W. F. CALDWELL.

DRAFT PREVENTING DEVICE.

APPLICATION FILED SEPT. 30, 1914.

1,173,555.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

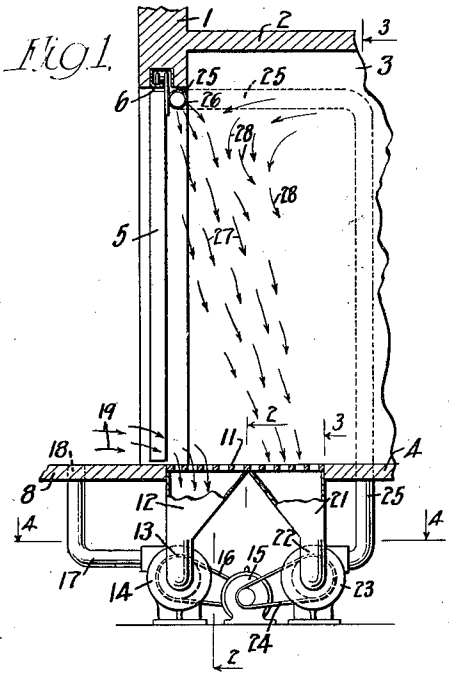


Fig. 2.

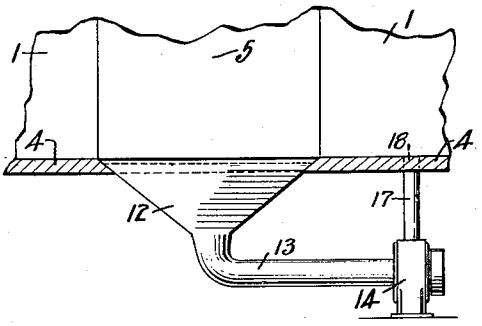


Fig. 4.

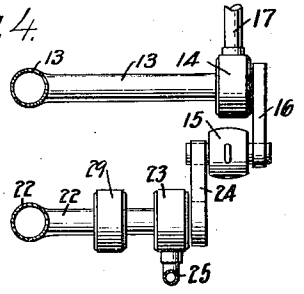
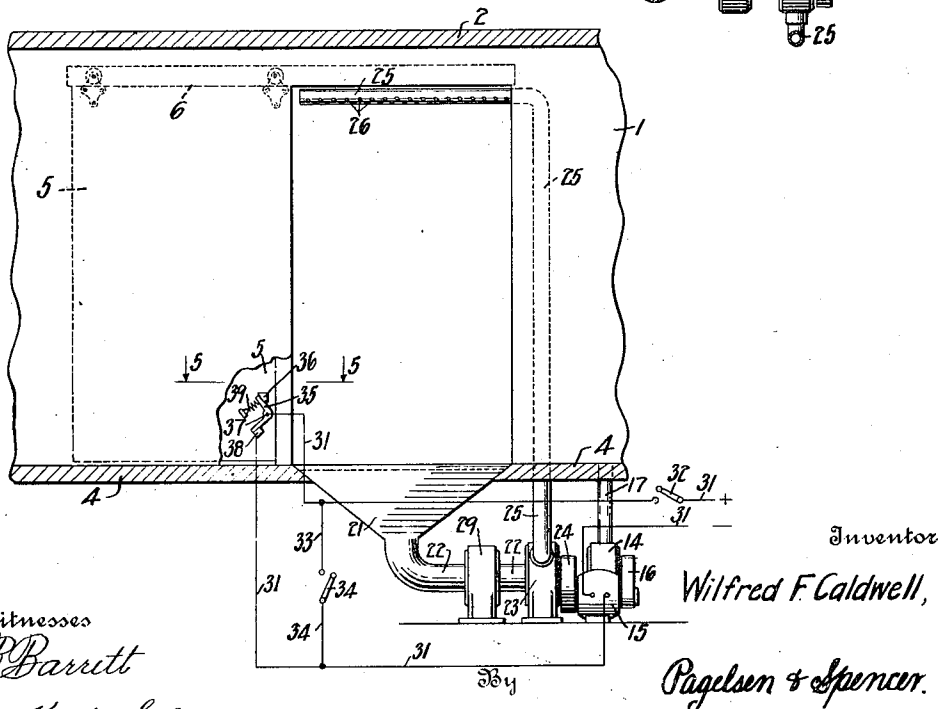


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

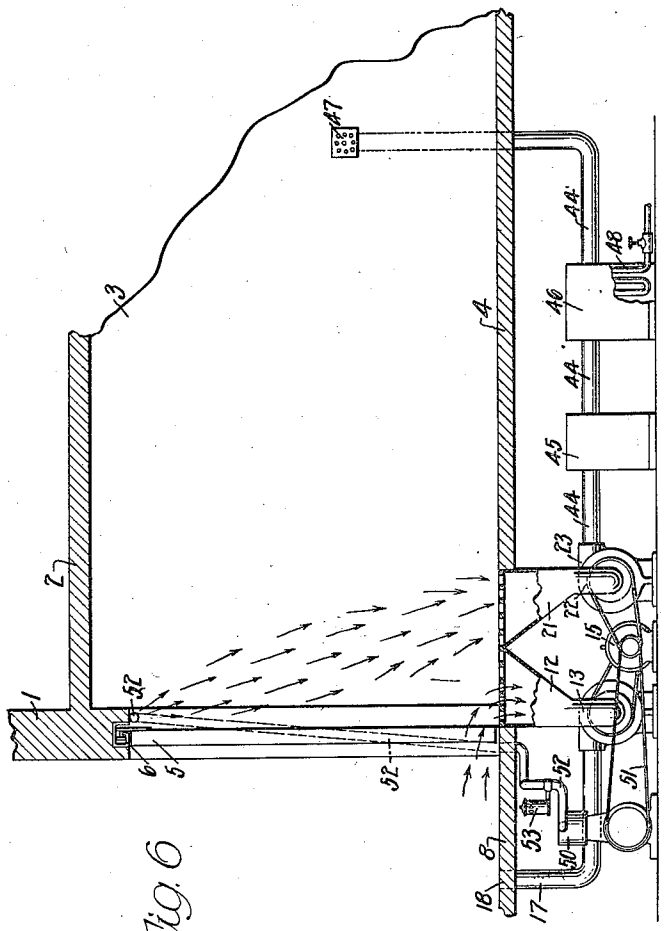


Fig. 6

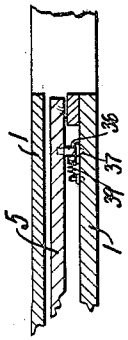


Fig. 5.

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UNITED STATES PATENT OFFICE.

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DRAFT-PREVENTING DEVICE.

1,173,555. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed September 30, 1914. Serial No. 864,219.

To all whom it may concern:

Be it known that I, WILFRED F. CALDWELL, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Draft-Preventing Device, of which the following is a specification.

This invention relates to a draft-preventing device; and some of its objects are to prevent currents of air from entering or leaving a building through an open passageway, whereby dust may be excluded and the temperature of the interior may be maintained substantially constant; to provide means to receive the current of cold air that tends to pass into the building along the floor and discharge it exterior to the building; to provide means for automatically causing the operation of the current-controlling devices when the door is opened; and to provide means whereby a disinfecting medium may be applied to persons or objects entering or leaving the building.

The invention is particularly applicable to stores, warehouses, office buildings and hospitals, but is obviously not limited to such structures.

The invention consists in the details of construction shown, described and particularly pointed out in the claims.

In the drawings, which are diagrammatic in nature, Figure 1 is a fragmentary vertical longitudinal section of a building or passageway equipped with one embodiment of my invention. Fig. 2 is a section on the line 2—2 of Fig. 1, the door being closed. Fig. 3 is a section on the line 3—3 of Fig. 1, showing the door and the circuits for controlling the operation of the motor. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a fragmentary section on the line 5—5 of Fig. 3. Fig. 6 is a longitudinal section showing another embodiment of my invention.

Similar reference characters refer to like parts throughout the several views.

In the embodiment shown in Figs. 1 to 5, inclusive, 1 indicates an outer wall, 2, the ceiling, 3, a side wall or partition, and 4, the floor of a building that may be of any desired construction, access to which is had through an opening that may be closed by a door 5. As shown, this door is slidable laterally upon a track 6 and, when open, is received in a niche in the wall in a well known manner, but it is to be understood that other types of doors may be used. The opening in the wall may be approached over a sidewalk 8. The floor is cut away, preferably at a point just inside of the doorway, to receive a grating 11 of any preferred form, through the outer portion of which air may be drawn into the flaring mouth-piece 12 that merges into the pipe 13 which leads to the suction fan 14, preferably located in the basement of the building. The fan may be driven from the motor 15 by the belt 16 and discharges through the pipe 17, the end of which is located at any desired point 18 exterior to the building. In this manner, the current of cold air that tends to enter the building along the floor, as indicated by the arrows 19, is sucked downwardly and discharged outside of the building without affecting the temperature of the interior. Air from points above the inner portion of the grating is drawn downwardly into the mouth-piece 21 which leads, through the pipe 22, to the suction fan 23 that may be driven from the motor 15 by means of the belt 24 and discharges through the pipe 25. The latter leads to and extends across the upper edge of the doorway, where it is perforated upon its inner lower side, as indicated at 26, to provide passages from which a blast of air is directed downwardly and inwardly toward the inner portion of the grating in substantially the manner shown by the arrows 27. The heated current of air that tends to leave the building through the upper part of the doorway is struck by the downwardly and inwardly directed current from the perforations 26 and deflected in the manner indicated by the arrows 28. It will thus be seen that a substantial barrier is interposed between the air in the building and the air outside, which nevertheless allows free entrance and does not tend to blow off the hats or disarrange the clothing of persons entering.

In some installations I provide an air filter or dust separator 29 in the pipe 22, by means of which dust may be removed from the air blast.

Current for the motor may be received from the wires 31 through the main switch 32 in either of two ways: It may pass through the connecting wire 33 and manu-

ally operated switch 34, or (in case the switch 34 is open) through a switch 35 which is thrown into operative position by being struck by a projection 36 upon the door as the latter approaches its fully open position. As shown, the switch 35 is pivoted to the wall at 37 and is normally held out of engagement with the contact 38 by means of a compression spring 39, the effect of which is overcome by contact of the projection 36 on the door with an arm of the switch. It is obvious, however, that other types of switches may be used.

The embodiment of my invention shown in Fig. 6 differs from that heretofore described in the following respect:—The air from the fan 23 is carried by a pipe 44, preferably through the filter or dust separator 45 and temperature-changing device 46 to a point considerably within the building, where it may be discharged through the register 47. As shown, the temperature-changing device comprises a casing, through which the air from the pipe 44 passes, and pipes 48 whereby either steam or a cooling medium may be supplied. The embodiment shown in Fig. 6 also differs from that previously described in that air for the blast is obtained from a compressor 50 that may be driven from the motor 15 by means of the belt 51. This arrangement allows the use of a pipe 52 of much smaller diameter than the pipe 25. The compressor may also obtain its air from the basement which, particularly in office and store buildings, is ordinarily over heated; a large proportion of this air is later sucked through the fan 23 and discharged through the register 47, whereby economy in the heating of the building is secured.

In hospitals and other buildings in which it is desirable to fumigate persons or objects entering or leaving, the blast pipe may be provided with a device 53 whereby predetermined amounts of a liquid or other fumigant may be discharged into the current of air. While this feature is shown only in Fig. 6, it is clear that a similar device may be used in the embodiment first described.

Many changes may be made in the details of construction without departing from the spirit of my invention. For example, the opening across which the current of air is directed may be that between two adjacent rooms of the same building instead of in the exterior wall as shown; and the term "wall" in the claims is used to designate either an external wall or a partition between adjacent rooms. In certain instances, also, one or both of the suction means may be omitted, in which case the inwardly inclined blast serves to prevent the current of air from leaving the building through the upper portion of the opening in a much more efficient manner than would an outwardly inclined or vertical blast. I do not, therefore, wish to be limited otherwise than as indicated by the subjoined claims.

I claim:—

1. In combination, a building having an opening in one of its walls, means for directing a current of air downwardly across the opening, suction means comprising an intake located near the lower side of the opening for receiving said current of air, and a second suction means also comprising an intake located near the lower side of the opening for intercepting the current of air that tends to pass into the building through the lower portion of the opening, said last mentioned suction means being arranged to discharge the intercepted air exterior to the building.

2. In combination, a building having an opening in one of its walls, means for directing a current of air downwardly across the opening, suction means comprising an intake located near the lower side of the opening for receiving said current of air, said suction means being arranged to discharge the air within the building, and suction means also comprising an intake located near the lower side of the opening for intercepting the current of air that tends to pass into the building through the lower portion of the opening, said last mentioned suction means being arranged to discharge the intercepted air exterior to the building.

3. In combination, a building having an opening in one of its walls, means for directing a current of air from above downwardly across the opening, and suction means comprising an intake located near the lower side of the opening for receiving the current of air, said suction means being arranged to discharge the air in the interior of the building.

4. In combination, a building having an opening in one of its walls, a door normally closing said opening, means for directing a current of air downwardly across the opening, means for supplying air under pressure to the directing means, and means controlled by the door as it approaches the limit of its movement toward open position for throwing the air supplying means into operation.

5. In combination, a building having an opening in one of its walls, a door normally closing said opening, means for directing a current of air downwardly across the opening, motor-operated means for supplying air under pressure to the directing means, and electric circuits, controlled by the door as it approaches the limit of its movement toward open position, for conducting current to the motor of the motor-operated air supplying means.

6. In combination, a building having an opening in one of its walls, means for di-

recting a blast of air from above downwardly and inwardly across said opening, the axis of said blast being arranged in a generally inclined direction, and suction means comprising an intake located inwardly of the opening to receive the blast as it approaches the lower level of the opening.

In testimony whereof I sign this specification in the presence of two subscribing witnesses.

WILFRED F. CALDWELL.

Witnesses:
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HUGO W. KREINBRING.