Aug. 21, 1951 T. HARDING 2,564,971

MEANS FOR REDUCING FIRE DANGER
IN HOTELS AND THE LIKE

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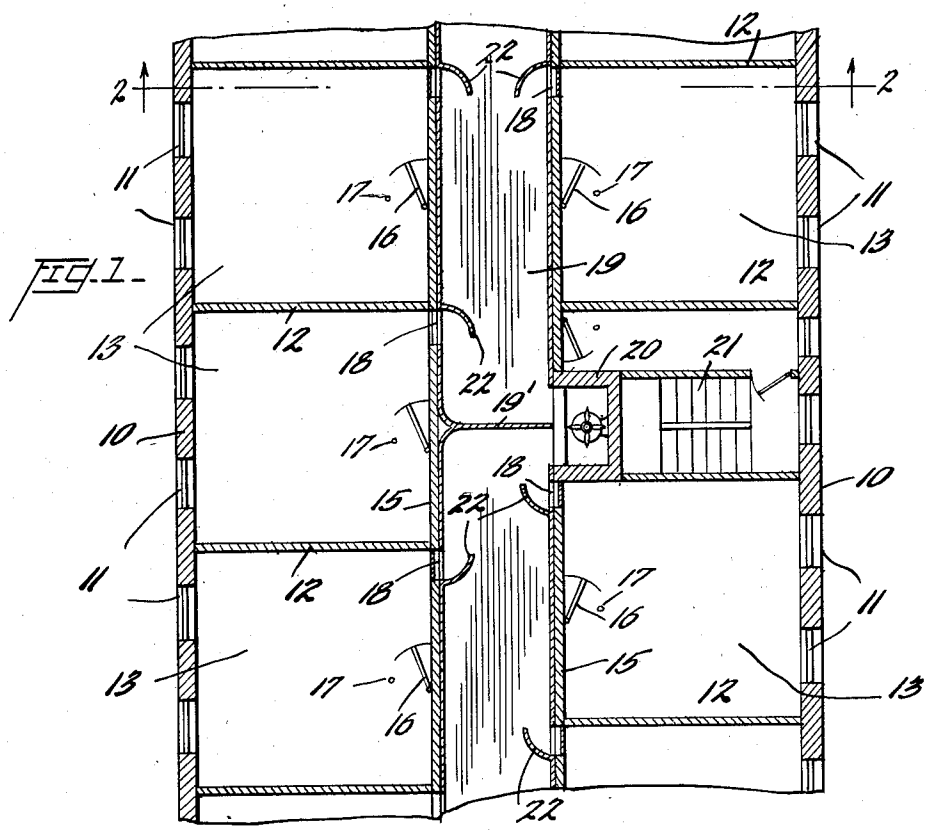


FIG. 1.

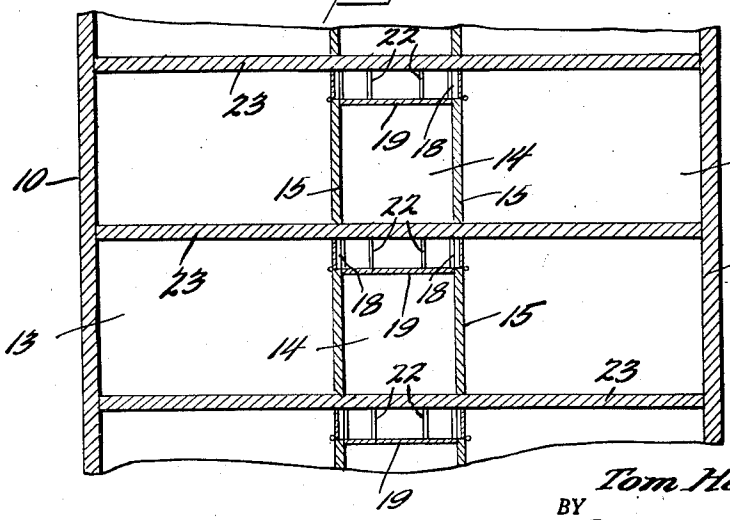


FIG. 2.

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FIG. 3.

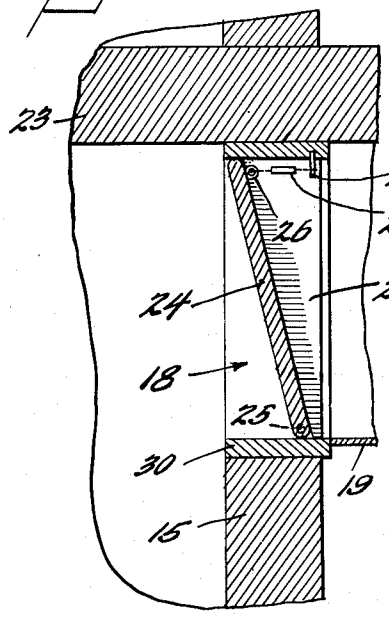


FIG. 4.

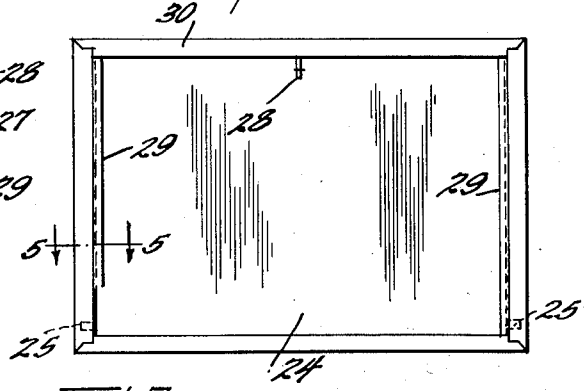


FIG. 5.

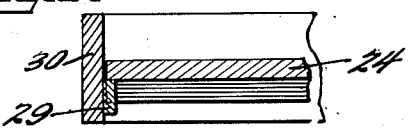


FIG. 6.

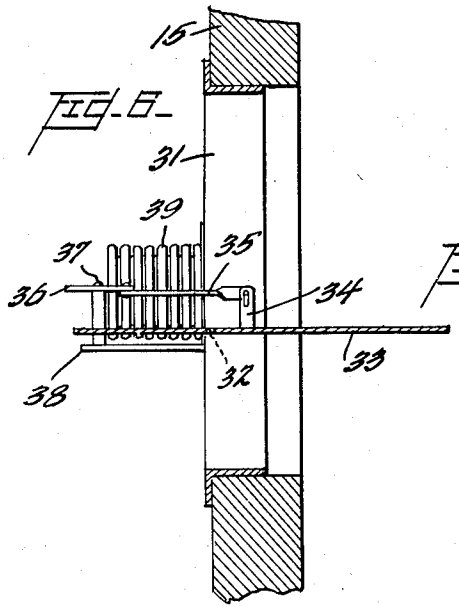
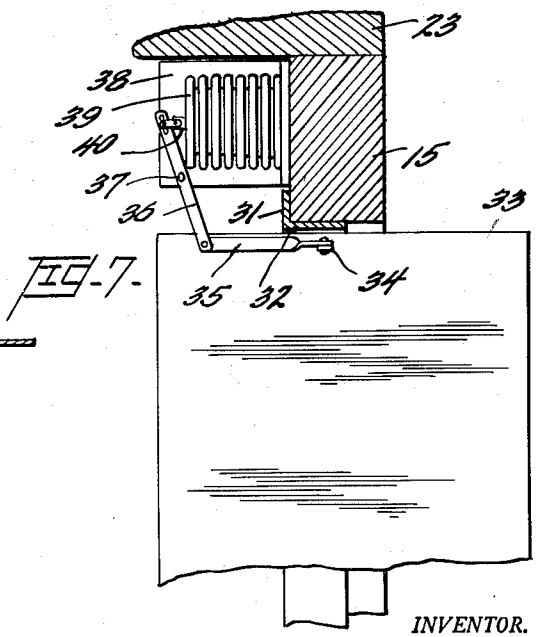


FIG. 7.



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Patented Aug. 21, 1951

2,564,971

UNITED STATES PATENT OFFICE

2,564,971

MEANS FOR REDUCING FIRE DANGER IN HOTELS AND THE LIKE

Tom Harding, Little Rock, Ark.

Application July 21, 1947, Serial No. 762,315

4 Claims. (Cl. 98—43)

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My invention relates to means for reducing fire danger in fireproof hotels and analogous places, and it is an object of the same to insure safety of life to a much greater extent than is now usually the case, as well as to reduce property damage in case of fire.

(1) A more specific object of the invention is to provide means for carrying off flames, hot gases and smoke from a room where a fire has started, and thus to limit the fire and the damage done, to a single room or suite of rooms.

(2) Another object of the invention is to provide effective means for limiting fire damage, without causing undue loss of heat as supplied by any conventional or desirable room heating means.

(3) To provide summer ventilation and cooling by means of fan or fans in stack and elimination of the fire hazard caused by pulling air through halls or corridors.

Referring to the accompanying drawings, which are made a part of this application and in which similar reference characters indicate similar parts:

Fig. 1 is a horizontal section of a portion of a building, taken a little below the level of the ceiling;

Fig. 2 a vertical section on line 2—2 of Fig. 1;

Fig. 3 a detail of draft controlling means, as shown in Figs. 1 and 2;

Fig. 4 an elevation at right-angle to Fig. 3;

Fig. 5 a section on line 5—5 of Fig. 4;

Fig. 6 a vertical section of another type of draft controlling means; and

Fig. 7 a horizontal section, showing on plan the controlling means of Fig. 6.

In the drawings, reference characters 10, 10, indicate a pair of boundary walls, as the outer walls of a building or other generally parallel walls, said walls being provided with windows 11, 11, of any preferred type. Transverse walls 12 divide the building into suitable rooms 13, there being a center hall indicated at 14 and said hall having walls 15, 15 at opposite sides thereof.

The walls at opposite sides of the hall are provided with room doors 16 of any suitable type, but so arranged as not to be capable of opening more than 88°, for which stops may be provided at 17, it being intended that the doors shall be made of metal or of wood and shall be of the self-closing type so that the stops will prevent the doors from being opened flat against the wall, whereby automatic closing of the door would be or might be prevented.

At some suitable place, and preferably just

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below the ceiling level at points remote from the room doors of individual rooms I provide one or more apertures 18 in each of which there is located a valve or closure or door hereinafter described. These apertures 18 form ports leading from a room to a duct formed by a false ceiling 19 near the top of each hallway 14, portions of two ducts being shown in Fig. 1, and each duct opens into a stack such as indicated at 20. A transverse partition 19' is shown adjacent to said stack, this partition separting ducts leading from opposite ends of the building to the stack, and one or more power-driven fans 20' are located in the stack at the junction of the stack with one or more of the ducts, for summer cooling and ventilating. In Fig. 1, conventional stairs are shown at 21 just back of the stack, these stairs being of conventional character and for ordinary purposes.

For the purpose of insuring privacy particularly where two alined ports occur in opposed wall partitions, as at the top of Fig. 1, as well as to guide the draft from a room into the duct when the adjacent valve is open, I provide at each of the apertures mentioned as opening into the ducts above the halls, a curved baffle 22, which, of course, also directs the flame from a room into the duct and toward the stack in case of fire.

It will be noted in Fig. 2 that there is shown a plurality of floors 23, for each of which there is a hall 14 and a duct divided therefrom by a horizontal partition 19.

A specific type of closure for a port 18 is shown in Figs. 3 and 4 as consisting of a panel 24 pivoted at its lower end at 25 at the lower side of an aperture in a wall 15 and held in position to close the aperture by means of a hook 26 pivotally connected to the panel and having a fusible link 27 attached at one end to the hook and at the other end to a suitable abutment 28 on the surrounding frame or other fixed part of the building. At opposite sides of the wall aperture 18 there are provided stops 29 preferably extending from top to bottom of the opening, in an inclined position to match that of panel 24 in Fig. 3, to arrest the panel at a desired inclined position. The panels 24 may be supported in any suitable manner, but I have here shown encircling frames 30 of suitable shape for the panels to fit therein, which frames are here indicated as consisting of upper, lower and side members of protected lumber or other material, said members being connected at their corners, but which may be of any preferred or desirable construction.

It will be understood that in case of fire in a room, the panel 24 will remain in place until the temperature rises sufficiently to fuse the link 27, whereupon the panel can fall into an open position, it being biased toward a horizontal plane, leaving the port in the upper part of the wall open to the duct that leads to the stack. The entire contents of the room may then be consumed by the fire without any necessary escape of flame or smoke or hot gases from that room except by way of the duct at the upper part of the hallway. This is, of course, facilitated by the fact that the room doors cannot be left open or so far open as to interfere with their automatic closing, except, of course, that some special door-stop may be used or furniture may be placed so as to hold the doors open. If preferred, the closure may be placed only at or adjacent to the junction of a duct with the stack, but ordinarily it is preferred to provide them at each room as being more certain to act when needed and as conserving room temperatures. Obviously, also, the panels may stand upright, etc., and springs or weights may be used to bias them toward open position.

It will be understood that the fusible links may be disconnected in summer so as to leave the ports wide open and so as to permit free circulation of air through the rooms to the stack; and, of course, they may also be disconnected for special or emergency reasons.

In Figs. 6 and 7, there is shown another form of automatic control for wall openings, well adapted for use to prevent the spread of fires, and it will be understood that I do not limit myself to any particular type of control since still other automatic controls may be found useful.

In the form shown in Figs. 6 and 7, there is a frame 31 about the opening, said frame being here shown as made in one piece, cast or stamped or otherwise formed of metal or plastic material shaped so as to fit in the wall aperture. Pivoted on the frame 31 as at 32 there is a shutter 33 having an arm 34 spaced from the pivot of the shutter and rigidly fixed to the shutter. A link 35 is pivoted to the arm 34 and also to one end of a lever 36, said lever being pivoted at 37 on any fixed portion of the building, such as the support 38 for the automatic controlling means, which has a thermostatically expansible bellows 39 of thin copper filled with gas adapted to be expanded upon heating. The bellows has a plunger 40 protruding therefrom into engagement with the adjacent end of lever 36. Obviously the plunger may be connected to lever 36 by a link or in any other suitable manner. Here again it will be seen that upon undue heating of a room, the bellows will be expanded and will open the shutter by means of the linkage shown, so that smoke and flames can escape through the wall aperture into a suitable duct leading to a stack or the like without damaging other parts of the building or the contents thereof.

It will be obvious to those skilled in the art that many changes may be made in the device herein disclosed, all without departing from the spirit of the invention, and, therefore, I do not limit myself to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

Having thus fully described my said invention, what I claim is:

1. The combination of a building having a corridor with rooms spaced along the same, a stack, ports each extending through the wall of a room into said corridor, a false ceiling forming a conduit along the upper part of the corridor to connect the ports to the stack, doors normally closing the ports, heat-responsive means serving to open the ports upon excessive heat in the corresponding rooms, and baffles each extending from the wall at one side of a port across the port so as to insure privacy for the inmates of the room while serving to direct flames and smoke from the room toward the stack.

2. The combination of a building having a corridor, rooms spaced along opposite sides of the corridor, ports extending through the walls of the rooms near the ceiling, a stack, a conduit extending along the upper part of the corridor and leading to the stack, said ports opening into said conduit, doors normally closing said ports, heat responsive means serving to open the doors upon excessive heat in the respective rooms, and baffles extending from the wall at one side of a port crosswise of the port and toward the outlet end of the conduit so as to direct flame and smoke from the corresponding room toward said outlet end of the conduit while also insuring privacy to the inmates of the room.

3. The combination of a building having a corridor with rooms spaced along the same, a port adjacent the ceiling of each room, a stack, a horizontal partition located adjacent the ceiling of the corridor and forming a conduit connecting the ports to the stack, curved baffles in the conduit adjacent each port located to direct the air current from the port toward the stack, closures for the ports, means for holding the closures in closed position, and means acting to open them upon occurrence of excessive heat, as in the case of fire.

4. A device as in claim 1, wherein the rooms are provided with doors, and a stop for each door to limit its opening movement to 80° or less.

TOM HARDING.

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