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R. R. WEST

VAULT VENTILATOR

Filed Nov. 2, 1925

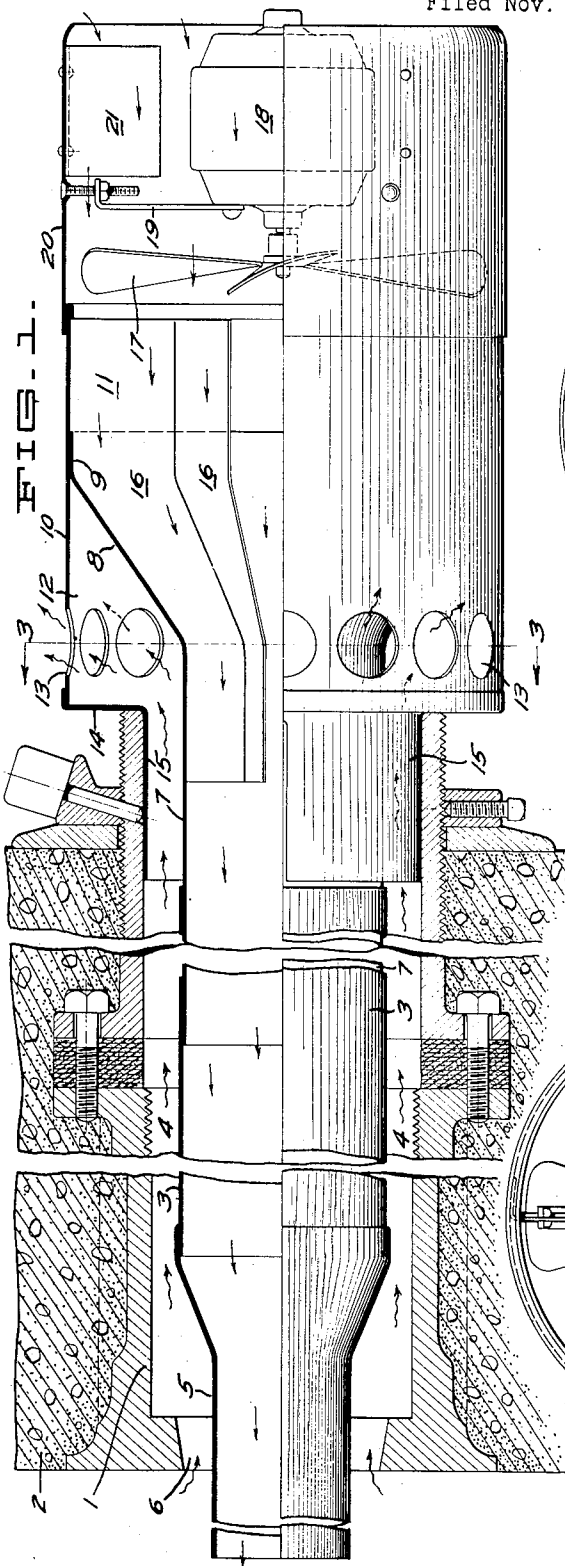


FIG. 1-

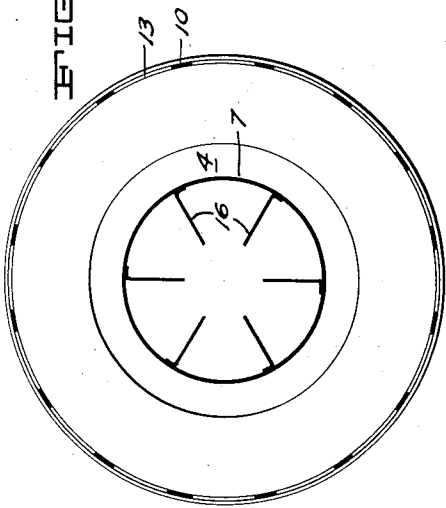
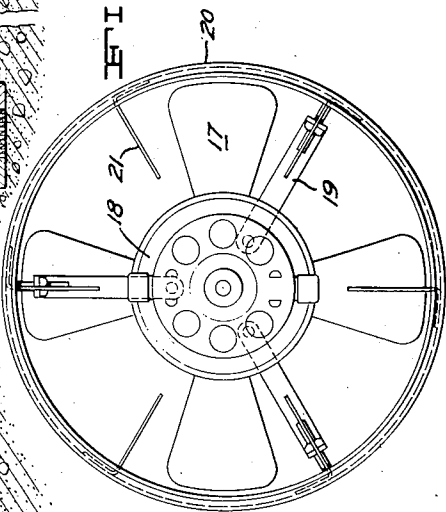


FIG. 2-



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VAULT VENTILATOR.

Application filed November 2, 1925. Serial No. 66,296.

This invention relates generally to a device intended to be used in ventilating the interior of a bank vault.

Bank vaults are commonly constructed substantially air-tight in order to preclude the possibility of burglary. In case the doors are accidentally locked against a person within the vault, suffocation will result in a few hours. To preclude this possibility it has previously been proposed to incorporate a closure or plug in one wall of the vault which a person could remove from the interior in order to provide an opening for fresh air. Such an arrangement has been shown in my Patent No. 1,549,240, issued Aug. 11, 1925. The difficulty with such an arrangement has been that because the plugs must be made fairly small in diameter, the opening provided would not permit a circulation of external air through the vault.

It is an object of this invention to obviate the above difficulties by providing a ventilating device which a person within the vault may insert within the opening upon removal of the closure or plug.

The invention possesses other advantageous features, some of which with the foregoing, will be set forth at length in the following description, where I shall outline in full that form of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification. In said drawings I have shown one form of device embodying my invention, but it is to be understood that I do not limit myself to such form, since the invention, as set forth in the claims, may be embodied in a plurality of forms.

Referring to said drawings:

Figure 1 is a side view of a ventilator embodying my invention, with parts in section, shown in operative position in a ventilating sleeve in the wall, the same being broken in parts for the purpose of reducing the size of the drawing.

Figure 2 is a right end view of Fig. 1 and Figure 3 is a section taken on the line 3—3 of Fig. 1.

In Figure 1, I have shown a ventilating sleeve 1 embedded in a vault wall 2 of the character described in my Letters Patent above referred to although my invention is not limited to use with the particular type of sleeve therein shown. The present invention comprises a ventilator adapted to be inserted into the sleeve 1 from within the vault

and projecting through the outer end of the same. Said ventilator is formed with a tube 3 of smaller diameter than the sleeve 1 so as to leave a passage 4 between its exterior surface and the interior surface of the sleeve. The front end of the tube 3 is provided with a reduced tube 5 adapted to extend through the opening 6 at the outer end of the sleeve and project therefrom. This end is reduced to provide a space between it and the surrounding sleeve 1, since said opening 6 is of smaller diameter than the interior proper of said sleeve. The tube 3 is preferably fitted telescopically on an extension tube 7 at its inner end so that the length of the unit formed by tubes 3, 5 and 7 may be adjusted to fit the length of the sleeve 1 and project therefrom. At its inner end, the tube 7 is flared outwardly or funnel-shaped as indicated at 8, and at its edge is formed with a flat peripheral portion 9. A sleeve 10 surrounds the portion 9 and extends on both sides of the same, so as to form at its inner end an enlarged chamber 11 adjacent the enlarged portion 8 of the tube 7. The outer or forward end of the sleeve 10 forms a chamber 12 around the exterior of the enlarged portion 8 of tube 7 and is provided with a series of apertures 13. This end of sleeve 10 is closed by a flange 14 on a tube 15 which is adapted closely to fit into the inner end of the ventilating sleeve 1.

From the above it will be seen that two passages in communication with the interior of the vault are provided, one being provided through the tubes 5, 3 and 7 and chamber 11, and the other between the interior of sleeve 1 and the exterior of tubes 5 and 3, through tube 15, chamber 12 and apertures 13. It will be observed that the flange 14 on tube 15 forms a shoulder which limits the movement of the unit described into the sleeve 1. Preferably, the interior of the chamber 11 and a portion of tube 7, including its funnel portion 8, are provided with a series of radially positioned vanes 16 thus forming a series of air channels. Adjacent the inner end of the sleeve 10 and said air channels, I have provided a fan 17 driven by a reversible motor 18, which may be of any suitable type. The motor is supported by a series of radial arms 19 within a cylinder 20 which is adapted to fit over the inner end of sleeve 10. Preferably the fan is positioned adjacent the chamber 11, so that the cylinder 20 forms a chamber in the

rear of the fan. The cylinder 20 is also provided with a series of radial vanes 21 positioned to correspond with the vanes 16. If the fan is rotating to draw air into the vault, this chamber serves to direct the air into the vault in a more or less solid stream, thereby creating an efficient circulation. Regardless of the direction of rotation of the fan, this arrangement permits the fan to operate more efficiently, since if the fan were not so inclosed, there would be a tendency for it merely to create a turbulent condition of the air within the vault rather than to create a circulation between the interior and exterior of the same.

Having described the structural details of a ventilator embodying my invention, its operation will readily be understood from a brief description thereof.

The plug having been removed from the sleeve 1, the unit is inserted in the sleeve until the flange 14 abuts against the inner end thereof, the tube 3 having been adjusted on the tube 7 to the proper length so that the tube 5 projects through the opening 6. The motor 18 is then started. Suitable electric connections, not shown in the drawings, are provided, which include a flexible cord and plug for a socket provided within the vault for this purpose. When the fan is driven in one direction, air is drawn into the vault through the opening 6, passage 4, tube 15, chamber 12 and apertures 13, and is exhausted from the vault through sleeve 20, chamber 11 and tubes 7, 3 and 5 in a manner readily understood. When the fan rotates in the opposite direction, the direction of the air through the two passageways described is reversed. By intermittently reversing the direction of the fan, a better air circulation within the vault may be obtained.

I claim:

1. In combination with a bank vault having a comparatively small opening in one wall thereof, a ventilating device adapted to be quickly and removably mounted in the opening in said wall and constructed to cause simultaneous circulation of air there-through into the vault and out thru said opening.

2. In combination with a bank vault having a comparatively small sleeve in one wall thereof, said sleeve having a closure removable only from the interior of the vault, of a ventilating device adapted to be quickly, readily and removably positioned in operative position with said sleeve upon removal of said closure, said ventilator being constructed to cause simultaneous circulation of air through said sleeve into the vault and out through said sleeve.

3. In combination with a bank vault having a comparatively small sleeve in one wall thereof, said sleeve having a closure removable only from the interior of the vault, of

a ventilating device adapted to be quickly, readily and removably mounted on said sleeve from the interior of the vault, said device being constructed to cause simultaneous circulation of air thru said sleeve into the vault and out thru said sleeve from the interior of the vault.

4. In combination with a bank vault having an opening of comparatively small diameter in one of its walls, a ventilating device adapted to be quickly and removably inserted in said opening from the interior of the bank vault, said device comprising means extending from the interior of the vault thru said opening forming an air passageway, means providing a second air passageway thru said opening to the interior of the vault, and means for causing air to circulate thru one of said passageways into the interior of the vault and thru the other of said passageways from the interior of the vault.

5. In combination with a bank vault having an opening of comparatively small diameter in one of its walls, a portable ventilating device adapted to be quickly and removably inserted in said opening from the interior of the vault, said device comprising means for supporting the same in and for limiting movement of the same thru said opening, means forming a plurality of passageways extending from the interior of the vault to the exterior of the same, and means for causing air to circulate thru one of said passageways into the interior of the bank vault and thru the other of said passageways from the interior of the bank vault.

6. In combination with a bank vault having a comparatively thick wall thru which extends an opening of comparatively small diameter, said opening being normally closed by a removable plug, of a ventilating device adapted to be removably inserted in said opening to take the place of said plug, said device providing separate passages thru said opening for incoming and outgoing currents of air, and means for causing a current of air thru one of said passages whereby an oppositely moving current of air is caused thru the other passage, said current of air serving to ventilate the bank vault thru said opening.

7. A ventilating device for a vault having an opening in one of its walls, comprising a tube adapted to be fitted in said opening from within the vault, means limiting the inward movement of said tube, a hollow member supported on said tube positioned within the vault when the device is inserted in said opening, means dividing said member into two chambers, one of said chambers being in communication with said tube and having apertures placing the same in communication with the interior of the vault, and means forming a passage in communication with the other of said chambers

extending through said opening and spaced from the walls thereof, and means for causing air to flow in opposite directions thru said passages.

- 5 8. A ventilating device for a vault having a comparatively small opening in one of its walls comprising a longitudinally adjustable tubular member of smaller diameter than said opening and positioned within
10 said opening and projecting through the same, means for supporting said tube in spaced relation with respect to the wall of said opening so as to form a passageway around the same, means placing said pas-
15 sageway in communication with the interior of said vault and an electric fan for causing air to flow thru said tubular member, whereby an opposite moving current is caused through said passageway, said device
20 being quickly and removably mounted in operative position.

9. A ventilating device for a vault having an opening in one of its walls comprising a tubular member of smaller diameter than
25 said opening and positioned within said opening and projecting through the same,

means for supporting said tube in spaced relation with respect to the wall of said opening so as to form a passageway around the tube, said passageway being in communication with the interior of said vault, radial
30 vanes within the tubular member adjacent its inner end, and an electric fan adjacent the ends of said vanes.

10. A ventilating device for a vault having an opening in one of its walls comprising a tubular member having portions of smaller diameter than said opening and positioned within said opening and projecting
35 through the same, means for supporting said tube in spaced relation with respect to the inner wall of said opening so as to form a passageway around the same, said passageway being in communication with the interior of said vault, radial vanes within the
40 tubular member adjacent its inner end, an electric fan adjacent the inner end of said tubular member and a cylindrical member surrounding said fan.

In testimony whereof, I have hereunto
45 set my hand.

ROSS R. WEST.