Jan. 10, 1933. O. B. McCLINTOCK 1,893,900

TEMPORARY CUT-OUT SWITCH FOR VAULT VENTILATORS

Filed Oct. 4, 1930 2 Sheets-Sheet 1

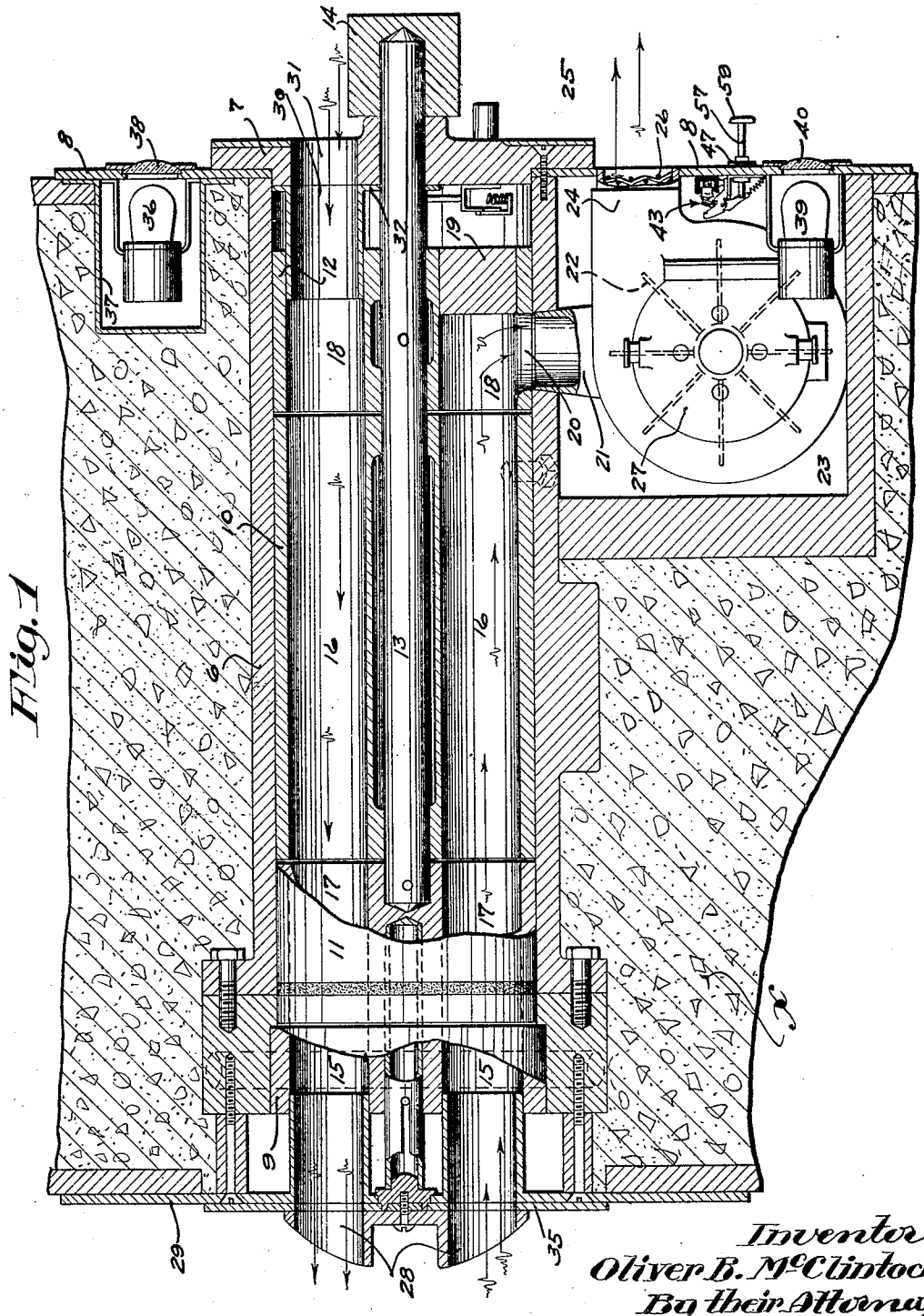


Fig. 1

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Fig. 5

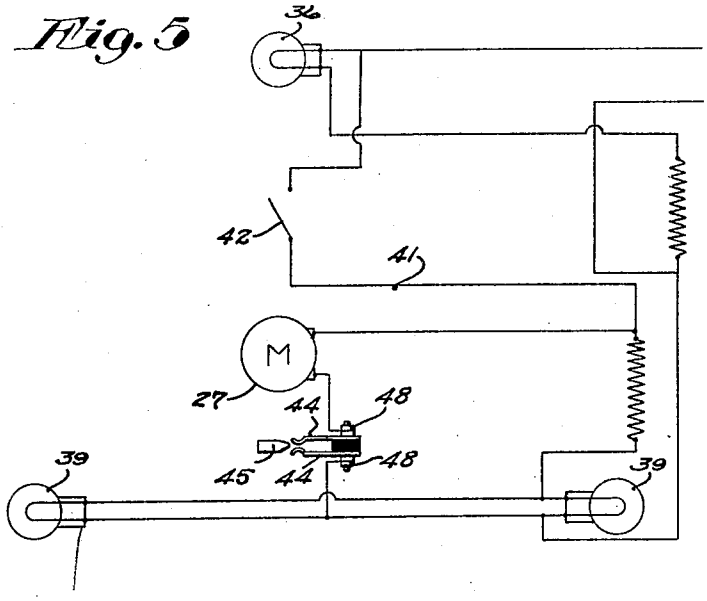


Fig. 2

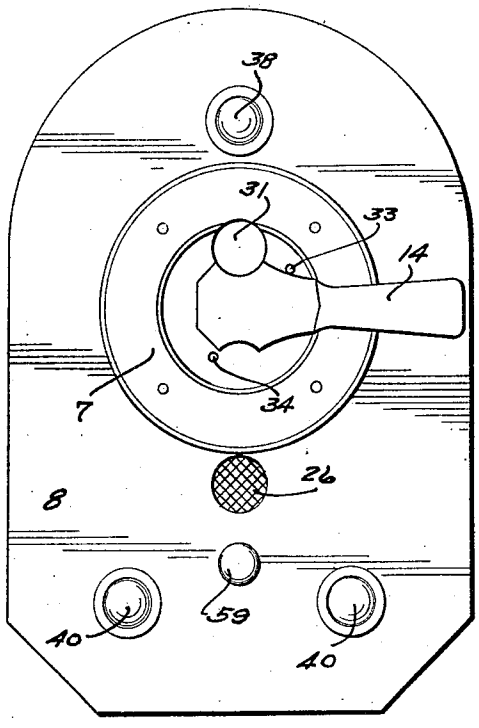


Fig. 3

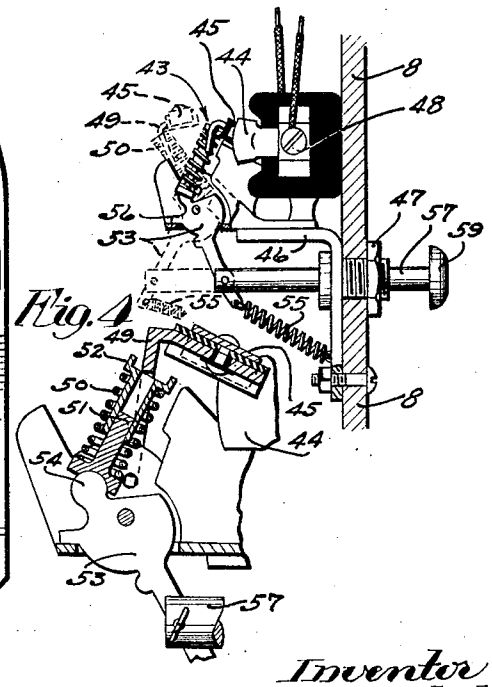


Fig. 4

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Patented Jan. 10, 1933 1,893,900

UNITED STATES PATENT OFFICE

OLIVER B. McCLINTOCK, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO O. B. McCLINTOCK COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA

TEMPORARY CUT-OUT SWITCH FOR VAULT VENTILATORS

Application filed October 4, 1930. Serial No. 486,395.

My present invention relates to vault ventilators such as used in connection with bank vaults and the like and for the well-known purpose of supplying fresh air to a person or persons in the vault and of the type using a blower for producing a forced circulation of air in the vault.

It has been found that when the blower is in operation it is difficult for persons working in the vault to converse due to the noise produced by the motor, blower and the rush of air through the ventilator.

The object of this invention is to interpose in the circuit of the motor for the blower a temporary cut-out switch that is normally and automatically closed to complete said circuit. This switch is provided with means by which it may be manually held open to break the motor circuit and cause the motor and blower to stop and, when released, will automatically close and again complete the motor circuit. The temporary cut-out switch is encased or otherwise made inaccessible so that it can not be tampered with for the purpose of causing the motor to stop and cut out the fresh air supply to the vault.

To the above end, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claim.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view principally in section showing a bank vault ventilator mounted in the wall of a vault and having the invention embodied in the circuit for the motor;

Fig. 2 is a front elevation of the ventilator head;

Figs. 3 and 4 are detail views of the switch, on an enlarged scale; and

Fig. 5 is a wiring diagram.

For the purpose of this case it will be only necessary to designate the monolithic concrete wall of the vault illustrated as an entirety by the letter X.

The bank vault illustrated, for the purpose of showing the invention in working position, is disclosed and broadly claimed in the pending application of Oliver B. McClintock, Silvan R. Popp and Edward C. Hanson, Serial Number 413,824 filed December 13, 1929, Patent Number 1,810,184, June 16, 1931.

Briefly described, the vault ventilator includes a casing 6 firmly anchored in the wall X and having a cylindrical interior. At the inner end of the casing 6 is a head 7 having an inside finishing plate 8. Within the casing 6 are non-rotary axially spaced inner and intermediate cylindrical core sections 9 and 10, respectively. A rotary cylindrical core section 11 is mounted to rotate in the space between the adjacent ends of the core sections 9 and 10 and held thereby against axial movement and a similar core section 12 is mounted to rotate at the inner end of the core section 10. The two rotary core sections 11 and 12 are pinned or otherwise rigidly secured to an axial operating shaft 13 that extends inwardly through the head 7 and is provided with an operating handle 14. The non-rotary core sections 9 and 10 are provided with diametrically spaced air conduits 15 and 16, respectively, and the rotary core sections 11 and 12 are provided with diametrically spaced air conduits 17 and 18, respectively.

The above noted air conduits of the rotary and non-rotary core sections are adapted for registration when, and only when the rotary core sections 11 and 12 are turned into one certain position, as will hereinafter appear. One of the air conduits 18 at its inner end is closed by a plug 19 and is provided with a port 20 which, when the air conduit of the rotary and non-rotary core sections are in registration, registers with an air intake spout 21 of a blower 22. This blower 22 is mounted in a chamber 23 with its discharge spout 24 opening into the vault 25 through a screen cover opening 26 formed in the finishing plate 8.

A small electric motor 27 within the chamber 23 is provided for driving the blower 22 and its rotor is, as shown, connected directly to the rotor of said blower. Tubes 28 forming extensions of the air conduit 15 are a part of a finishing plate 29 on the outer face of the wall X.

A conduit-extension tube 30 is secured in the inner end of the axially open air conduit 18. This tube 30 will register with the port 31 in the head 7 when the port 20 is in registration with the spout 21 of the blower 22. On the inner end of the conduit-extension 30 is a segmental joint plate 32 which works in close contact with the inner surface of the head 7. The operating lever 14 is against an upper stop pin 33 when the ports 20 and 31 are open and the air conduits 17 and 18 are in registration with the air conduits 15 and 16. The extreme movement of the lever 14 away from the pin 33 is limited by a second pin 34 and which pin, together with the pin 33, are on the head 7. When the lever 14 is in engagement with the pin 34 the core sections 11 and 12 are in positions in which the air conduits 17 and 18 are out of registration with the air conduits 15 and 16 and said conduits 15 and 16 closed. At this same time the spout 21 is closed by the core section 12 and the port 31 closed by the joint plate 32.

The air conduits through the ventilating device are further closed when the lever 14 is against the pin 34 by a valve-acting joint plate 35 carried by the core section 11 for common turning movement therewith and arranged to work over the outer face of the finishing plate 29.

For the purpose of locating the ventilator and directing the attention of a person, that may be locked in the vault 25, to the operating lever 14, a constantly lit pilot light is provided and includes an electric light bulb 36 in a circuit, as will hereinafter appear. This bulb 36, as shown, is located in a casing 37 set in the wall X back of the finishing plate 8 and a lens 38 is mounted in said plate directly in front of the bulb 36.

To afford better light in the vault 25 while the ventilator is in operation, there is provided two electric light bulbs 39 mounted in the chamber 23 in a circuit, as will presently appear. A lens 40 is mounted in the finishing plate 8 in front of each bulb 39.

A wiring diagram for the motor 27 and bulbs 36 and 39 is shown in Fig. 5, and indicated as an entirety by the numeral 41 except a manually-controlled switch 42. It will be noted that the circuit for the pilot light bulb 36 is always complete and that the circuit for the motor 27 and bulbs 39 may be opened and closed, at will, by the switch 42 without affecting the circuit for the bulb 36. The switch 42 may be located in any convenient place and, preferably, where it is not easily accessible to persons working in the vault 25.

Referring now in detail to the temporary cut-out switch 43 which is interposed in the circuit for the motor 27 and, as shown, is mounted in the chamber 23, includes a pair of relatively fixed spring contact members 44 and a cooperating movable contact member 45. The contact members 44 are laterally spaced from each other and mounted on a bracket 46 secured by a tubular nut-equipped bolt 47 to the finishing plate 8. These contact members 44 are insulated from each other and the bracket 46 and have terminals 48 to which the wires of the motor circuit 41 are attached. The movable contact member 45 is in the form of a yoke-like plate secured to and insulated from the free end of an angle arm 49. This arm 49 is pivoted to the bracket 46 for swinging movement to and from a position in which the contact member 45 extends between the contact members 44 and engages the same with a wiping engagement that holds said contact members spread under tension.

The movable contact member 45 is yieldingly held in engagement with the contact members 44 by a coiled spring 50 encircling a longitudinally extensible and contractable spring carrier 51 comprising telescopically connected members. This spring 50 is compressed between a spring cap, on one of the members of the carrier 51, and a spring base on the other member of said carrier. The spring carrier 51 extends between the prongs of the bifurcated pivoted member of the arm 49 and its upper end engages the transverse portion thereof and is held against lateral separation therefrom by a pair of lugs 52 located, one on each side of said carrier. The lower member of the spring carrier 51 is mounted on and carried by the short arm of a lever 53 pivoted to the bracket 46, intermediate of its ends, and connected thereto by a ball and socket joint 54.

A coiled spring 55 attached to the long arm of the lever 53 and anchored to the bracket 46 yieldingly holds the lever 53 with the contact member 45 in engagement with the contact members 44. A lug 56 on the levers 53 normally engages the bracket 46 as a stop and limits the movements of the lever 53 under the action of the spring 55. Obviously, as the switch 43 is mounted in the chamber 23 the same can not be tampered with.

To temporarily open the switch 43, so as to break the motor circuit 41 and cause the motor 27 and the blower 22 to stop, there is provided a plunger 57 mounted for endwise sliding movement in the tubular bolt 47, pivoted at its inner end to the long arm of the lever 53 and having on its outer end a push button 59. By pressing inward on the push button 59 the lever 53 is operated against the tension of the spring 55 to swing the movable contact 45 out of engagement with the contacts 44. As soon as the push button 58 is released the spring 55 will again close the switch 43 and project the plunger 57. It will thus be seen that by simply pressing on the push button 58 the motor 27 may be stopped while persons in the vault

are conversing and then released to again cause the motor to start and operate the blower 22. By thus controlling the switch 43 the supply of fresh air to the vault 25 can not be interrupted for any length of time and there is no danger of a person opening the motor circuit and then forgetting to again close the same.

What I claim is:

A vault ventilator comprising a member adapted to extend through a vault wall and having an air conduit therethrough, manually operable valve means carried by said member for opening and closing said conduit, means cooperating with said valve means and conduit for normally maintainng forced circulation of air through said conduit when said valve means is moved to open position, and means independent of said valve means carried by said member and manually operable in one direction to interrupt circulation of air through said conduit when said valve means is open, whereby to permit conversation in either direction through said conduit, said independent means being automatically operable to return to normal position upon manual release to restore circulation of air through said conduit.

In testimony whereof I affix my signature.

OLIVER B. McCLINTOCK.