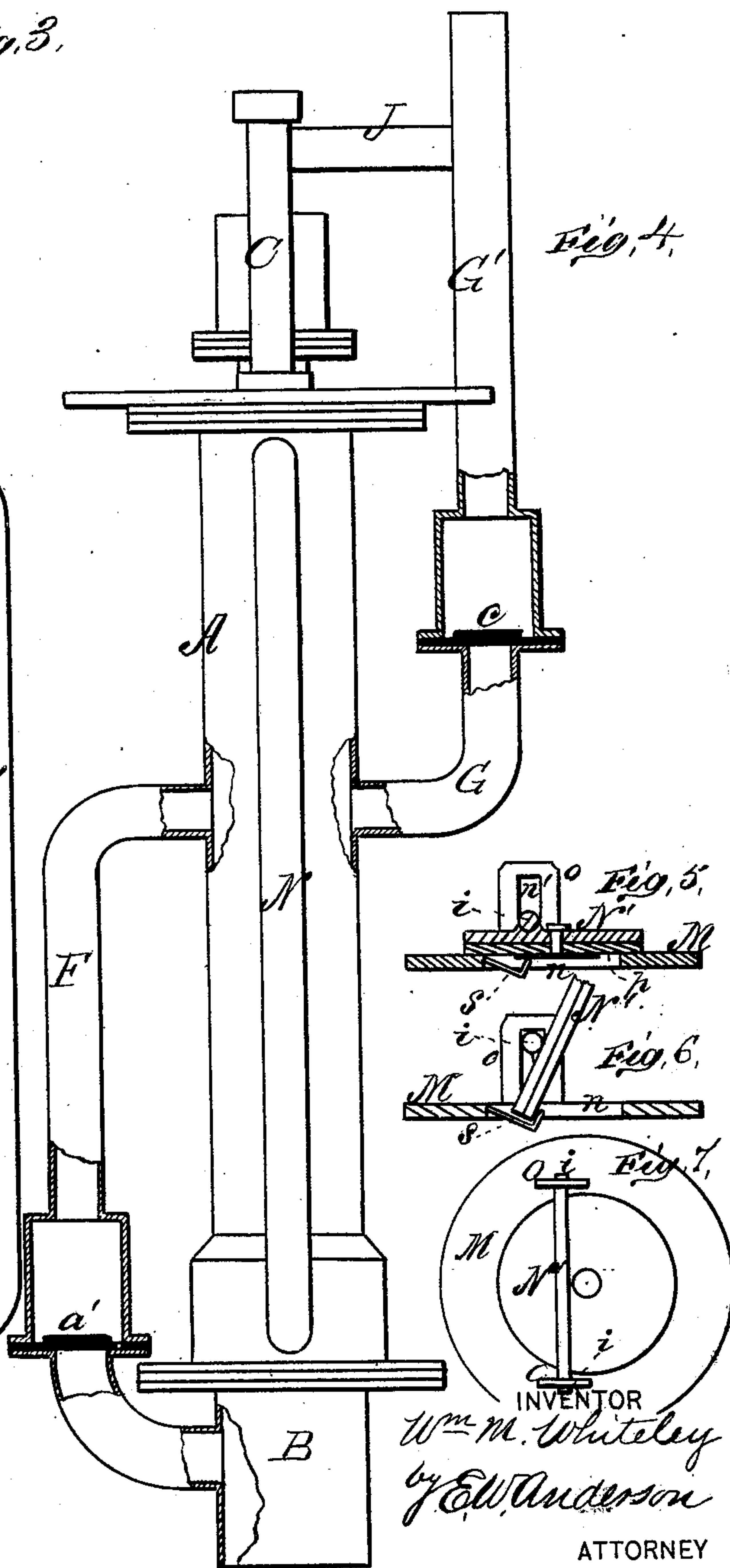
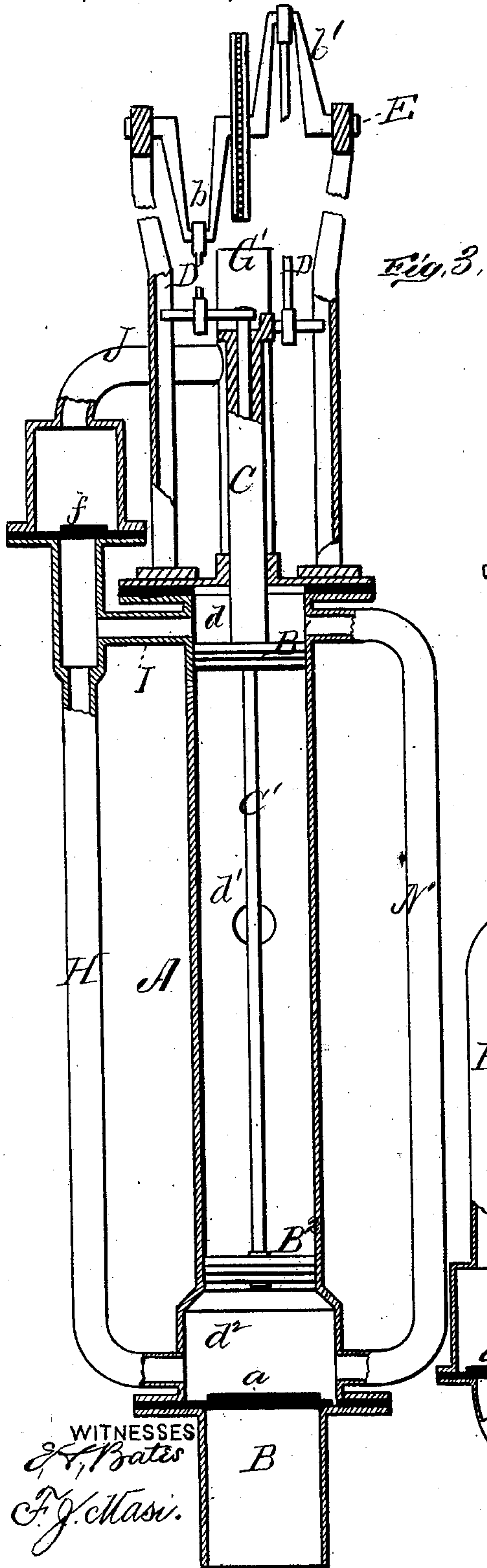
WITNESSES
H. Bates
C. J. Masi

INVENTOR
Wm. M. Whiteley.
by E. W. Anderson,
ATTORNEY

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UNITED STATES PATENT OFFICE.

WILLIAM MEREDITH WHITELEY, OF JOPLIN, MISSOURI.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **205,935**, dated July 9, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM MEREDITH WHITELEY, of Joplin, in the county of Jasper and State of Missouri, have invented a new and valuable Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figures 1, 2, and 4 of the drawings are side views of my improved pump, the latter partly in section. Fig. 3 is a longitudinal vertical section of pump-barrel, with its pipes partly in section; and Figs. 5, 6, and 7 are detail views of the valve.

This invention has relation to improvements in pumps for wells, cisterns, and mines.

The object of the invention is to devise a pump for the purposes mentioned that will discharge a continuous stream from a nozzle or spout.

The nature of the invention will be fully set forth hereinafter.

In the accompanying drawings, the letter A designates a strong metallic barrel, having at its lower end a supply-pipe, B, closed by a valve, *a*, opening upward. $B^1 B^2$ designate two properly-packed unvalved pistons arranged in the barrel A. The piston-rod C of the piston B^1 is tubular, and that C^1 of piston B^2 solid, and carried up the rod C, as shown in Fig. 3. They are connected by pitmen D to the opposite arms *b b'* of a double-crank shaft, E, operated by a suitable mechanism to cause the said pistons to approach and recede from each other. F represents a metal tube, opening at its lower end into the supply-pipe below its valve, and at its upper end into the pump-barrel at the space between the pistons $B B^1$, aforesaid. The tube F has at a point on a level with the valve *a* of the supply-pipe a valve, *a'*, opening upward. Opposite the point of entrance of the tube F into the barrel a second pipe, G, enters, that curves upward and enters the discharge-pipe G' . The pipe G has also a valve, *c*, opening upward.

It will be observed that there are three chambers in the barrel—one above the pis-

ton B^1 , one below the piston B^2 , and the third between them.

H represents a pipe, opening at its lower end into the chamber d^2 , and connected by means of a short coupling, I, with the upper chamber. The pipe H is provided with a valve, *f*, opening upward at a point above the coupling I, and is carried to the main discharge-pipe by means of an elbow, J. Diametrically opposite pipe H is another pipe, N, opening at one end into the chamber *d*, and at the other into the chamber d^2 . This pipe is auxiliary to pipe H, and may sometimes be dispensed with. In this case pipe H should be of greater capacity.

The operation of my improved pump is as follows: When the pistons recede from each other a vacuum is formed in the chamber d^1 , the valve *a'* is opened, and water rushes up the pipe F into the chamber d^1 , aforesaid. At the same time the air and water in the chambers *d d^2* are forced, through the pipes H and N, valve *f*, and elbow J, into the discharge-pipe G' , above its valve *c*. When the pistons approach each other the valve *a'* of pipe F closes, and that, *c*, of pipe G opens, and the water is forced out of the chamber d^1 , through the valve *c*, out of the discharge-pipe. At the same time vacuums are made in the top and bottom chambers *d d^2*, valve *a* opens, and water rushes up the supply-pipe B into the chamber d^2 , and, through the pipes H and N, into the chamber *d*. When the pistons again recede from each other the water in the chambers *d d^2* is forced out, the former, through connection I and valve *f*, into the discharge-pipe G, and out of the latter, through pipes A N and the said valve *f*, also into the said discharge-pipe.

It is evident from the above description that this arrangement of pipes and valves in connection with a pump-barrel and the unvalved pistons, operating as set forth, produces a pump of exceptional excellence for discharging water continuously. It is also evident that, by the use of a condenser or condensers in connection with the discharge-pipe G, the lifting-pump is converted into an excellent force-pump for many purposes.

In practice, the valves *a a' c f* will be of any of the usual forms of clacks where clear water

is to be pumped; but where muddy water or water and sand mixed are to be raised, I prefer to use a valve of the following description: It consists of a metallic seat, M, having at each side of its opening *n* a vertically-slotted post, *o*, and of a valve, N', having journals *i*, that engage the slots *n'* of the posts *o*. The valve is of metal, and is provided with a leather or rubber facing, *p*. When the valve is raised by the upward flow of water, the journals *i* ascend the slots *n'*, thereby causing the said valve to assume a nearly vertical position, when the silt, sand, or mud will run back through the opening in the valve-seat, and prevent the valve from clogging. The valve is prevented from tilting over by means of a stop, *s*, projecting inward toward the center of the opening in the seat.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a double-action pump, the combination, with the pump-barrel A, having a supply-pipe, B, with upwardly-opening valve *a* and the

unvalved pistons, approaching to and receding from each other alternately, of the pipe F, opening at one end into the pump-barrel between the pistons, and at the other into the supply-pipe below its valve, the discharge-pipe G', opening into the pump-barrel opposite pipe F, and provided with valve *c*, the pipes H N, opening into the upper and lower chambers of the pump-barrel, the valve *f* in pipe H, and a connection between the pipes H and G' above the valve of the latter, substantially as specified.

2. The pump-valve consisting of the seat M, having stop *s* and vertically-slotted posts *o*, and the plate N', having journals *i*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM MEREDITH WHITELEY.

Witnesses:

S. SIMONSON,

GEO. W. GABINE.