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BLAST CLEANING ROOM

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FIG. 1.

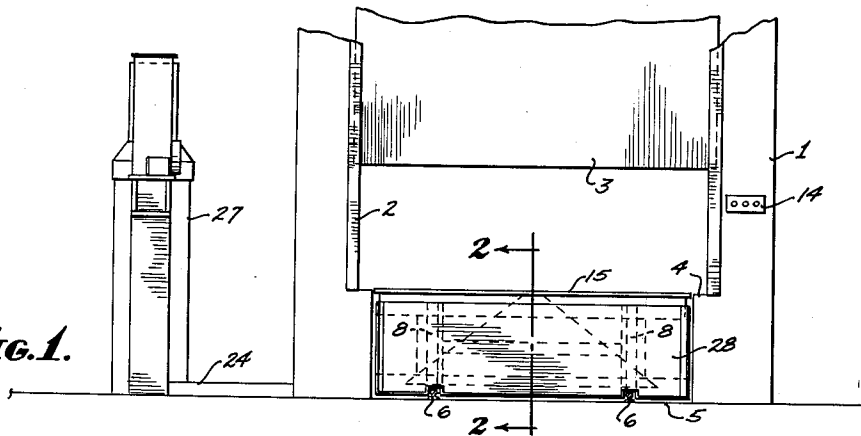


FIG. 2.

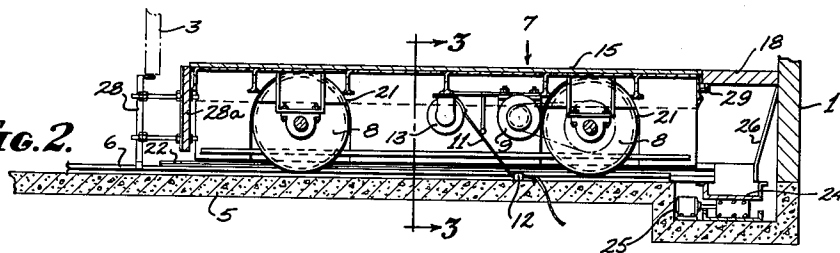


FIG. 3.

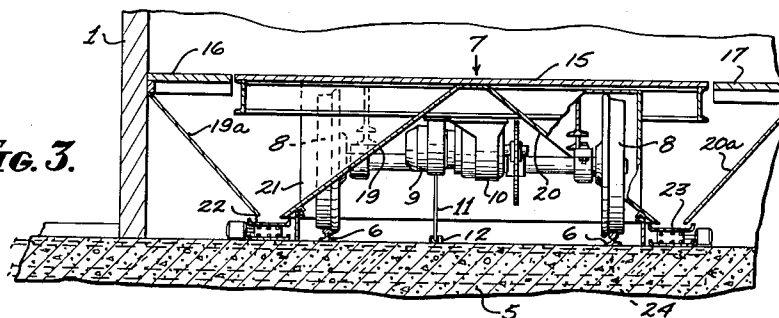
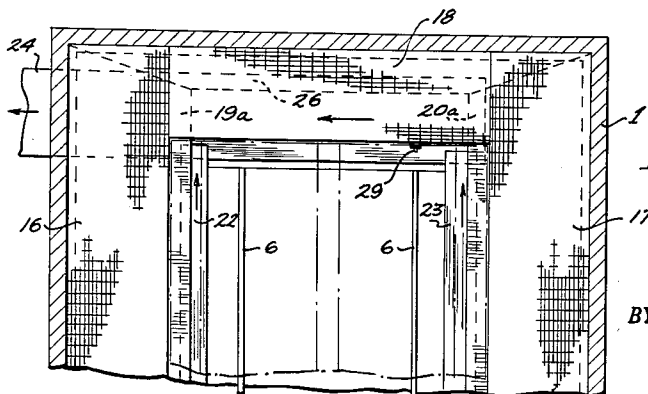


FIG. 4.



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BLAST CLEANING ROOM

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This invention relates to blast cleaning equipment of the type wherein an abrasive material, such as sand, is propelled at high velocity against the object being cleaned, and relates more particularly to the provision of a blast cleaning room provided with means for reclaiming and reusing the abrasive material.

In blast cleaning units currently in use, particularly the types utilized for large work, reclamation of the abrasive material is accomplished by providing the blasting room with a grated floor which is substantially the full size of the room, the grated floor overlying a pit defining a hopper at the bottom of which a screw or trough conveyor is located for delivering the abrasive material to an elevator which delivers it to a reclaiming unit for processing, whereupon the abrasive material is returned to the storage tank of the blast machine. The pits for such installations are usually constructed of reinforced concrete and where the blast room is of appreciable size, the pit of necessity becomes quite large and is expensive to construct. In addition, once the unit has been installed, it cannot be thereafter moved from one place to another in the users plant without constructing a new pit; and of course the old pit must be either filled or covered which, in itself, involves additional expense.

Accordingly, a principal object of the instant invention is the provision of a blast cleaning room particularly suited for large installations, which blast cleaning room eliminates the necessity for a large hopper pit of the character currently employed in installations of this character.

A further object of the invention is the provision of a blast cleaning room in which the work enters the room on a wheeled truck the bed of which is grated and effectively defines an elevated floor for the blast room, there being inclined hopper walls mounted on the truck beneath the grated bed which coact with complementary hopper walls forming a part of the blast room to define hoppers effective to direct abrasive material passing through the grating to conveyors which deliver the abrasive material to an elevator which returns the material to a reprocessing device located adjacent the room.

Still a further object of the instant invention is the provision of a blast cleaning room, which, while of relatively large size, may be nevertheless moved from place to place within the user's plant with a minimum of installation difficulties, should the necessity for such move occur.

Yet a further object of the invention is the provision of a blast cleaning room having an electrically controlled truck movable on rails from a loading position outside the room where objects to be blasted may be placed on the truck, as by means of an overhead crane; the truck upon actuation being movable into the blast room where its grated bed mates with elevated grating extending along opposite sides and the far end of the blast room to provide a perforated floor through which abrasive material will fall for subsequent reclaiming.

The foregoing together with other objects of the invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading this specification, I accomplished by that construction and arrangement of parts of which I shall now describe an exemplary embodiment.

Reference is now made to the accompanying drawing wherein:

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FIGURE 1 is a fragmentary front elevational view of a blast cleaning room in accordance with the instant invention.

FIGURE 2 is a vertical sectional view taken along the line 2-2 of FIGURE 1.

FIGURE 3 is a vertical sectional view taken along the line 3-3 of FIGURE 2.

FIGURE 4 is a fragmentary plan view of the blast cleaning room illustrating the conveyor system for removing abrasive material for reclamation.

Referring first to FIGURE 1, I have therein illustrated a blast cleaning room 1 having a door opening 2 which may be conveniently closed by a sliding door 3 which, in the embodiment illustrated, is adapted to seat against a ledge 4, although if desired the door may extend all the way to the floor. It will be understood that the construction of the blast room as such does not constitute a limitation on the instant invention, nor does the nature of the door which could be of any known character, suitable provisions being made to effect a tight, essentially sift-proof condition when closed.

In the embodiment illustrated, the cement floor or the like 5 on which the blast room is erected supports a pair of tracks or rails 6 extending lengthwise of the blast room and projecting outwardly through the door opening 2 so that the truck 7 having sets of wheels 8 may be moved from a loading position outside the blast room to a cleaning position in which the truck is wholly contained within the blast room. One of the sets of wheels 8 is adapted to be driven by a prime mover, such as the electric motor 9, through suitable gearing 10, current for the motor 9, which is preferably of the reversible type, being supplied through an electric cable 11 extending from an outlet box 12 secured to the floor 5 to a self-winding reel 13 mounted on the truck. With this arrangement, the electric cable will be payed out and wound-in on the reel as the truck moves along its tracks; and a suitable control panel may be provided to energize the motor from any desired point, as for example the switch panel 14 mounted on an outside wall surface of the blast room.

The bed 15 of the truck 7 is in the form of a grating or grill work which, when the truck is wholly contained within the blast room, defines an elevated floor for the blast room, the bed 15 coacting with stationary grating sections 16, 17 and 18 extending along the opposite sides and rear wall of the blast room, as will be apparent from FIGURES 3 and 4. These grating sections are in horizontal alignment with the bed 15 and, in effect, provide extensions of the blast room floor as defined by the truck bed 15.

The truck 7 is provided with inclined longitudinally extending hopper walls 19 and 20 underlying the bed 15, the hopper walls being provided with curved hoods 21 in the areas of the wheels 8. Coacting complementary hopper walls 19a and 20a underlie the grating sections 16 and 17, respectively, the coacting pairs of hopper walls serving to direct adhesive material collected thereby on to the vibrating conveyors 22 and 23 extending lengthwise along the floor surface 5. These conveyors act to convey the abrasive material to the rear of the blast room where it is deposited on a transverse conveyor 24 which, preferably, will be mounted in a shallow pit 25 extending across the rear of the blast room. As seen in FIGURE 2, abrasive material passing through the grating section 18 at the rear of the truck, will be diverted by the hopper wall 26 onto the transverse conveyor 24. The conveyor 24 will serve to deliver the reclaimed abrasive to a processing unit 27 (FIGURE 1) adjacent the blast room where it will be reconditioned for reuse in a known manner.

In the embodiment illustrated, the truck 15 is provided with a dust guard 28 which, when the truck is fully inserted in the blast room, makes sealing contact with the

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lowermost edge of the sliding door 3. However, as already pointed out, the door may extend all the way to the ground level or, alternatively, it may be arranged to make direct contact with the end edge of the truck bed 15, in which event the plate 23a (FIGURE 2) will serve as a dust guard. Proper positioning of the truck within the blast room may be readily obtained by means of a limit switch 29 (FIGURES 2 and 4) which will be contacted when the leading edge of the truck reaches the grating section 18, thereby shutting off current to the motor 9.

In the operation of the device, the truck 7 will be withdrawn from the blast room and the castings or the like to be blasted loaded thereon, as by means of an overhead crane or hoist, whereupon the driving unit will be actuated to move the truck into the blast room. Thereafter, the door 3 will be closed, whereupon the parts will be blasted in usual fashion, the spent abrasive material falling through the grating where it is collected by the inclined hopper walls and diverted onto the conveyors which return it to the reclamation unit. The installation avoids the necessity for a large pit beneath the blast room; and what little excavation is needed for the shallow pit 25 is of minor character and, in the event the blast room is moved to a new location, is no problem to fill or cover.

Having thus described the invention in an exemplary embodiment and with the understanding that modifications may be made in it without departing from its spirit and purpose, what I desire to secure and protect by Letters Patent is:

1. In a blast cleaning room having a floor therein at substantially the same level as the floor outside the blast cleaning room and a door opening in one wall thereof, a truck mounted for movement through said door opening from a loading position outside said room to an operating position within said room, said truck having an elevated grated bed, inclined hopper walls secured to said truck beneath said grated bed and positioned to collect abrasive material falling through said grated bed, said inclined hopper walls terminating short of the floor of said blast cleaning room, and conveyor means supported on said floor underlying said hopper walls and positioned to receive abrasive material collected by said hopper walls and deliver it to a collection station, said blast cleaning room being free from a material collection pit lying beneath the surface of the floor in the area underlying said truck when in its operating position.

2. In a blast cleaning room having a door opening in one wall thereof, a truck mounted for movement through said door from a loading position outside said room to an operating position within said room, said truck having a grated bed, stationary grating sections extending inwardly from the walls of said blast room in alignment with the bed of said truck, said bed and said grating sections defining an elevated floor for said blast room, inclined hopper walls secured to said truck beneath said bed and positioned to collect abrasive material falling through said bed, additional inclined hopper walls underlying said grating sections and positioned to coact with the hopper walls of said truck, and conveyor means underlying said coacting hopper walls and positioned to receive abrasive material collected by said coacting hopper walls and deliver it to a collection station.

3. In a blast cleaning room having a door opening in one wall thereof, a truck mounted on tracks for movement through said door opening from a loading position outside said room to an operating position within said room, said truck having a grated bed, inclined hopper walls mounted on said truck beneath said grated bed, said inclined walls extending lengthwise of said bed and extending downwardly and outwardly from the center thereof, grating sections mounted within said blast room in alignment with the bed of said truck, the free edges of said sections being positioned to lie in close proximity to the edges of said truck bed when positioned in said blast room, inclined

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hopper walls underlying said grated sections in complementary relation to said first named hopper walls, whereby to define hoppers to receive abrasive material falling through said grated bed and sections, said complementary hopper walls terminating downwardly in an elongated discharge opening, and conveyor means underlying said discharge openings to receive abrasive material deposited thereon from said hoppers and deliver it to a collection station.

4. The blast cleaning room claimed in claim 3 including a grated section extending across the rear of said blast room in alignment with said grated bed, and inclined hopper walls underlying said last named grating, and a transversely disposed conveyor underlying said last named hopper wall for receiving abrasive material collected by said last named hopper wall, said last named transverse conveyor also being positioned to receive abrasive material deposited on said first named conveyor means.

5. The blast cleaning room claimed in claim 4 including electrically powered drive means mounted on said truck for moving it from one position to the other, and control means for actuating said drive means.

6. The blast cleaning room claimed in claim 5 wherein said control means includes an electric cable having one end thereof fixedly secured to an outlet box mounted within said blast room at a point underlying said truck, the other end of said cable being wound on a self-winding reel secured to said truck, the fixed end of said cable being operatively connected to switch means, and a source of current for operating said drive means.

7. A blast cleaning room comprising enclosing walls one of which has a door opening therein, said blast cleaning room having a floor therein at substantially the same level as the floor outside said room, a door for closing said opening, tracks extending through said door, a wheeled truck movable along said tracks from a loading position located outside said blast room to a blasting position in which said truck is wholly contained within said blast room, said wheeled truck having an elevated perforated bed, inclined hopper walls mounted on said truck beneath said perforated bed and extending downwardly toward said blast room floor, said hopper walls being positioned to collect abrasive material falling through the perforations in said bed, and collection means supported on said floor in the area underlying said hopper walls when said truck is in the blasting position for receiving abrasive material collected by said hopper walls, whereby said collection means lies at floor level to the elimination of a below floor level collection pit underlying said truck when in blasting position.

8. The blast cleaning room claimed in claim 7 wherein said blast room incorporates elevated platforms which are perforated and lie in the plane of said truck bed, and wherein hopper walls underlie perforated platforms, said last named hopper walls being positioned to collect abrasive material falling through said perforated platforms and deliver it to said collection means.

9. The blast room claimed in claim 8 wherein said truck bed is of rectangular configuration, wherein said elevated platforms extend along the opposite sides and rear wall of said blast room, and wherein the hopper walls secured to said truck extend lengthwise of said truck and coact with the hopper walls underlying the platforms extending along the opposite side walls of said blast room.

10. The blast room claimed in claim 9 wherein the collection means comprise vibratory conveyors arranged to convey collected abrasive material to a reclamation station.

11. In a blast cleaning room, a truck having an elevated bed movable into said blast room, said truck having a perforated bed, inclined hopper walls mounted on said truck beneath said elevated bed, coacting hopper walls mounted within said blast room, said last named hopper walls underlying perforated platform sections aligned with the elevated bed of said truck, said hopper

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walls terminating downwardly in a discharge opening lying above the normal ground level of said blast room, and conveyor means for receiving abrasive material discharged through said discharge opening, said conveyor means lying at substantially the normal ground level of said blast room. 5

12. The blast room claimed in claim 11 wherein said hopper walls mounted on said truck extend the length thereof and are oppositely inclined thereof, wherein co-acting hopper walls extend along opposite sides of said blast room, wherein a vibratory conveyor underlies each

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of said hoppers so formed, and wherein a transverse conveyor extends across the rear of said blast room and is positioned to receive material from said first named conveyors.

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