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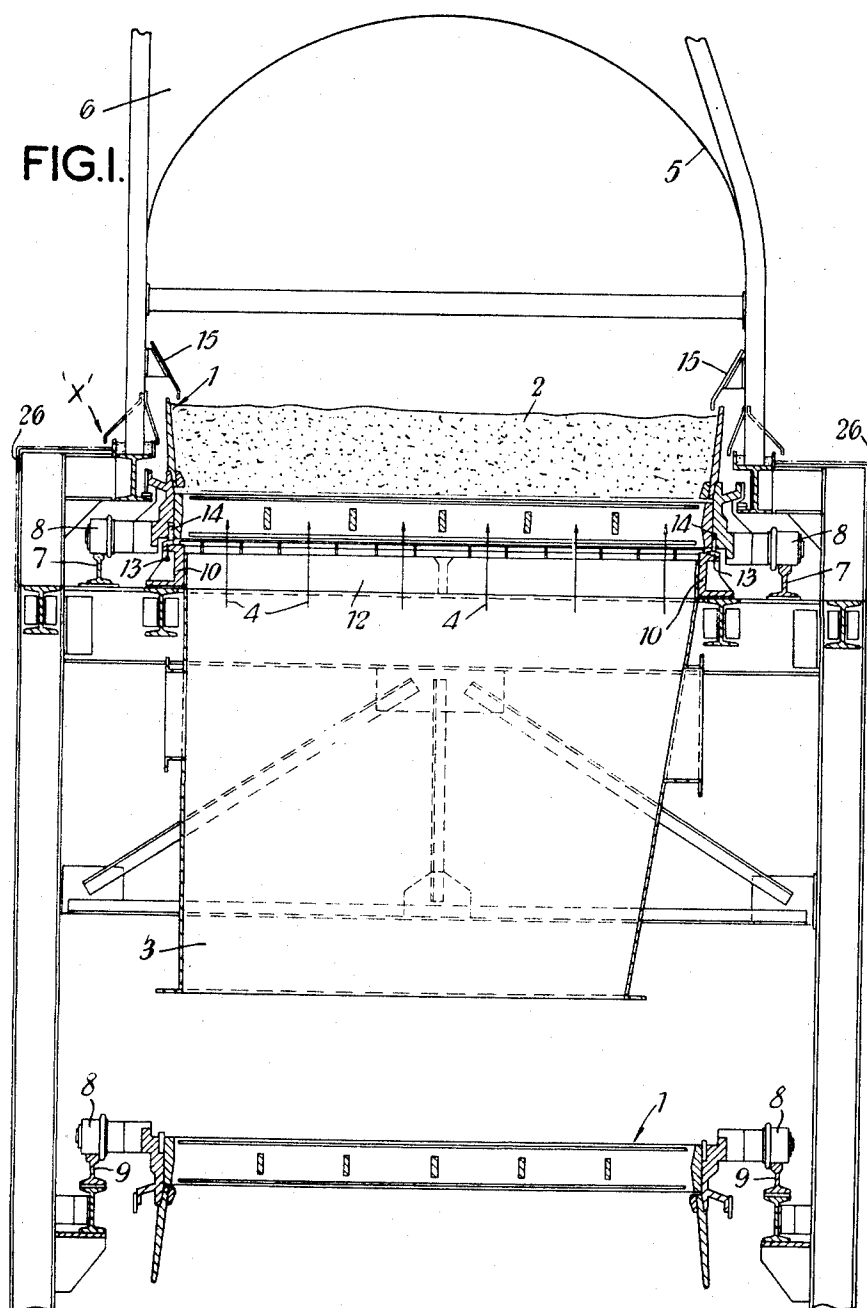
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TRAVELLING GRATE SINTERING APPARATUS AND THE LIKE

Filed June 27, 1966

2 Sheets-Sheet 1



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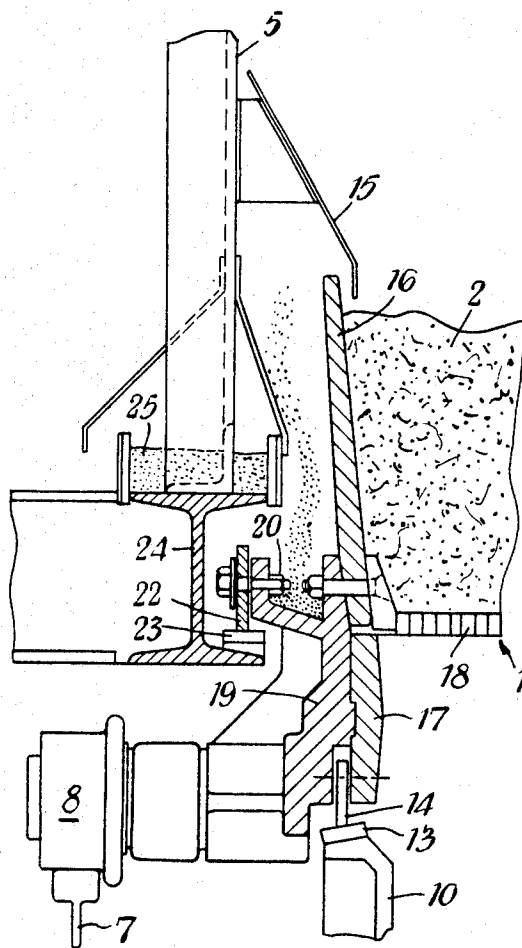


FIG. 2

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TRAVELLING GRATE SINTERING APPARATUS AND THE LIKE

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3 Claims. (Cl. 263—28)

ABSTRACT OF THE DISCLOSURE

The invention relates to sintering apparatus of the kind having a gas collecting hood, drop seal arrangements being provided between the travelling grate of the apparatus and the hood, the drop-bars of the drop seal arrangements being carried by protuberances from the sides of the grate and which define continuous troughs along the sides of the grate for carrying dust out of the hood.

The present invention relates to apparatus, such as sintering apparatus, of the kind having an endless travelling grate, for example in the form of a series of pallets, for carrying material which is treated by gases blown through the grate from the underside thereof, as the grate travels along, windboxes being provided beneath the grate and a gas collecting hood in the form of a tunnel being positioned over the grate. In such apparatus the grate is, so to speak, sealed to the windboxes to prevent excessive escape of gases to the atmosphere, the seal comprising either a grease slide arrangement which also provides a supporting track for the travelling grate, or, if the grate has a separate supporting rail track engaged by rollers or the like on the grate, a drop seal arrangement. In apparatus where a grease slide arrangement is provided, the guiding of the grate over its return run is usually by rollers or the like on the grate which engage a guide track. It will be appreciated that such apparatus may also be operated so that over a first section gas is blown upwardly from the underside of the grate and over a second section is drawn downwardly through the grate by using pressure windboxes over the first section and suction windboxes over the second section, the sealing arrangement over said second section serving to prevent excessive air being drawn directly into the suction boxes.

Grease slide and drop seal arrangements are similar insofar as they both comprise surfaces associated with the windboxes, for example surfaces on the supporting frame for the windboxes, over which slide sealing members associated with the travelling grate. In the grease slide arrangement grease is pumped between the sliding surfaces and in the drop seal arrangement the sealing members associated with the grate are drop bars which slide over wear strips and are so mounted that as the wear strips wear away, drop downwardly under their own weight to take up the wear automatically.

When such apparatus is used to manufacture agglomerated material, for example sintered material or hardened pellets, principally of a mineral base, dust and particles blown off the grate can fall between the sides of the grate and the sides of the tunnel in known apparatus and can eventually block the track path of the grate. The dust under these conditions can eventually penetrate the axle bearing enclosure of the grate rollers which then require continuous maintenance.

Attempts have been made on existing installations to deflect the dust back on to the grate by deflector plates extending the length of the tunnel and projecting inwardly and downwardly from the sides of the tunnel to

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a position overlying the grate, but these are not wholly effective and any attempt to install a further rubbing seal between these deflector plates and the grate is not practicable because any seal surface on the sides of the grate cannot be kept in perfect alignment because of the necessary running tolerances between the grate and its tracks.

An object of the present invention is to deal with this dust problem in a more efficacious manner than hitherto.

According to the present invention in apparatus of the kind described above, there is provided a drop seal arrangement between the tunnel and grate, the drop bars of the drop seal arrangement being supported by protuberances from the sides of the grate which are adapted to collect the dust blown off the grate and thus transport the dust out of the tunnel where it can be discharged.

Certain other advantages accrue from the present invention in that the side-walls of the tunnel can be terminated at the level of this drop seal arrangement, so that the ends of the tunnel which are sealed off to prevent gases being blown to atmosphere or air being sucked into or out of the tunnel ends need only be profiled to allow movement through them of that part of the grate above the drop seals; thus the problem of sealing off the ends of the tunnel arising when the rollers have to pass through the ends of the tunnel is obviated. Further by terminating the tunnel at the level of the drop seal arrangement the lower side-walls of the grate and the rollers and associated tracks can be exposed to atmosphere which gives ease of access for maintenance and also prolongs the life of the lubricating grease for the rollers because the grease is not subject to the temperature of the hot gases blown through the grate.

In cases where it is desirable to totally enclose the grate the tunnel side-walls can be extended to do so.

With the drop seal arrangement between the tunnel and the grate, a suitable rapping device can easily be installed to ensure that the drop bars are in the "down" position or, alternatively an "up" detection device can give warning of faulty drop bars.

In order that the invention may be readily understood, a sintering apparatus in accordance therewith will now be described by way of example with reference to the two figures of the accompanying drawing, in which:

FIGURE 1 is a section through the sintering apparatus looking towards the discharge end, and

FIGURE 2 is an enlarged view of that part indicated at X in FIGURE 1.

Referring now to the drawing, the sintering apparatus has a travelling grate in the form of an endless series of pallets 1 which are supported and guided to move continuously around a closed loop through upper and lower runs. Over their upper run the pallets 1 carry material 2 over a series of windboxes 3 through which hot gases are blown as indicated by the arrows 4 to pass through the bottoms of the pallets 1 and hence through the material 2 to effect sintering. At the end of the upper run the material 2 is automatically discharged from the pallets 1 and the pallets 1 return empty over their lower run which is below the windboxes 3 to the reloading position. A gas collecting hood in the form of a tunnel 5 is disposed over the windboxes 3 and extending from the tunnel 5 in a gas take-off duct 6.

The apparatus is supported by a girder framework as can be clearly seen in the drawings and this carries rails 7 extending along the upper run of the pallets 1 and forming a track engaged by roller 8 on the pallets 1 to support and guide the pallets 1 over their upper run and rails 9 extending along the lower run of the pallets 1 and which are engaged by the rollers 8 to support and guide the pallets 1 over their lower run.

The windboxes 3 are supported longitudinally and

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transversely of the apparatus by members 10 and 12 respectively of the girder framework, the members 10 and 12 being disposed closely adjacent the underside of the pallets 1 and defining the open mouths of the wind-boxes 3. To prevent gases being blown from the wind-boxes 3 directly to atmosphere, a drop seal arrangement is provided between the members 10 and the pallets 1, this drop seal arrangement comprising wear strips 13 mounted on the longitudinal members 10 at opposite sides of pallets 1 and drop bars 14 mounted on the pallets 1. As can be seen more clearly in FIGURE 2, the wear strips 13 are disposed at an angle to the horizontal. As an alternative to this drop seal arrangement a grease slide arrangement could be used, in which case the rails 7 would be omitted, the support and guidance of the pallets 1 over their upper run being by the grease slides which replace the wear strips 13.

Deflector plates 15 extend inwardly and downwardly from the sides of the tunnel 5 so that some of the dust and particles blown out of the bed of material 2 is deflected back into the bed.

Referring now more particularly to FIGURE 2, the sides of the pallets 1 are in upper and lower sidewall sections 16 and 17, the floor 18 of the pallets 1 extending from the junction of the upper and lower sections 16 and 17. Mounted on the sides of the pallets are brackets 19 which carry the axles of aforementioned rollers 8 and drop bars 14 of drop seal arrangement. The brackets 19 each terminate at their upper end, which is about at the level of the floors 18 of the pallets 1, in a trough 20 to the outer side of which is mounted a drop bar 22 of a further drop seal arrangement, the associated wear strip 23 of this drop seal arrangement being carried by a girder 24 supporting a sand seal 25 in which the lower edge of the sheet metal structure of tunnel 5 terminates.

In operation of the apparatus dust and particles blown between the deflector plates 15 and the sides of the tunnel falls into the troughs 20 and is thus transported out of the tunnel and discharged.

The drop seal arrangement between the tunnel 5 and the pallets 1 enables the tunnel to terminate as shown at the girders 24 so that the rail 7, rollers 8 and lower side-

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wall sections 17 of the pallets 1 are exposed to the atmosphere. If it is desired to extend the tunnel sides downwardly this can be done by casing 26 shown in dash-dot line in FIGURE 1.

It will be appreciated that a trough corresponding to the trough 20 could form an independent unit bolted to the side of the grate.

I claim:

1. Apparatus such as sintering apparatus comprising means forming a treatment zone for material defined by a succession of windboxes and a gas collecting hood in the form of a tunnel disposed over said windboxes, a track extending through said treatment zone above said windboxes, an endless travelling grate for carrying said material through said treatment zone, track engaging means on said grate engaging said track to support and guide said grate, protuberances from the sides of said grate defining troughs which extend continuously along said grate for collecting dust blown off said grate and so transport such dust out of said tunnel, and a drop seal arrangement on each side of said grate between said grate and said tunnel the drop bar of said drop seal arrangements being mounted on said protuberances at a position laterally of the grate on the outer side of said troughs.

2. The apparatus as claimed in claim 1, wherein the lower ends of the tunnel side-walls terminate at the level of said drop seal arrangement.

3. Apparatus as claimed in claim 2, wherein the lower ends of said tunnel side-walls terminate in sand seals and the wear strips of said drop seal arrangement are mounted on the supporting structure of said sand seals.

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