

Jan. 6, 1931.

L. D. HARNETT

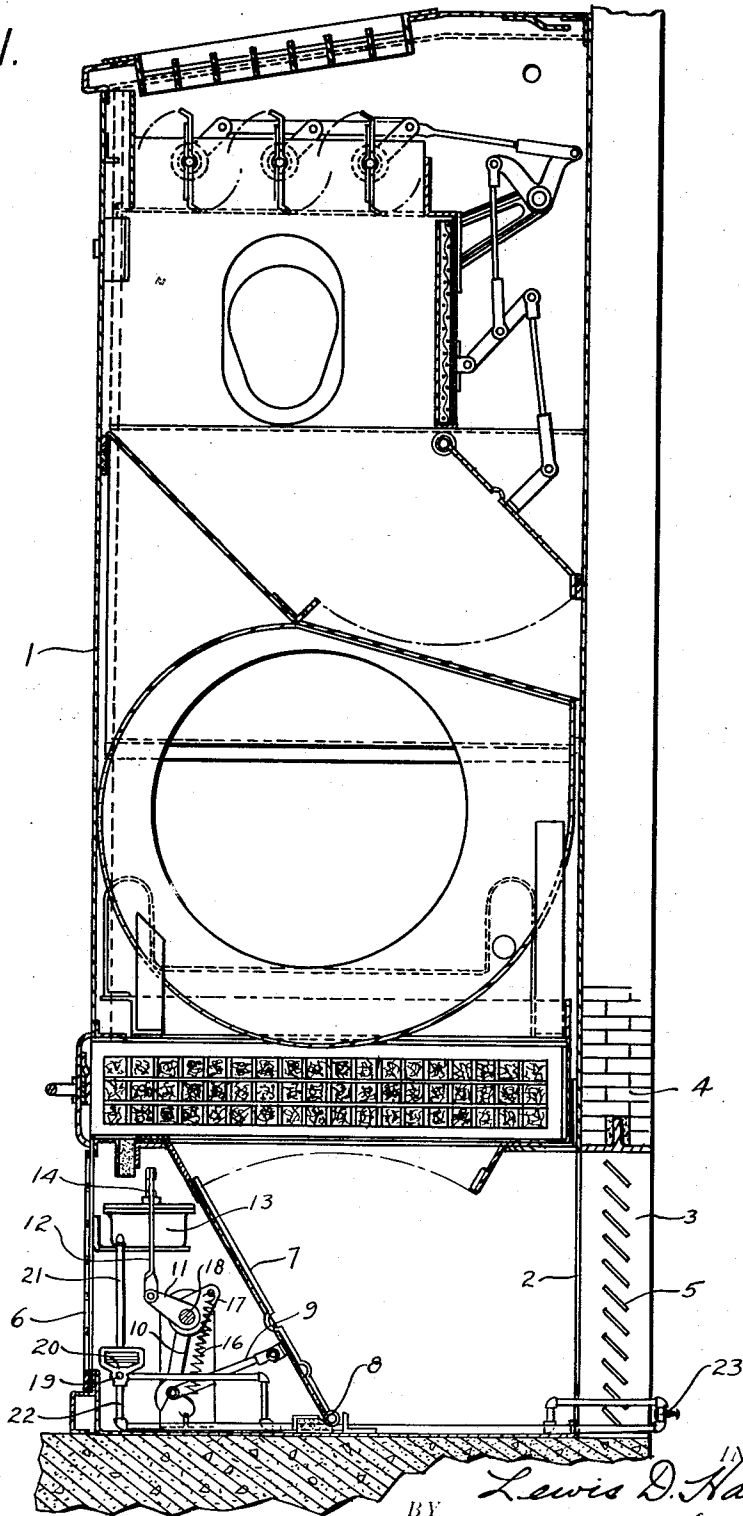
1,787,623

FUSIBLE AIR CONTROL FOR UNIT HEATERS

Filed Aug. 29, 1929

3 Sheets-Sheet 1

Fig. 1.



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3 Sheets—Sheet 2

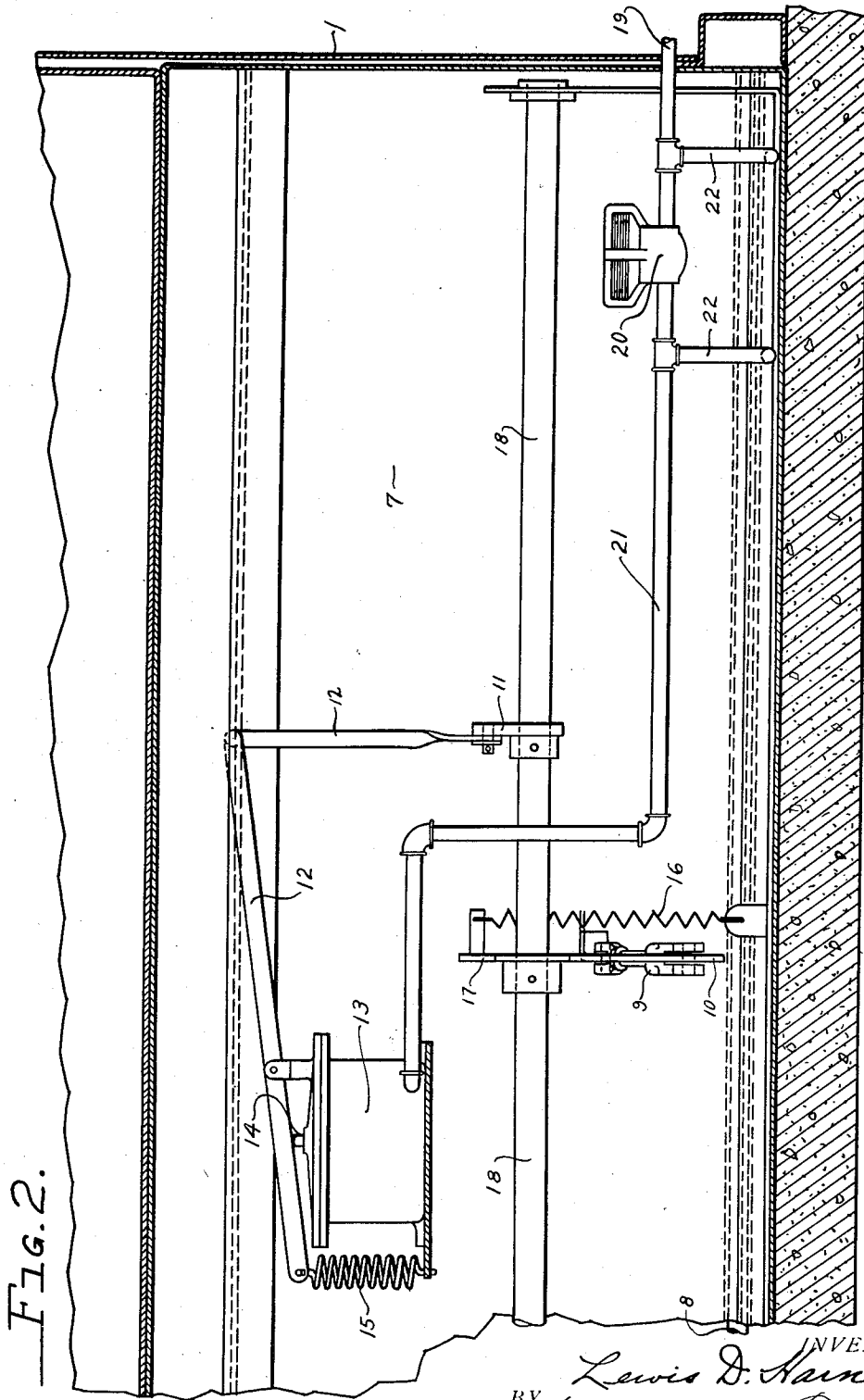


FIG. 2.

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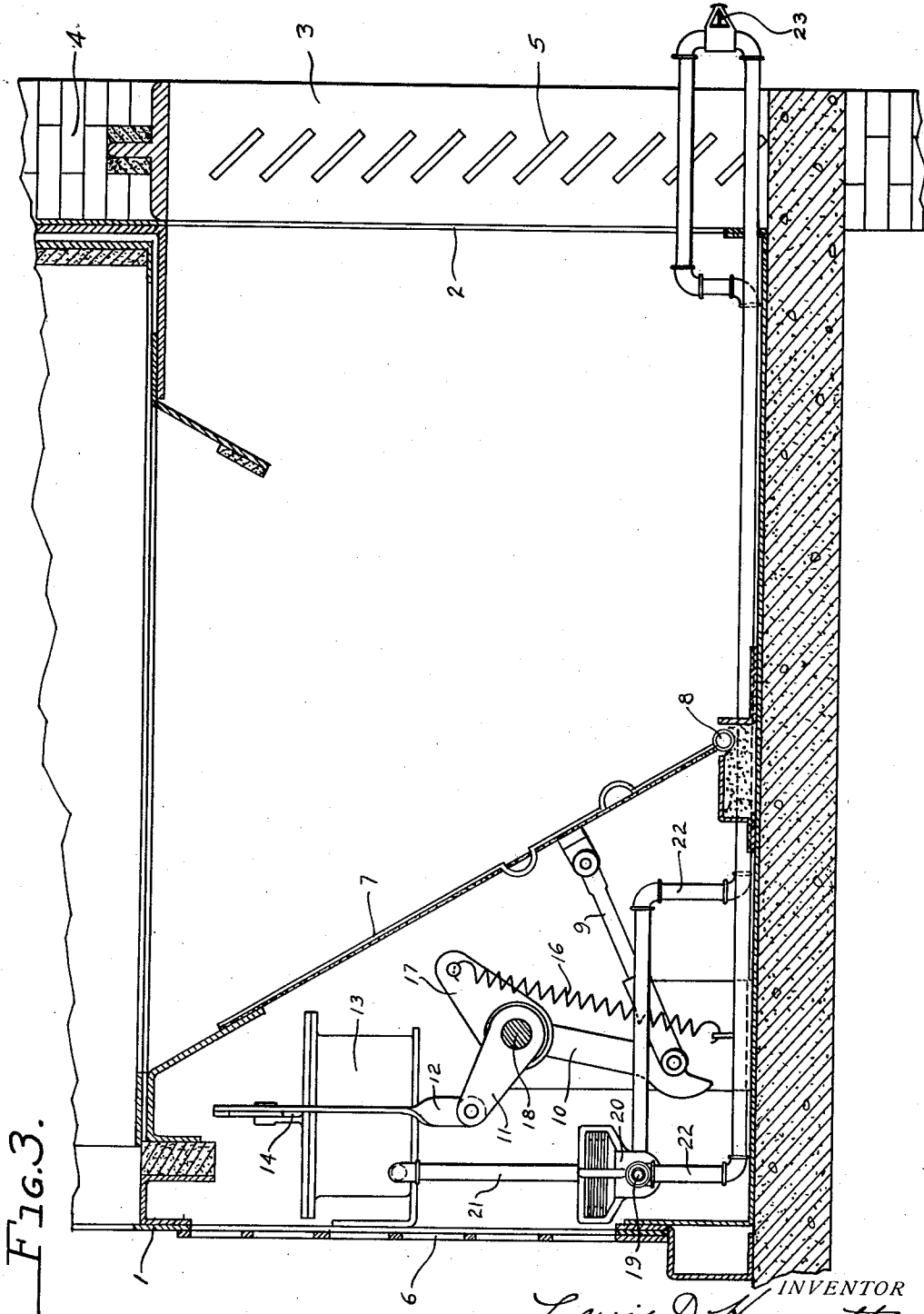


Fig. 3.

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UNITED STATES PATENT OFFICE

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FUSIBLE AIR CONTROL FOR UNIT HEATERS

Application filed August 29, 1929. Serial No. 389,164.

My invention relates to heating and ventilating apparatus and particularly to unit heaters and ventilators.

It is the object of my invention to provide a unit heater and ventilator in which the air inlet damper will automatically close under the air pressure control for the damper in the event of a fire outside of the building. At the present time, fire regulations are very stringent as to fire windows, but, with the present design of heating and ventilating unit, a large opening for inlet air is left in the wall beneath such windows completely nullifying the fire regulations for sealing one building from fire in another.

In unit heaters and ventilators in which the dampers are operated by a thermostat controlling an air pressure line which operates a diaphragm or air motor, it is my object to place a portion of this air line bypassing the thermostat and adapted to directly control the air motor on the damper outside of the building adjacent the air inlet opening. In such portion outside the building adjacent this opening, it is my object to provide a fusible member which, upon being melted, will open the line and will allow the air pressure to close the damper immediately irrespective of the damper conditions in the room in which the unit heater and ventilator is located.

Referring to the drawings:

Figure 1 is a vertical section through a wall of a building, the floor, and the unit heater and ventilator;

Figure 2 is a detail front elevation with the casing in section showing the arrangement of the air motor, damper and piping;

Figure 3 is a detail section of the lower part of Figure 1 enlarged.

Referring to the drawings in detail, 1 is a unit heater and ventilator casing having a fresh air inlet opening 2 for receiving air through the opening 3 in the wall 4, such opening being provided with the usual storm louvers 5. The casing is provided with a recirculation air inlet opening 6 at the bottom of the casing. The introduction of the air through the openings 2 and 6 is controlled by the main inlet damper 7 which is pivoted

at 8 on the floor of the casing. This damper is operated by the links 9, 10, 11 and 12. The air motor 13 in which there is a piston and piston rod 14 is adapted to operate such links against the resistance of the spring 15.

The spring 16 connected to the arm 17 on the operating shaft 18 serves to hold the damper in either of its positions and to resist its movement from one position to the other. The air pressure line 19 is provided for supplying air through the thermostatic valve 20 and pipe 21 to the air motor 13.

When the damper lowers the thermostat 20 opens its valve and permits the air in the line 19 to close the damper 7 shutting off the fresh incoming air.

When the damper rises the valve 20 closes and the spring 15 opens the damper to admit fresh air.

This air line 19 is provided with a by-pass loop 22 which conveys air around the thermostatic valve 20 for directly operating the air motor 13 to close the damper 7 to prevent air from entering the opening 2. This by-pass 22 is only opened when heat outside of the building adjacent the air inlet opening 3 is sufficiently great to fuse the fusible stop 23 which is located in the loop 22 and thus allow air to pass directly to the motor 13 and close the damper 7 and shut out any fire or gases from the outside of the building which would otherwise enter the building through the open damper 7 and the wall opening 3.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

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

1. In combination, a unit heater and ventilator having an air inlet opening, a damper therefor, air operated means to close said damper, and means adapted to be destroyed by heat for admitting said air to said air operating means to close the damper.

2. In combination, a unit heater and ventilator having an air inlet opening, a damper therefor, air operated means to close said damper, and means adapted to be destroyed

by heat for admitting said air to said air operating means to close the damper, said means in the air operating means being located outside of the building in which the unit heater and ventilator is open adjacent the air inlet opening therefor.

3. In combination, a unit heater and ventilator having an air inlet opening, a building wall having an air inlet opening therefor, air operating means, a damper for closing said opening operated thereby, means for conveying a portion of said air operating means outside of the building adjacent said air inlet opening, and a heat fusible link in said means.

4. In combination in a unit heater and ventilator, a casing having an air inlet opening adjacent an air inlet opening in a wall, a damper for controlling said openings, air operated means for closing said damper, heat operated means within the room in which said unit is located for controlling the closing of the damper, an air by-pass around said controlling means extending out of the room to a point adjacent said air inlet openings, and heat operated means therein for opening said by-pass to close said damper irrespective of any other means.

5. In combination, a unit heater and ventilator having an air inlet opening, a damper therefor, a wall having an air inlet opening associated therewith, air operated means for closing said damper, a thermostat in the room in which said unit is located for controlling the air operated means, a by-pass in the air operated means around said thermostat extending to a point outside of the building wall adjacent the air inlet opening, and a fusible link in said by-pass adjacent said opening.

6. In combination in a unit heater and ventilator of a casing having an air inlet opening at the bottom, an air exit opening at the top and a re-circulation opening at the top, a damper alternately controlling said bottom openings, link mechanism for operating said damper, yielding means for maintaining said damper in either position, an air motor for operating said link means in one direction, yielding means for operating the link means in the other direction, an air pressure line for operating said motor, a thermostatically-operated valve therein, an air by-pass line around said thermostatic valve, a portion of which extends outside of the building adjacent the air inlet opening and a fusible link in said portion of said by-pass.

In testimony whereof, I affix my signature.

LEWIS D. HARNETT.