H. C. BRISTOL.

Water-Feed for Boilers.

No. 140,462. Patented July 1, 1873.

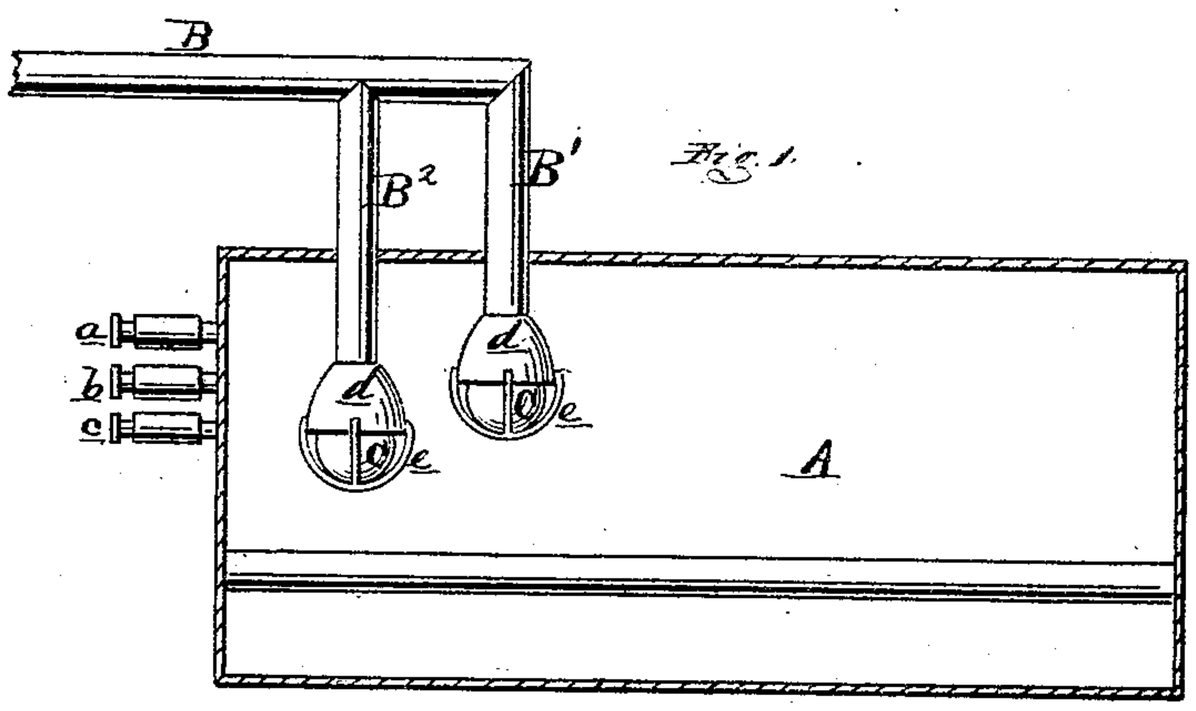

Fig. 1.

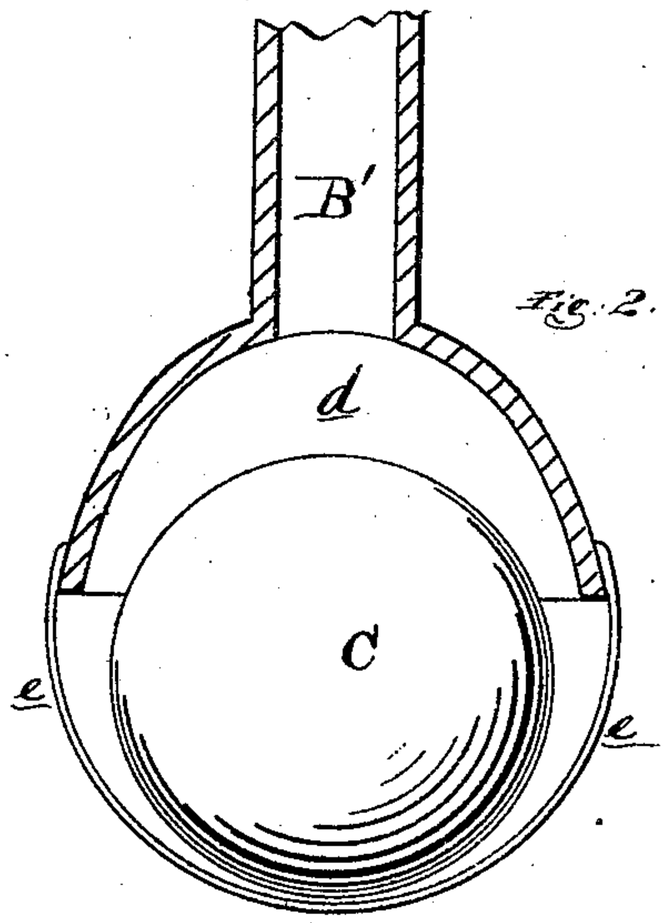

Fig. 2.

ATTEST:
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HOWARD C. BRISTOL, OF EAST CHINA, MICHIGAN, ASSIGNOR TO HIMSELF, WILLIAM D. HART, AND JOHN CLARK, JR., OF SAME PLACE.

IMPROVEMENT IN WATER-FEED FOR BOILERS.

Specification forming part of Letters Patent No. **140,462**, dated July 1, 1873; application filed March 17, 1873.

To all whom it may concern:

Be it known that I, HOWARD C. BRISTOL, of East China, in the county of St. Clair and State of Michigan, have invented a new and useful Improvement in a Device for Controlling the Operation of Steam-Pumps; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is a longitudinal vertical section of a steam-boiler fitted with my device. Fig. 2 is an enlarged vertical section of one of the feed-pipes within the boiler, with the float-valve at its lower end.

Like letters refer to like parts in both figures.

This invention has for its object to so connect the steam-pipe of a donkey-pump, which supplies feed-water to a boiler, with the interior of said boiler by means of a pendent pipe fitted with a float-valve, that when the water-line falls below a given line steam will flow through the said pipe to the steam-pump, which is set in motion, and will continue to pump water into the boiler until the water-line is raised to the proper level. The invention consists in connecting to the steam-pipe of a donkey-pump one or more pendent pipes, which pass down into the boiler and terminate at the planes of the middle or lower gage-cocks in bell-mouthed valve-seats, with a pendent cage from each, in which cage there is a float-valve which seats itself in the mouth of the pipe when raised by the water rising to that plane, and falls with the water.

In the drawing, A represents the shell of a steam-boiler fitted with the gage-cocks *a b c*. B is a steam-pipe which supplies steam to the steam-pump which feeds the boiler. To this pipe is connected another, B^1, which is tapped through the shell of the boiler, and extends to the plane of the middle gage-cock *b*, where it terminates in a flaring mouth, *d*, which forms a seat for a hollow sphere, C, which becomes a combined float and valve, and is supported in close proximity to its seat by a cage, *e*. B^2 is a similar pipe, in like manner provided with a float-valve and cage, but extends from the pipe B down to the plane of the lower gage-cock *c*. So long as the water in the boiler remains at the plane of the gage *b* the valve *c*, by its buoyancy, is seated, and closes the mouth of the pipe B^1; but when the water recedes it falls with it, and allows steam to flow through the pipes B^1 and B to the donkey-pump, which is thereby set in motion, continuing to pump water into the boiler until the water-line is raised to the point where, by the buoyancy of the float-valve, the mouth of the pipe will be again closed by it, when of course the pump will cease to work. The purpose of the cage is to keep the valve in such a position that it will seat again when the water-line is rising, after having been lowered below the bell-mouth. The action of the pipe B^2 and its valve is substantially the same as the first, the only difference being that the valve admits steam to the steam-pump when the water falls to the plane of the lower gage-cock, and the reason for its employment is in case the first pipe, B′, or its valve should fail to work, or that the water should fall so fast from a leak in the boiler or other cause that the steam flowing the pipe B^1 did not drive the pump fast enough, then the additional supply of steam through said pipe B^2 would keep the water up to the lower gage, and thus prevent the burning of the flues of the boiler, and possibly an explosion.

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

The combination of the main pipe B with pipes B^1 B^2, of unequal lengths, having valve-seats *d* and cages *e e*, adapted to hold the float-valve C, as described.

HOWARD C. BRISTOL.

Witnesses:

H. F. EBERTS,

H. S. SPRAGUE.