

Feb. 12, 1952

G. H. FRANK
HOOD FOR CONVEYERS

2,585,105

Filed July 10, 1948

2 SHEETS—SHEET 1

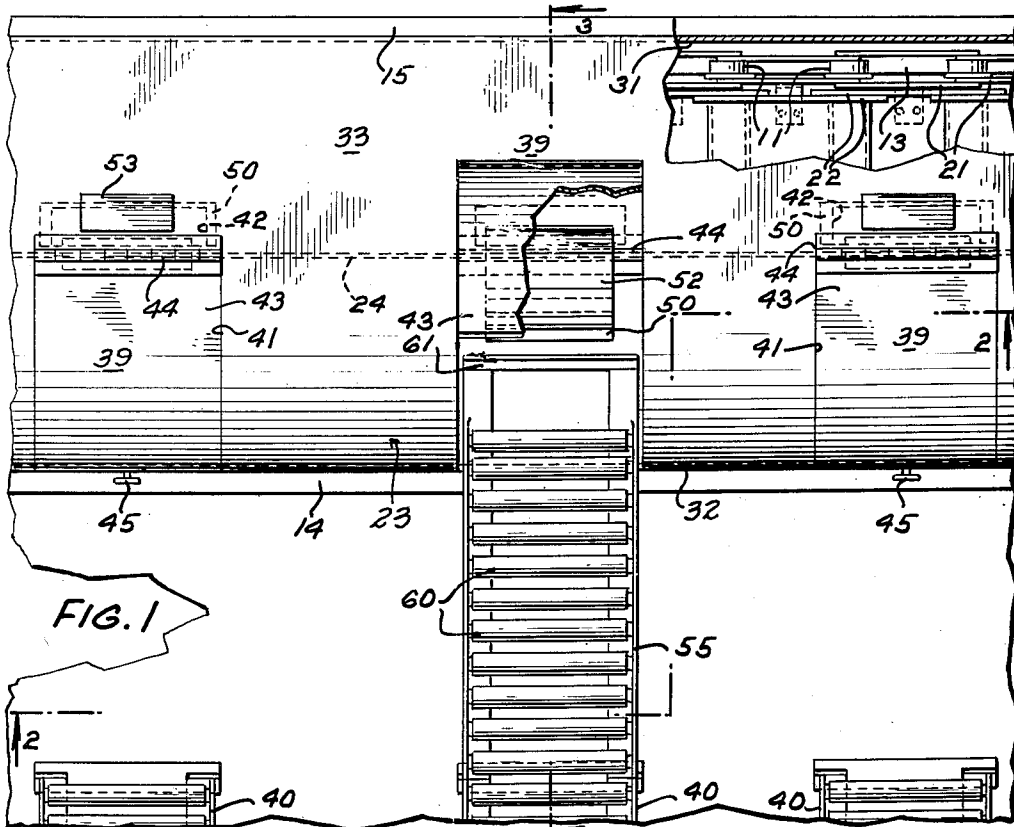


FIG. 1

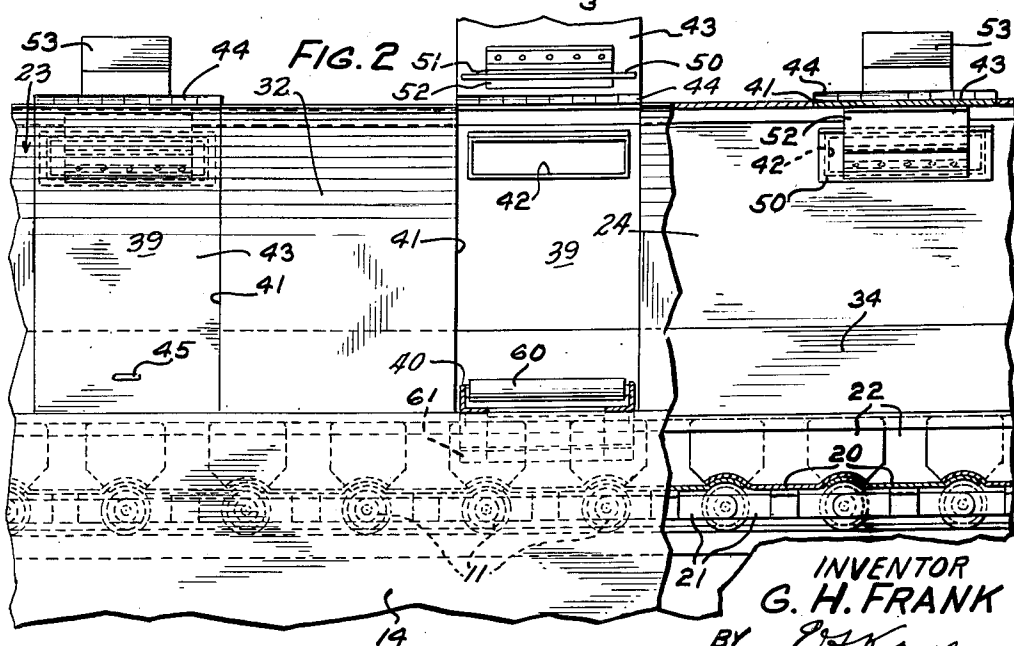


FIG. 2

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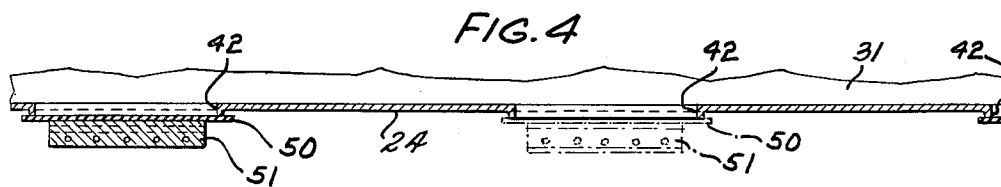
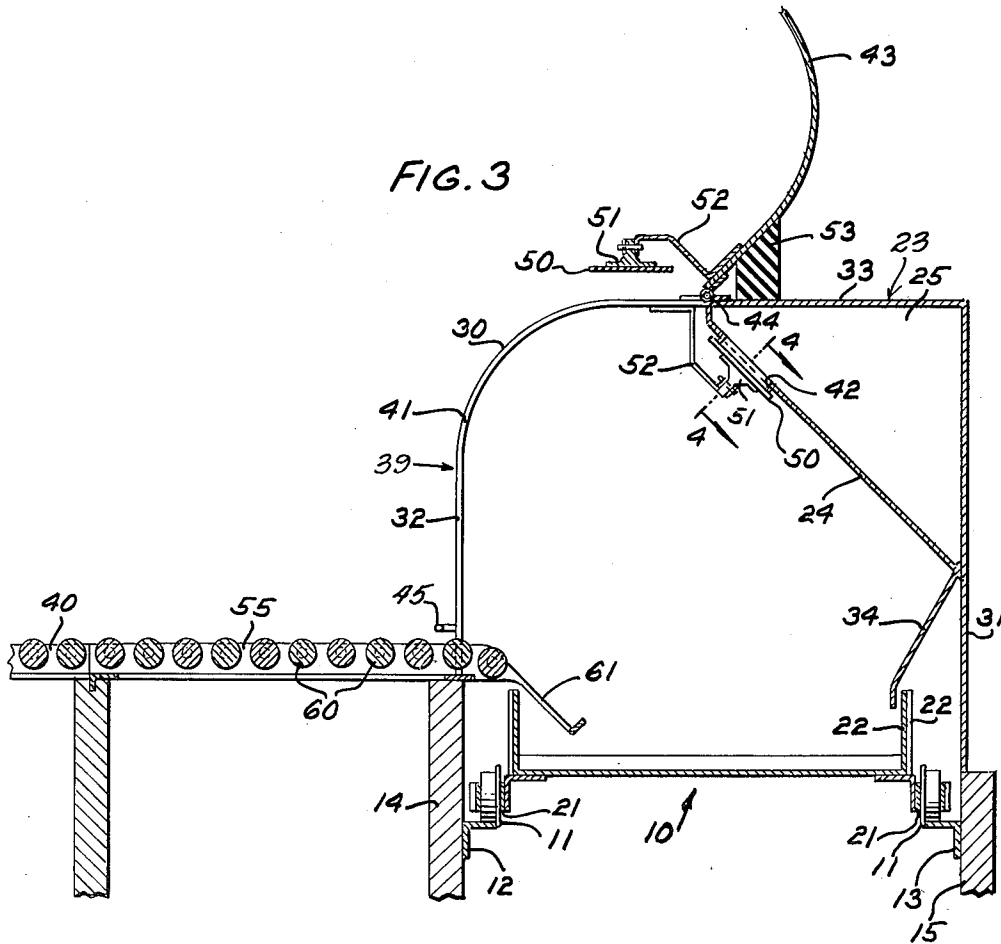
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2 SHEETS—SHEET 2



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HOOD FOR CONVEYERS

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4 Claims. (Cl. 198—1)

1

This invention relates to hoods for conveyors and in particular to hoods for apron conveyors used in foundries.

In one method of dislodging molding sand from hot castings an operator dumps the sand mold and the hot castings from the mold box onto an apron conveyor which leads to a shake-out apparatus. During this dumping process clouds of noxious gases and vapors containing fine particles of sand from the hot metal and the disintegrating mold are broadcast thus creating a health hazard and an atmosphere of extreme discomfort for the operator.

It is an object of this invention to provide a new and efficient apparatus for removing gases and contaminated atmosphere from the loading zone of a conveyor.

In accordance with one embodiment of this invention an apron conveyor is enclosed in a tunnel-like housing having a plurality of loading doors, each of which, upon being opened, operates to uncover an individual opening to an exhaust duct common to all the individual openings controlled by the other loading doors.

A complete understanding of this invention will be had by referring to the following detailed description taken in conjunction with the drawings in which

Fig. 1 is a plan view of one embodiment of the invention showing three loading zones of a hooded conveyor;

Fig. 2 is a view of the apparatus showing in Fig. 1 taken on the line 2—2 of that figure and showing the apparatus in front elevation with a portion broken away;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1 and showing the relation of the openings to the conveyor and air tunnels; and

Fig. 4 is a section taken along the line 4—4 of Fig. 3.

As shown in the drawings an apron conveyor 10 is provided with flanged rollers 11 which, as shown most clearly in Fig. 3, ride on rails 12 and 13 carried by supporting stringers or walls 14 and 15, respectively. The conveyor 10 may be of any suitable type and material, the one shown being an endless type made of overlapping metal segments 20 secured to side links 21 on which the rollers 11 are rotatably mounted. Overlapping end plates 22 may be provided at both ends of the segments to give the conveyor a trough-like form.

Supported on the walls 14 and 15 is a housing 23 disposed over a substantial portion of the length of the conveyor and partitioned by an

2

angular wall 24 into an air duct 25 and a hood 30 for the conveyor. The housing 23 comprises a back wall 31, a curved forward wall 32, a top 33 and the dividing wall 24 which runs the length of the housing 23. An exhaust pump or fan (not shown) continuously applies suction tending to suck the air out of the duct 25 thereby maintaining a steady exhaust current through the duct. A baffle or bumper plate 34 secured to the wall 31 and running the length thereof extends over the conveyor segment end plates 22 along the wall 31 to prevent sand or castings from bouncing off the conveyor and contacting the rollers or track.

The housing 23 is provided with a plurality of regularly spaced-apart loading stations 39, each in line with a mold conveyor 40 leading to a metal casting area. Each station comprises a loading opening 41 formed in the forward wall 32 and an exhaust port 42 between the exhaust duct 25 and the hood 30. The loading opening 41 is normally kept closed by a door 43 which is hinged to the top 33 of the housing 23 at 44 and opens upwardly as shown most clearly in Fig. 3. For convenience, the door 43 at its lower end may be provided with a door handle 45. The exhaust port 42 is formed in the wall 24 and is provided with a raised edge as shown most clearly in Fig. 3. Normally the door 43 is closed, and when in this position the port opening 42 is sealed by a relatively soft, flexible rubber cover plate 50 pressed against the raised edges of the port opening.

The cover plate 50 is fastened to a backing member 51 secured to an irregularly shaped bracket 52 which is in turn fastened at one end to the inside surface of the door 43 in such a manner that when the door 43 is closed the cover plate 50 closes the port 42, and when the door 43 is in the open position, shown in Fig. 3, the port 42 will be uncovered so that suction from the duct 25 will withdraw the atmosphere in the vicinity of the particular port 42 which is uncovered at the time. A rubber door bumper 53 may be secured to the top 33 to prevent the door 43 from falling backward out of the operator's reach.

In the operation of the apparatus the operator first opens a door 43 in line with a conveyor 40 from which molds are to be loaded onto the conveyor 10 under the hood 30. If the molds are light, the operator may carry them from the conveyor 40 and toss them through the loading opening 41. The baffle 34 prevents molding sand and metal castings from falling between the

3

conveyor 10 and the wall 31. Gas and sand-laden vapors released when the molds hit the conveyor 10 or the baffle 34 are immediately sucked through the port 42 by the exhaust current flowing through the duct 25 thereby protecting the operator and keeping the atmosphere in the vicinity of the loading zone comparatively clear of deleterious foreign elements.

If the molds are too heavy for an operator to carry, a portable mold transfer bridge 55 may be used to bridge the gap between the conveyor 40 and the opening 41. The portable bridge 55 may be of any suitable type, the one shown being provided with individual rollers 60 and an overhanging lip 61 which extends through the opening 40 and over the conveyor 19.

Since only the exhaust port at the station or stations being loaded is opened at any particular time, a lower volume of exhaust capacity is required with this apparatus than would be required if instead the entire hood 30 would be continuously exhausted from one end. For this reason this apparatus requires a relatively small exhaust fan or pump.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of the invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. An apron mold conveyor for foundries comprising an endless conveyor, a hood enclosing the conveyor throughout its length, an exhaust duct normally sealed from communication with the conveyor and extending the length thereof, said hood having a plurality of openings along the conveyor to permit the transference of molds to the conveyor under the hood, doors for said openings, closure members mounted on each door, and a port adapted to be closed by each closure member when the doors are closed, said port interconnecting the exhaust duct and hood when the door is open.

2. In a conveyor, a housing comprising a hood for covering the conveyor, a plurality of loading openings in said hood, a door for each of said openings, said doors being normally closed and adapted to be opened for loading the conveyor,

4

an exhaust duct substantially parallel to said hood, a port in said duct associated with each of said doors, said ports interconnecting the duct with the hood, and a closure member for closing each of said ports, each closure member being operable in response to a door associated with the port to open the port when its associated door is opened and to close said port when said door is closed.

3. In a conveyor, a housing comprising two parallel compartments, one forming a hood for covering the conveyor and the second normally sealed from the hood for carrying an exhaust current, a plurality of loading openings in said hood, a door for each of said openings, a plurality of ports interconnecting said compartments adjacent each of said openings, closure members for said ports, each of said closure members being individually operable in response to its adjacent door to close one of said ports when the door is closed and to open said port when the door is opened.

4. A conveyor housing comprising two parallel compartments, one forming a hood for the conveyor and the second normally sealed from the hood for carrying an exhaust current, and a plurality of loading stations, each station comprising a loading opening, a door for normally closing said opening, an exhaust port interconnecting said compartments, and a closure member operable to close said port in response to the closing of said door and to open said port in response to the opening of said door.

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