Aug. 25, 1936. A. R. WATZKE 2,051,924

DUST TRAP FOR SINTERING MACHINES

Filed Aug. 11, 1933 2 Sheets-Sheet 1

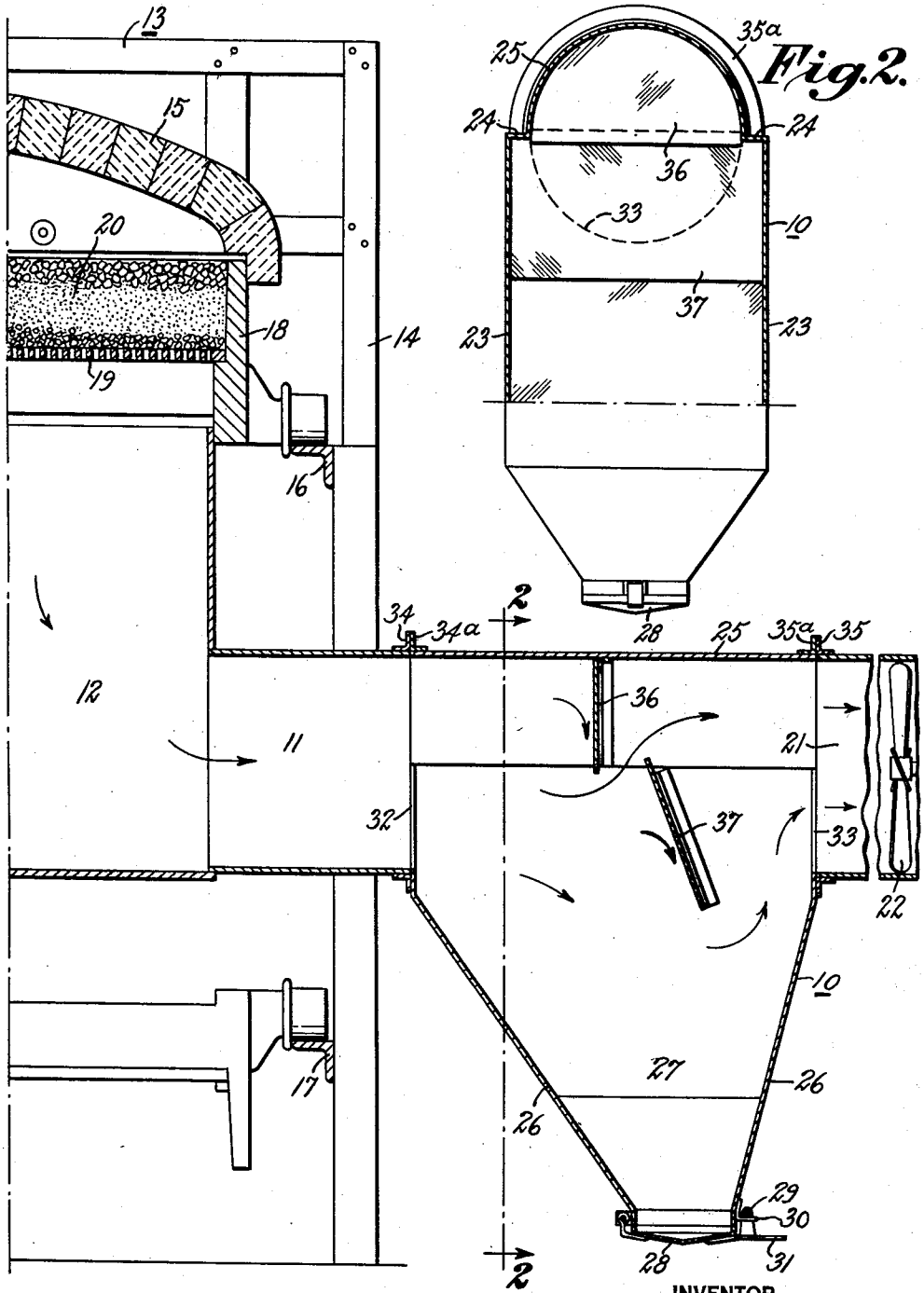


Fig. 1.

Fig. 2.

INVENTOR
Albin R. Watzke
BY
Austin & Dix
ATTORNEYS

Aug. 25, 1936. A. R. WATZKE 2,051,924

DUST TRAP FOR SINTERING MACHINES

Filed Aug. 11, 1933 2 Sheets-Sheet 2

Fig. 3.

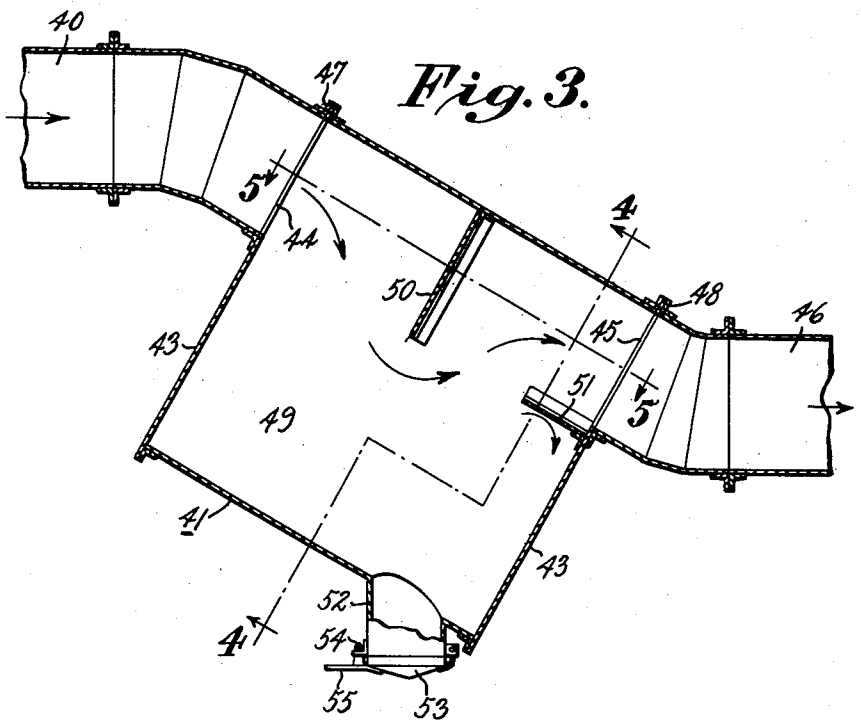


Fig. 4.

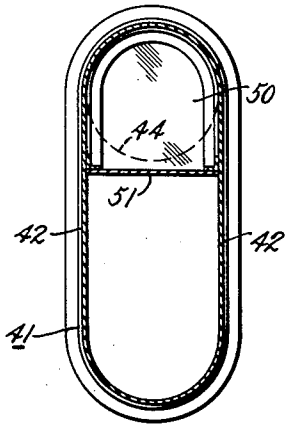
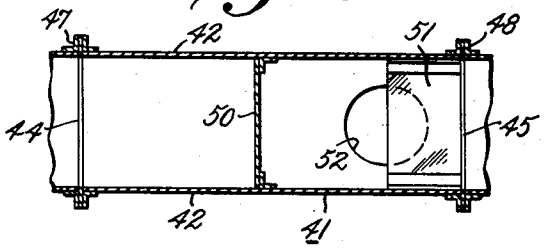


Fig. 5.



INVENTOR
Albin R. Watzke
BY
Justin & Dix
ATTORNEYS

Patented Aug. 25, 1936 2,051,924

UNITED STATES PATENT OFFICE

2,051,924

DUST TRAP FOR SINTERING MACHINES

Albin R. Watzke, El Paso, Tex., assignor to American Smelting and Refining Company, New York, N. Y., a corporation of New Jersey

Application August 11, 1933, Serial No. 684,635

2 Claims. (Cl. 183—111)

This invention relates to dust traps for sintering machines and more particularly to a dust trap positioned between the suction box and the fan of a sintering machine for removing the dust and other solid particles and preventing them from entering the fan casing or contacting with the blades of the fan.

In the sintering operation, small solid particles, such as dust, may be drawn along with the exhaust gases at a high velocity. These particles, if allowed to contact with the exhaust fan, would tend to scour and wear down the metal parts of the fan blades and the housing to such an extent that frequent repairs and renewals would become necessary. The present invention, accordingly, provides means for removing these particles from the gas stream at a point ahead of the exhaust fan so as to reduce the wear on the fan blades with a consequent reduction in the maintenance costs.

Various other features and advantages of the invention will be apparent as the nature thereof is more fully disclosed.

Although the novel features which are believed to be characteristic of this invention will be more particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner of its operation, 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 broken transverse section through a sintering machine showing the dust trap applied thereto;

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a longitudinal section through a modified form of dust trap;

Fig. 4 is a section taken on the line 4—4 of Fig. 3; and

Fig. 5 is a section taken on the line 5—5 of Fig. 3.

In the various figures of the drawings, like parts are identified by similar reference numerals.

Referring to the drawings more in detail, the invention is shown in Figs. 1 and 2 as embodied in a dust trap 10 which is connected to the exhaust flue 11 leading from the wind box 12 of a sintering machine 13.

The sintering machine is shown as comprising a framework 14 supporting a roof 15 of refractory material and carrying tracks 16 and 17 upon which pallets 18 are adapted to advance. The pallets 18 are provided with a perforate bottom 19 adapted to carry a charge 20 of ore or similar material to be treated. The sintering machine and wind box are of standard construction and are accordingly not shown herein in detail.

Combustion gases are circulated above the charge 20 in any convenient manner and are drawn downwardly through the charge and through the perforate bottom 19 into the wind box 12. Thence, they are passed through the flue 11 and through the dust trap 10, to be described, to an exhaust flue 21 which is connected to a suitable suction means, such as a fan 22, of any desired type.

The dust trap 10 comprises a pair of side members 23 which are joined at their top edges, as by flanges 24, to a semi-circular member 25. The side members 23 are joined by transverse members 26 to form a funnel shaped chamber 27 terminating in a clean-out door 28 which may be hinged to one of the transverse members 26 in any convenient manner and may be provided with a latch 29 adapted to cooperate with a stationary flange 30 to hold the door 28 in a closed position. A suitable handle 31 may be provided for opening and closing the door. Openings 32 and 33 are formed in the transverse members 26 which are mounted in alignment with the flues 11 and 21 respectively, as by flanges 34 and 35, carried by said flues which may be secured to the transverse members 26 and to flanges 34a and 35a mounted on the semi-circular member 35.

The dust trap may be provided with a plurality of transverse baffles, such, for example, as a vertical semi-circular baffle 36 which is mounted with the semi-circular member 25 directly in the path of the gases which pass through the dust trap from the flue 11 to the flue 21. A transverse inclined baffle 37 is positioned within the dust trap between the side members 23 and at the rear of the baffle 36 in the direction of the gas flow. The baffle 37 is inclined to the direction of the gas flow so as to divert downwardly the gases and any particles which may be carried thereby.

In the operation of the device, the high velocity gases from the flue 11 enter the dust trap 10 and, by reason of the greater cross-sectional area of the dust trap, pass therethrough at decreased velocity. In so passing, the gases impinge upon the baffles 36 and 37 with a resultant change in direction and, thence, are caused to pass around said baffles and into the exhaust flue 21. The dust and other solid particles which impinge upon the baffles settle out into the chamber 27 to accumulate above the clean-out door

28. This door may be opened from time to time to remove the accumulation of particles without otherwise interrupting the process. The gases which pass into the flue 21 are substantially free from solid particles and consequently can be applied to the fan without danger of damage or injury thereto.

Referring to the form of the invention illustrated in Figs. 3 to 5, flue 40 is shown which is similar to the flue 11 of Fig. 1 and is adapted to be connected to the suction box of a sintering machine. An inclined dust trap 41, comprising elongated side members 42 and end members 43, is provided with openings 44 and 45 which are mounted in alignment with the flue 40 and with an exhaust flue 46 respectively, as by flanges 47 and 48. The upper portion of the dust trap 41 conforms to the top surface of the flue 40 whereas the lower portion of said trap is extended to provide a chamber 49 of enlarged cross-sectional area. The flue 46 is connected to a suitable suction device such as a fan, not shown.

A transverse baffle 50 is mounted within the dust trap 41 at the upper portion thereof and extends downwardly a sufficient distance to prevent the direct passage of gases between the flue 40 and the flue 46. A second baffle 51 projects longitudinally of the dust trap from a point below the discharge opening 45 so as to further interrupt the flow of gases into the flue 46. At the lower part of the dust trap a circular extension 52 may be provided which terminates in a door 53 suitably hinged thereto and provided with a latch 54 for holding the same in a closed position. A handle 55 permits the door to be readily opened. The extension 52 is preferably mounted as near the lower corner of the dust trap as may be mechanically convenient so as to permit the complete removal of the dust which may accumulate therein.

The operation of this form of dust trap is similar to that of the dust trap shown in Figs. 1 and 2. The exhaust gases from the sintering machine pass through the dust trap at decreased velocity and are deflected around the baffles 50 and 51 whereby they are caused to give up their burden of dust and other solid particles and are discharged through flue 46 in a comparatively clean condition.

It has been found that the use of the above described dust traps materially increases the life of the fan blades and of the fan housing. Whereas, inspections and repairs were previously required at least once a month, the present invention permits the operations to continue several months without such interruptions. The saving in cost of replacements and in loss of time has reached substantial proportions.

Although certain embodiments of the invention have been disclosed for purposes of illustration, it is to be understood that the construction of the dust trap and the location of the various baffles may be varied in a manner which will be apparent to a person skilled in the art. Furthermore, the position of the dust trap may be varied between the suction box 12 and the exhaust fan according to the requirements of the particular installation, the essential feature being to remove the dust particles before they are applied to the blades of the fan.

While certain specific terms have been used for convenience in describing the preferred embodiments in the present invention, they are intended to be given as generic an interpretation as the art will permit. The invention is only to be limited in accordance with the following claims when interpreted in view of the prior art.

What is claimed is:

1. A dust trap for a sintering machine comprising a chamber having openings in the upper portions of opposite sides adapted for positioning at right angles in a substantially horizontal exhaust flue interconnecting the wind box and fan of the sintering machine, a plurality of baffles within said chamber, one of same extending transversely of the path of otherwise normal flow of gases through said chamber and another of said baffles located at an angle with respect to said first baffle, said baffles being adapted to divert solid particles and to separate same from gases entering the chamber whereby the gases discharged from the chamber are in a comparatively clean condition.

2. A dust trap for a sintering machine comprising a chamber having openings in the opposite sides at the upper portions thereof adapted to communicate with the exhaust flue leading from the wind box of the sintering machine, a transverse baffle within said chamber between said openings, a longitudinal baffle located below the discharge opening from said chamber, said baffles being adapted to divert solid particles from gases passed through the chamber and a clean-out door at the bottom of said chamber for removing accumulated solid particles.

ALBIN R. WATZKE.