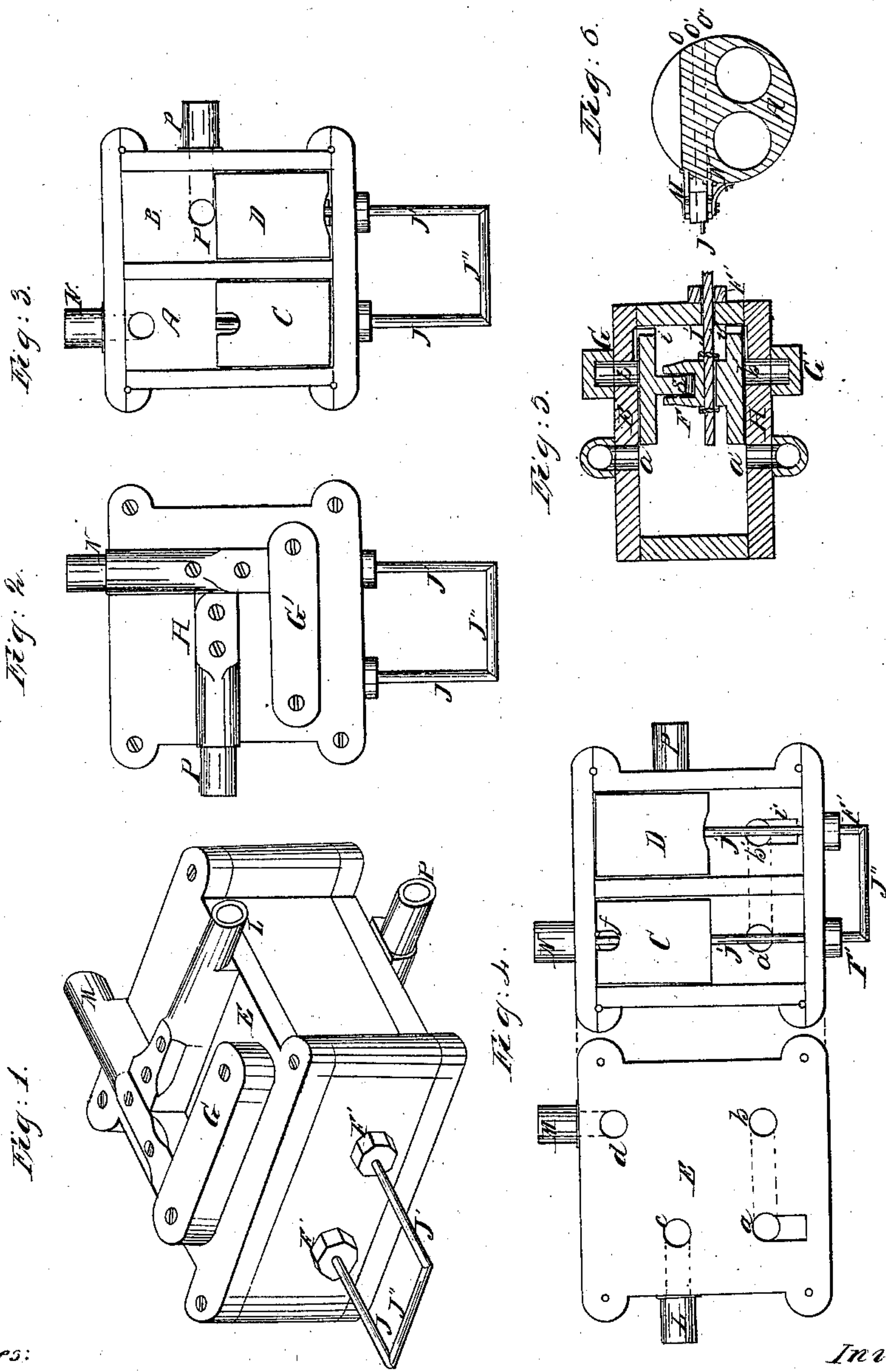


R. Judwin,
Steam-Boiler Water-Feeder,
No 32,066, *Patented Apr. 16, 1861.*



Witnesses:

Inventor:
R. Judwin

UNITED STATES PATENT OFFICE.

RENSALIER JADWIN, OF GRAFTON, OHIO.

APPARATUS FOR SUPPLYING STEAM-BOILERS WITH WATER.

Specification of Letters Patent No. 32,066, dated April 16, 1861.

To all whom it may concern:

Be it known that I, R. JADWIN, of Grafton, in the county of Lorain and State of Ohio, have invented a new and Improved Mode of Supplying Steam-Boilers with Water; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a perspective view. Fig. 2, is a view of the underside of Fig. 1. Fig. 3, is a plan view, with the top removed, to show the internal structure. Fig. 4, is another plan view with the top removed, and inverted for the purpose of showing the passages between the several parts. Fig. 5, is a vertical longitudinal section. Fig. 6, is a vertical section of a boiler, with the apparatus attached, showing why the water can never rise above a given point in the boiler.

The same letters refer to like parts in the different views.

The nature of my invention relates to the herein described apparatus for supplying steam boilers with water, by means of the direct pressure of steam upon the surface of the water discharged into the boiler, simply by means of shifting sliding valves, which can be done automatically, or by means of the hand of the engineer, which apparatus is so constructed, that the water never can rise above a given line in the boiler, although the apparatus is kept constantly at work.

Fig. 1, is a perspective view of the whole apparatus, which may be of a rectangular, square, or any other suitable form. It is divided equally into two chambers A, and B, as shown in Fig. 3. In these divisions or chambers are sliding valves C, and D, Figs. 3, and 4. There is a spring S, shown in Fig. 5, in the piece F, connecting the upper and lower parts of the valve C, and also in the valve D, that causes them to press closely against the upper and lower valve seats E, and H. To the piece F, in each valve are connected the valve rods J, and J', that pass through stuffing boxes F', and are connected by the rod J'', by means of which the valves are slid backward and forward, in the chambers from the outside.

On the upper side of the valve seat E, is secured the pipe G, which establishes a communication between the chambers A and B,

by means of the openings *a*, and *b*, shown in Fig. 4, which is a view of the underside of this valve seat.

L, and M, are pipes, secured to the outside of the valve seat E, as shown in Fig. 1, that communicate with the chambers through the openings *c*, and *d*. The pipe M, is connected with the boiler, as shown in Fig. 6.

The under valve seat H, is constructed, in the same manner as the upper one, the openings *a'*, and *b'*, being directly opposite the openings *a* and *b*, as shown in Fig. 5. The lower pipe N, secured to the under side of the valve seat H, passes into the boiler, and the pipe P, on the other side, connects with the water tank.

When this apparatus is connected with the steam boiler K, by the pipes M, and N, the lower pipe N, connects with the water in the boiler and the upper pipe M, with the steam, as shown in Fig. 6; and when the valves C, and D, are in the position, represented by Fig. 4, the water in the boiler is in communication, with the water in the chamber A, through the pipe N. The steam space in the boiler is in communication with the chamber A, through the pipe M. The pipe P connects with the water tank, as does also the pipe L.

In Fig. 6, M, N, show the position of the apparatus, when attached to the boiler, the pipe M, entering the boiler at the line O, which is the point at which the water should uniformly stand in the boiler. The pipe N, enters the boiler at low water mark O'', the line O', being the medium water line.

Now in the operation of this apparatus, suppose the valve rods J, J', (which may be worked by hand, or by an eccentric, or crank) are drawn out as in Figs. 3, and 5, so that the lower valves cover perfectly the openings *a'*, *b'*. It will be seen that only the chamber A, is in connection with the boiler, because the passages *a*, *b*, *a'*, *b'*, in Fig. 4, are all closed by the upper and lower valves, and there being a free communication, between the boiler K, and the chamber A, by means of the pipes M, N, it follows, that the water in the chamber A, will stand at the same level as the water in the boiler, and if the chamber A, is but half filled with water, the upper half will be occupied with steam. At the same time, the chamber B, being in communication with the water tank, by means of the pipes P and L, (the water in the tank being higher

than the pipe L,) the chamber B, will become filled with water. (The water in the tank can be kept heated by the exhaust steam.) Now if each pair of valves C, D, are changed from their position seen in Figs. 3, and 5, by shoving in the valve stems J, and J', so that they will occupy the position shown in Fig. 4, the opening P', of the ingress pipe P, and the opening c, of the pipe L, will both be closed, and a communication established between the chambers A, and B, by a, b, in the upper valve seat, and the passage a', b', in the lower valve seat; and consequently the steam, in the upper part of the chamber A, will pass over to the chamber B, through the openings a, b, while the water, to a corresponding volume, will pass through the passages a' b', from the chamber B, to the chamber A, and thence, into the boiler through the pipe N, the steam from the boiler entering first the chamber A, through the pipe M, and the chamber B, through the passage a, b, as before described. And the action will continue at every change of the valves, until the water in the boiler reaches the line O, after which all transfer of water from the chambers A, and B, into the boiler will cease, until the water falls below the pipe M. Nor does this interruption of the passage of the water into the boiler, in any way interfere with the action,

or movement of the valves. In all cases when steam or air occupies the upper portion of the chamber B, (the position of the valves being as shown in Fig. 3) such steam or air escapes into the tank, through the pipe L. The openings i, i', are for the free circulation of water from the chamber B, to the pipes or passages a, b, and a', b'. The openings f, in the ends of the valves C, are for the passage of water, into the boiler, and of steam, into the chamber A, to produce an equilibrium, between the boiler and chamber.

In situations where the supply tank is below the boiler, the condensation of the steam, in the chamber B, will raise the supply water any distance, within the limit of atmospheric pressure.

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

The chambers A, B, the pipes M, N, and L, P, the passages a, b, and a', b', with the pair of valves C, D, in each chamber, the several parts being constructed, arranged and operated in the manner and for the purpose herein set forth.

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Witnesses:

J. BRAINERD,
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