(No Model.)

M. V. SMITH.

Fire Shield.

No. 233,120. Patented Oct. 12, 1880.

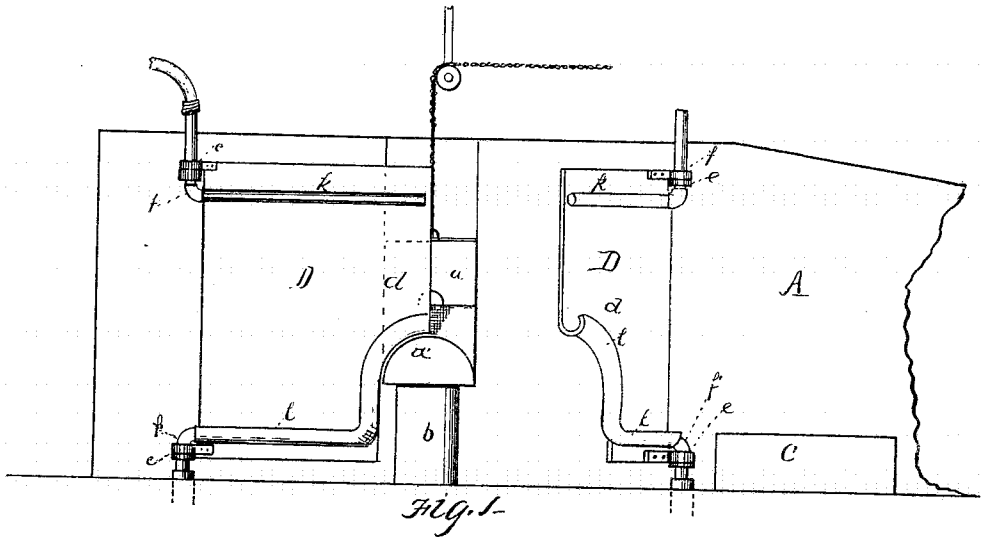


Fig. 1.

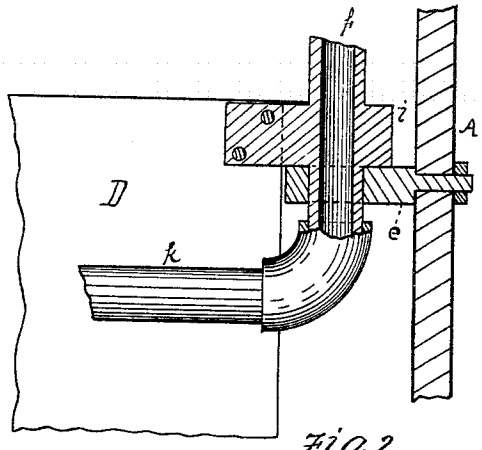


Fig. 2.

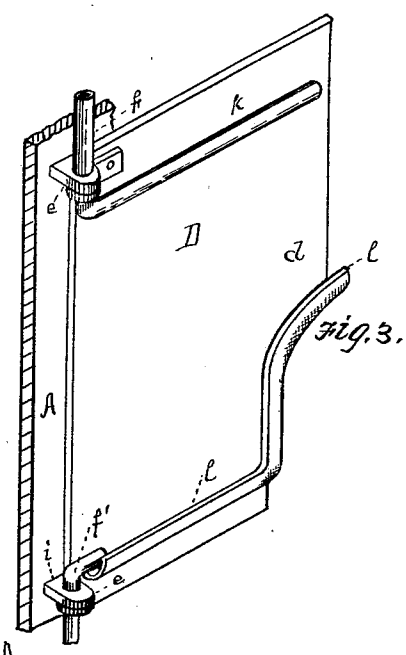


Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

MARTIN V. SMITH, OF McKEESPORT, PENNSYLVANIA.

FIRE-SHIELD.

SPECIFICATION forming part of Letters Patent No. 233,120, dated October 12, 1880.

Application filed August 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, MARTIN V. SMITH, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Furnace-Shields; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side view of my improved furnace-shield applied to a puddling-furnace. Fig. 2 is a sectional view of the shield on the line *x x*, Fig. 1; and Fig. 3 is a perspective view of one of the shields.

Like letters of reference indicate like parts in each.

My invention relates to the furnace-shields used in connection with puddling and other heating-furnaces to protect the workmen from the intense heat generated in and thrown out from the furnace while operating the same.

Heretofore different styles of these shields have been constructed, such as stationary shields hung or suspended in front of the furnace, and sliding shields hung from rollers on a rod above the furnace, so that they could be slid out of the way of the workmen to gain access to the door. The shields have also been arranged so that a current of water was kept running through them, or a spray of water thrown against them to cool them; and they have been arranged to support a dry non-conductor of heat between the furnace and workmen. Objections have been made to the sliding shields because they did not protect the lower part of the body, it being impossible to extend the shield low enough on account of the cinder box and bosh, which prevented its sliding. It was also difficult to arrange the water feed and discharge to the water-shields.

The object of my invention is to provide a convenient water-shield which can be easily withdrawn from in front of the furnace-door and extend down low enough to afford a full protection to the workman, and to arrange a more perfect water feed and discharge to the same.

It consists in a furnace-shield hung on hinges in front of the furnace and a little distance therefrom, and provided with a fluid supply and discharge through hollow hinges, by which it is supported; and also in certain details of construction of the same.

To enable others skilled in the art to make and use my invention, I will describe the same more fully.

My invention is illustrated in connection with a puddling or boiling furnace, though it is applicable to different heating-furnaces, whether for metallurgic or other purposes, and with a slight change, obvious to the skilled mechanic, can be adapted thereto.

In the puddling-furnace, A represents the puddling or heating chamber, provided with the door *a*, cinder-box *b*, and water-bosh *c*, these parts being of the usual or any desired construction.

D is my improved shield, which is shown in the accompanying drawings as a "spray" shield, and is provided with two parts, *d d*, meeting at or near the center of the door. It is hung on brackets *e* or eye-hinges *e*, extending out from the side of the furnace at the outer end of the shield or otherwise supported in the proper position, one bracket being at the top and the other near or just below the bottom of the shield. The hinges *f f'* of the shield pass through these brackets *e*, and are provided with shoulders or braces *i* to retain the hinges in the proper position within them. These hinges are formed of hollow tubes, through which the water is conducted to and discharged from the shield.

In the spray-shield shown the supply is conducted through the upper hinge, *f*, and is discharged against the shield through the jet-pipe *k* extending along the top. The water thrown from the spray runs down the shield and is caught in the trough *l*, extending along the base, and conducted to and discharged from the trough through the lower hinge, *f'*, into a waste-pipe, drain, or receiver. When a tank-shield holding a body of water between the furnace and workman is used the water is fed through the lower hinge, *f'*, and discharged through the upper hinge, *f*, which is connected to a waste-pipe in any desired way. When the shield is formed in one part only, it is hung at one side of the furnace, extending in front of the entire furnace-chamber, and having a suitable working opening formed therein, and the water or other fluid is conducted thereto

through the tube-hinges, as above described. I prefer, however, to form it in two parts and conduct and discharge the fluid to it through the hinges on either side, as the parts are lighter and more easily handled, and there is not so much liability of leakage.

As the shield swings out of the way, instead of sliding, it can be operated irrespective of either the bosh or cinder box or buggy, and therefore is made long enough to extend below the furnace-bed and protect the entire body of the workman. It is provided with suitable handles for operating it, as shown at *m*.

The operation of my improved shield is as follows: The two parts *d d* are closed in front of the furnace-door *a*, meeting together at the top, but extending straight down on either side of the door, so as to leave room for the cinder box or buggy. When the puddler or other workman is operating the furnace the spray of water is kept discharging directly against the shield to keep it sufficiently cool, or in the tank-shield the water is kept flowing through it for the same purpose. The cooled shield thus affords the workman full protection and enables him to accomplish his work with less exertion. When it is desired to withdraw the charge from the furnace or obtain access thereto for any other reason, the hinged shield is drawn aside by means of the handles, and free access is obtained to the furnace. No trouble is experienced in drawing aside the shield on account of the water-bosh or cinder-box as in the sliding shield, as the shield swings on its hinges past the box and has no necessary water-connection with the bosh.

The water can be conducted to and discharged from the shield in pipes or underground drains, so that it is only seen in its course down the shield, and the shield can be swung in any desired position without any attention to the water-connections.

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

1. In a furnace shield hung in front of and a little distance from a furnace, the combination of the shield D, brackets *e*, and hollow supply and discharge hinges *f f'*, on which the shield is supported, substantially as and for the purposes set forth.

2. The combination of the furnace-shield D, hollow supply and discharge hinges *f f'*, spray-pipe *k*, and trough *l*, substantially as and for the purposes set forth.

In testimony whereof I, the said MARTIN V. SMITH, have hereunto set my hand.

MARTIN V. SMITH.

Witnesses:

JAMES I. KAY,

JAMES S. KELLEY.