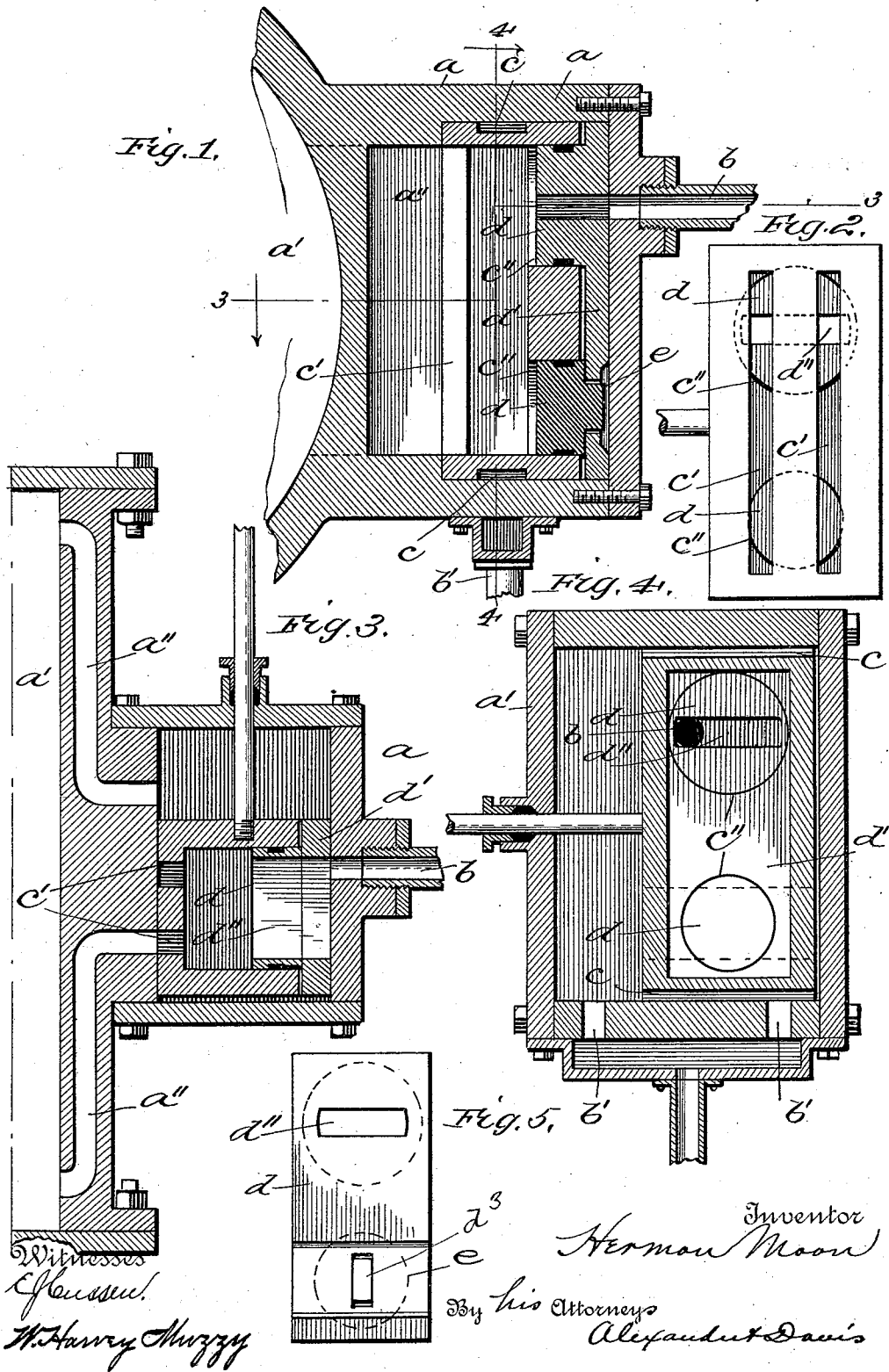


(No Model.)

H. MOON.
SLIDE VALVE.

No. 485,505.

Patented Nov. 1, 1892.



UNITED STATES PATENT OFFICE.

HERMON MOON, OF GROVE CITY, PENNSYLVANIA.

SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 485,505, dated November 1, 1892.

Application filed April 29, 1892. Serial No. 431,161. (No model.)

To all whom it may concern:

Be it known that I, HERMON MOON, a citizen of the United States, residing at Grove City, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Slide-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a vertical transverse section of my valve applied to the side of an ordinary cylinder; Fig. 2, a detail view of the valve; Fig. 3, a horizontal section on the line 3 3 of Fig. 1; Fig. 4, a vertical longitudinal section on the line 4 4 of Fig. 1, and Fig. 5 a detail view of the movable wearing-plate.

This invention has relation to that class of slide-valves covered by my former patent, No. 450,470, granted April 14, 1891; and it consists of certain novel features of construction hereinafter described and claimed.

In the drawings, *a* designates the valve-chest, which is formed on or secured to the side of a suitable cylinder *a'*, provided with the ports *a''*. Leading into the chest, near its upper end, is the inlet-pipe *b*, and formed in its lower end are the two exhaust-ports *b'* *b'*, communicating with the exhaust-pipe in the same manner as in my former patent. The reciprocating valve working in the chest is made hollow and rectangular in shape and is provided with a groove *c* on its upper and lower ends to provide for a free exhaust. The inner wall of the valve is provided with two long vertical slots *c'*, which extend the full length of the valve and alternately register with the cylinder-ports during the reciprocations of the valve. The outer wall of the valve is provided with two cylindrical openings *c''* *c''* of unequal size, the upper larger one being located near the upper end of valve and the lower one near its lower end. Fitting and working in these openings are pistons *d*, the upper one of which is secured to the inner side of a movable rectangular plate *d'*, which bears against the adjacent wall of the valve-chest, and the lower one bears loosely against this plate and is provided with a rectangular projection *d³*, which fits in an opening or recess in the plate. In line with the steam-inlet a horizontal slot *d''* is formed

through the plate and upper piston, the slot being of such length that it is always in communication with the inlet, irrespective of the position of the valve.

The operation of the valve is evident. The steam passing into the hollow valve exerts a constant pressure outwardly upon the pistons and keeps the pressure-plate pressed against the outer wall of the chest, thereby insuring a smooth and steady movement of the valve and compensating for the wear of the parts. Employing two pistons, one near each end of the movable plate, is advantageous in that it enables the valve-ports to be made longer and distributes the pressure more evenly, preventing binding and lifting off the seat. Making the valve-ports longer makes the engine run stronger and quicker, as is evident, the necessary volume of steam being permitted to enter the cylinder quicker on account of the greater area of the ports, and the advantage found in practice from making two parts in the valve is that the valve is thereby made to run lighter. In order that the pressure upon the plate will be evenly distributed over its entire bearing-surface, the pressure-area of the two pistons is equal, the upper one being sufficiently larger than the lower one to compensate for the area of the inlet-slot. To cheapen the construction of the valve, a groove *e* may be formed across the wearing-surface of the plate, exhaust-steam being permitted to circulate freely therein. The advantage in loosely attaching one of the pistons to the pressure-plate is that the pistons and plate will act freer and without binding, whereas if both pistons were rigidly secured they would frequently bind in the openings. The valve-stem passes through a stuffing-box in one of the heads of the chest and is secured to the valve in any suitable manner.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a cylinder and valve-chest, exhaust and inlet openings in the chest, a hollow sliding valve therein, said valve having a long inlet-port in its inner wall and two circular openings in its outer wall, and a wearing-plate provided with a piston working

in one of said openings, an inlet-slot being formed in the plate and said piston and another piston working in the other opening and bearing against the plate, substantially as described.

2. The combination of a cylinder and valve-chest, said chest being on the side of the cylinder, an inlet-port entering the chest near its upper end, and exhaust-ports communicating with its lower end, a vertical hollow slide-valve working in said chest and having two long inlet-slots in its inner wall and two circular openings of unequal area in its outer wall, one being near each end of the valve, pistons working in these openings, and a wearing-plate secured to one of these pistons and bearing against the inner side of the outer wall of the valve-chest, a horizontal inlet-slot being formed in the outer plate and

larger piston, as and for the purpose described.

3. The combination of a cylinder and the valve-chest thereon, a hollow reciprocating valve working therein and provided with a steam-port in its inner wall and two separated circular openings in its outer wall, a piston working in each of these circular openings, a pressure-plate secured at one end rigidly to one of the pistons and having its other end resting loosely against the outer side of the other piston, and an inlet-port, substantially as described.

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

HERMON MOON.

Witnesses:

DAVID MOON,
O. L. GILMORE.