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FORCED DRAFT FAN INCLOSURE
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Fig. 1

Fig. 2

Fig. 3

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The invention is a fan mounted in a circular opening in a closure in the inlet duct of a hot air heating furnace in which the closure is arranged so that it may be opened to permit substantially the entire area of the duct to be open and which may be manually operated to close the entire duct except for the fan opening.

The object of the invention is to provide means for mounting a fan in the inlet air duct of a hot air furnace which is positively operated.

Another object of the invention is to provide means for mounting a fan in the inlet duct of a hot air heating furnace by which the entire opening may be closed with the exception of the opening for the fan.

Another object of the invention is to provide means for mounting a fan in an inlet duct in which the fan motor is rigidly mounted on a solid base independent of a closure frame.

And a still further object of the invention is to provide a means for mounting a fan in the inlet duct of a hot air heating furnace which is of a simple and economical construction.

With these ends in view the invention embodies a fan mounted directly on a motor, a frame, a door with a circular opening therein hinged at the lower side of the frame and positioned so that the fan will operate in the circular opening, means for drawing the door to a closed position from a remote point.

Other features and advantages of the invention will be seen from the following description taken in connection with the drawings wherein:

Figure 1 is a section through the inlet duct showing the device with a closure at the closed position.

Figure 2 is a front view of the frame showing the closure in the closed position.

Figure 3 is a cross section through the switch.

In the drawings the device is shown as it would be made wherein numeral 1 indicates the frame, numeral 2 the closure and numeral 3 the fan.

In the device shown the frame 1 is made of angle irons and of a rectangular shape and of such a size that it will fit snugly in the inlet duct of a hot air heating furnace as shown in the drawing. It is understood that this frame may be of any suitable shape or size to fit any type of duct and may also be made of any suitable material.

The closure 2 is made of a flat plate with a hinge 4 in the lower edge by which it is hinged in the lower side of the frame 1. In the central portion of the closure is an opening 5 having an outstanding flange 6 in which the fan 3 operates. In the device shown the fan 3 is directly mounted on a motor which is indicated by the numeral 7 and it will be observed that the motor is directly mounted on a solid foundation and is not connected to, and does not engage any portion of the frame, closure or duct, so that all vibration of the motor will be absorbed by the foundation and will not be transmitted to the frame or duct. At the rear of the closure is an eye 8 to which a chain 9 is attached and the chain 9 may extend upward through a tube 10 to any suitable point from which it may be desired to operate the device. In the device shown the upper end of the chain is attached to an eye 11 on a knob 12 which is slidable in a frame 13 so that the knob may be moved upward in the position shown to hold the closure in the closed position and may be moved downward to release the closure or to permit it to drop to the open position as shown in dotted lines in Figure 1. It is understood that although a chain is shown and described, a cord or wire or any other suitable device may be attached to the closure to hold the closure in the closed position.

The switch shown in Figure 3 may be attached to the upper edge of the frame as shown in Figure 1 and positioned so that the closure will engage it as it arrives at the closed position and thereby complete a circuit to start the motor. It is understood that any suitable type of switch may be used and may be arranged to close a circuit as the closure arrives at the closed position by any suitable means. In the device shown the switch is made in a casing 14 which has a plunger 15 slidably mounted therein and held in the outward position by a spring 16 in an opening 17. The outer end of the opening is closed by an insulating nut 18 in which a contact point is mounted and it will be observed that the point 19 extends through the spring to a point slightly behind the inner end of the plunger 15 and as the plunger is moved inward it will engage the point 19. A wire 20 may be connected to the point 19 and another wire 21 may be connected through a
plug 22 to the plunger 15 as shown in Figure 3 so that as the plunger is forced inward by the door it will form a contact that may complete a circuit.

It will be understood that changes may be made in the construction without departing from the spirit of the invention, one of which changes may be in the use of other means for mounting or operating the fan directly from the foundation, another may be in the use of any other suitable means for mounting the closure, and still another may be in the use of any other suitable means for operating the closure.

The construction will be readily understood from the foregoing description. To use the device it may be provided and installed as shown and the closure will normally rest in the position shown in dotted lines in Figure 1. When it is desired to increase the draft the chain may be pulled upward which will pull the closure to the upward position as shown in full lines in Figure 1, and as the closure arrives at this position it will engage the switch and start the motor as hereinafore described. When it is desired to stop the motor the chain may be released and the closure, which may be slightly overbalanced, will fall by gravity to the position shown in dotted lines.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

In a device of the class described, an air duct, a motor positioned in the duct, a fan mounted on the motor shaft, a closure having a circular opening, the diameter of which is slightly larger than the diameter of the fan, said closure being positioned so that the fan will rotate in the said opening, said closure being provided with a flange surrounding the said fan, a stationary frame mounted in the said duct to hold the said closure, suitable hinges by which the said closure is mounted in the said frame, said frame and closure closing the entire interior of the duct with the exception of the opening around the fan when in the closed position, a flexible device attached to the said closure and extending outward through the said duct to a remote point, and means for adjustably holding the end of the said flexible device to adjust the position of the said closure.

In testimony whereof I affix my signature.

WILLIAM D. CALHOUN.