

July 3, 1945.

B. D. HUGHES ET AL

2,379,638

EXTRACTOR VENTILATOR

Filed Jan. 12, 1943

2 Sheets-Sheet 1

FIG. 1.

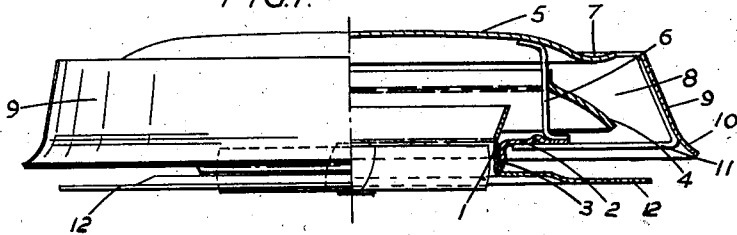


FIG. 2.

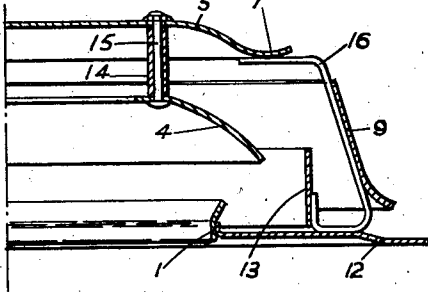


FIG. 3.

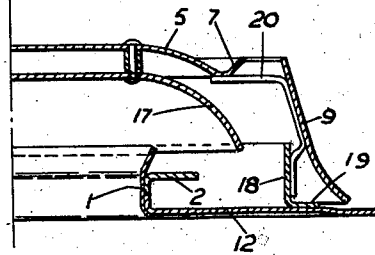


FIG. 4.

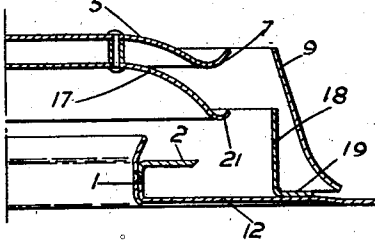


FIG. 5.

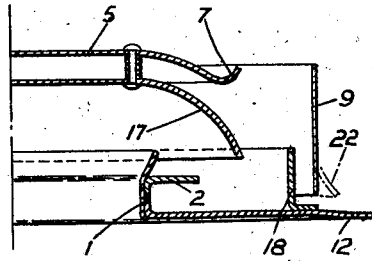
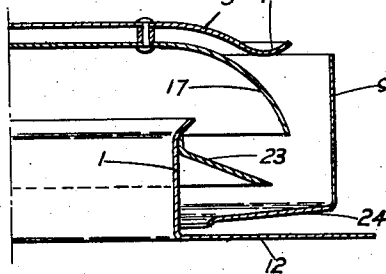


FIG. 6.



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2 Sheets-Sheet 2

FIG. 7.

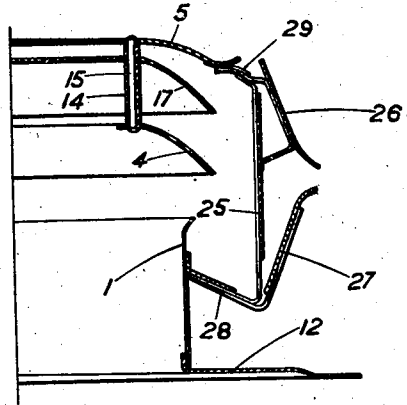


FIG. 8.

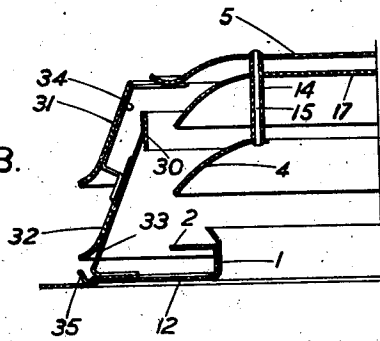


FIG. 9.

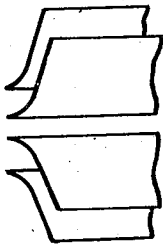
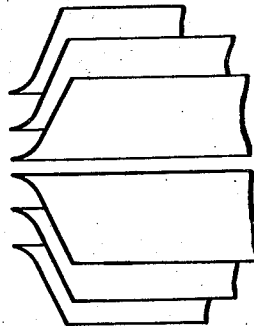


FIG. 10.



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# UNITED STATES PATENT OFFICE

2,379,638

## EXTRACTOR VENTILATOR

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Application January 12, 1943, Serial No. 472,116  
In Great Britain January 22, 1942

8 Claims. (Cl. 98—84)

This invention relates to extractor ventilators and it has for its object the provision of a ventilator designed more particularly for use on the side walls of buildings, cabins or vehicles though it is equally applicable for use as a roof extractor, an essential feature of said ventilator being that it effectively prevents the entry of water and the exit of light from within.

In the accompanying drawings which illustrate this invention—

Figure 1 is a side elevation partly in section of one embodiment of the invention.

Figure 2 is a sectional side elevation of a further embodiment.

Figures 3, 4, 5, 6, 7 and 8 are similar views of further embodiments, and

Figures 9 and 10 are diagrammatic views illustrating two further embodiments.

In the embodiment of the invention illustrated in Figure 1, the ventilator comprises a short length of tube 1 constituting the stack pipe, the inner end of which is outwardly flared or of conical form. A horizontally disposed annular plate or ring 2 which constitutes a surge plate is furnished on its inner periphery with a flange 3 by means of which said surge plate is secured to the central tube or stack pipe 1. A centrally apertured dome shaped element 4 and a shallow unapertured dish shaped element or cover member 5 are supported above the central tube 1 by brackets 6 in the desired position relatively to the central tube, surge plate and each other. The peripheral edge of the unapertured element or cover member 5 is reversely curved as at 7 so that when the parts are assembled as shown a flared aperture 8 is formed between the apertured member 4 and the cover member 5 which flared aperture is surrounded by deflector means comprising a band 9 of conical form, the major circumference of which is outwardly flared as at 10, said deflector band being maintained in the desired position by a plurality of brackets or spacing members 11. The ventilator may be provided with a wall (or roof) plate 12 furnished with a central flanged aperture to which the depending flange 3 on the surge plate 2 may be secured or if desired a longer length of stack pipe may be employed either in place of, or in addition to, the wall (or roof) plate.

In the embodiment of the invention illustrated in Figure 2, the horizontal surge plate 2 is replaced by a vertically disposed cylindrical plate 13 positioned approximately mid way between the peripheral edge of the apertured dome shaped element 4 and the deflector band 9. In this con-

struction the elements 4 and 5 are spaced more widely apart and the element 4 is supported by and maintained in the desired spaced relationship by a plurality of spacing members 14 and bolts or the like 15. The deflector band 9 and surge plate 13 are supported on the wall (or roof) plate 12 by brackets 16 the upper ends of which also serve to support the cover member 5.

According to the embodiment of the invention illustrated in Figure 3, the stack pipe 1, surge plate 2 and wall or roof plate 12 are approximately the same as in the construction shown in Figure 1, but in this case the dome shaped element disposed above the upper end of the stack pipe comprises an unapertured element 17 supported by the cover member 5. A vertically disposed deflector surge plate 18 is secured by a horizontally disposed flange 19 to the wall plate 12 so as to form an enclosure and prevent the entry of water between the lower edge of the deflector surge plate 18 and the wall plate 12. The deflector band 9 is positioned around the deflector surge plate 18 said band and the cover member 5 being supported and maintained in their desired relative positions by a plurality of brackets 20 secured to the surge plate 18 as shown or in any other convenient manner.

The embodiment illustrated in Figure 4 is the same as that in Figure 3 with this exception, that the dome shaped element 17 is formed somewhat shallower and the peripheral edge is reversely curved as at 21.

The embodiment illustrated in Figure 5 is again practically the same as that in Figure 3, but in this case the deflector band 9 is vertically disposed and parallel with the vertically disposed surge plate 18. The lower edge of the deflector band may, if desired, be outwardly flared as indicated by broken lines at 22.

According to the further embodiment illustrated in Figure 6, the annular ring or surge plate secured to the stack pipe 1 is of conical form downwardly directed as at 23 and the vertically disposed surge plate is replaced by a horizontally disposed water baffle plate 24 extending inwardly from the lower edge of the vertically disposed deflector band 9 to within a short distance of the wall of stack pipe or central duct 1. As shown the baffle plate 24 may be formed integrally with the deflector band 9, or, the two parts may be connected together by flanges.

As shown in Figure 6, the stack pipe 1 may if desired be formed integrally with the wall or roof plate 12.

According to the embodiment of the invention

illustrated in Figure 7, designed to produce a twin ejector action, the central element of the ventilator comprising a stack pipe 1, secured to a wall or roof plate 12, a centrally apertured dished shaped element 4, an unapertured dome shaped element 17, and a shallow unapertured element or cover member 5, may be more widely spaced apart and surrounded by deflector means comprising a cylindrical inner deflector or surge plate 25 and outside this a pair of conical deflector bands 26 and 27 so arranged that their maximum diameters are flared and directed towards each other. The stack 1 is provided adjacent its upper end with an annular conical ring 28 constituting a surge plate. The several elements are maintained in their relative positions by a plurality of spacing members 14, 15 and brackets 29 arranged in any convenient manner.

According to a still further embodiment as illustrated in Figure 8 the central elements may be arranged as above described and be surrounded by deflector means comprising a cylindrical inner deflector or surge plate 30 of any convenient depth, and outside this a pair of conical deflector bands 31, 32 the maximum diameters of which are flared and downwardly directed, said deflector means 30, 31 and 32 being maintained in position by suitably disposed brackets 33, 34 the latter being also, if desired, arranged to support certain of the central elements. In this embodiment a deflector plate 35 having an upwardly directed peripheral edge is secured to the base plate 12 and serves to deflect water or air upwards on to the deflector 32.

For various purposes the number and arrangement of the outer deflector bands may be increased by a combination of the two embodiments in Figures 7 and 8, two such combinations are illustrated diagrammatically in Figures 9 and 10.

According to a further modification, one or more further dome shaped elements 4 or 17 may be disposed between the top of the central duct 1 and the cover member 5, the length and form of the supporting brackets or spacing members and the depth of the deflector band or bands being arranged accordingly.

What we claim is:

1. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to said stack pipe, a dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said dome shaped element, at least one deflector surge plate surrounding said stack pipe for cooperation with the reversely curved edge of said dish-shaped element to cause an outward deflection of the air flow, deflector means surrounding said elements and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

2. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said stack pipe, a deflector surge plate located below said flared upper end of and outwardly directed from said stack pipe, an unapertured dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said unapertured dome shaped element, a vertically disposed deflector surge plate surrounding said outwardly directed surge plate at a distance from the outer edge thereof, deflector means surround-

ing said elements and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

3. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, a dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said dome shaped element, deflector means comprising an outer deflector band of conical formation the lower part of which is outwardly flared, the upper edge of said deflector band being disposed substantially in the same plane as the peripheral edge of said dish-shaped element, and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

4. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, an apertured dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said dome shaped element, deflector means comprising an outer deflector band of conical formation the lower part of which is outwardly flared, the upper edge of said deflector band being disposed substantially in the same plane as the peripheral edge of said dish-shaped element, and a plurality of brackets and spacing members for supporting the several elements relatively to each other.

5. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, an unapertured dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said unapertured dome shaped element, a vertically disposed deflector surge plate arranged externally to the peripheral edge of the dome shaped element, deflector means comprising an outer deflector band of conical formation the lower part of which is outwardly flared, and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

6. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, an unapertured dome shaped element the peripheral edge of which is reversely curved arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said unapertured dome shaped element, a vertically disposed deflector surge plate arranged externally to the peripheral edge of the dome shaped element, deflector means surrounding said elements comprising an outer deflector band of conical formation the lower part of which is outwardly flared, and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

7. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said

stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, an unapertured dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said unapertured dome shaped element, a vertically disposed deflector surge plate arranged externally to the peripheral edge of the dome shaped element, the lower edge of said surge plate being arranged in close contact with said base plate, deflector means comprising an outer deflector band of substantially cylindrical formation, disposed with its upper edge in substantially the same plane as the peripheral edge of said dish-shaped element, and a plurality of brackets and spacing members for supporting the several elements and parts relatively to each other.

8. An extractor ventilator comprising in combination a short stack pipe having a flared upper end, a base plate secured to the lower end of said

stack pipe, a horizontally disposed deflector surge plate secured to said stack pipe, an unapertured dome shaped element arranged above said stack pipe, a shallow dish shaped element, the peripheral edge of which is reversely curved, arranged above said dome shaped element, a vertically disposed deflector surge plate, arranged externally to the peripheral edge of the unapertured dome shaped element, deflector means surrounding said elements comprising an outer deflector band of conical formation the lower part of which is outwardly flared, a plurality of brackets secured to one of said elements for supporting the outer deflector band and the shallow dish shaped element relatively to each other, and a plurality of spacing elements for supporting the dome shaped element relatively to the shallow dish shaped element.

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