July 2, 1946. R. D. YOUNG 2,403,203

HEAT SHIELD

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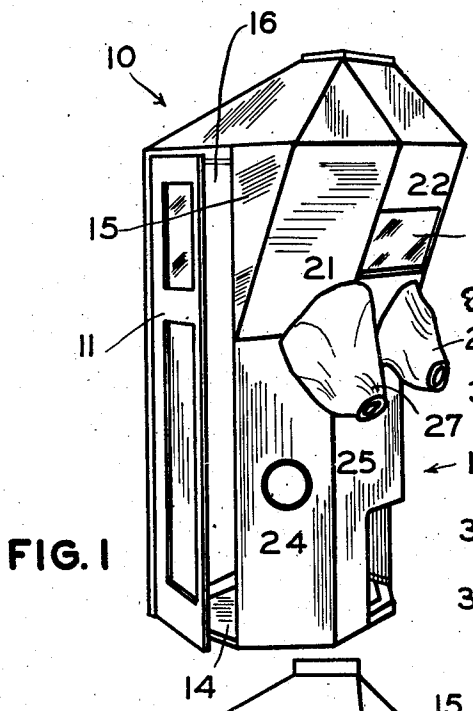



FIG. 1

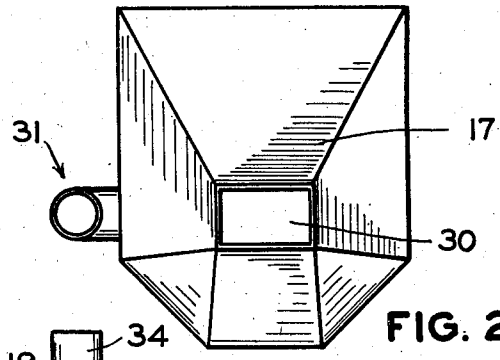



FIG. 2

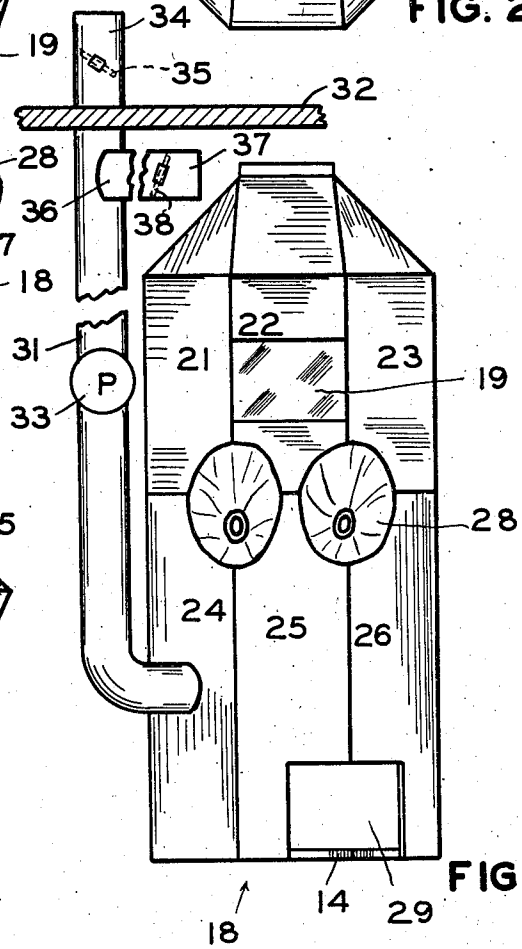



FIG. 3

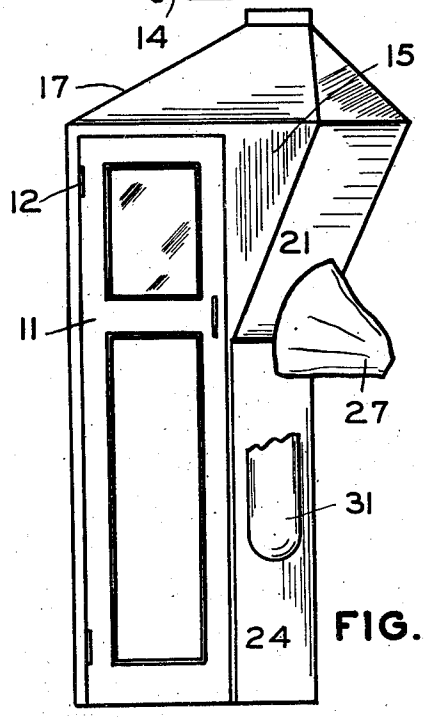



FIG. 4

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## HEAT SHIELD

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3 Claims. (Cl. 20—2)

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This invention relates to a heat shield and more particularly to a heat-protective enclosure for workmen.

In the performance of many work operations, the workman is subjected to intense heat. One of these operations is the molding of optical glass to form lenses wherein the glass is heated at high temperatures to obtain sufficient fluidity of the glass for the ready shaping of the same in a mold. For this purpose, the glass is usually inserted in a gas-fired furnace and heated to a plastic state, at which time, the glass is removed from the furnace and placed in a mold by the workman. In the performance of this operation, the one side of the furnace is open to permit the transfer of the glass to and from the furnace and the workman's face and hands are subjected to the intense heat emitted from the open side of the furnace.

Heretofore, the workman has been protected from the effects of the heat by the provision of a heat-resistant transparent plate disposed between the face of the workman and the furnace while cool air was forced upwardly about the plate. While this method of protecting the face of the workman is partially efficient, the air in the room absorbs the heat emitted by the furnace and the resultant rise in temperature of the air causes considerable bodily discomfort to the workman.

It is the principal object of the present invention to provide a heat shield in the form of an enclosure surrounding the workman which is provided with means for circulating cooling air through the enclosure and about the workman while permitting the use of the hands and feet of the workman exteriorly of the enclosure. In the preferred embodiment of the invention, the enclosure is formed of heat-insulating material and is equipped with a transparent viewing plate to permit the workman to inspect the work operation and also with flexible sleeves receiving the arms of the workman to allow the workman the free use of his hands exteriorly of the enclosure, an opening in the lower edge of the enclosure permitting the foot of the workman to be extended therethrough to operate foot-manipulated means attached to a furnace or other heat-emitting machine. To prevent the absorption of the heat by the air within the enclosure, the enclosure is provided with means for forcing cooling air through the enclosure and about the workman. As the temperature of the air passing into the enclosure can be controlled by any suitable regulating means associated with the cooling

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means, the air within the enclosure may be maintained at temperatures conducive to the bodily comfort of the workman.

Other objects and advantages of the present invention will appear from the following description taken in connection with the accompanying drawing in which:

Fig. 1 is a perspective view of the heat shield.

Fig. 2 is a top view of the shield showing a conduit, forming a portion of the cooling system, attached thereto.

Fig. 3 is a front view of the shield showing the conduit and the means for circulating air through the conduit into the shield.

Fig. 4 is a side view of the shield with a portion of the conduit broken away.

A preferred embodiment of the invention is illustrated in the drawing wherein the numeral 10 indicates the heat shield or enclosure having a door 11 attached thereto by hinges 12.

To shield the workman from the heat emitted by a furnace or other machine, the enclosure 10 is formed of heat-insulating material and therefore the bottom wall or floor 14, the side wall 15, the back wall 16, and the top wall or roof 17, as well as the door 11, are preferably of wood construction. The front wall 18 faces the furnace and is preferably formed of asbestos material.

In the performance of many work operations, it is necessary to place the enclosure in close proximity to a furnace, or like heat-emitting machine, to permit the workman the use of his hands to manipulate tools for treating the heated article or the use of his feet to operate levers attached to the furnace. To permit the workman to observe the work operation performed by his hands, a transparent viewing plate 19 is carried in the upper portion of the front wall 18, formed of a plurality of panels 21, 22, and 23, and this portion of the wall is angularly inclined to the lower portion of the wall, formed of a plurality of panels 24, 25, and 26, and overhangs the same. By forming the enclosure in this manner, the plate 19 faces the site of the work operation and the workman may readily inspect the heated article for manipulating the article.

For the purpose of permitting the workman the use of his hands exteriorly of the enclosure, the front wall of the same is formed with apertures through which the workman may extend his arms and, if desired, two sleeves 27 and 28 of flexible heat-insulating material may be attached about the apertures to protect the arms of the workman. The sleeves are loose fitting and permit the unrestricted movement of the arms of the

workman during the manipulation of tools by the exteriorly disposed hands of the workman. The ends of the sleeves are gathered about the wrists of the workman by elastic bands stitched to the material of the sleeves which prevents displacement of the sleeves on the workman during the work operation.

As it is desirable in many cases to operate foot-manipulated levers, and the like, attached to a furnace, or other heat-emitting machine, during the work operation, an opening 29 is had in the panels 25 and 26 to permit the workman to extend a leg therethrough to operate the levers by his foot.

As the enclosure 10 must be placed adjacent the furnace, or machine, during the work operation to permit the manipulation of the article heated and the operation of foot-manipulated means the air surrounding the enclosure absorbs the heat and transmits the heat to the air within the enclosure. The resultant rise in temperature of the air within the enclosure is the source of considerable discomfort to the workman.

Although any means may be used to maintain the air confined within the enclosure relatively cool, in the preferred embodiment of the invention, these means comprise a conduit or pipe 31 leading from the outside of the building or from a portion of the building in which the air is relatively cool to the enclosure. The pipe 31, in the form of the invention illustrated, extends through an opening formed in a wall 32 of the building and is led into the enclosure through an opening formed in the panel 24. To circulate cooling air through the enclosure, an electrically-operated pump 33 is carried within the pipe 31.

It will be apparent that, upon actuation of the pump 33, the pump will draw cool air into the inlet end 34 of the pipe and cause the air to flow through the pipe and into the enclosure. A continual circulation of cool air will be had through the enclosure and about the workman as the air within the enclosure will be forced through an opening 30 in the roof 17 and the opening 29 in the panels 25 and 26. In this manner, the heated air will be prevented from entering the enclosure and cooling air will flow freely about the workman to insure his comfort during the work operation.

While this arrangement of the cooling system is satisfactory when atmospheric conditions permit cool air to be drawn into the inlet end 34 of the pipe, it becomes unsatisfactory when the air becomes cold or heated. To provide for this contingency, the inlet end of the pipe is equipped with a valve or damper 35 which may be rotated to a horizontal position to prevent the passage of the cold or heated outside air through the pipe 31. Cool air may then be drawn into the pipe 31 through a pipe 36 connected thereto and leading from a portion of the building in which the air is of the desired temperature. To prevent the flow of the air into the inlet end 37 of the pipe 36 the same is equipped with a valve or damper 38 which may be rotated to a closed position to prevent the passage of the air therethrough.



It will be apparent that the flow of air from the outside or the inside of the building may be controlled by any suitable means for regulating the movement of the dampers 35 and 38 to other positions than those described and for decreasing or increasing the action of the pump. In this manner, it is possible to control the temperature of the air within the enclosure according to the desires of the workman which insures the comfort of the workman in the performance of the work operation.

From the foregoing, it will be apparent that I am able to attain the objects of my invention and provide a new and improved heat shield having means for circulating air therethrough and about the workman. Various modifications can, of course, be made without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. In a device for protecting a workman operating a heat-emitting machine comprising an enclosure surrounding the workman; means for circulating air through said enclosure; a pair of sleeves carried by a wall of said enclosure adjacent said machine for receiving the arms of the workman to permit the use of the hands of the workman exteriorly of said enclosure, said wall having an opening adjacent the lower edge thereof whereby the workman may extend a leg therethrough to operate foot-manipulated means of said machine; and a transparent plate carried by the wall of said enclosure for viewing the work operation.

2. In a device for protecting a workman operating a heat-emitting machine comprising an enclosure surrounding the workman; a door carried by said enclosure for ingress and egress of the workman to said enclosure; a pair of sleeves carried by said enclosure adjacent said machine for receiving the arms of the workman to permit the use of the hands of the workman exteriorly of said enclosure; a transparent plate carried by said enclosure for viewing the work operation; means for circulating air through said enclosure from at least one of a plurality of air sources; and means for selectively regulating the flow of air from said sources.

3. In a device for protecting a workman operating a heat-emitting machine comprising an enclosure for the workman, said enclosure having a wall adjacent said machine with an opening formed in the lower edge thereof whereby the workman may extend a leg therethrough to operate foot-manipulated means of said machine, said wall divided into an upper portion angularly inclined outwardly from the lower portion; a transparent plate carried by the upper portion of said wall and facing the site of the work operation to permit inspection of the work operation by the workman; a pair of sleeves carried by said wall below said plate for receiving the arms of the workman to permit the use of the hands of the workman exteriorly of said enclosure; and means for circulating air through said enclosure.

ROGER D. YOUNG.