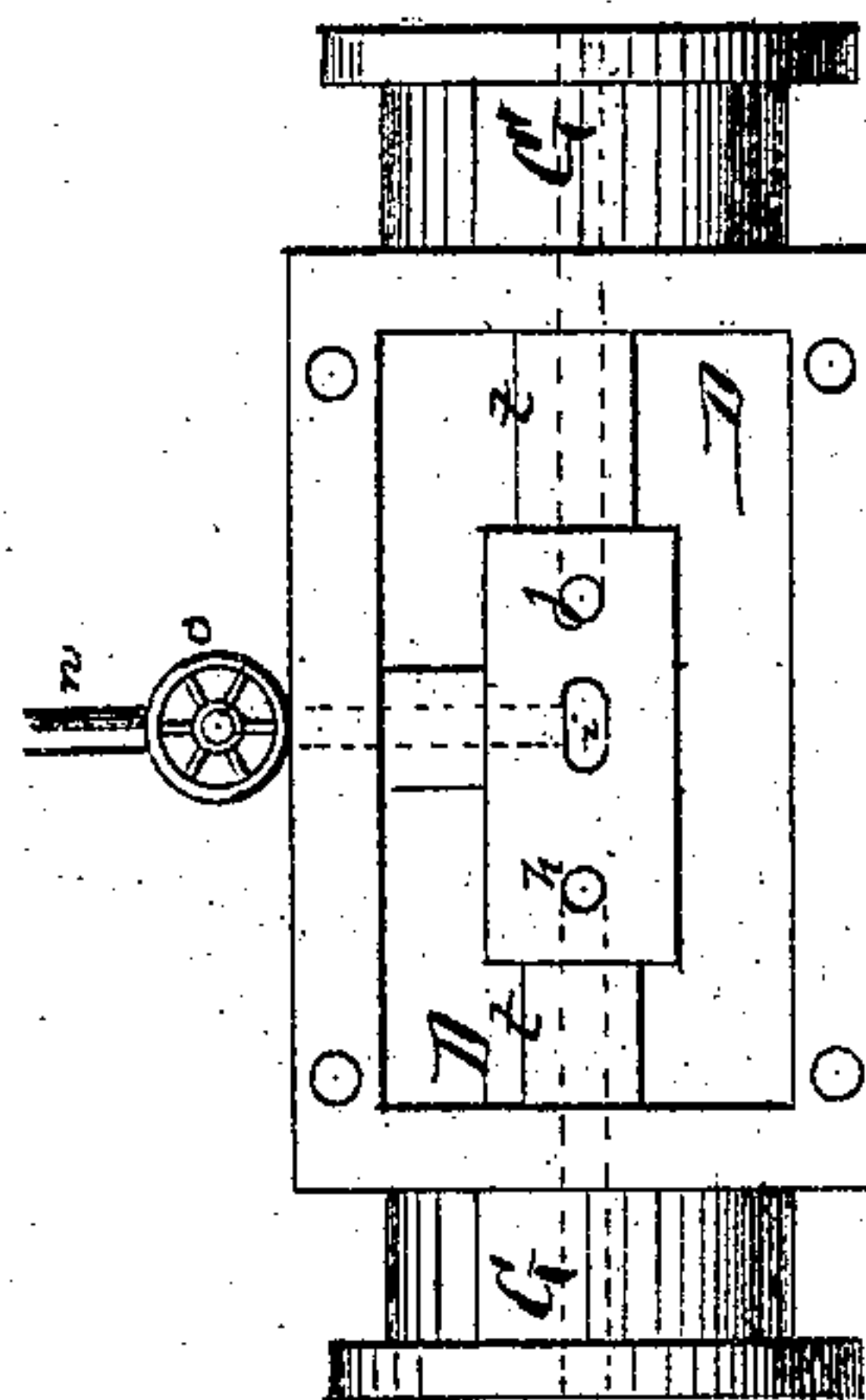
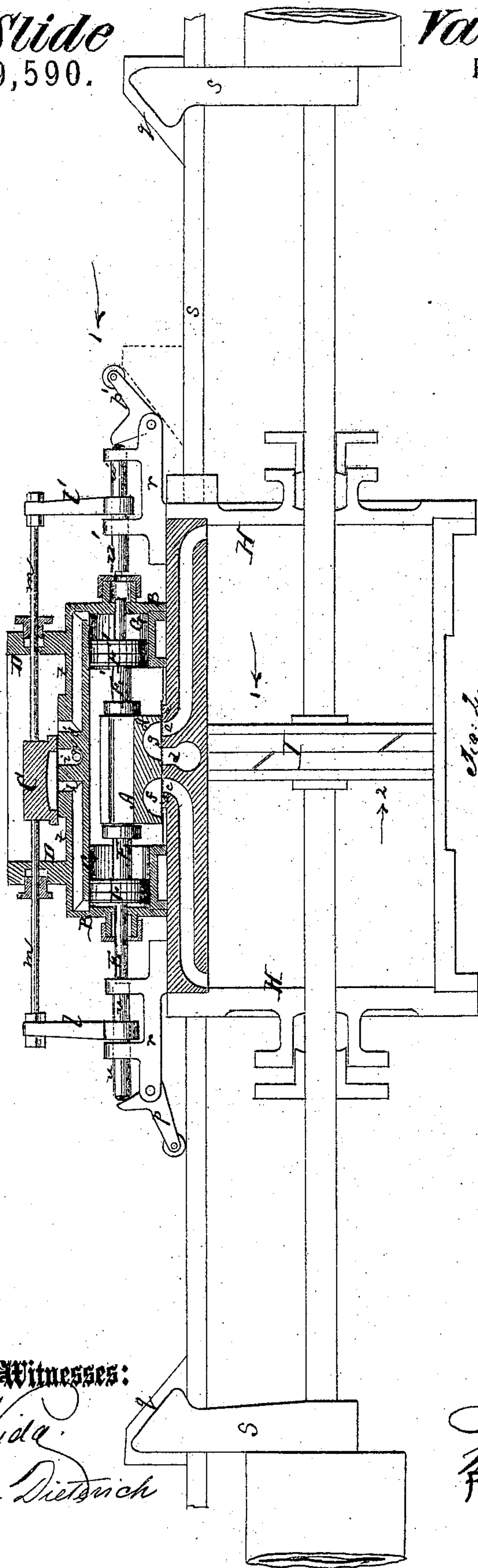


T.E. Evans, W.R. Thomas & J. Hunt's

[72.] *Slide*
No. 119,590.

Valve.

Patented Oct. 3, 1871.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS E. EVANS, WILLIAM R. THOMAS, AND JOSHUA HUNT, OF CATASAUQUA, PENNSYLVANIA.

IMPROVEMENT IN VALVE-GEARS.

Specification forming part of Letters Patent No. 119,590, dated October 3, 1871.

To all whom it may concern:

Be it known that we, THOMAS E. EVANS, WILLIAM R. THOMAS, and JOSHUA HUNT, of Catasauqua, in the county of Lehigh and State of Pennsylvania, have invented a new and Improved Valve-Gear; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a vertical longitudinal section of our improved valve-gear. Fig. 2 is a plan or top view of the upper valve-chamber.

Similar letters of reference indicate corresponding parts.

Our invention consists in the improvement of slide-valves, as hereinafter fully described and subsequently pointed out in the claims.

A in the drawing represents the main slide-valve, operating on the elevated bottom *a* of a steam-chest, B, above the ports *c d e*. The valve A has two recesses, *f* and *g*, as shown. C is the auxiliary slide-valve, working in a chamber, D, which forms the upper part of the steam-chest B, and over these ports, *h*, *i*, and *j*, in a bridge, *t*, of the chest. The valve A is placed between two piston-rods, E E', which may be made in one piece and extend through the ends of the steam-chest. Pistons F and F' are, respectively, mounted upon the rods E E' and work in the cylindrical terminuses G and G' of the steam-chest. The ports *h* and *j* lead to these cylinders G G', as shown. The central port *i* is, by a pipe, *n*, connected with the exhaust *d* of the main cylinder, the pipe *n* having a valve or cock, *o*, whereby the amount of exhaust steam escaping from the cylinders G G' can be regulated. Elbow-levers *p p'* are pivoted to frames *r*, opposite the outer ends of the piston-rods E E', to be actuated by wedges or inclined planes *q* that project from a frame, *s*, receiving reciprocating motion from the main piston I of the principal cylinder H. *m* is a horizontal bar connected to the valve C, and provided at the ends with pendent arms *l* and *l'*,

respectively, which are fastened to sliding rods *u* and *u'*. These rods are, respectively, interposed between the elbow-levers *p p'* and the piston-rods E E', as shown.

When at the end of one stroke of the piston I, in the direction of the arrows 1, an elbow, *p*, has been swung so as to push the rod *u* and valves A and C and all appendages to one side in the same direction, such motion is insufficient to complete the stroke of the valve A, but leaves it in the middle position, so that it will admit steam to neither port *c* or *e*. The steam confined in the cylinder G holds the piston F back and prevents thereby the main valve from completing its stroke. Considerable jar and concussion are thereby avoided. The motion of the valve C opens, however, the port *j*, which lets live steam into the cylinder G', pushing the piston F', and completing the stroke of the main valve, bringing it into the position shown in Fig. 1, in which position the piston I moves in the direction of the arrow 2, the cylinder G at the same time exhausting into the pipe *n*.

By the stated arrangement it will be seen that the valve A is kept on the center for an instant, or any desired length of time, which can be regulated by the cock O. For pumping-engines this is of great importance, as it gives time to the pump-valves to gradually open and close.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The bell-cranks *p p'*, applied indirectly against the ends of the rods E and E' so as to move the main valve A to the middle position, as set forth.

2. The combination of the valve A with the rods E E', pistons F F', ports *h j*, exhaust-pipe *n*, and auxiliary valve C, all arranged to operate as specified.

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(72)