No. 698,148. Patented Apr. 22, 1902.

P. F. SMITH.

BOTTOM FOR SHEET HEATING FURNACES.

(Application filed Jan. 28, 1902.)

(No Model.)

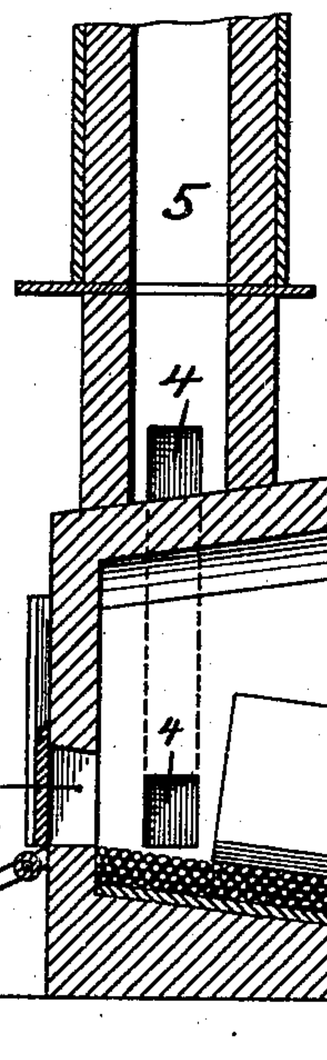
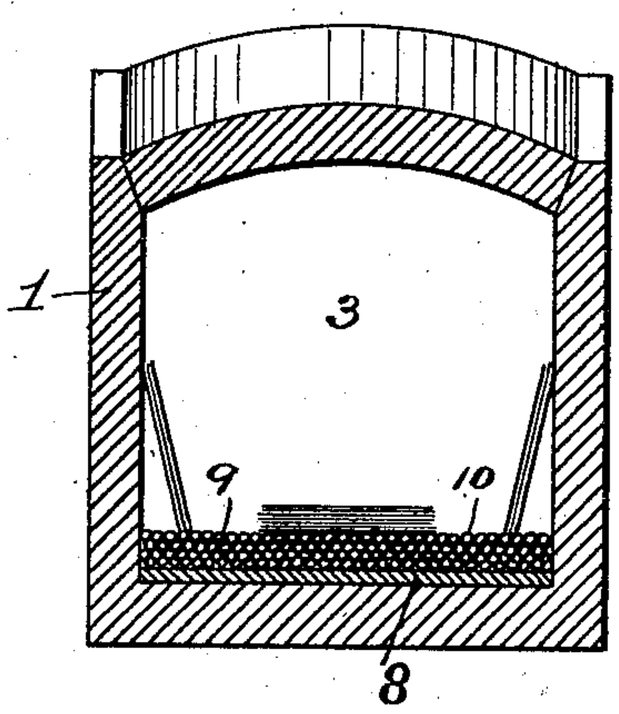


FIG. 1.

FIG. 3.

FIG. 2.



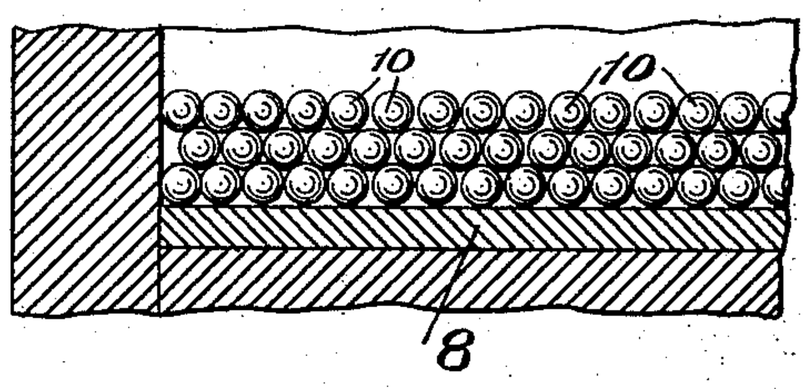
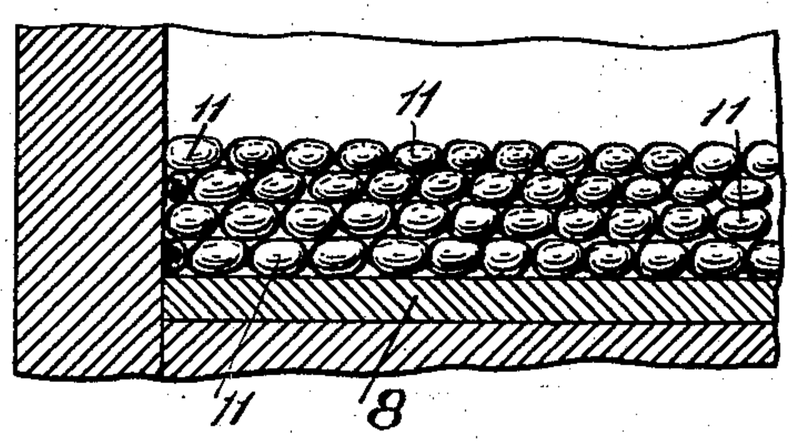


FIG. 4.



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UNITED STATES PATENT OFFICE.

PERSIFER F. SMITH, OF PITTSBURG, PENNSYLVANIA.

BOTTOM FOR SHEET-HEATING FURNACES.

SPECIFICATION forming part of Letters Patent No. 698,148, dated April 22, 1902.

Application filed January 28, 1902. Serial No. 91,542. (No model.)

To all whom it may concern:

Be it known that I, PERSIFER F. SMITH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bottoms for Sheet-Heating Furnaces; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to sheet-heating furnaces, its object being to provide a bottom for such furnaces which shall be clean and free from small particles of hard matter liable to enter between the sheets of the pack and mar the same or the rolls and shall also be more easily removed from and replaced in the furnace-chamber.

The bottom for sheet-heating furnaces most largely employed consists of a mass of broken pieces of cinder, brick, or like non-combustible material which is spread over the furnace-floor and provides a bottom having interstitial passages and presenting a broken and uneven surface, as set forth in Letters Patent No. 408,475 granted to Francis and Banfield August 6, 1889, this bottom having the advantages that while it was non-combustible it would itself store the heat of the furnace and prevent the heat from passing through the interstitial passages and so provide for the more even heating of the packs, that it overcame "patching" in the pack from the sulfur contained in the coke previously used for such bottoms, that the dust could settle down within the mass, and the bottom could be removed from time to time for cleaning. The main difficulties with this broken-cinder or brick bottom have been that small particles of the cinder or brick were liable to break off and enter between the sheets of the pack and spoil the rolls or spoil the sheets in their passage through the rolls and that if the brick is soft particles would adhere to and form streaks on the sheets rolled. It was also difficult to clean the angular broken pieces of cinder or brick, as the dust and dirt would adhere thereto.

My invention consists, generally stated, in a bottom for sheet-heating furnaces composed of a loose mass of hard-burned clay balls or other globular bodies, this bottom while providing support for the packs upon the higher portions of such balls permitting the passage of the heated gases through the interstices formed between them and the contact of the same with the packs and the supporting-balls having no angular portions to break off and enter between the sheets or adhere to the sheets and be carried into the rolls, while they can be more easily removed and cleaned or separated from the dust carried into the heating-chamber from the fire-chamber, a cleaner and better bottom being so provided.

To enable others skilled in the art to employ my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a sheet-heating furnace having a bottom embodying the invention. Fig. 2 is a cross-section, and Figs. 3 and 4 are enlarged views of portions of bottoms, showing two forms of globular bodies suitable for the same.

The drawings show an ordinary sheet-heating furnace 1, having the fire-chamber 2, sheet-heating chamber 3, flues 4, stack 5, and working door 6 and slide 7, over which the packs are run out and drawn from the furnace. The heating-chamber has the floor 8, on which the non-combustible bottom 9 is supported. This bottom 9 is composed of a loose mass of hard-burned clay balls or like globular bodies to a depth of about five to ten inches. The balls are usually about two inches in diameter, and the upper surfaces form a series of high spots for support of the packs and form interstitial passages for the circulation of the heated gases. I may employ for the purpose either balls 10, as shown in Fig. 2, or oblong or other approximately egg-shaped bodies. In Fig. 3 I have illustrated what have been termed "potatoes" 11, being baked-clay bodies, oblong in form, which have been used successfully for the purpose. The balls are especially burned to produce hard surfaces not liable to flake off and enter between the sheets.

In the use of the invention the flame and heat from the fire-chamber circulate within the sheet-heating chamber, heating the balls composing the furnace-bottom. The packs are fed to the furnace and manipulated in the ordinary way therein, being turned up against

the side walls and again turned down onto the bottom, as necessary for heating the pack throughout. In such feeding and manipulation the packs when they strike the balls slide over the curved globular sides of the same, and as there are no small broken pieces of hard matter to pass between the sheets of the packs or adhere to their outer surfaces the main difficulties heretofore formed with broken-cinder or brick bottoms are overcome, while interstitial passages for the circulation of the gases are provided, so that the bottom may be maintained at a substantially uniform heat and the substantially uniform heating of the packs be obtained. Any dust from the fire-chamber or from other sources can settle down between the balls, and the balls can be more easily removed and more easily cleaned.

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

A bottom for sheet-heating furnaces formed of a loose mass of hard-burned non-combustible balls or approximately globular bodies, providing interstitial passages and a support for the packs upon the higher portions of the balls, substantially as set forth.

In testimony whereof I, the said PERSIFER F. SMITH, have hereunto set my hand.

PERSIFER F. SMITH.

Witnesses:
JAMES I. KAY,
ROBT. D. TOTTEN.