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L. D. PEIK.

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SAND BLAST SYSTEM

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2 Sheets-Sheet 2

Fig. 2

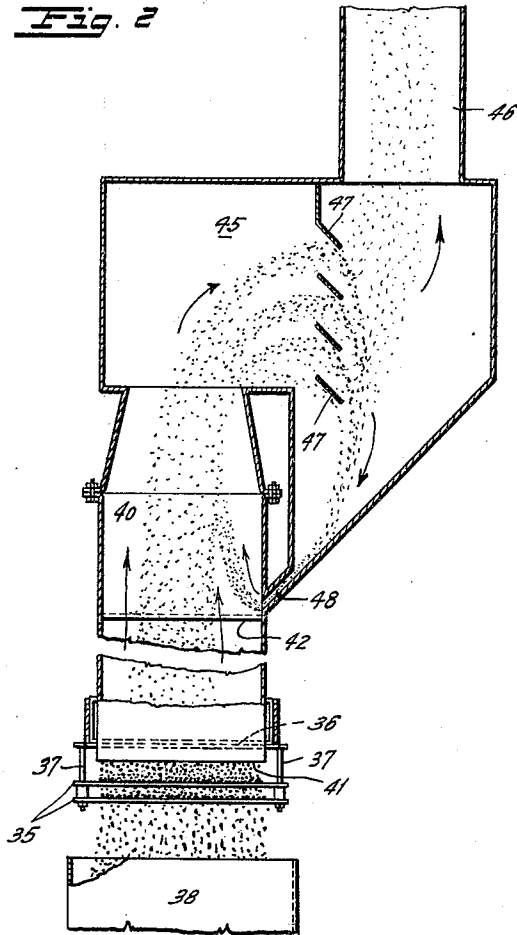
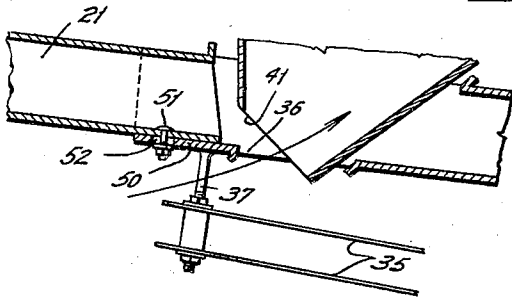


Fig. 3



INVENTOR.  
*Louis D. Peik*  
BY *Albert M. Austin*  
ATTORNEY

# UNITED STATES PATENT OFFICE

LOUIS D. PEIK, OF MISHAWAKA, INDIANA, ASSIGNOR TO THE AMERICAN FOUNDRY EQUIPMENT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

## SAND BLAST SYSTEM

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This invention relates to blasting apparatus, and more particularly, to a new and improved system for recovering and reconditioning abrasive material which has been used in blasting, as for example, in the sand blasting of castings.

In carrying out the blasting operations it is desirable to direct a stream of finely divided abrasive material onto the substance which is to be treated. This is commonly done in a room called the down-draft-room which is provided with means whereby the used abrasive material falls through the floor and is discharged into a hopper.

The present invention particularly provides for recovering the used abrasive material from the hopper, separating the same from the fine dust and the coarser particles and depositing the recovered material into a suitable container for further use. This is accomplished by directing a suitable air current over the abrasive material and causing the current to pick up the dust and finer particles and removing them from the abrasive which it is desired to recover. Means is also provided for preventing the air current from carrying away particles which are sufficiently large to be used for further blasting.

The invention provides more specifically a transfer pan which is located below the hopper of the down-draft-room and is so vibrated as to cause the particles to move longitudinally thereof and to fall onto a suitable screen. A current of air is passed through the falling particles, picks up the dust and certain of the finer particles and carries the same to a dust chamber which is provided with suitable baffles for so changing the direction of the air current that the larger particles release and drop back onto the screen. Means is also provided for regulating the amount of air which is drawn through the falling particles whereby the desired action may be obtained.

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 the down-draft-room and associated apparatus constructed in accordance with the present invention;

Fig. 2 is a section taken on the line 2—2 of Fig. 1 showing the construction of the dust separation chamber; and

Fig. 3 is an enlarged detail view of the mechanism for adjusting the air current.

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 down-draft-room 10 having a floor 11 which is suitably perforated to permit the used abrasive material to pass therethrough into a hopper 12. Floor 11 and hopper 12 may be supported over a pit 13 as by walls 14 to which they are secured in any convenient manner.

Hopper 12 terminates in a spout 20 which is mounted adjacent an oscillating transfer pan 21. Said pan may be supported from pivoted link 22 and is oscillated by means of cam 23 which is driven by a suitable motor 24. Cam 23 cooperates with a roller 25 mounted on lever 26 which is pivotally secured to the motor support 27. Spring 28 is mounted between lever 27 and end plate 30 forming a part of transfer pan 21 and serves to hold stop member 31 secured in end plate 30 against stop member 32 which is attached to lever 26.

A pair of screens 35 are mounted on transfer pan 21 in alignment with discharge opening 36 by suitable means, such as links 37. Said screens are preferably inclined and are vibrated together with transfer pan 21 whereby the coarse particles or tailings are separated.

rated and discharged into a refuse can 38, whereas the desired abrasive material is passed through a screen into container 39. Transfer pan 21 is mounted in a slightly inclined position to assist in causing the necessary movement of the sand particles as will be later described.

Air duct 40 extends through transfer pan 21 and is provided with an open end 41 which is mounted in proximity to opening 36 in said transfer pan and is adapted to receive air which passes through the particles of material falling from said pan onto screen 35. Duct 40 is provided with an extension 42 which may be controlled by damper 43 extending into hopper 12. Said duct communicates with a dust removal chamber 45 which has associated therewith a stack or discharge pipe 46. Chamber 45 is extended horizontally whereby duct 40 and pipe 46 are slightly displaced. A plurality of inclined baffles 47 are mounted in chamber 45 in such position that air and dust particles which pass from duct 40 to pipe 46 are deflected downwardly. Dust chamber 45 extends downwardly below pipe 46 and communicates through port 48 to duct 40 for a purpose to be described. Any suitable blower or suction means may be employed for causing the desired air currents through down-draft-room 10, duct 40 and dust removal chamber 45.

Adjusting plate 50 (Fig. 3) is mounted below transfer pan 21 adjacent opening 36 and is secured thereto by suitable means such as bolt 51 extending through an elongated slot 52 in said plate. Plate 50 projects toward end 41 of duct 40 and controls the extent of opening between the transfer pan and duct. Materials are also directed by plate 50 onto screen 35. Said plate consequently controls both the discharge of materials onto screen 35 and the size of opening through which air may be drawn into duct 40.

In the operation of the above described apparatus the material to be treated, such as rough castings, is placed in the down-draft-room 10 and a blast of abrasive material is applied thereto. The used abrasive material then falls through floor 11 into hopper 12 and is discharged onto transfer pan 21. Pan 21 is oscillated due to the action of cam 23 in such manner as to cause the abrasive particles to move longitudinally of said pan and to be discharged over plate 50 through opening 36 onto screen 35.

As the particles fall onto said screen an air current is drawn therethrough into duct 40 which picks up the fine particles and dust and carries them into dust separation chamber 45. Damper 43 may be so regulated as to provide the necessary down draft in room 10 for effecting the proper removal of the abrasive material.

In separation chamber 45 the air currents pass between baffles 47 which deflect said cur-

rents downwardly and cause the larger particles to be deflected to the bottom of said chamber, where they again enter duct 40 through port 48. The air currents and the finer particles after passing between baffles 47 are removed upwardly through pipe 46. The coarser particles which re-enter duct 40 through port 48 are again subjected to the air currents whereby the finer dust is again picked up and the larger particles are allowed to drop back through duct 40 onto screen 35. The coarse particles are discharged from said screen into container 38 and the desired abrasive material falls into container 39.

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. A blasting apparatus comprising a blasting chamber having a perforated floor, a transfer pan mounted beneath said chamber, a hopper for directing material from said chamber onto said pan, a screen associated with said pan, means for causing abrasive material to move longitudinally of said pan and to drop onto said screen, an exhaust duct terminating adjacent said screen and means for causing an air current to pass through the particles of material falling from said pan to said screen whereby the dust and finer particles are removed therefrom.

2. A blasting apparatus comprising a blasting chamber having a perforated floor, a transfer pan mounted beneath said chamber, a hopper for directing material from said chamber onto said pan, a screen associated with said pan, means for causing abrasive material to move longitudinally of said pan and to drop onto said screen, an exhaust duct terminating adjacent said screen, means for causing an air current to pass through the particles of material falling from said pan to said screen whereby the dust and finer particles are removed therefrom, and means for controlling the opening of said duct whereby the amount of said air current may be varied.

3. A blasting apparatus comprising a blasting chamber having a perforated floor, a transfer pan mounted beneath said chamber, a hopper for directing material from said chamber onto said pan, a screen associated with said pan, means for causing abrasive material to move longitudinally of said pan and to drop onto said screen, an exhaust duct terminating adjacent said screen, means for causing an air current to pass through the particles of material falling from said pan to said screen whereby the dust and finer

particles are removed therefrom, and an adjustable member secured to said transfer pan for directing the material onto said screen in the path of said air current.

5 4. A blasting apparatus comprising a  
blasting chamber having a perforated floor,  
a transfer pan mounted beneath said cham-  
ber, a hopper for directing material from  
said chamber onto said pan, a screen asso-  
10 ciated with said pan, means for causing abra-  
sive material to move longitudinally of said  
pan and to drop onto said screen, an exhaust  
duct terminating adjacent said screen, means  
for causing an air current to pass through  
15 the particles of material falling from said  
pan to said screen whereby the dust and finer  
particles are removed therefrom, and a sep-  
aration chamber associated with said duct  
and having means therein for removing the  
20 larger particles and returning said particles  
to said duct.

5. A blasting apparatus comprising a  
blasting chamber having a perforated floor,  
a transfer pan mounted beneath said cham-  
25 ber, a hopper for directing material from  
said chamber onto said pan, a screen asso-  
ciated with said pan, means for causing abra-  
sive material to move longitudinally of said  
pan and to drop onto said screen, an exhaust  
30 duct terminating adjacent said screen, means  
for causing an air current to pass through  
the particles of material falling from said  
pan to said screen whereby the dust and finer  
particles are removed therefrom, and a sep-  
35 aration chamber associated with said duct  
and provided with baffles for directing the  
air currents downwardly whereby the larger  
particles are caused to fall at the bottom of  
said chamber, and means for re-admitting  
40 said larger particles into said duct.

In testimony whereof I have hereunto set  
my hand.

LOUIS D. PEIK.

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