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Fig. 2.

Inventor
S. G. Barker
By Hummer & Co
attf

UNITED STATES PATENT OFFICE.

S. G. BARKER, OF DUNMORE, PENNSYLVANIA.

IMPROVEMENT IN SAFETY-VALVES FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. **49,068**, dated August 1, 1865.

To all whom it may concern:

Be it known that I, S. G. BARKER, of Dunmore, in the county of Luzerne and State of Pennsylvania, have invented a new and Improved Safety-Valve for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention. Fig. 2 is a sectional side elevation of the same.

Similar letters of reference indicate like parts.

This invention consists in operating two or more valves on the same lever, said valves being held closed by the action of a weight or spring in such a manner that when the pressure of the steam rises beyond the desired point the several valves open simultaneously, and the combined areas of the openings thereby obtained for the escape of the steam are greater than that of a safety-valve of the ordinary construction.

The invention consists, also, in an adjustable fulcrum applied in combination with the lever from which two or more valves are operated, and with a weight or spring holding said valves closed against the action of the steam in such a manner that the time when the steam blows off is regulated by shifting the fulcrum instead of by a change in the power exerted by the spring or weight to hold the valves in their seats.

A represents a pipe, which communicates by a branch pipe, B, with a steam generator of any desired construction, and which is provided with two branch pipes, C C, which support the valve-chambers D D'. Each of these valve-chambers is provided with a seat, *a* or *a'*, and with a valve, *b* or *b'*, one of which opens down and the other up. The stems *c c'* of these valves connect, by means of pivots *d d'* with a lever, E, which has its fulcrum on an adjustable standard F, and which connects by a rod, *e*, with a spring, *f*, by the action of which the valves are both closed; or, instead of the spring, a weight might be suspended from the end of the lever E, which would produce precisely the same effect. The power of this spring or weight is such that the same is capable to

hold the valves closed against the strongest pressure which it may ever be desired to carry, and it remains always the same, and is never changed, like the weight or spring of safety-valves of the ordinary construction.

In order to adjust the valve so that it blows off at a certain pressure the fulcrum F is arranged to slide back and forth in a slot in the bar G which supports the same, and the fulcrum-pin *h* in said standard passes through a slot, *i*, in the lever E. A rod, *e'*, forms the connection between the standard F and a hand-lever, H, which has its fulcrum on a pivot in a standard projecting from the side of the steam-generator, or from any other fixed point. By moving said hand-lever in the direction of the arrow marked near it in Fig. 2 the adjustable fulcrum is moved toward the point of connection between the weight or spring and the lever E, and the power requisite to raise the valves increases, and vice versa. A suitable scale, marked on the edge of the bar which supports the adjustable fulcrum, indicates the pressure of the steam, for which the fulcrum is set, and after said fulcrum has been adjusted in the desired position the hand-lever H is secured by a set-screw, *k*, and slotted bracket I, or by any other suitable means. When the valves are opened the steam escapes through a pipe, K, which connects the two valve-chambers, and from which rises the blow-off pipe L. When the pressure of the steam rises beyond the desired point, so as to overcome the force of the weight or spring, both valves open simultaneously and an escape-opening is obtained of double the size from that of ordinary safety-valves. The boiler is thereby quickly relieved of any over-pressure existing in it, and the danger of an explosion is materially reduced.

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

1. The application of two or more valves, *b b'*, in combination with one and the same lever, E, and with a spring or weight, substantially as and for the purpose set forth.

2. The adjustable fulcrum F, in combination with the lever E, valves *b b'*, and spring or weight, constructed and operating substantially as and for the purpose described.

SAMUEL G. BARKER.

Witnesses:

I. T. CROWTHER,
D. G. SMITH.