

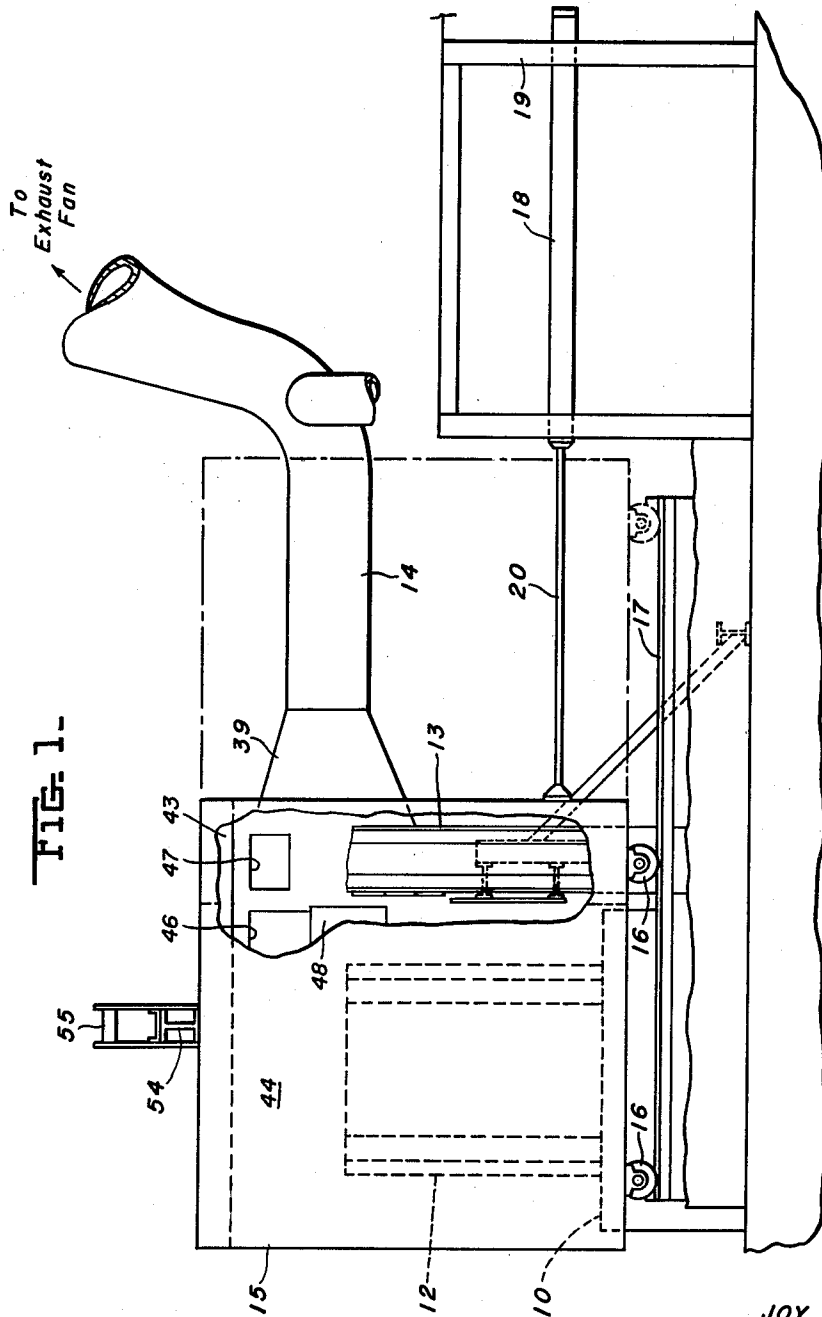
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J. W. NIELSEN
DUST-COLLECTING HOOD

3,148,614

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3 Sheets-Sheet 1



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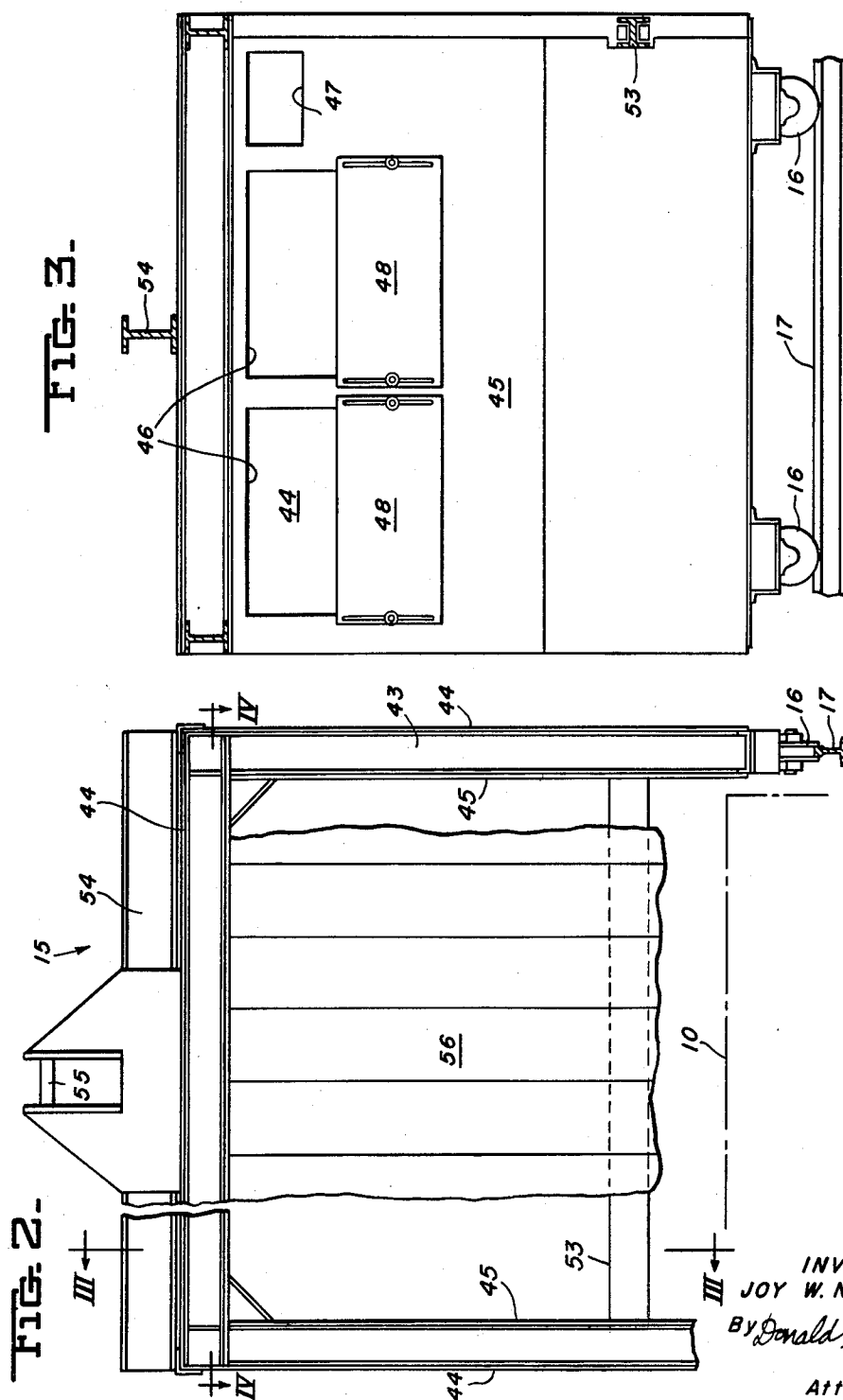
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FIG. 4-

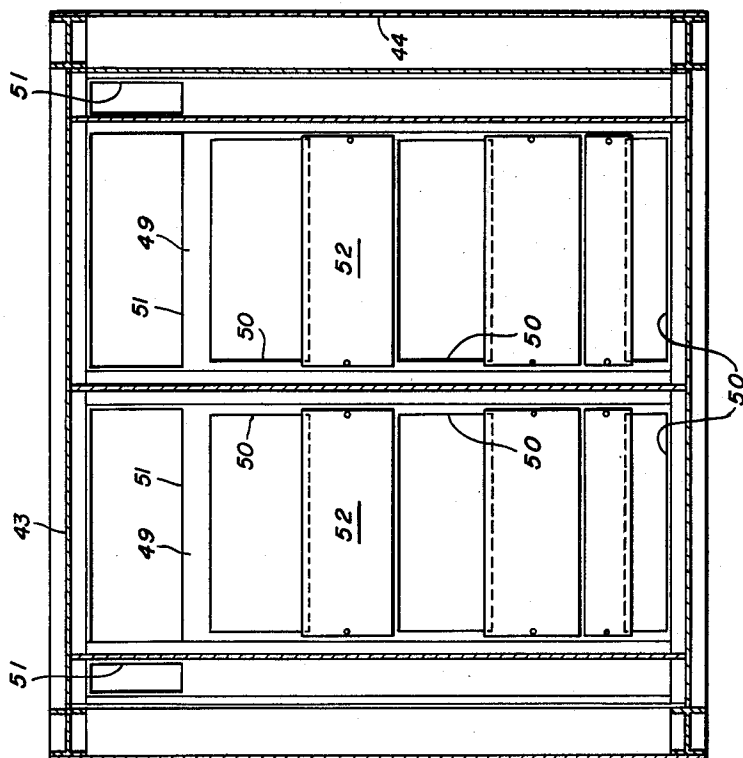
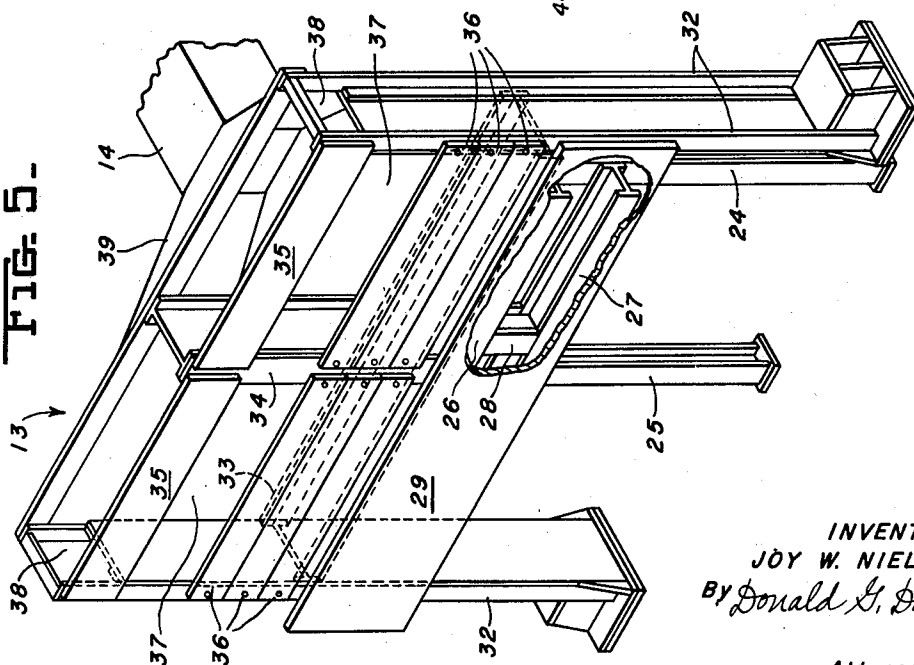


FIG. 5-



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DUST-COLLECTING HOOD

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5 Claims. (Cl. 98-115)

This invention relates to an improved hood for collecting dust or the like.

Although the invention is not thus limited, my hood is particularly useful in a foundry for collecting dust from a "shakeout." After a casting solidifies, the mold in which it was formed may be placed on a shakeout for removing sand. When the shakeout operates, considerable dust forms and would contaminate the air beyond acceptable limits. Commonly a stationary two or three-sided exhaust dust collector is constructed around the shakeout. The top and at least one side of the dust collector are left open to allow the mold to be placed on the shakeout and removed. Since large areas remain uncovered, dust collectors of this type are only partially effective. Nevertheless it is apparent my hood may be used elsewhere for overcoming analogous problems.

An object of my invention is to provide an improved hood which covers a machine such as a shakeout more completely, yet permits ready access to the machine for placing and removing articles.

A further object is to provide an improved hood which includes a movable section adapted to cover a machine such as a shakeout for collecting dust or to be retracted for permitting access.

A more specific object is to provide an improved dust collecting hood which includes a double-walled stationary section, an exhaust duct connected to the stationary section, and a cooperating double-walled movable section adapted to move over the stationary section and over a machine such as a shakeout, the double walls of the two sections communicating with each other when the movable section is positioned to collect dust.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a preferred form of which is shown in the accompanying drawings, in which:

FIGURE 1 is a side elevational view with parts broken away of my improved dust-collecting hood installed on a shakeout;

FIGURE 2 is an end elevational view of the movable section which forms part of my hood taken from the left of FIGURE 1;

FIGURE 3 is a vertical section on line III—III of FIGURE 2;

FIGURE 4 is a horizontal section on line IV—IV of FIGURE 2; and

FIGURE 5 is an isometric view of the stationary section which forms part of my dust-collecting hood.

The drawings show a conventional shakeout 10 on which a mold 12 is placed to remove sand. My hood comprises a double-walled stationary section 13, a duct 14 connected to the back of the stationary section, and a cooperating double-walled movable section 15. The stationary section 13 extends across the back end of the shakeout 10. Duct 14 communicates with the space between its double walls and leads to an exhaust fan, not shown. The movable section 15 is of inverted U-shape when viewed in end elevation (FIGURE 2) and of dimensions to slide freely horizontally over the stationary section and to cover both sides and the top of the shakeout 10 and mold 12. The movable section has wheels 16, preferably four in number, which ride on fixed rails 17 extending longitudinally of the shakeout on opposite sides of the stationary section. A double-acting fluid pressure cylinder 18 is fixed to a frame 19 and contains

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a reciprocable piston and piston rod 20 attached to the back end of the movable section for propelling it along the rails. The movable section has a dust-collecting position shown in full lines in FIGURE 1 in which it covers the shakeout and mold, and a retracted position shown in dot-dash lines in which it clears the shakeout to enable a mold to be placed thereon or removed. Duct 14 extends horizontally a sufficient distance from the stationary section 13 that the movable section 15 can clear the duct when moved to its retracted position.

As best shown in FIGURE 5, the stationary section 13 includes a vertical supporting column 24 located at one side of the shakeout 10 and another such column 25 located intermediate the width of the shakeout. Upper and lower transverse beams 26 and 27 are fixed to the inner faces of these columns, as by welding, and vertical structural members 28 are similarly fixed between said beams. A plate 29 is fixed across the inner face of beams 26 and 27 and members 28 to cover the lower portion of the space above the shakeout and form an independent back stop. Additional vertical supporting columns 32 are located at opposite sides of the shakeout and carry a transverse beam 33 located just above beam 26. An intermediate vertical column 34 is fixed to the midportion of beam 33. A pair of fixed cover plates 35 are attached to the inside faces of the three columns 32 and 34 adjacent their upper ends. A plurality of removable cover plates 36 are attached to these columns beneath the fixed plates. I leave portions of the inner face between cover plates open, as indicated at 37, to admit air and dust. I can control the flow of air and dust by properly arranging the removable plates 36. Openings 38 are formed at the upper ends of columns 32 at each side and the stationary section has an open top to admit dust from the movable section 15, as hereinafter explained. A duct inlet funnel 39 is fixed to the back faces of columns 32 and 34 and leads to duct 14.

As best shown in FIGURES 2, 3 and 4, the movable section 15 includes a rigid frame 43 and outside cover plates 44 fixed over both sides and the top of said frame. Inside cover plates 45 are fixed to the sides of said frame around its lower portion, leaving inlet openings 46 and outlet openings 47 at the upper portion. I can place removable cover plates 48 over portions of the inlet openings 46 to control flow of air and dust. An inside cover plate 49 is fixed to the top of frame 43 and has inlet openings 50 and outlet openings 51. The inlet openings are covered in part by removable plates 52 which I can also arrange as needed to control flow. When the movable section is in its dust-collecting position, the outlet openings 47 register with openings 38 in the stationary section 13 and the outlet openings 51 register with the open top of the stationary section to admit air and dust from the movable section into the stationary section and thence into duct 14. A transverse beam 53 extends between the vertical members of frame 43 at the back or right end (FIGURE 3). Piston rod 20 is attached to this beam. Preferably a transverse spreader beam 54 is attached across the top of frame 43 and carries a lifting eye 55 to be engaged by an overhead crane, for bodily lifting the movable section when installing or removing it. Preferably the front or left end of the movable section carries a curtain 56 for covering the remaining side of the mold. I can conveniently form this curtain of flexible strips of rubber belting which hang from the upper edge of the frame 43. Although the curtain prevents escape of dust through the front of the movable section, it allows air to enter the hood during operation of the exhaust fan.

In operation, I retract the movable section 15 and place a mold 12 on the shakeout 10. I then operate cylinder 18 to move this section over the stationary section 13 to its dust-collecting position covering the mold. If cur-

tain 56 is used, it flexes to allow the movable section to pass the mold and thus cover the mold completely. I operate the shakeout in the usual manner and operate the exhaust fan to withdraw air and dust from the hood.

On occasion I may wish to place on the shakeout a mold too large to permit the movable section 15 to move to its dust-collecting position. In this event I attach cover plates 48 and 52 on the inside walls of the movable section in positions where they cover openings 38 and the open top of the stationary section 13 as long as the movable section remains in its retracted position. I may then operate the exhaust fan and draw air and dust through openings 36 in the front of the stationary section and thus collect a large portion of the dust with the hood open. The air has a high velocity by reason of the more restricted open area in the stationary section alone; thus the hood can collect dust with fair efficiency even when open.

From the foregoing description, it is seen that my invention provides an improved hood of simple construction which effectively covers a machine such as a shakeout and thus collects all the dust arising from operation of the machine. At the same time the hood is readily retracted to allow free access to the machine for placing or removing articles. As pointed out hereinbefore, the invention has broader application; hence I intend the term "dust" to be construed as including air pollutants generally, such as fumes and noxious gases.

While I have shown and described only a single embodiment of my invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

I claim:

1. A dust-collecting hood comprising an upstanding stationary section formed of spaced-apart inside and outside walls, an exhaust duct connected to said outside wall and communicating with the space between walls, a cooperating movable section of inverted U-shape supported to move over said stationary section, said movable section having opposed sides and a connecting top formed of spaced-apart inside and outside walls with the spaces between walls at the sides being in communication with the space between walls at the top, the inside walls of said stationary section and of the sides and top of said movable section having inlet openings for admitting air and dust into the spaces between walls of the respective sections, the inside walls of said movable section also having outlet openings, said movable section having a dust-collecting

position in which said outlet openings communicate with the space between walls of said stationary section, said movable section also having a retracted position for placing and removing articles, and means operatively connected with said movable section for moving it between said positions.

2. A hood as defined in claim 1 further comprising means mounted on said sections for adjusting the effective area of said inlet openings and thus regulating the flow of air and dust therethrough.

3. A hood as defined in claim 1 further comprising rails extending along opposite sides of said stationary section, said movable section riding on said rails, and in which the means for moving said movable section includes a fluid pressure cylinder and piston.

4. A hood as defined in claim 1 further comprising a flexible curtain mounted on said movable section at the end opposite said stationary section.

5. The combination, with a support for articles while a dust-generating operation is performed thereon, of a dust-collecting hood comprising an upstanding stationary section adjacent said support and being formed of spaced-apart inside and outside walls, an exhaust duct connected to said outside wall and communicating with the space between walls and extending away from said support, a cooperating movable section of inverted U-shape supported to move over said stationary section and over a portion of said duct, said movable section having opposed sides and a connecting top formed of spaced-apart inside and outside walls with the spaces between walls at the sides being in communication with the space between walls at the top, the inside walls of said stationary section and of the sides and top of said movable section having inlet openings for admitting air and dust into the spaces between walls of the respective sections, the inside walls of said movable section also having outlet openings, said movable section having a dust-collecting position in which it fully covers said support and in which said outlet openings communicate with the space between walls of said stationary section, said movable section also having a retracted position in which said support is accessible for placing and removing articles, and means operatively connected with said movable section for moving it between said positions.

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