E. W. SMITH.

Boiler-Covering.

No. 161,168. Patented March 23, 1875.

Fig. 1.

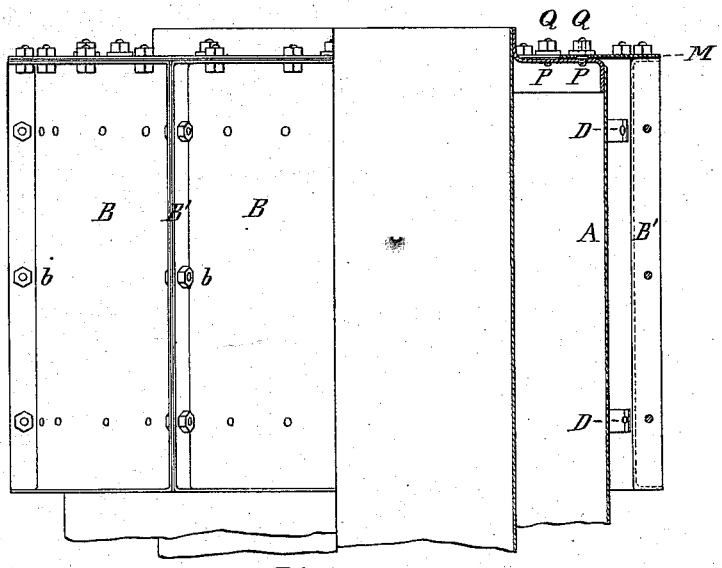
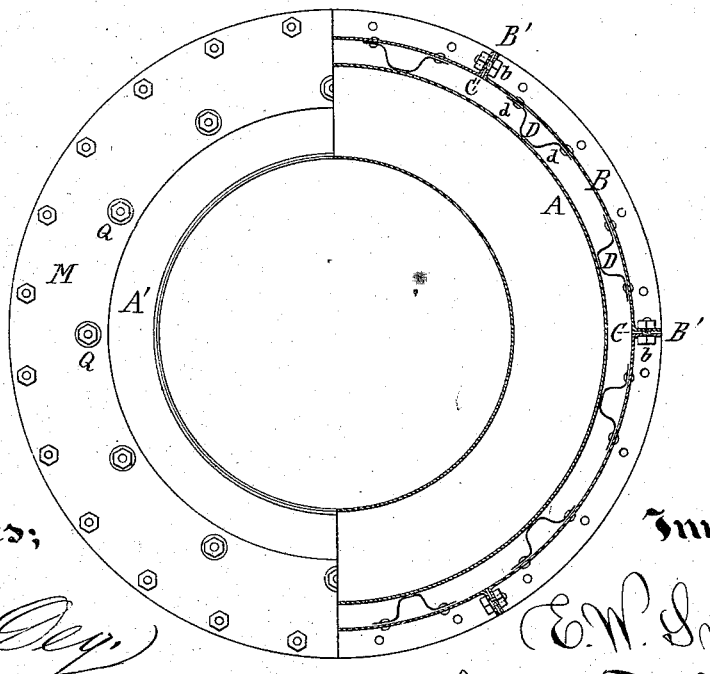



Fig. 2.




Witnesses;

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# UNITED STATES PATENT OFFICE.

ERASTUS W. SMITH, OF NEW YORK, N. Y.

## IMPROVEMENT IN BOILER-COVERINGS.

Specification forming part of Letters Patent No. **161,168**, dated March 23, 1875; application filed July 8, 1874.

*To all whom it may concern:*

Be it known that I, ERASTUS W. SMITH, of New York city, in the State of New York, have invented certain Improvements Relating to Boiler-Coverings, of which the following is a specification:

Sheet metal has been used for boiler-covers at various times; but in latter years has been superseded almost entirely by hair-felt, or the various so-called non-conducting cements. This has been in consequence of the metal jackets not having been made sufficiently tight to insure a space of dead air between the jacket and boiler, to check radiation of heat, and at the same time admit of convenient removal in whole or in part, when necessary to examine or repair the boiler. My invention, as described below, overcomes these difficulties, while it makes a most effective non-conducting jacket. I construct such a covering in sections, with peculiar provisions for fitting and confining them.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 represents the upper part of a marine boiler, usually designated the steam-chimney, with my invention applied, the right-hand side being in section, and the left-hand side in elevation. Fig. 2 is a horizontal section and plan view of the same.

Similar letters of reference indicate like parts in both the figures.

A represents the upright cylindrical portion of the boiler-shell, and A′ the annular flat part or head. B B represent the main cylindrical portions of the covering, formed in sections, with the edges flanged outward, as indicated by B′. They are secured together by screw-bolts and nuts, marked *b*. In each joint, between the faces of the flanges B′ B′, is inserted a layer of wool-felt, marked C. This gives a slight elasticity to the joint, allows for slight imperfections in the workmanship, and makes it tight under all conditions. D D are struts of thin sheet metal, preferably hard iron or steel, secured to the sections B by rivets *d*, and bent in the form represented, so as to lie against the boiler-shell A, and hold the sections off therefrom. The struts D are elastic, and yield to any irregularities, as also to any expansion or contraction due to the changes of temperature or the like.

The covering may be correspondingly applied on the flat heads of boilers, if preferred. I have represented the end covering on top of steam-chimney as applied directly to the boiler, only smearing the boiler or covering plate, or both, with red lead, or other suitable cement, to make a tight joint. I tap screw-studs P into the head A′, upon which the covering-plate M is applied, and secured by nuts Q. The upper ends of the several sections B are formed with flanges corresponding to the flanges B′, and are secured to the plate M by screw-bolts and nuts. Felt is also used to make the joint tight between these parts.

My covering can be easily taken apart, and, by taking care to mark the several sections, so that they can be applied again in the same relation as before, it is very easy to remove them from the whole or any portion of the boiler, to make any necessary calking or repairs, and replace the covering again with perfection. The sections may be of convenient size, and form an air-tight covering.

Instead of felt as a packing for the joints, I can use woven fabrics of any incombustible material, or variously matted fibers of asbestus, paper, or analogous material made incombustible by saturating with suitable antiphlogistic liquids. I propose in some cases to use wood saturated with silicate of soda, or analogous preparation.

Any of the strong plastic compounds known as cements or putties may be used with some success. Anything which will present a yielding surface to compensate for irregularities or imperfections in the workmanship may serve; but I greatly prefer wool-felt, as it fulfills a greater number of important conditions.

I esteem it highly desirable that the joints shall not be so strongly cemented together as to prevent their being readily taken apart when required.

The preferable material in most cases for the supports or struts D is galvanized sheet-iron. Galvanized iron about No. 20, Birmingham gage, will serve well for the jacket B, connecting-flanges B′, and struts D. I have

in my experiments used for the fastenings cast brass nuts and screw-bolts, the latter made from rods about one-quarter of an inch in diameter. Such do not corrode, and may be removed and applied again at will.

I claim as my invention in boiler-covering—

1. The flanged sections of sheet metal B B′ and fastenings *b*, through said flanges, in combination with the soft packing C and strut D, for holding the sections B B′ at a uniform distance from a boiler, A, as shown and specified.

2. The elastic struts D, in combination with the metallic covering-sheets B, formed in sections, and adapted to be secured together by fastenings *b* upon the boiler A, as herein specified.

In testimony whereof I have hereunto set my hand this 6th day of July, 1874, in the presence of two subscribing witnesses.

ERASTUS W. SMITH.

Witnesses:

WM. C. DEY,

M. A. VAN NAMEE.