R. BIESTER.

THROTTLE-VALVE.

No. 171,086. Patented Dec. 14, 1875.

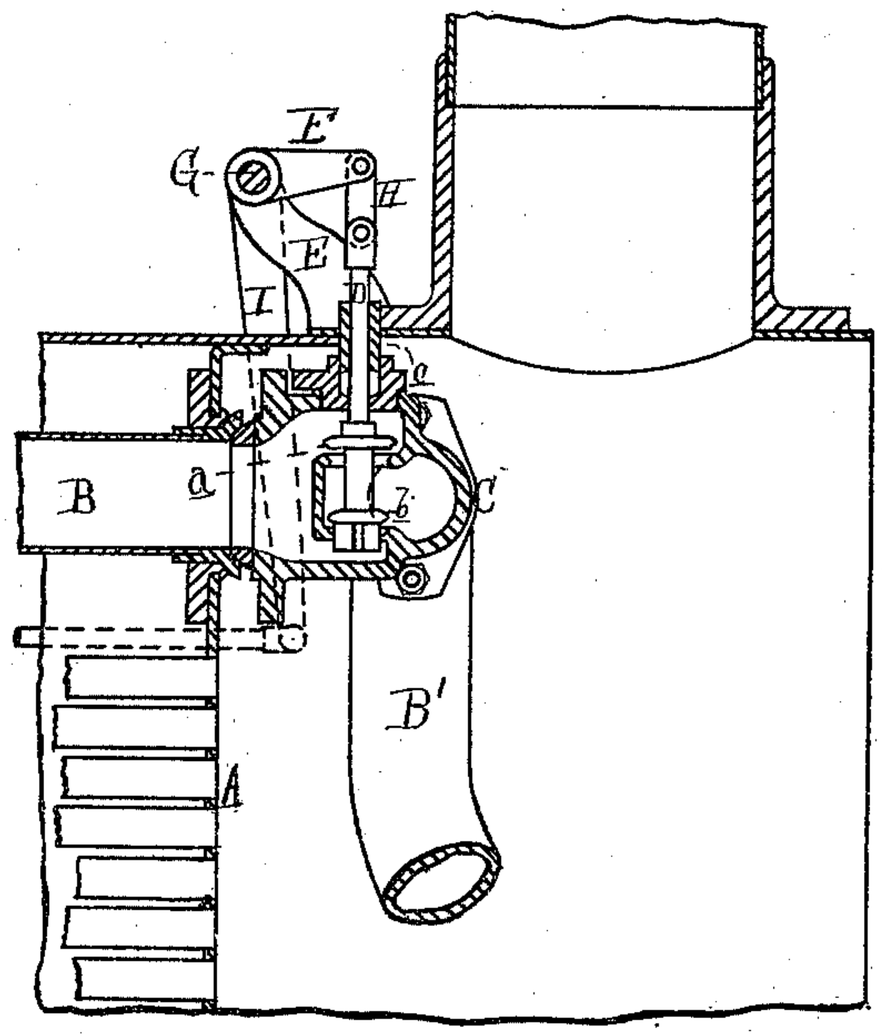

Fig. 1

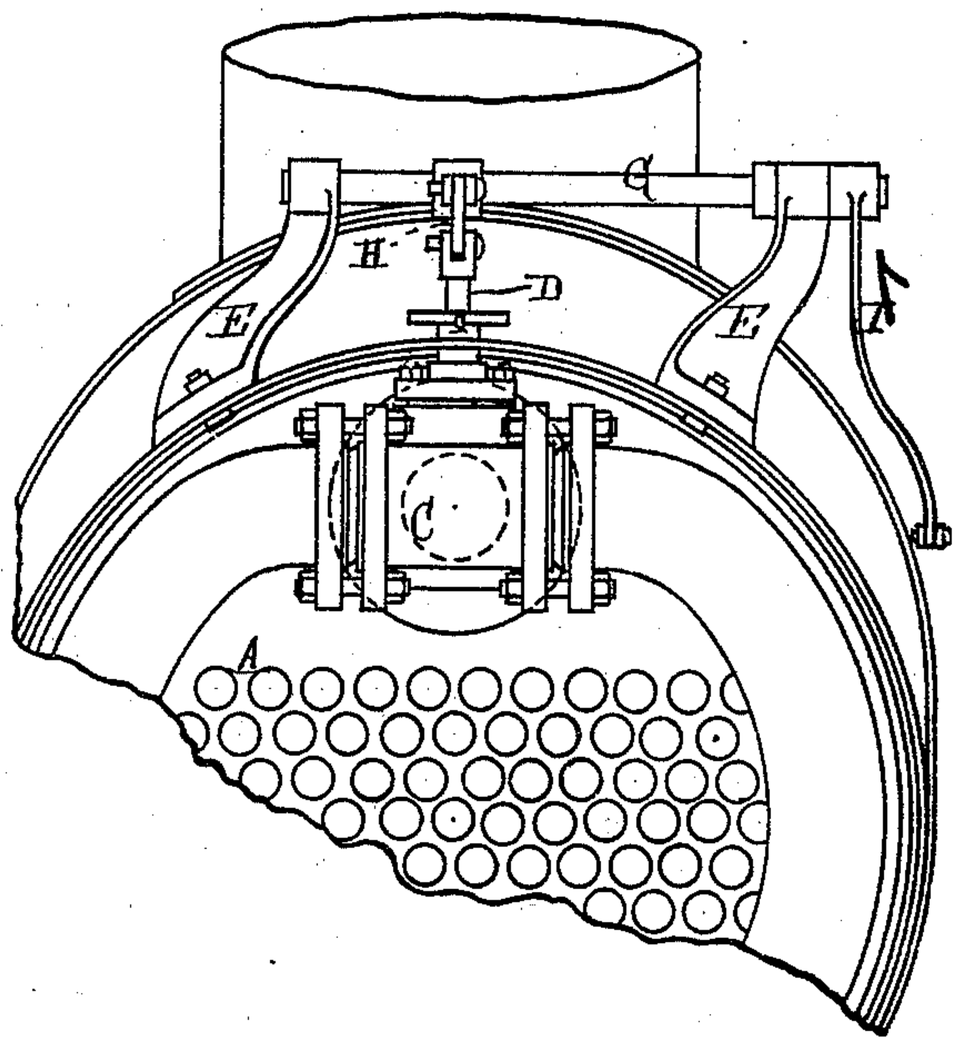

Fig. 2

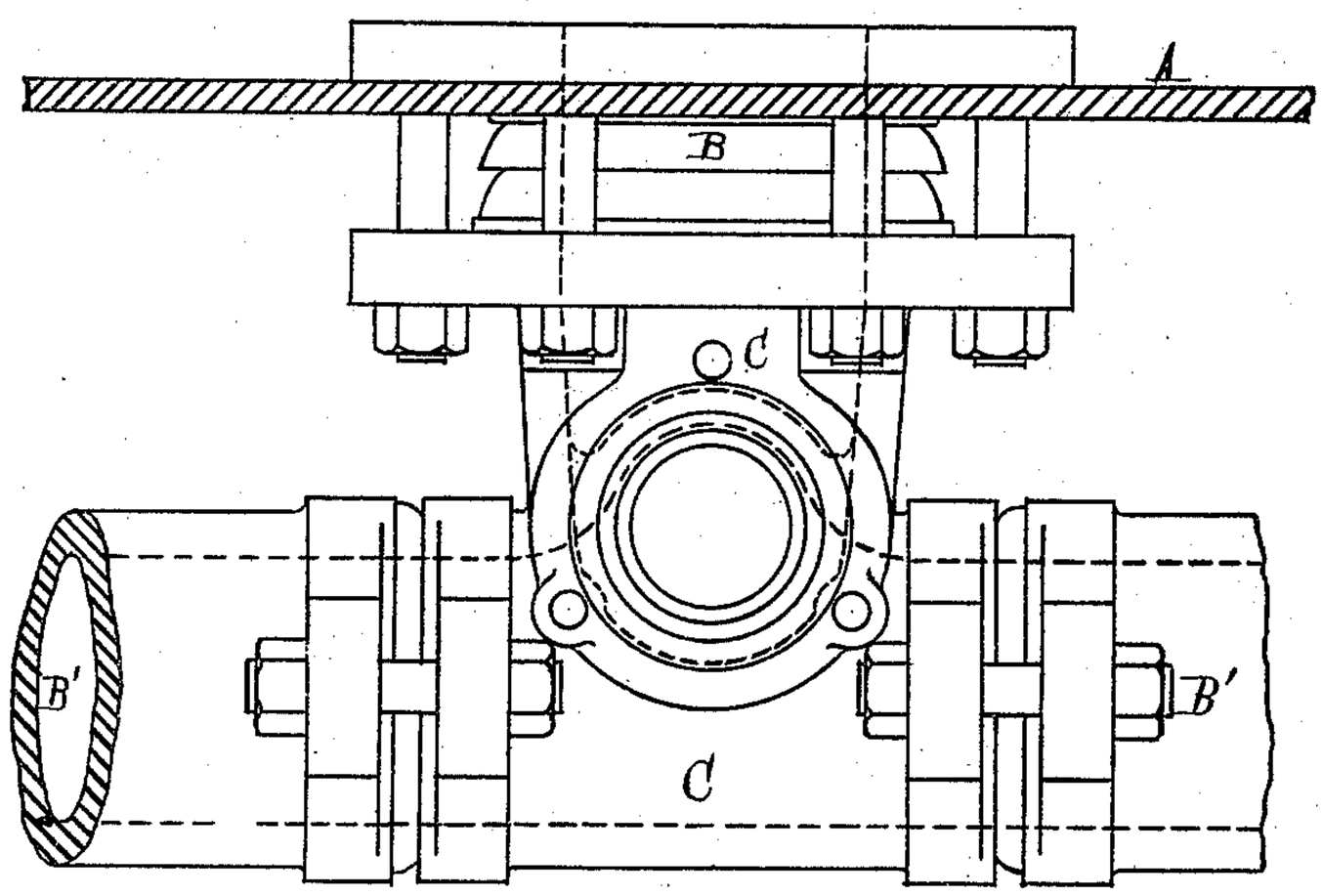

Fig. 3

WITNESSES

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RUDOLPH BIESTER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN THROTTLE-VALVES.

Specification forming part of Letters Patent No. **171,086,** dated December 14, 1875; application filed October 8, 1873.

To all whom it may concern:

Be it known that I, RUDOLPH BIESTER, of Chicago, in the county of Cook and State of Illinois, have invented an Improved Throttle-Valve for Locomotive-Engines, of which the following is a specification:

The nature of this invention relates to an improvement in throttle-valves for locomotive-engines, which, instead of being a slide located at the inner end of the steam-pipe in the steam-dome, is a double puppet balance-valve, located at the branch or T-head of the steam-pipe outside the front flue-sheet, the object being, first, to so construct the valve that it may be nearly or quite balanced, if so desired; and, secondly, to render the valve, seats, and connections accessible without the necessity of going into the shell of the boiler.

Figure 1 is a longitudinal vertical section through the steam-pipe, T-head, and valve-seats, showing the throttle in side elevation, the front end of the boiler being also included in the section to show the application of the valve. Fig. 2 is a front elevation. Fig. 3 is an enlarged plan of the T-head.

In the drawing, A represents the front flue-sheet of a locomotive-boiler, and B the steam-pipe, to the front end of which is secured the T-head C, from the sides of which the branch steam-pipes B′ extend to the steam-chests. The T-head is chambered, (as seen in Fig. 1,) with two valve-seats, one at each opening in the top and bottom diaphragms of the shell, which openings are closed by two puppet-valves, *a b*, mounted on a spindle, D, playing through a stuffing-box, *c*, in the cap of the T-head, the said stuffing-box also extending through the top of the smoke-box, on top of which two brackets, E, are bolted, between which an arm, F, is keyed on a shaft, G, journaled in said brackets. The top of the valve-stem is connected with the end of the arm F by a link, H.

On the out-board end of the shaft G is keyed a pendent arm, I, from which a rod extends back into the cab within reach of the engine-driver.

In the present valve the upper one, *a*, has a little more area than the lower one, *b*, so that the upward pressure of the steam, under the latter, will not quite equal its downward pressure upon the former, so that the valve will always have a tendency to seat itself, if left uncontrolled.

It is evident that the T-head can be so chambered that the steam-pressure will be exerted upon the valves between the seats, instead of at top and bottom, as shown.

I do not claim the invention of the balanced puppet-valves, as such have long been in use on stationary and marine engines.

What I claim as my invention is—

The combination of the puppet-valve *a b* D, arranged within the T-head C, with the brackets E, arms F and I, shaft G, and link H, constructed and arranged substantially as described, for the purpose set forth.

RUDOLPH BIESTER.

Witnesses:

WM. H. LOTZ,

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