United States Patent [19]

Marsh

[11] **3,744,777**

[45] **July 10, 1973**

[54] **SINTERING MACHINES**

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[22] Filed: **Apr. 26, 1972**

[21] Appl. No.: **247,894**

Related U.S. Application Data

[63] Continuation of Ser. No. 70,074, Sept. 8, 1970, abandoned.

[30] **Foreign Application Priority Data**

Oct. 20, 1969 Great Britain 51,359/69

[52] **U.S. Cl.** **266/21,** 34/236, 432/245

[51] **Int. Cl.** **F27b 9/00**

[58] **Field of Search** 263/28; 266/21; 49/480

[56] **References Cited**

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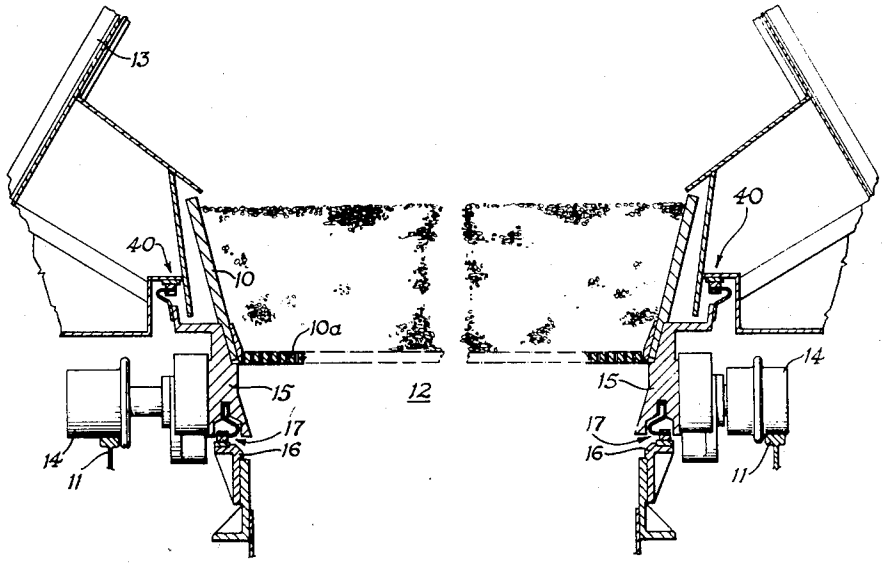
Primary Examiner—John J. Camby

Attorney—James E. Nolan

[57] **ABSTRACT**

Apparatus for the gaseous treatment of solid materials of the kind wherein a plurality of pallets each having a base in the form of a grate are adapted to be moved in end-to-end abutting relationship through treatment zone where a gaseous medium is passed through material on the pallets, and provided with sealing means to ensure a seal between the sides of the pallets and the sides of means for the supply of treatment gas in the treatment zone, characterised in that said sealing means comprise opposed slidably engaging sealing strips carried by the sides of the pallets and the sides of the means for supply of treatment gas respectively, there being longitudinally extending leaf springs sealably connecting the strips carried by one of these parts with the part and urging same into sealing engagement with the opposed strips.

13 Claims, 4 Drawing Figures



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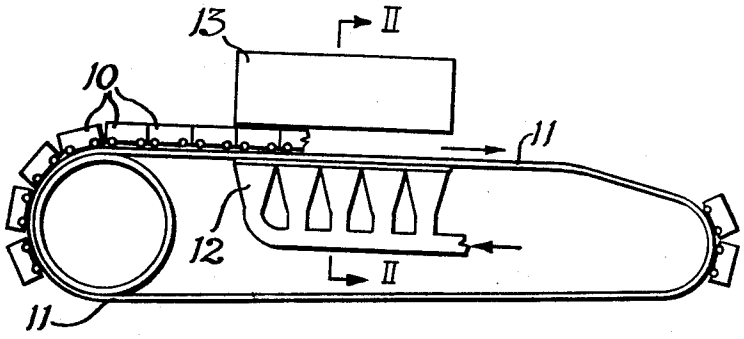

Fig. 1

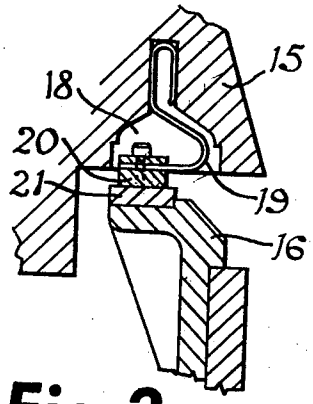

Fig. 3.

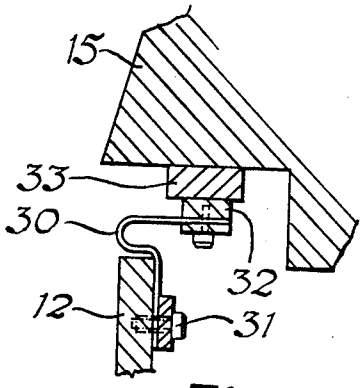

Fig. 4.

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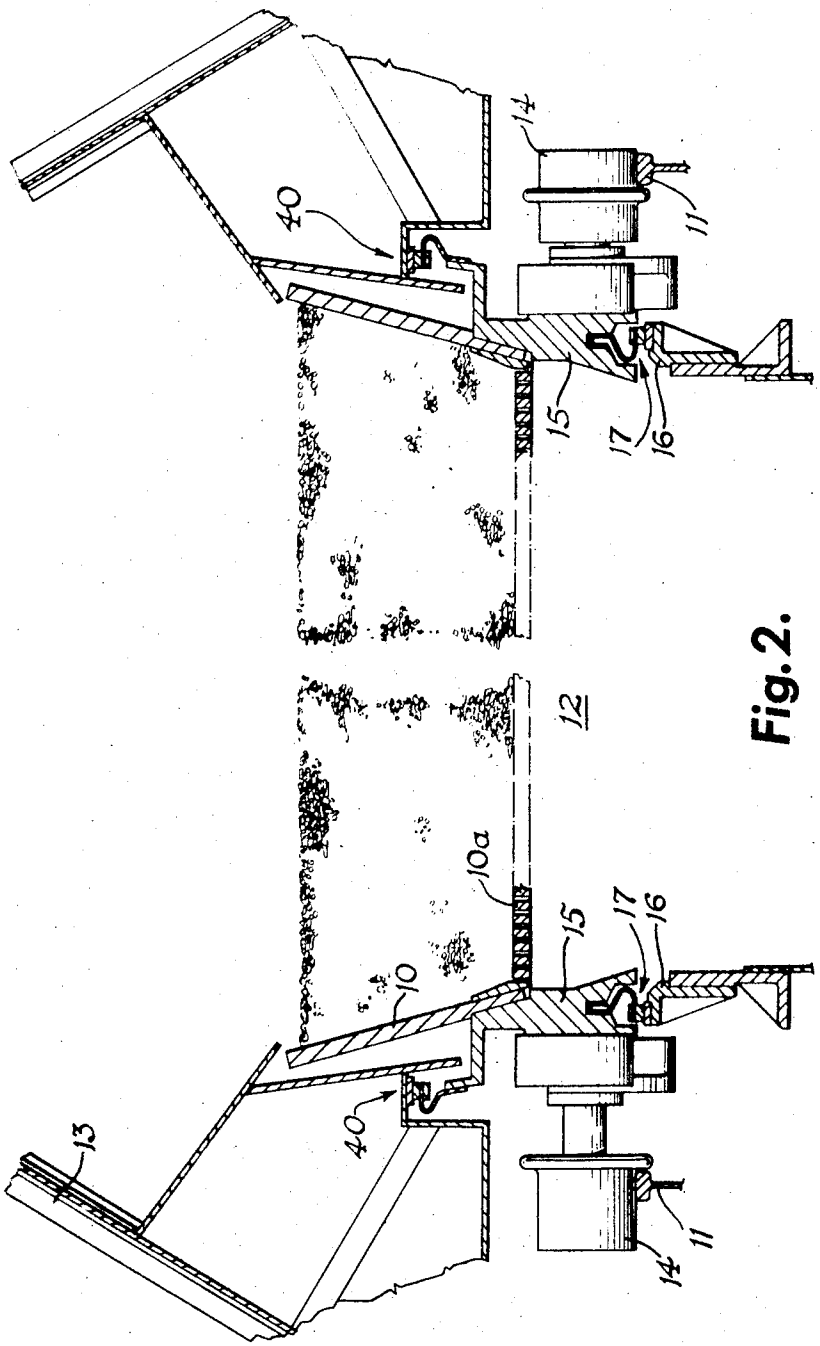

Fig. 2.

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SINTERING MACHINES

This is a continuation, of application Ser. No. 70,074, filed Sept. 8, 1970, now abandoned.

This invention concerns apparatus for the gaseous treatment of solid materials particularly, though not exclusively, sintering apparatus, and being of the kind wherein a plurality of pallets each having a base in the form of a grate, are adapted to be moved in end-to-end abutting relationship through a treatment zone where a gaseous medium is passed through material on the pallets.

In such apparatus it is necessary to seal the sides of the pallets with respect to the supply of gaseous medium to ensure that the gas flows through the material on the pallets and not around the sides thereof. It will be understood that sealing is not necessary at the ends of the pallets since the pallets are moved through the treatment zone in end-to-end abutting relationship.

According to the present invention apparatus for the gaseous treatment of solid materials of the kind wherein a plurality of pallets each having a base in the form of a grate are adapted to be moved in end-to-end abutting relationship through a treatment zone where a gaseous medium is passed through material on the pallets, and provided with sealing means to ensure a seal between the sides of the pallets and the sides of means for the supply of treatment gas in the treatment zone, is characterised in that said sealing means comprise opposed slidably engaging sealing strips carried by the sides of the pallets and the sides of the means for supply of treatment gas respectively, there being longitudinally extending leaf springs sealably connecting the strips carried by one of these parts with the part and urging same into sealing engagement with the opposed strips.

The invention will be further apparent from the following description with reference to the several figures of the accompanying drawing, which show, by way of example only, one form of apparatus being sintering apparatus embodying the invention.

Of the drawings:

FIG. 1 shows a general arrangement drawing of the sintering apparatus;

FIG. 2 shows an enlarged cross-section of the apparatus on the line II—II of FIG. 1;

FIG. 3 shows an enlarged fragmentary view of the sealing arrangements provided on the apparatus of FIG. 2 at the underside of the pallet;

and FIG. 4 shows an enlarged fragmentary view of a modified sealing arrangement.

Referring firstly to FIG. 1 it will be seen that the apparatus comprises a plurality of pallets **10** which are adapted to be moved continuously on rails **11** around an endless path, having upper and lower runs. The pallets **10** are in end-to-end abutting relationship as they move along the upper run through a treatment zone defined between wind boxes **12** beneath the run and a hood **13** above the run.

Turning now to FIG. 2 it will be seen that each pallet **10** has a base in the form of a grate **10*a***. The pallets are equipped with wheels **14** which engage with the rails **11.** In order that the combustion air, supplied from the wind boxes **12** is constrained to flow upwardly through the grates **10*a*** and hence through the material carried by the pallets, it is necessary to provide a seal between the sides of the pallets **10** and the sides of the wind boxes **12.**

Each pallet is provided with flanges **15** which depend from opposed lateral sides of the grate **10*a*** and terminate in spaced relationship from frame members **16** running along the sides of the wind boxes **12** and seals generally indicated at **17** are formed between these parts.

Referring to FIG. 3 it will be seen that each flange **15** has a channel **18** therein which houses the upper cross-sectional part of an elongated leaf spring **19** of generally S-shaped cross-section and which extends over the length of the side of the pallet. The lower edge of the spring **19** has a strip **20** secured thereto and which is forced by the spring action into sealing engagement with a wear strip **21** carried by the frame member **16.**

It will be appreciated that as the pallets are progressed through the treatment zone the strips **20** are slidably drawn over the strips **21** and that the seal is maintained throughout movement of the pallets **10** through the treatment zone.

The seal may be modified as shown in FIG. **4,** wherein a leaf spring **30** of generally L-shaped cross-section is secured by bolts **31** to the sides of the wind boxes **12,** the upper longitudinal edge of the spring **30** having a strip **32** secured thereto which is urged upwardly into sealing engagement with a wear strip **33** secured to the base of the flange **15.**

If desired the sides of the pallets **10** may be sealed relative to the hood **13** by similar arrangements of leaf springs and slidably engaging sealing strips as generally indicated at **40** on FIG. **2.**

It will be appreciated that it is not intended to limit the invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible, without departing from the scope thereof as defined in the appended claims.

What is claimed is:

1. Apparatus for the gaseous treatment of solid materials wherein a plurality of pallets each having a base in the form of a grate are adapted to be moved in end-to-end abutting relationship through a treatment zone having means whereby a gaseous medium is supplied and passed through material on the pallets, characterized by means providing substantially gas tight sealing along the opposite sides of the pallets comprising at each side of each pallet opposed slidably engaging sealing strip means carried by respective parts on the sides of the pallets and the sides of the means for supply of treatment gas and additional seal means comprising longitudinally extending leaf springs, each leaf spring acting as a gas tight seal by sealably connecting the strip means carried by one of said parts with that part and resiliently urging the opposed strip means into sealing engagement, one with the other.

2. Apparatus according to claim **1** wherein the treatment gas is supplied by wind boxes disposed below the path of movement of the pallets in the treatment zone whereby the gas is passed upwardly through the material on the pallets.

3. Apparatus according to claim **2** wherein each pallet has opposed lateral flanges depending from its base, said sealing means being located between the lower edges of said flanges and the upper side edges of said windboxes.

4. Apparatus according to claim **3** wherein said longitudinally extending leaf springs are secured to the lower edges of said flanges to urge the strip means secured thereto into sealing and sliding engagement with

strip means secured to the upper side edges of said windboxes.

5. Apparatus according to claim **4** wherein said leaf springs are of generally S-shaped cross-section and are secured by their own spring action to the lower edges of said flanges by having part of their cross-section located in channels in said lower edges.

6. Apparatus according to claim **3** wherein said longitudinally extending leaf springs are secured to the upper side edges of the windboxes to urge the strip means secured thereto into sealing and sliding engagement with strip means secured to the lower edges of said flanges.

7. Apparatus according to claim **6** wherein said leaf springs are of generally L-shaped cross-section and are secured to the upper side edges of said windboxes by bolts.

8. Apparatus according to claim **2** having a hood for collection of treatment gases disposed over the path of movement of the pallets in the treatment zone.

9. Apparatus according to claim **5** having a hood for collection of treatment gases disposed over the path of movement of the pallets in the treatment zone.

10. Apparatus according to claim **7** having a hood for collection of treatment gases disposed over the path of movement of the pallets in the treatment zone.

11. Apparatus according to claim **8** including upper sealing means between the sides of the hood and the sides of the pallets, said upper sealing means comprising opposed slidably engaging sealing strips carried by the sides of the pallets and the sides of the hood respectively, there being longitudinally extending leaf springs sealably connecting the strips carried by one of these parts with the part and urging same into sealing engagement with the opposed strips.

12. Apparatus according to claim **9** including upper sealing means between the sides of the hood and the sides of the pallets, said upper sealing means comprising opposed slidably engaging sealing strips carried by the sides of the pallets and the sides of the hood respectively, there being longitudinally extending leaf springs sealably connecting the strips carried by one of these parts with the part and urging same into sealing engagement with the opposed strips.

13. Apparatus according to claim **10** including upper sealing means between the sides of the hood and the sides of the pallets, said upper sealing means comprising opposed slidably engaging sealing strips carried by the sides of the pallets and the sides of the hood respectively, there being longitudinally extending leaf springs sealably connecting the strips carried by one of these parts with the part and urging same into sealing engagement with the opposed strips.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,744,777 Dated July 10, 1973

Inventor(s) FRANCIS MARSH

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the line after identification of the Inventor insert

--[73] Assignee Simon-Carves Limited, Stockport, Cheshire, England --.

Signed and sealed this 26th day of February 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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