(No Model.) 2 Sheets—Sheet 1.

W. H. LAVINIA, Dec'd.

M. B LAVINIA, Administratrix.

SECONDARY VALVE.

No. 475,455. Patented May 24, 1892.

Fig. 1.

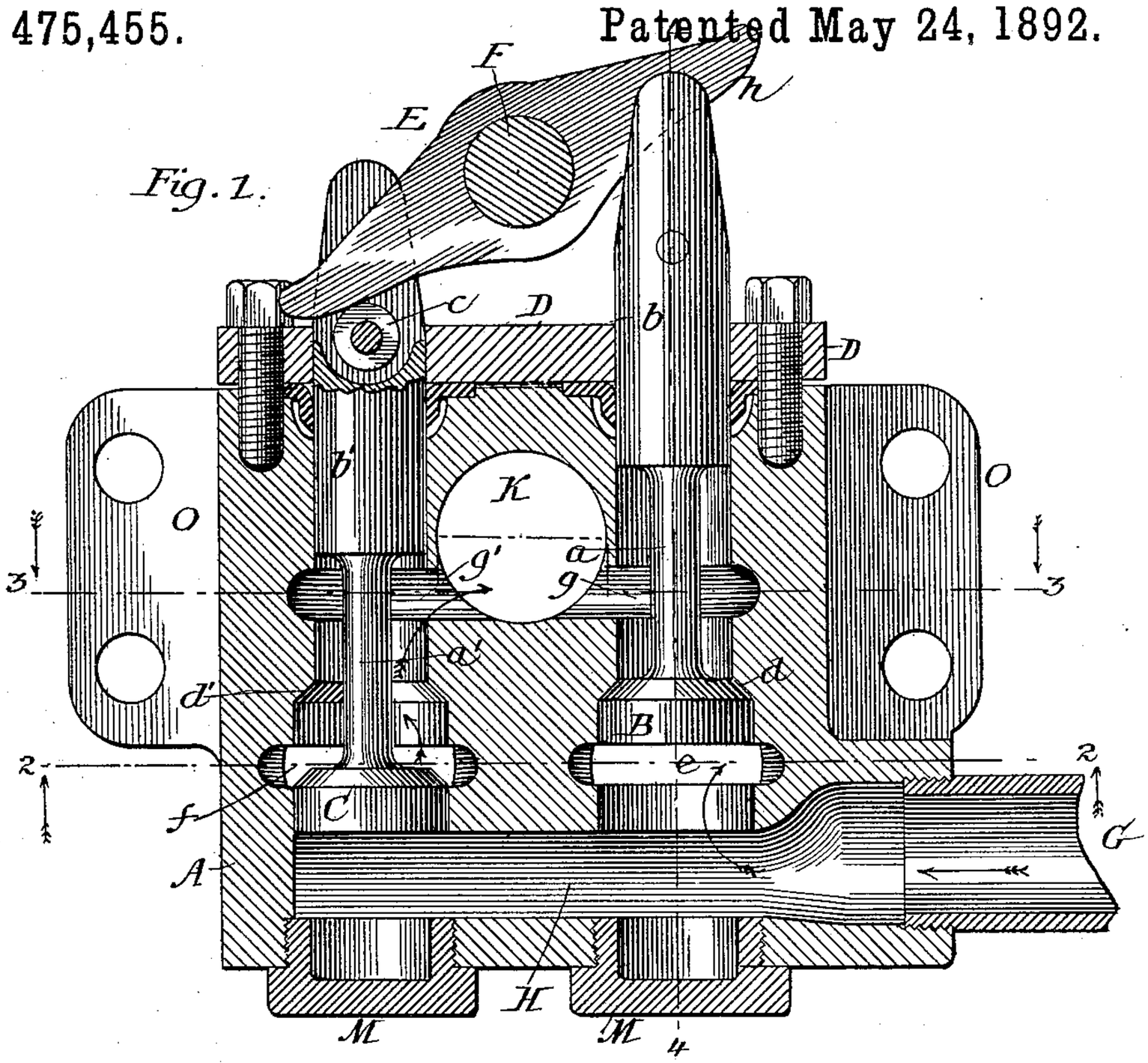
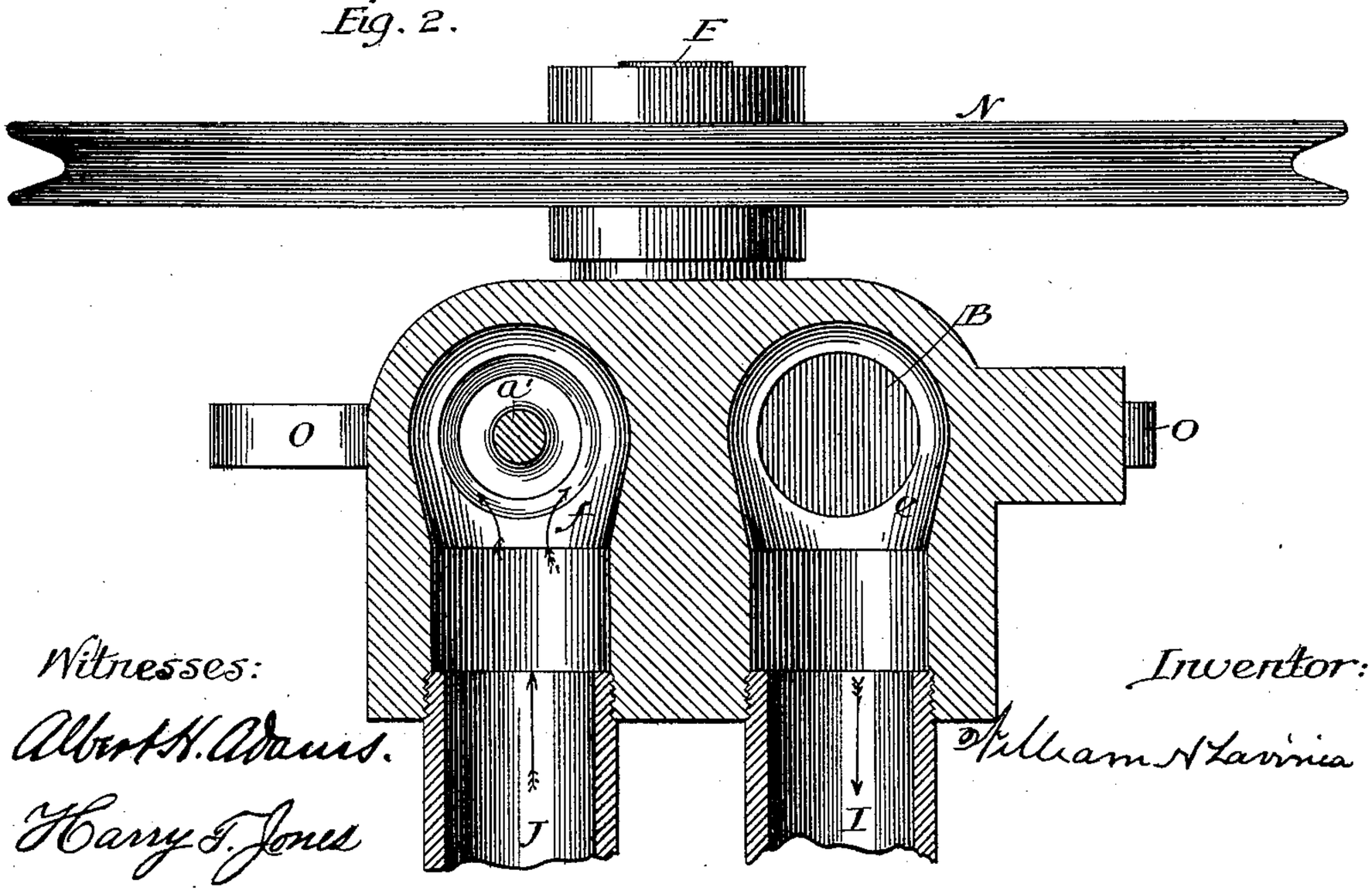


Fig. 2.



Witnesses:

Albert H. Adams.

Harry T. Jones

Inventor:

William H Lavinia

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

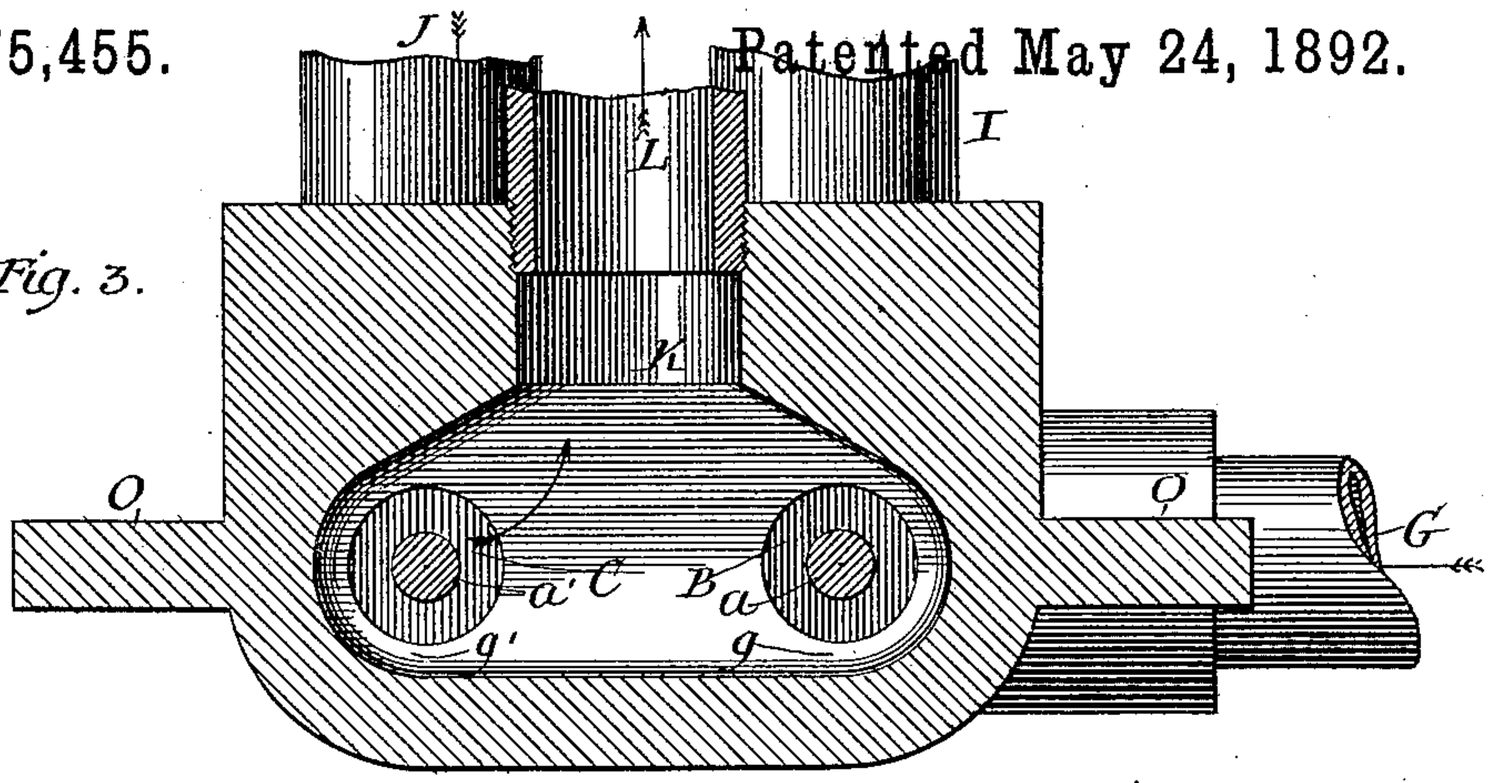
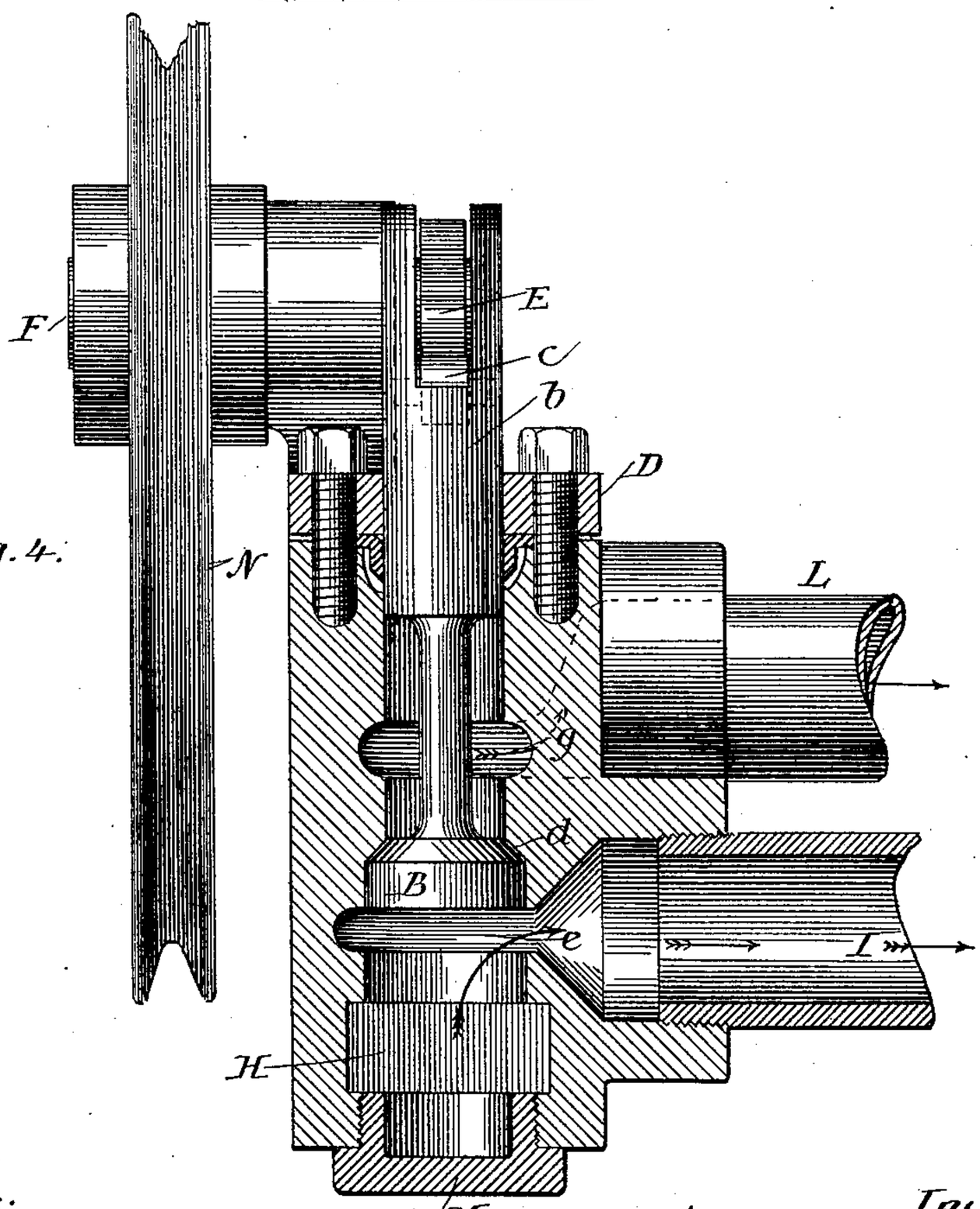


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. LAVINIA, OF CHICAGO, ILLINOIS; MARY B. LAVINIA ADMINISTRATRIX OF SAID WILLIAM H. LAVINIA, DECEASED.

SECONDARY VALVE.

SPECIFICATION forming part of Letters Patent No. 475,455, dated May 24, 1892.

Application filed November 27, 1889. Serial No. 331,823. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. LAVINIA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Secondary Valves, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section, the pulley for operating the lever being omitted. Fig. 2 is a section at line 2 2 of Fig. 1, looking up. Fig. 3 is a section at line 3 3 of Fig. 1, looking down. Fig. 4 is a section at line 4 4 of Fig. 1, looking to the left.

In Figs. 2 and 4 the pulley is shown in elevation.

The drawings may be regarded as about three-fourths of full size; but the size may be varied, as circumstances require.

My improvement is primarily designed to be used in connection with hydraulic elevators, but may be used for other purposes. It is now common to use a secondary valve to control the movement of a motor which is used to operate a primary valve, which primary valve in hydraulic elevators is used to control the flow of water to the opposite ends of the cylinder.

The object of my invention is to provide an improved secondary valve simple in construction and easily operated, which I accomplish as illustrated in the drawings, and as hereinafter described.

That which I claim as new will be pointed out in the claims.

In the drawings, A represents a case, which may be cast, and which contains two valve-chambers which communicate with an inlet-pipe.

B represents one of the valves. C is the other valve. Each of these valves is provided with a small stem *a a'*, the upper end of which stem is connected with a larger stem *b b'*, which stems pass up through the cap D and are forked at their upper ends. Each of these parts *b b'* is provided with a roller *c*, one of which is shown in Fig. 1.

E is a lever rigidly secured to a shaft F. The ends of this lever are arranged within the forks of the stems *b b'*, but are not connected therewith.

d d' are the valve-seats.

G is an inlet-pipe, through which water can flow under suitable pressure to a chamber or passage H in the case A.

e is an outlet-passage, with which a pipe I is connected, which pipe leads to the motor which controls the primary valve.

f is another outlet, with which a pipe J is connected. The motor is provided with a piston-head, and the pipe I, for the purpose of this description, is supposed to pass to the upper side of such piston-head and the pipe J passes to the under side of the piston-head of the motor.

K is the discharge-outlet from the case A, with which outlet, as shown, a pipe L is connected. Both of the valve-chambers communicate by means of passages *g g'* with the outlet-passage K.

M are caps over the lower ends of the valve-chambers.

N is a pulley upon the shaft, which is designed to receive a cord, by means of which cord and pulley the position of the lever E can be changed at pleasure, so as to control the flow of water to the motor.

O are flanges by means of which the case can be secured to any suitable support.

The operation is as follows: When the valves B C are in their normal position, both will be against their seats, and then water can flow through the passages *e f* and pipes I J to both sides of the piston-head of the motor, equalizing the pressure thereon, and then the motor will remain at rest. Now if one of the valves C, for example, be forced down by the lever E to the position shown in Fig. 1 water can pass from the passage or chamber H through the port *e* and pipe I to the upper side of the piston-head of the motor; but water cannot flow from the chamber H through the port *f* and pipe J to the under side of such piston-head while the lever E is in the position shown in Fig. 1, and the force of the water upon the upper side of the piston-head of the motor will force it down and the water beneath the piston-head of the motor will at the same time flow out through the port *f* and passage *g'* and the discharge-outlet K, the upper side of the valve C then being relieved from pressure. The primary valve being properly

arranged, the movement of the motor will cut off the flow of the water, which is used to operate the hydraulic elevator from one end of the cylinder and permit its flow to the other end. When the lever E is released, which may be done before the piston of the motor reaches the end of its stroke, the pressure of the water on the under side of the valve C will immediately force it up against its seat, opening the port *f* to admit water from the chamber H. Then both ports *e f* will be open and the water will flow from the chamber H to both sides of the piston-head of the motor and the same will remain at rest so long as both of said ports *e f* remain open. If the lever E be held in the position shown in Fig. 1 until the piston-head of the motor reaches the end of its stroke, then water will cease to flow through the passage *e* to the upper side of the piston-head of the motor, and the ram of the water in the chamber H, acting on the under side of the valve C, will be immediately felt by the operator, who has control of the lever, and he will thus be notified that the piston-head of the motor has reached the end of its stroke. If the end *h* of the lever E be forced down, the valve B will be carried down below the port *e*, cutting off the flow of water through such port to the motor, and the port *f* being then open water will flow through such port *f* and pipe J to the under side of the piston-head of the motor and its movement will operate the primary valve. Whenever the lever is released from the valve B, it will be at once returned to its normal position by the pressure of the water in the chamber H, and if not released until the piston of the motor reaches its upward limit the ram of the water on the valve B will be at once felt by the operator, as before stated, relative to the valve C. With my valve no springs are used, and the operator can know when the piston of the motor has completed its stroke.

I make no claim for the construction of the motor and have referred to the same simply for the purpose of describing the operation of my improved secondary valve.

It is not essential that the valve be in the position shown in Fig. 1 when in use. It might be used with the other end up as well as in other positions.

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

1. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a vibrating lever disconnected from said stems and having a fixed pivot and located practically as described to engage the said stems, substantially as described.

2. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a vibrating lever disconnected from said stems and having a fixed pivot and located practically as described to intermittently engage said stems, substantially as described.

3. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a lever pivoted between its ends upon a fixed pivot and having its end portions disconnected from said stems and located practically as described to respectively engage said stems, substantially as described.

4. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing and provided with anti-friction rollers, and a lever disconnected from said stem and having a fixed pivot and located practically as described to engage the said anti-friction rollers of said stems, substantially as described.

WILLIAM H. LAVINIA.

Witnesses:
ALBERT H. ADAMS,
HARRY T. JONES.