United States Patent

[11] 3,592,121

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[54] COMPENSATING HOOD APPARATUS
3 Claims, 3 Drawing Figs.

[52] U.S. Cl. 98/36, 98/115
[51] Int. Cl. F23j 11/00
[50] Field of Search 98/115, 36

[56] References Cited
UNITED STATES PATENTS

2,565,933	8/1951	Schneible	98/115
3,411,428	11/1968	Ahlrich	98/115 K

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ABSTRACT: Supply air, which is preferably outside air, is discharged to form an air curtain between an operator and a mold pourer, etc., joining a rising column of gas, dust, etc., to direct the column toward an exhaust intake, and adjustable means are provided for directing the air curtain outwardly to cool the operator in warm seasons. It is helpful to increase the velocity of the air for this purpose.

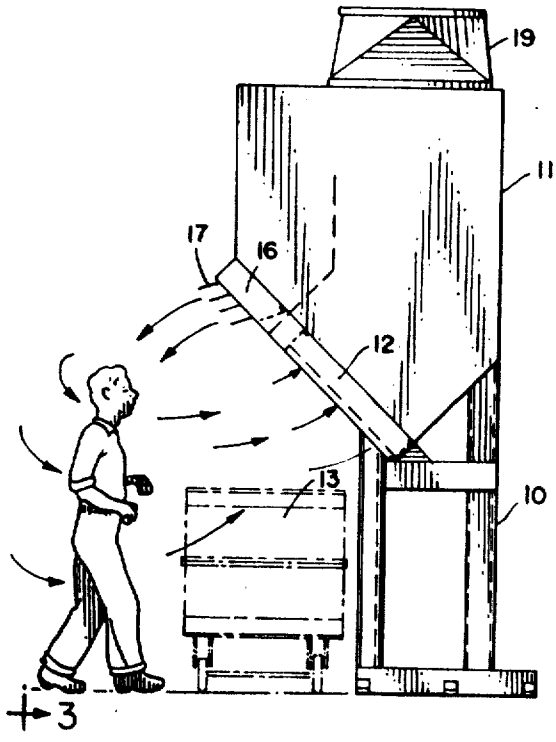


FIG. 1

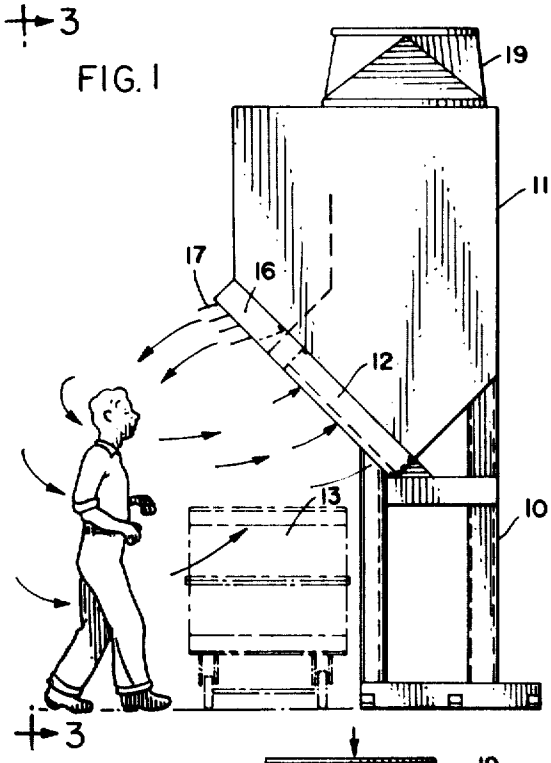


FIG. 2

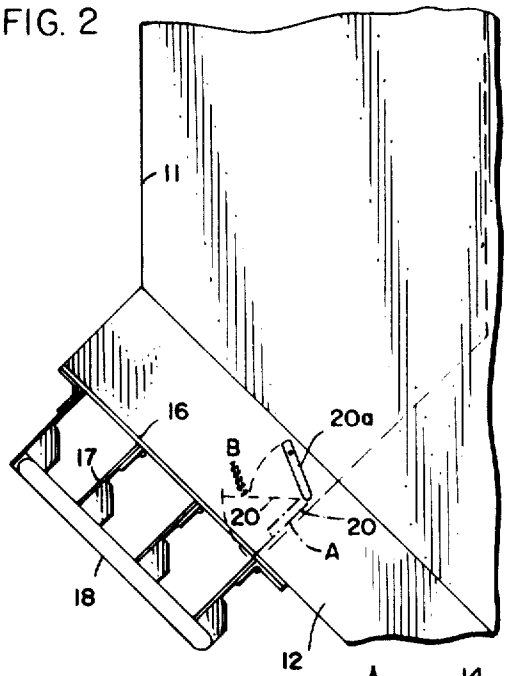
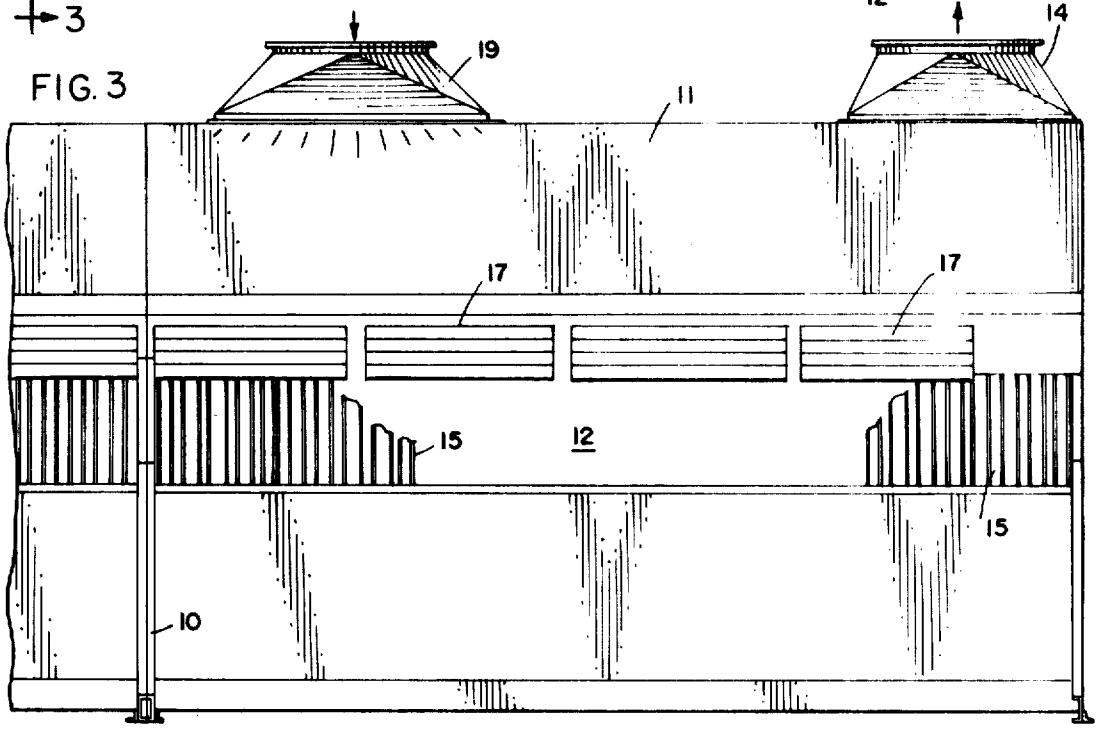


FIG. 3



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COMPENSATING HOOD APPARATUS

BACKGROUND AND SUMMARY

Compensating hoods with integral air supply have been provided for removing a column of smoke, dust or other contamination while employing an air discharge adjacent to the edge of the hood to direct a curtain of air between the column and the operator, the curtain of air serving to direct the smoke or other contamination toward the intake of the hood. A primary benefit is to reduce room-heating costs as a large portion of the total air exhausted is supplied in unheated form.

It has also been the practice in warm weather to employ fan coolers which blast air toward the exhaust hood at high velocity as a means for cooling the operator, but in this case a severe turbulence is set up at the hood face, thus causing the exhaust hood to be ineffective in removing the contaminant.

I have discovered that the compensating hood can be modified to provide adjustable means for cooling the operator by the use of outside air in warm seasons while at the same time providing the air curtain between the operator and the source of smoke, fumes, etc. in the winter season when the incoming air is cold. By increasing the velocity of the air discharged, I find that the air can be directed against the operator for improved cooling purposes while at the same time the air is effective as a blanket for directing the contaminant material toward the discharge intake. I prefer to increase the velocity by providing a closure baffle which will reduce the area of the discharge opening.

DRAWING

In the accompanying drawing,

FIG. **1** is a side view in elevation of compensating hood apparatus embodying my invention;

FIG. **2**, a broken side view in elevation of a portion of the apparatus shown in FIG. **1**; and

FIG. **3**, a broken front view in elevation of a portion of the apparatus shown in FIG. **1**.

DETAILED DESCRIPTION

In the illustration given, **10** designates support apparatus upon which a hood **11** is mounted. The hood is provided at its front with an exhaust intake **12** which extends downwardly and inwardly over a casting **13** or other source of smoke, fumes, dust, or other contaminant. A source of suction **14** communicates with the chamber leading to the intake **12**. The intake may be provided with spaced louvers **15** which may be of any suitable shape but are preferably tear shaped in cross section. Above the intake **12** is an air discharge opening **16**, and forwardly of the opening are mounted deflectors **17** connected by a side member **18**. The hinged deflectors may be moved to different positions for guiding the outflow of air and may be clamped in any fixed position by tightening nuts on the hinge rods, etc.

The air chamber **16** communicates with an air supply conduit **19** leading to a source of air pressure. Thus, exhaust air is drawn in through intake **12** and discharged through the outlet **14** under the force of suction, while supply air is introduced through conduit **19** which communicates directly with the air outlet **16** and the deflectors **17**.

For proper operation of the compensating hood to provide a curtain between the operator and the contamination source, I prefer to employ an air velocity under 1,200 feet per minute and preferably in the range of 700—1,000 feet per minute. While a velocity in this range will cool the operator, improved cooling will be secured with a higher airflow velocity, preferably in the range of 1,200 to 2,500 feet per minute. Accurate of the velocities is important for good results in providing the air curtain between the operator and the source of contamination, and also for providing the curtain which envelopes the operator to cool him while at the same time accomplishing the important purpose of directing the column of smoke, fumes, etc. toward the exhaust intake.

Any suitable means for increasing the velocity of the air when it is to be directed upon the operator may be provided. I prefer to employ a closure baffle **20** of the type illustrated in FIG. **2** and which may be equipped with a handle **20***a*. The baffle **20** is moved downwardly to position A for use in the winter season when the air curtain is to be directed between the operator and the shaker or casting support, etc. In the summer season when it is desired to direct the outside air upon the operator, the baffle **20** may be moved to position B in which it effectively closes the lower discharge port so that all of the incoming air is discharged through the two upper discharge ports illustrated in FIG. **2**. In this specific example, the velocity of the air is approximately 50 percent greater than when the air is used with the baffle **20** in position A.

Directing the cooling air upon the operator may be accomplished by moving the deflectors **17** to the desired position, and the velocity of the air may be increased by any suitable means including increasing the volume. By the use of the closure baffle **20**, when it is swung to the restricting position B, there is an automatic increase in velocity which causes the air to move forwardly to a greater extent, and this may be sufficient by itself to furnish the cooling blanket of air about the operator.

If desired, the compensating air deflectors may be adjusted to blowing the compensating, or outside, air directly on the workman or workmen in warm weather, thus providing comfort cooling. In the wintertime or when the air is cool, the baffles may be adjusted to direct the air between the workman and the source of contamination while providing means for increasing the velocity of the discharged air.

Since the discharged air extends outwardly and downwardly toward the operator, there is no tendency to increase turbulence at the hood face and thus cause the exhaust hood to be ineffective in removing the contaminant. Instead, the air in each type of operation extends downwardly and curves inwardly under the influence of the suction of intake **12** to provide a blanket around the smoke, fumes, etc. and directs it toward intake **12**. The air forms an inverted V canopy for directing the rising column of gas, etc. toward the intake **12**.

While in the foregoing specification I have set out specific structure in considerable detail for the purpose of illustrating an embodiment of the invention, it will be understood that such details of structure may be modified widely by those skilled in the air without departing from the spirit of my invention.

I claim:

1. In ventilating exhaust apparatus for treating a rising column of gas, an exhaust conduit equipped with an intake adjacent said column, means providing an air chamber communicating with a source of air pressure, said chamber having upper and lower discharge ports for directing the discharged air downwardly and outwardly over said gas column to direct said gas toward said exhaust intake, and closure means for closing said lower port to increase the velocity of the discharged air and to project the air from the upper port.

2. The structure of claim 1 in which said air chamber providing means is provided with adjustable deflectors which extend outwardly and downwardly.

3. In ventilating exhaust apparatus for treating a rising column of gas while protecting an operator standing in front of said column, an exhaust conduit equipped with an intake adjacent said column, means providing an air chamber above said intake and communicating with a source of air pressure, said chamber having upper and lower discharge ports for directing air downwardly and outwardly over said gas column as a curtain between said column and said operator and to direct said gas toward said exhaust intake, and closure means for closing said lower port to increase the velocity of said discharged air and to project said discharged air solely from said upper port whereby said discharged air is directed upon said operator.

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(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,592,121 Dated July 13, 1971

Inventor(s) Alvin S. Lundy

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 69, after "Accurate" insert -- control --.

Signed and sealed this 23rd day of November 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents