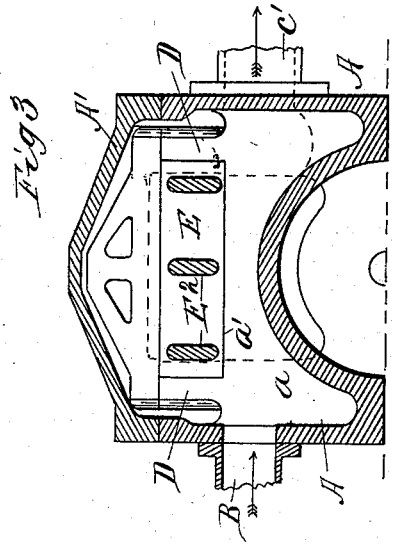
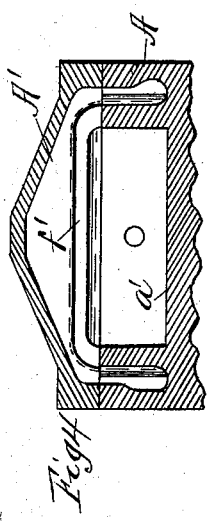
(No Model.)

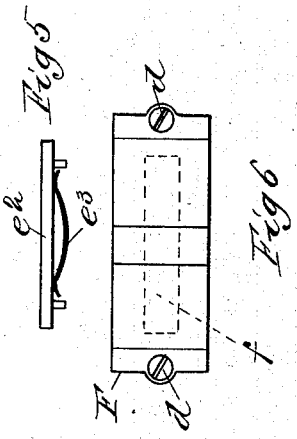
E. F. WILLIAMS.

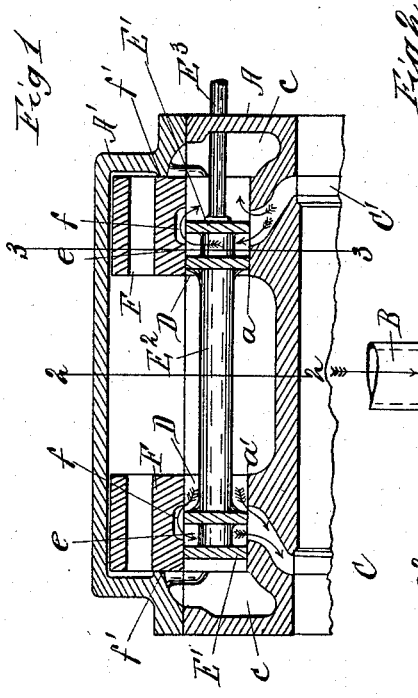
VALVE.

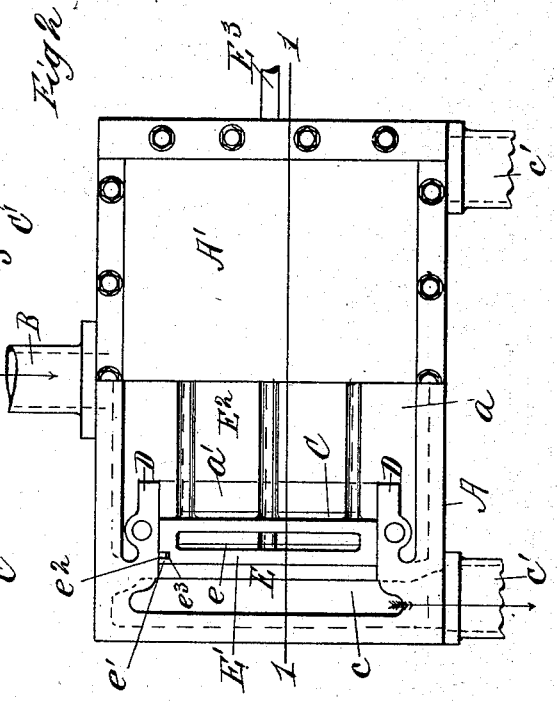
No. 384,883. Patented June 19, 1888.











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UNITED STATES PATENT OFFICE.

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VALVE.

SPECIFICATION forming part of Letters Patent No. 384,883, dated June 19, 1888.

Application filed August 20, 1887. Serial No. 247,486. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. WILLIAMS, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Valves, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of a mechanism embodying my invention, taken on the line 1 1 of Fig. 2; Fig. 2, a plan view of the same, one-half in section; Fig. 3, a transverse sectional view taken on the line 2 2 of Fig. 1; Fig. 4, a detail sectional view taken on the line 3 3 of Fig. 1, with the pressure-plate removed; Fig. 5, a detail view of the packing detached, and Fig. 6 a detail plan view of one of the pressure-plates detached.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to valves for steam-engines, and has for its object to provide an improved form of pressure-plate for the slide-valve of the steam-engine, which shall possess various advantages of construction and operation, which will be hereinafter more particularly pointed out.

My present invention is in the general nature of an improvement upon Letters Patent No. 350,650, granted to me October 12, 1886.

I will now proceed to describe a construction in which I have practically carried out my invention in one form, and will then particularly point out in the claims those features which I deem to be new and desire to protect by Letters Patent.

In the drawings, A represents the steam-chest, which is preferably divided at any suitable point—as, for instance, in the case shown, along the line of the top of the valve, so that the upper portion or cap, A′, is removable. The steam-chest A is provided with a central space, *a*, into which the live steam is admitted through the supply-pipe B. At each end of this central space is a valve seat, *a′*, the steam-ports C and C′ opening into the said valve-seats in the usual manner. At each side of the valve-seats *a′* are arranged distance-ledges D, of a height equal to the valve and of a length equal to that of the valve-seat. Beyond the valve-seats *a′*, at each end of the steam-chest, is an exhaust-passage, *c*, each passage being provided with an exhaust-pipe, *c′*.

E represents the valve, which is constructed substantially as in my prior Letters Patent referred to. In the present instance, however, the cut-off valve has been omitted in order to simplify the construction. In this simplified form the valve consists of a transverse bar or plate, E′, at each end extending across the valve-seat from side to side thereof, having a height equal to the height of the distance-ledges D and a width equal to about one-half the width of the valve-seat. The two portions are connected to each other by bars E^2, or in any other suitable manner, and the whole valve is actuated by the valve-stem E^3. Through each end of the valve a steam-port, *e*, passes from top to bottom thereof, as clearly shown in Figs. 1 and 2. At one side of the valve a vertical groove, *e′*, is formed, and a key or gib, e^2, backed by a spring, e^3, is arranged in said groove to form a packing, and thus keep the valve tight at the sides.

The pressure-plates are shown at F. These pressure-plates rest upon the distance-ledges D, and may be secured thereto, if desired, by screw-bolts *d*. Each pressure-plate is provided on its under side with a cavity, *f*, exactly opposite and equal in length and width to the corresponding steam-port. The exposed under surface of the pressure-plate is of the same dimensions as the upper surface of the valve-seat, so that the valve-seat and the pressure-plate present two exactly equal and opposite faces, between which the valve works freely. The end of the steam-chest adjacent to each pressure-plate is provided with a ledge, *f′*, having a smooth bearing-surface, against which the pressure-plate is held by the pressure of the steam within the space *a*.

It will be observed that the only points of contact of the pressure-plate with the steam-chest are the distance-ledges D and the end ledges, *f′*. It will also be noticed that a separate and independent pressure-plate is provided for each end of the valve.

The operation of my improved valve will be readily understood from the preceding description. The steam enters the central portion, *a*, of the chest, and thence passes through

the main steam-port C and through the supplementary port *f* in the valve to the cylinder. The exhaust passes off in like manner at the other end through the main and supplementary ports, the direction of the travel of the steam being indicated by the arrows. The pressure-plates are very small and the pressure on the two sides is so nearly equal that no serious damage will result from putting them down in full force on the valve. In this manner the valves will wear themselves tight and free, thus making a close fit and at the same time insuring freedom of movement without leakage.

It is obvious that various modifications may be made in the details of construction and arrangement of the parts without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the drawings.

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

1. The combination, with the steam-chest provided with the central live-steam space and exhaust-steam spaces at each end, with end-bearing ribs above the same, of the independent pressure-plates, arranged one at each end of the chest within the central space above the valve and held against the bearing-ribs by the steam-pressure, substantially as and for the purposes specified.

2. The combination, with the steam-chest A, having valve-seats *a*, distance-ledges D on each side of each valve-seat, and bearing-ribs *f'*, one at each end, of the valve E, having a height equal to that of the distance-ledges, and the pressure-plates F, mounted on the distance-ledges and bearing against the ribs *f'*, substantially as and for the purposes specified.

EDWIN F. WILLIAMS.

Witnesses:
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