(No Model.)

J. WHEELOCK.

VALVE AND SEAT FOR STEAM ENGINES.

No. 455,810. Patented July 14, 1891.

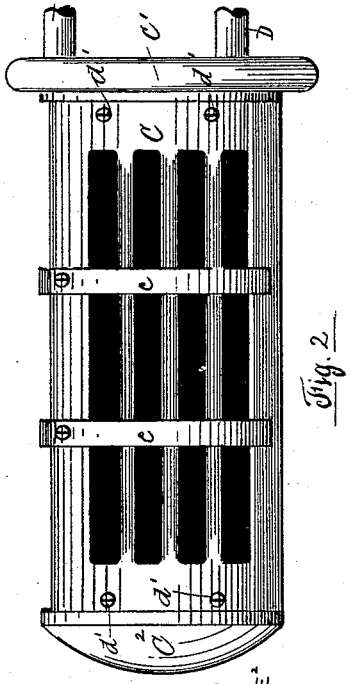

Fig. 2.

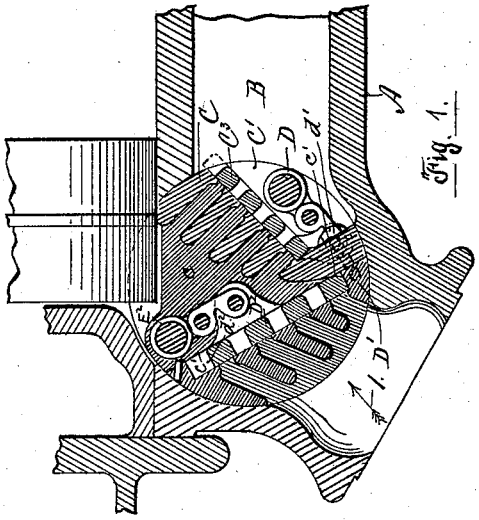

Fig. 1.

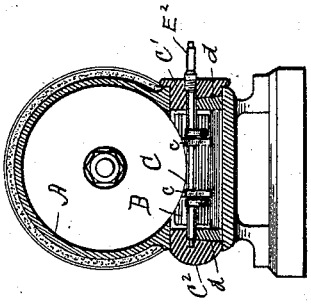

Fig. 3.

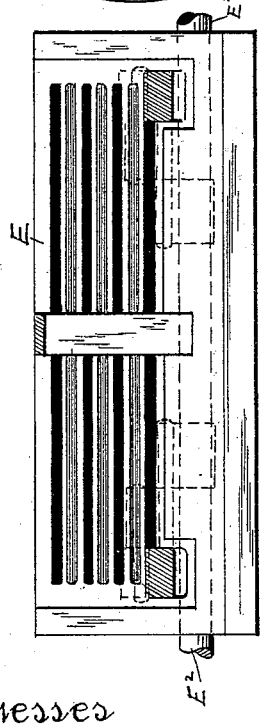

Fig. 5.

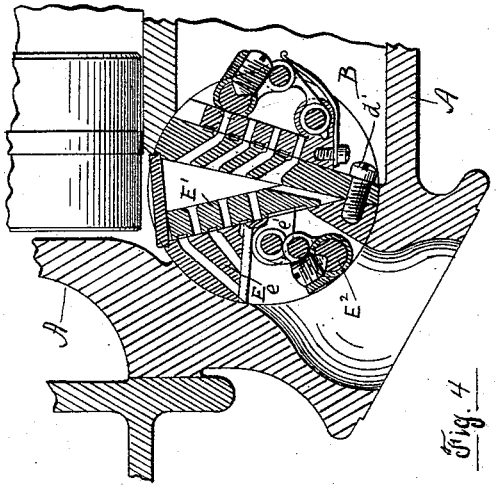

Fig. 4.

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JEROME WHEELOCK, OF WORCESTER, MASSACHUSETTS.

VALVE AND SEAT FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 455,810, dated July 14, 1891.

Application filed December 2, 1890. Serial No. 373,348. (No model.)

To all whom it may concern:

Be it known that I, JEROME WHEELOCK, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Valves and Seats for Steam-Engines, of which the following, in connection with the accompanying drawings, is a specification to enable those skilled in the art to which my invention belongs to make and use the same.

My invention relates to that class of valves which are generally known as the "gridiron" variety, and more particularly to that shown, described, and claimed in Letters Patent No. 440,523, granted to me on November 11, 1890, in which one shell contains both cut-off and exhaust valve seats; and my invention has for its object to so construct said shell and seats that the process of planing and scraping of the seats may be done without interfering, and, furthermore, to give to the seats a degree of strength which was incompatible in the valve claimed in the above-mentioned patent on account of its particular construction.

To this end my invention consists in making the exhaust-seat independent and removable from the shell, and at the same time of sufficient strength, so that a re-enforcing bolt or other similar means may be dispensed with altogether, as is illustrated in the accompanying drawings, in which—

Figure 1 represents a central cross-section of one end of the steam-engine cylinder with my improved valve in proper position. Fig. 2 is an elevation of the valve-shell, looking in the direction of arrow 1, Fig. 1, and illustrating the manner in which the removable seat is retained in its proper position in the shell. Fig. 3 is a vertical section through the cylinder and valve-shell. Fig. 4 represents a modification in the construction of the removable seat; and Fig. 5 shows the removable seat as it appears when taken out of its place in the shell, the valve proper being let off, but its operating-lug being shown in section.

In the drawings, A is the steam-engine cylinder, having a steam-chest B, from which steam is supplied to the cut-off valves, the seat C of which is made integral with the heads C' C^2 and thus form the shell, while the valve C^3 obtains a reciprocating motion on the seat C from the shaft D in the ordinary manner.

The seat C is provided with the bridges *c*, in which the driving-shaft D for the exhaust-valve-rests, and which are planed off at c' to allow for a close contact with the exhaust-valve seat D′, which is made removable, and the ends of which are slightly tapered, as at *d*, Fig. 3, to properly fit into the shell, where it is retained and secured by means of screws d'. (See Figs. 1 and 2.) It will therefore be understood that the exhaust-seat is firmly attached to the shell and can readily be replaced by a new seat in case of breakage without rendering it necessary to substitute a new shell complete. In order to prevent the exhaust-valve from interfering with the cut-off seat and its bridges, I provide in the exhaust-seat a recess d^2 of sufficient depth to receive the valve D^2, the top of which will be below the top of the seat, as shown in Fig. 1.

In Figs. 4 and 5 I have represented a modification in the construction of the removable seat. In this instance I have provided a clear space *e* in the outside of the seat E to allow the lug e' of the valve E′ to project downward, and thus be operated from a shaft E^2, which is located below the valve E′. By this construction I am enabled to bring the cut-off seat and the exhaust-valve close together, so that very little waste of steam occurs, and by placing the driving-shaft E^2 below and in the position illustrated I remove an obstruction which would materially decrease the passage for the steam from the cut-off valve into the cylinder.

In the drawings I have shown the exhaust-seat as being made removable; but I do not confine my invention to that fact alone, since the cut-off seat may be made removable instead of the exhaust-seat, or they may be so arranged that either or both may be adapted to be taken from the shell without in any way altering the gist of my invention. Therefore

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

1. In a steam-engine, a removable shell containing the seats for steam and exhaust valves so arranged that either seat may be removed from the shell, substantially as and for the purpose set forth.

2. In a valve-shell, the combination, with the removable valve-seat, of the independent stationary valve-seat having bridges which serve as guides and bearings for the removable seat, substantially as described.

3. In a valve-shell, the combination, with the stationary valve-seat, of the removable seat having a recess to receive the valve, substantially as and for the purpose set forth.

4. The combination, with the shell provided with a valve and its seat, of a shaft through which motion is imparted to said valve, and which is located on that side of the contact line between valve and seat within the shell which is opposite to that of the valve, substantially as described.

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