B. C. DAVIS & J. T. HARDESTER.

Improvement in Blow Offs for Steam Boilers.

No. 124,341. Patented March 5, 1872.

Fig. 1.

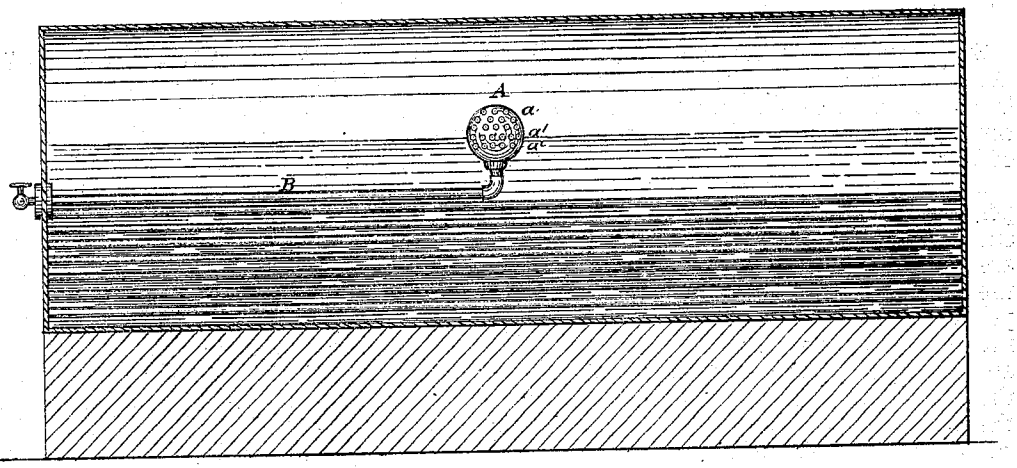
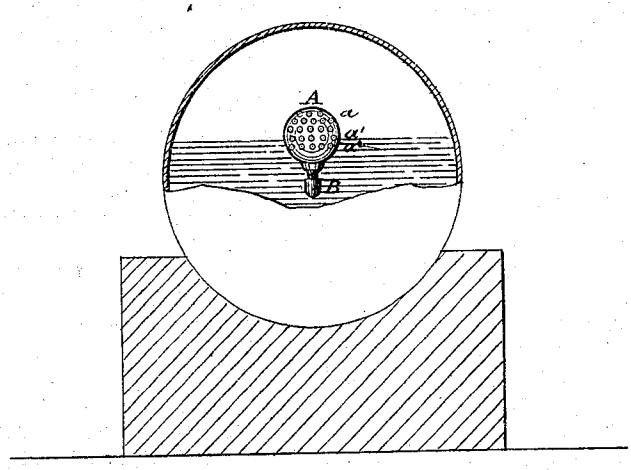


Fig. 2.



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UNITED STATES PATENT OFFICE.

BENTON C. DAVIS AND JOHN T. HARDESTER, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN BLOW-OFFS FOR STEAM BOILERS.

Specification forming part of Letters Patent No. 124,341, dated March 5, 1872.

Specification describing an Improved Blow-Off for Marine Boilers, invented by BENTON C. DAVIS and JOHN T. HARDESTER, of Baltimore, in the county of Baltimore and State of Maryland.

The invention relates to blow-offs, in which perforated vessels are employed at or near the surface of the water-line of a boiler, and which are provided with a pipe extending out into the open air. It has been common for many years to use troughs and open funnels extending lengthwise through the middle of boiler, and in some instances to protect the tops of these funnels by a perforated cover, to prevent the ingress of straws and small floating substances which might otherwise choke and hinder the proper working of the blow-off. Our improvement upon these will now be fully described and then clearly pointed out in the claim.

In the drawing, Figure 1 represents a longitudinal section of a marine boiler with our improved blow-off applied thereto, and Fig. 2 a cross-section.

A represents a globe-shaped vessel, connected rigidly to a discharge-pipe, B, and having a number of rows of perforations, a a^1 a^2, from the top almost to the point of junction with pipe. The line b indicates the water-line of the boiler. When the water falls below this an automatic feed usually injects a new supply, but there always elapses a slight interval, and if any obstruction exists a considerable one may occur before the alarm can be heard and the water obtained. During this time the blow-off would cease its operation, if the row a^2 had not been provided. On the other hand, when the water rises much above the water-level b the device ceases in a greater or less degree to be a surface blow-off, and fails in a measure to eject the scum, unless other rows, a a, of apertures are provided. Again, the concave or flat-topped funnels or troughs allow the scum to settle upon them, to aggregate gradually, and finally to choke up the perforations. This difficulty is entirely obviated by the globular, spherical, or curved top of my vessel A. Again, it will be observed that my vessel A is placed at or near the intersection of two median lines, drawn on the plane of the water-level, the one longitudinally and the other transversely. The vessel A is small in proportion to the area of water-surface, but as soon as the steam commences to blow through the vessel A and pipe B a whirl is created about vessel A, into which the water and steam are being forced. This determines the direction of the surface-water and scum from all points to the vessel, as to the center of a whirlpool. In all those blow-offs which have two or more vessels in the same boiler, through which the scum is blown, there are two or more whirls or vortices created, which draw from circular spaces running into one another, and to a greater or less extent counteracting the effect of each other. In comparing these old devices, now in common use, with our own, experimentally, we discover that we can effect a thorough discharge of the scum with one-third to one-half of the steam and hot water which is consumed by a plurality of funnels, by a trough or by a funnel that is made to embrace nearly the whole water-surface of the boiler.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The globular and perforated chamber A, arranged at or about the water-line of the boiler, and midway between the sides and ends thereof, in combination with the discharge-pipe, all constructed as and for the purpose specified.

BENTON C. DAVIS.
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Witnesses to both signatures:
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