May 3, 1932. G. U. GREENE 1,856,548

COVER FOR SINTERING MACHINES

Original Filed Aug. 3, 1929

Fig. 1

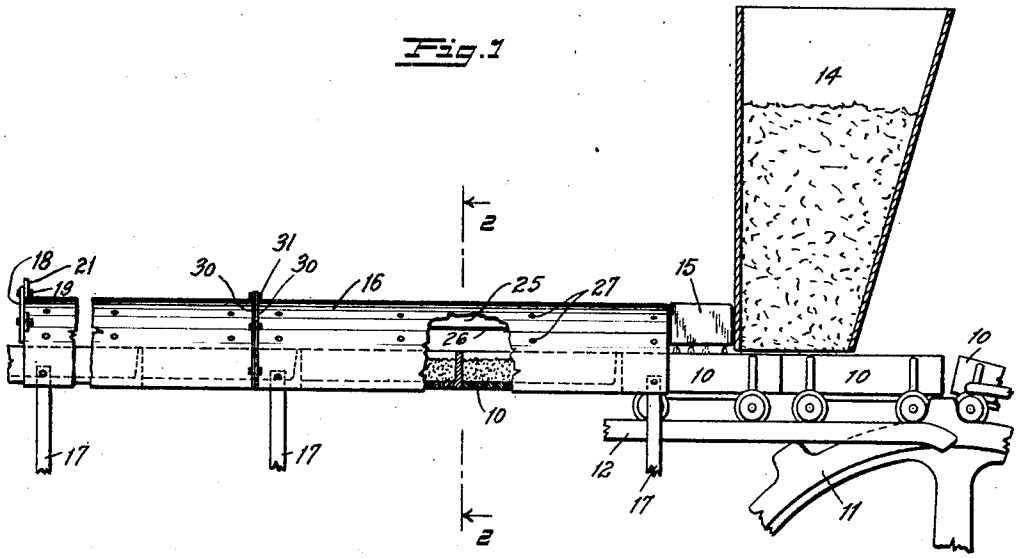
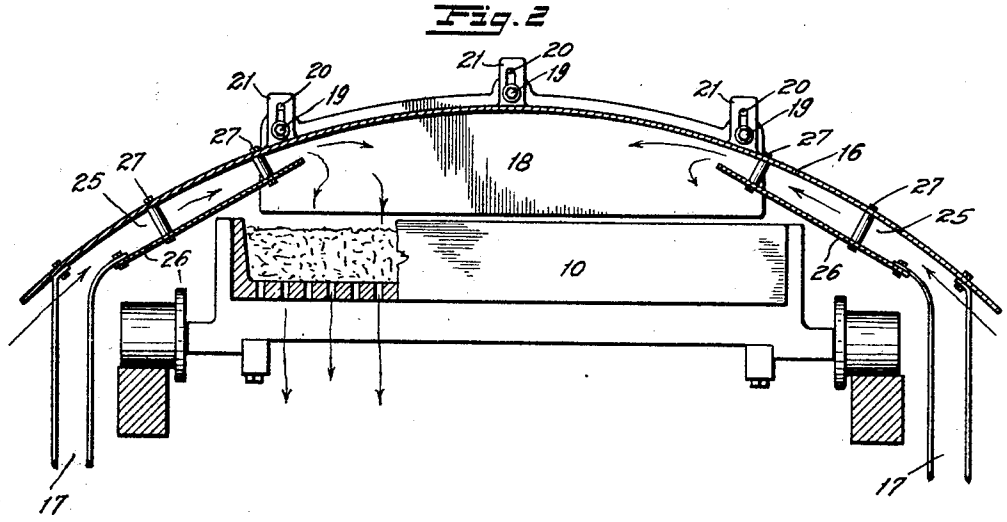


Fig. 2



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UNITED STATES PATENT OFFICE

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COVER FOR SINTERING MACHINES

Application filed August 3, 1929, Serial No. 383,187. Renewed June 17, 1931.

This invention relates to metallurgical apparatus, and more particularly to sintering machines.

The invention provides for preheating the air which is passed through the pallets of a sintering machine in order to prevent the surface of the charge from becoming cooled before the reaction has been completed. This is particularly applicable in cases where it is desired to reduce the sulphur content of an ore, since the cold air being drawn through the charge chills the surface before the sulphur has been burned to the desired extent. This is evidenced by the fact that the surface of such sinter cake frequently contains a substantially higher percentage of sulphur than the interior thereof.

The present invention provides a hood for covering the surface of the pallets and which is heated by passage of the air therethrough. The hood is so arranged, that before air enters the pallets it passes along the hot portion of the hood and is preheated before it can come in contact with the charge. Suitable means are provided for controlling the elevation of the hood with respect to the pallets and regulating the amount of air which passes therethrough.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a side elevation of a portion of the sintering machine showing the hood in position; and

Fig. 2 is a section taken on the line 2—2 of Fig. 1 showing the relationship of the hood to the pallet.

Like reference characters denote like parts in the several figures of the drawings.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawings more in detail, the invention is shown as applied to a sintering machine including a plurality of pallets 10 which are caused by any suitable means, such as driving wheel 11, to pass along trackway 12. Pallets 10 passing along trackway 12 are first brought under hopper 14 from which they receive the charge of ore and other material to be sintered, thence under muffle 15 which ignites the combustible material at the surface of the charge. Pallets 10 are then passed under hood 16 and over a wind box (not shown) by means of which air is caused to be passed downwardly therethrough. The air in so passing supports the combustion of the combustible material contained in the charge in a manner well known in the sintering art, and causes an incipient fusion of the ore particles, whereby a porous sinter cake is produced.

Hood 16 is positioned above the pallets 10 by means of support 17 and is provided with an adjustable end member 18 which is secured thereto by any suitable means, such as bolts 19 cooperating with elongated slots 20 formed in ears 21 which are secured to said hood in any convenient manner.

End member 18 is adapted to be positioned closely adjacent the surface of the material in pallets 10 and thereby prevent air from entering the end of the hood and cooling the upper surface of the charge.

Air ducts 25 are formed by plates 26 which are secured to hood 16 as by studs 27. Said air ducts are designed to receive air from the outside of the machine and to supply said air to the top of the pallets after which it is drawn through the charge by means of the wind box, not shown. The air in passing through ducts 25 is preheated by contact with the hot hood and is applied to the charge in a heated condition whereby the rapid cooling of the upper surface of the charge is prevented.

It has been found that the above described

apparatus not only provides a more complete elimination of sulphur, but aids in the production of a final sinter of more desirable physical characteristics. One end of the cover is positioned adjacent the muffle, and the other end is provided with an adjustable member 18 which should preferably come within one inch of the top of the charge for preventing air from entering and cooling the same.

In operation it has been found that temperatures as high as 800° C. are obtained in the gases under the cover. It is accordingly essential to make the hood from material which will stand this temperature.

The hood has been shown as formed of a plurality of sections secured together by flanges 30 and bolts 31. It is obvious that the hood could be made of any desired length for securing the proper operation of the sintering machine, but is particularly important at the portion adjacent the muffle where the top of the charge is being burned. After the top has become burned the upper portion of the charge serves to preheat the air and thereby assist in the combustion of the lower portions. It is evident, therefore, that the exact dimension of the hood will be determined by the thickness of the charge and the rate of combustion.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. In combination with a sintering machine having a muffle, a low hood covering the pallets adjacent said muffle, said hood being provided with air ducts at the sides thereof, the air pasing through said ducts being preheated by contact with said hood before being applied to the surface of the charge.

2. In combination with a sintering machine having a muffle, a low hood covering the pallets adjacent said muffle, said hood being provided with air ducts at the sides thereof, the air passing through said ducts being preheated by contact with said hood before being applied to the surface of the charge, the end of said hood opposite said muffle being provided with an adjustable closure member whereby the entrance of air into the end of said hood may be controlled.

3. In combination with a sintering machine having a muffle and movable pallets, a low hood extending over said pallets from a point adjacent said muffle, said hood being arched and extending sufficiently close to the sides of said pallets to restrict the passage of air therebetween, air ducts carried by said hood through which the incoming air is caused to pass, said ducts directing said air into contact with said hood whereby said air is preheated before being applied to the charge in said pallets.

4. In combination with a sintering machine having a muffle and movable pallets, a low hood extending over said pallets from a point adjacent said muffle, said hood being arched and extending sufficiently close to the sides of said pallets to restrict the passage of air therebetween, air ducts carried by said hood through which the incoming air is caused to pass, said ducts directing said air into contact with said hood whereby said air is preheated before being applied to the charge in said pallets, and an adjustable end member mounted on said hood and adapted to be extended into close relationship to said charge so that excessive lateral movement of air thereover is prevented.

5. In a sintering machine having a plurality of movable pallets, a hood covering said pallets through a portion of their travel, said hood extending laterally beyond said pallets and being spaced vertically from the edge of said pallets to form air ducts between said hood and said edges, whereby the air drawn through said pallets is caused to enter under the overhanging edges of said hood and to become preheated by contact therewith before being applied to the surface of the charge in said pallets.

6. In a sintering machine having a plurality of movable pallets, a hood covering said pallets through a portion of their travel, means for guiding air under said hood and in contact with the lower surface thereof so that said air becomes heated by heat transfer from said hood and means for limiting horizontal movement of said heated air relatively to the surface of the charge in said pallets.

7. In a sintering machine having a plurality of movable pallets, a hod covering said pallets through a portion of their travel and extending laterally beyond said pallets and means for guiding air under said hood and in contact with said lateral extension so that said air is pre-heated by said contact and means for limiting horizontal movement of said pre-heated air relatively to the surface of the charge in said pallets.

In testimony whereof I have hereunto set my hand.

GERALD U. GREENE.