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HUMIDIFYING CONSTRUCTION

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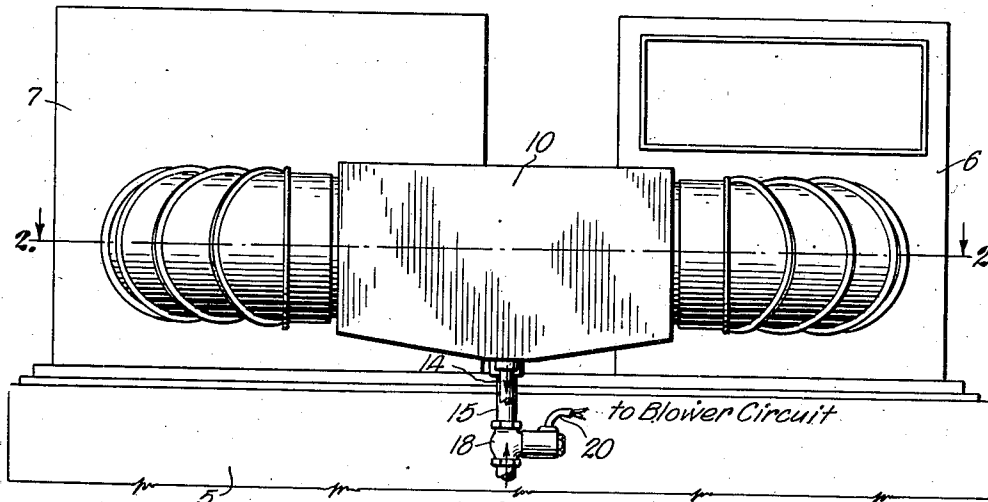


Fig. 1.

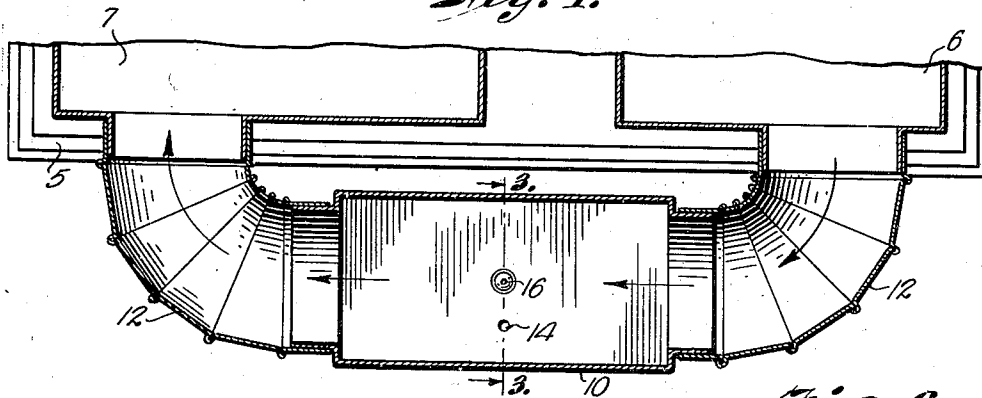


Fig. 2.

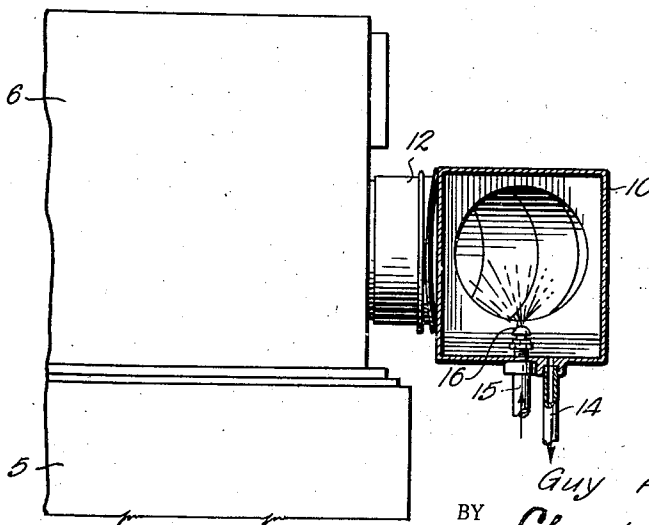


Fig. 3.

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HUMIDIFYING CONSTRUCTION

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1 Claim. (Cl. 126—110)

This invention relates to humidifying devices, and aims to provide an improved and efficient humidifier accessory construction for air conditioning apparatus and more particularly winter air-conditioning installations such as warm air furnace equipment.

Accordingly the primary object of the invention is to provide an extremely simple and practical type of accessory unit adapted to be readily installed in connection with standard forms of such winter air conditioning apparatus, and in a novel and improved relation thereto as regards increased operating efficiency.

The essentially novel feature characterising my improved construction is the provision of a by-pass structure between the intake and outlet air connections to the air conditioning apparatus, and including within itself and apart from said apparatus the means for supplying the requisite degree of humidity to the air passing through said connections.

With the foregoing general object in view, the invention will now be described by reference to the accompanying drawing illustrating a typical form of construction for embodying my proposed improvements, after which those features and combinations deemed to be novel and patentable will be particularly set forth and claimed.

In the drawing,

Figure 1 is an elevation of the upper portion of an air conditioning apparatus with my improved accessory unit applied thereto;

Figure 2 is a sectional plan view, representing a section taken on the line 2—2 of Figure 1; and

Figure 3 is a transverse sectional view representing a section following the section line 3—3 in Figure 2.

Referring now to the said drawing in detail, this illustrates the upper portion 5 of a winter air conditioning apparatus, such as a warm air furnace equipment having the usual warm air outlet casing 6 and the intake casing or housing 7 for the relatively colder return air, the service connections to said casings 6 and 7 being of course of any desired number and type to satisfy the conditions of the particular installation.

It has been the common practice heretofore to incorporate the humidifying means or device within the heating portion of the apparatus, which has always developed certain operating difficulties or objections such as the lack of uniformity of the humidifying action, the incompleteness of the water purifying or filtering action for removing impurities from the circulated air, etc.

For overcoming such difficulties I provide a by-pass unit which comprises a housing or casing 10 adapted to be installed by means of any desired type or form of connections such as elbows 12 or the like in communicating relation to the casings 6 and 7, thereby establishing a by-pass air passage between said outlet and intake casings as clearly illustrated in Figures 1 and 2 of the drawing. As represented in Figure 1, the bottom of the casing or housing 10 may be shaped to drain to a drain outlet connection 14; and at any desired point, as at its middle portion, said casing 10 is further provided with a water pipe connection 15 which is fitted with a suitable spray nozzle 16 for supplying the desired humidity to the air as it flows through said by-pass unit.

Any practical form of electric valve 18 is also included in the water pipe connection 15, and the electric circuit 20 for which valve is arranged in series with the fan blower circuit of the apparatus 5, whereby said valve 18 is allowed to open for admitting water to the spray nozzle 16 only in accordance with the operating requirements of the installation.

With such a by-pass construction, arranged as described and illustrated, it will be apparent that the operation of the air conditioning apparatus 5 will result in a by-pass movement of air in the direction of the arrows in Figure 2 or from the outlet casing 6 through the housing unit 10 and on into the intake casing 7, due to the higher pressure differential developed on the outlet side of said apparatus, as will be readily understood. The air thus by-passed into the return flow of air is subjected to the humidifying action of the water spray and thus is humidified prior to intermingling with the recirculated air in the intake chamber 7.

One particular advantage of this method of operation is its cleanliness, due to the water treatment taking place prior to recirculation of the air through the apparatus 5, where all the air flow is purified by the action of the filtering means which constitutes a standard part of such equipment, thus eliminating any lime or other foreign matter from the flow of air. A most important feature, however, is the regulation of the humidifying action entirely in accordance with the operation and demands of the apparatus, due to the pressure creating the by-pass flow being in constant conformity to the rate and periods of that operation; and as already pointed out, the water supply to the spray nozzle is opened only at times when the main unit is in operation, by virtue of the series connection between the blow-

er mechanism and the electric control valve 18. Thus a clean operation is assured, and the humidifying action is efficiently and accurately controlled in such a manner as to conform exactly to the demands of the air volume passing through the installation.

It will therefore be apparent that I have devised an efficient as well as extremely simple and inexpensive type of construction for fulfilling the desired objects of my invention; and while I have illustrated and described one practical and satisfactory form of construction for embodying my improvements, it is to be understood that minor changes and variations are possible within the scope of the invention, such as various arrangements and sizes and shapes of connections to meet the special requirements of somewhat different types of installations. I therefore desire to be understood as reserving the right to make all such changes and modifications as may fall within the spirit and scope of my invention as defined by the appended claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

In apparatus of the character described, the combination with the upper air intake casing and the warm air outlet or plenum casing of a warm air furnace, said casings being both arranged in substantially the same horizontal plane, of a by-pass unit entirely external to said furnace and its air intake and outlet casings and comprising an intermediate casing having the opposite ends thereof connected by curved elbow connections with said intake and outlet casings respectively, said intermediate casing and elbow connections all lying in substantially the same horizontal plane with said intake and outlet casings and thereby providing a continuous free and unobstructed air by-pass passage at an unvarying level between said intake and outlet casings, and means for supplying moisture to the air flow through said by-pass passage, the bottom of said intermediate casing converging downward for drainage and having a drain outlet from said bottom.

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