

Dec. 21, 1926.

J. C. MILES

1,611,766

APPARATUS FOR HOT AIR HEATING SYSTEMS

Filed June 7, 1923

2 Sheets-Sheet 1

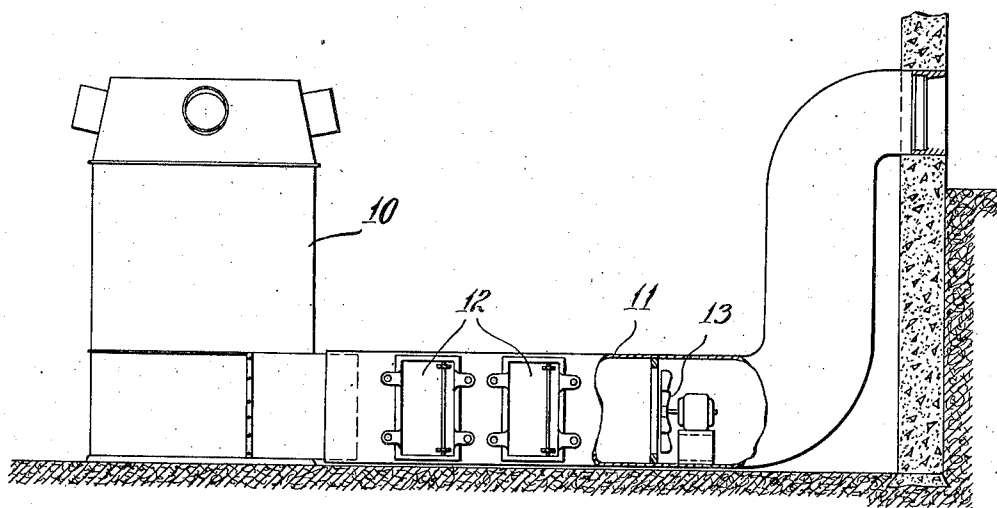


Fig. -1

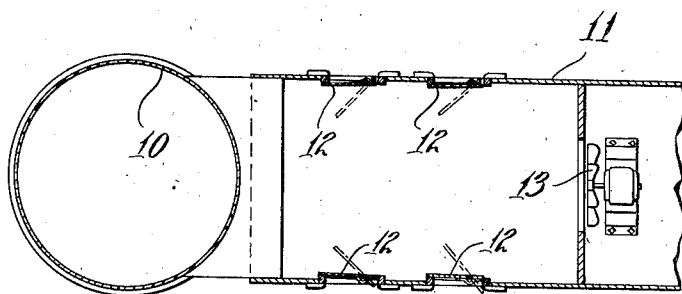


Fig. -2

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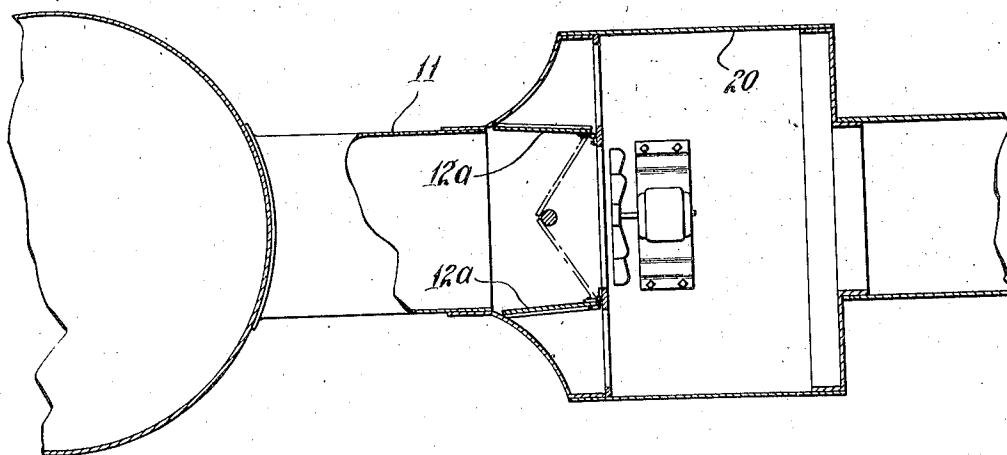


Fig. -3

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UNITED STATES PATENT OFFICE.

JAMES C. MILES, OF CLEVELAND, OHIO.

APPARATUS FOR HOT-AIR HEATING SYSTEMS.

Application filed June 7, 1923. Serial No. 643,857.

This invention relates to apparatus used in hot air heating systems and more particularly refers to an apparatus used in a system such as is shown and described in my co-pending application Serial No. 430,160 filed December 13, 1920, i. e. Patent No. 1,508,831, issued Sept. 16, 1924.

Briefly, the apparatus illustrated in my co-pending application embodies a fan and a damper which are arranged to be positioned adjacent the inlet of the heating chamber of a furnace. The damper is arranged to be opened when the fan is stopped, and to be closed when the fan is in operation.

One of the objects of the present invention, is the arrangement of mechanism whereby the fan may be positioned remote from the furnace while the damper may be disposed adjacent the usual air inlet conduit to the heating chamber. This permits the fan to be positioned remote from the furnace and in an accessible location, and also permits air to be drawn from regions different from that used for the normal operation of the furnace on the gravity system.

I carry out the above objects by providing a motor driven fan having a conduit leading therefrom to the furnace and by so arranging a damper in the conduit that actuation of the fan creates pneumatic pressure sufficient to close the damper. The dampers are also arranged to open automatically when the artificial pressure created by the fan is diminished.

The means for carrying out the above objects will be hereinafter more fully described in connection with the accompanying drawings, while the essential features will be summarized in the claims.

In the drawings, Fig. 1 is a side elevation partly in section of a hot air furnace, having my invention embodied therein; Fig. 2 is a horizontal section taken through the apparatus shown in Fig. 1; Fig. 3 is a similar horizontal section through a modification of my invention.

In Fig. 1, I have shown the heating chamber of a hot air furnace at 10 with an air conduit 11 leading thereto. My invention as heretofore stated comprises a fan and damper associated with this conduit in such manner that while the fan is stopped the dampers are open so as to permit the operation of the furnace by gravity system, and are arranged to be closed when the fan is in operation so that air pressure within the

heating chamber may be increased. In the preferred form, the dampers and fan control the admission of air to the heating chamber through the same conduit 11. Thus, in Fig. 1, the dampers are illustrated at 12 as being disposed in the sides of the conduit while the fan is disposed within the conduit and is indicated in general at 13.

With the arrangement above described, air is admitted to the heating chamber through the dampers 12 when the furnace is operating on a gravity system and in this case, the air is taken from the room in which the furnace is located. The type of damper employed is preferably that shown and described in my co-pending application, Serial No. 630,740, filed April 9, 1923. Briefly, the damper embodies a plate pivotally mounted on an off-center axis so that the area of the plate on one side of the axis is greater than that on the other side thereof. Moreover, the pivotal connection of each damper is inclined inwardly at the top wherefore under normal conditions the damper is held in open position. With the apparatus above set forth, the air entering the heating chamber under the gravity system, is that within the room in which the furnace is located.

To utilize the conduit from which the fan receives air so that one conduit is sufficient for supplying air under either the gravity or forced air systems, I have shown the dampers in Fig. 3, as disposed on opposite sides of the fan and as arranged to swing across the passageway when in closed position. I have illustrated the conduit as being enlarged adjacent the fan as at 20 and I have shown the dampers 12^a as arranged to be disposed across the openings formed by the enlargement 20 adjacent the region of engagement with the conduit 11. Normally, that is, on the gravity system, the dampers are urged to open position, but when the fan is started, the dampers are closed by the velocity pressure created by the fan. Thus, when the fan is in operation, air is admitted to the heating chamber only through the fan opening, but when the fan is stopped, sufficient air is admitted through the damper openings to prevent overheating of the furnace.

With an apparatus heretofore described, a heating system may be operated on a gravity or forced air principle even though separate conduits are employed for convey-

ing air to the heating chamber. Moreover, the dampers are automatically closed when the fan is in operation and are automatically opened when the fan is stopped wherefore
5 sufficient air is admitted to the heating chamber under the gravity system to prevent burning out of the furnace, and while the fan is in operation, the air set in motion thereby is forced to enter the heating chamber
10 and is prevented from escaping through the damper openings.

I claim:—

1. In a heating apparatus, the combination with a heating chamber, of a conduit
15 leading thereto, a fan for forcing air into the chamber through the conduit, said conduit having openings intermediate the fan and chamber, whereby air may enter the chamber independently of the fan opening,
20 a damper mounted in the conduit adjacent

each opening, each of the dampers being so mounted so as to be held normally in open position, but to be moved, to closed position when the fan is started.

2. In a heating apparatus, the combination with a heating chamber, of a conduit
25 leading thereto, a fan adapted for forcing air into the chamber through the conduit, said conduit having a vertical wall intermediate the fan and chamber, and having
30 an opening in the wall, whereby air may enter the chamber independently of the fan opening, and a damper pivotally mounted on the wall so as to be held normally in open
position when the fan is stopped, and so as
35 to be moved to closed position by pneumatic pressure when the fan is in operation.

In testimony whereof, I hereunto affix my signature

JAMES C. MILES.