Jan. 8, 1946. E. M. JENKINS 2,392,742

STATIONARY VENTILATOR

Filed May 25, 1943

Fig. 1.

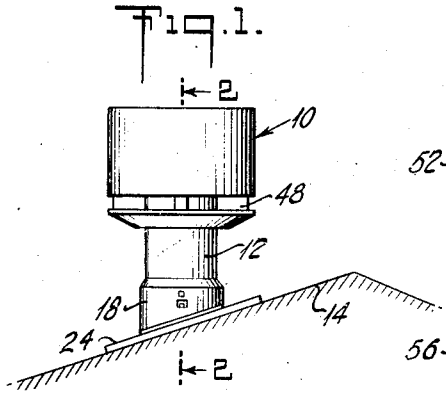



Fig. 2.

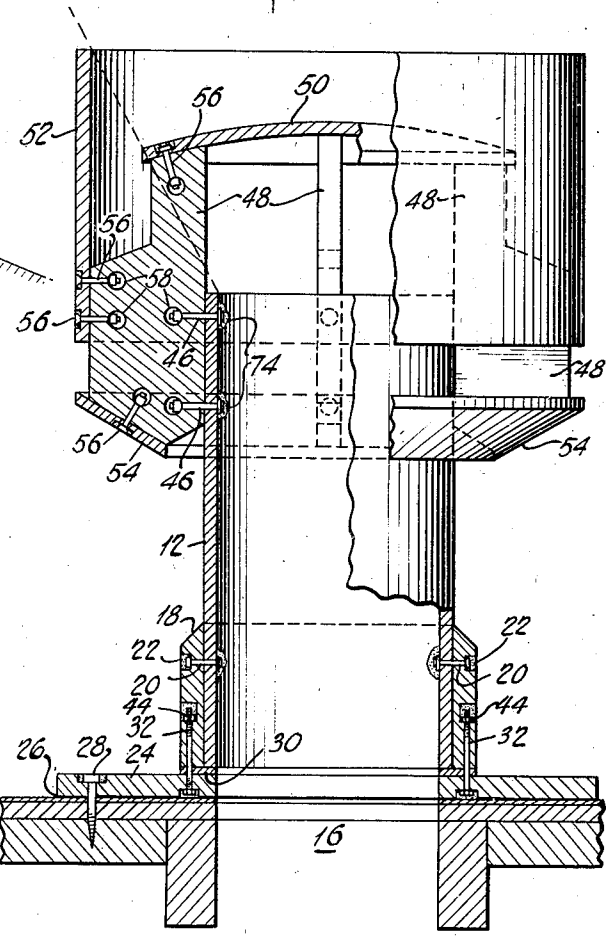



Fig. 3.

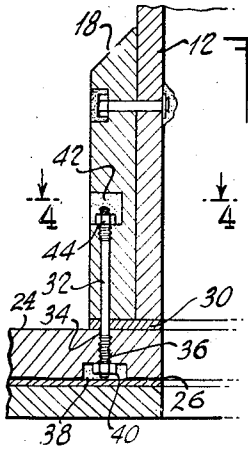



Fig. 4.

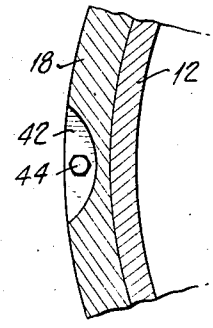
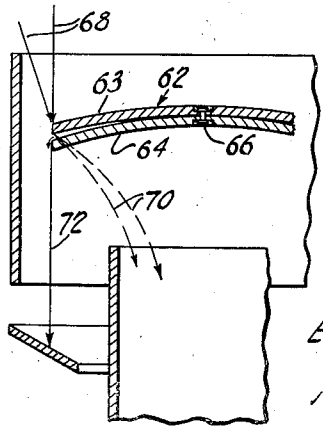



Fig. 5.




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# UNITED STATES PATENT OFFICE

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## STATIONARY VENTILATOR

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Application May 25, 1943, Serial No. 488,345

10 Claims. (Cl. 98—84)

My invention relates to improved stationary ventilators for buildings and like structures. Stationary ventilators, here referred to, are of the type including an air eduction pipe or stack communicating with the interior of the building to permit the exhaust of fumes or air, and also including a weather protecting device overlying the eduction pipe to prevent the entry of rain or other precipitation. More particularly the invention is concerned with such ventilators employing asbestos-cement materials in their manufacture.

Heretofore stationary ventilators have for the most part been made of sheet metal and hence, have been subject to deterioration under severe service conditions, as for example, where corrosive fumes are vented. Also, they have not the permanency required to withstand the action of weather over extended periods. It has also been proposed to construct ventilators of asbestos-cement material in an attempt to eliminate these difficulties, but the proposed constructions have still required the use of metal flashings and like metal parts which have, to a considerable extent, voided the advantages which would have otherwise been achieved through the use of asbestos-cement. Also the prior proposals have required a large number of parts adding unduly to the manufacturing and erection costs and furthermore, have not provided the appearance and ventilating characteristics desired.

The principal object of the instant invention is the provision of an improved ventilator and mounting therefor in which all of the exposed parts are composed of a hardened, compressed, asbestos-cement composition. The improved ventilator of the invention operates efficiently, both from the standpoint of air exhaust, and in the prevention of leakage of rain or other precipitation into the eduction pipe.

Another object of the invention is the provision of a simplified ventilator construction which eliminates the need of metal flashings.

A further object of the invention is the provision of a ventilator, formed for the most part of hardened, compressed, asbestos-cement materials, in which the entire erection may be made from the top side of the building.

A still further object of the invention, in one form thereof, is the provision of a special type ventilator cap.

My invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow, and to the accompanying drawing, in which:

Fig. 1 is a side elevational view of a ventilator mounted on a building structure;

Fig. 2 is an elevational view on an enlarged scale of the ventilator of Fig. 1, with parts in section;

Fig. 3 is a fragmentary sectional view on an enlarged scale, illustrating features of the construction;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3; and

Fig. 5 is a view similar to Fig. 2 with parts omitted for clearness of illustration, depicting a special form of the ventilator cap.

Referring now to the drawing and particularly to Figs. 1 and 2, there is shown a ventilator 10 comprising an eduction pipe 12, supported on a roof structure 14, and communicating through an opening 16 with the interior of the building. In Fig. 1, the ventilator is shown as mounted upon a pitched roof, but it will be understood that the ventilator may equally well be erected on flat roofs or on the roof ridge, by properly shaping the lower portion of the eduction pipe and the other base elements. Also, if desired, the ventilator may be mounted upon a level surface supported on a curbing built up from the roof.

In accordance with the invention, the eduction pipe or stack 12 is of relatively heavy construction and is suitably formed of a length of hardened, compressed, asbestos-cement pipe, such as that known in the trade as "Transite" pipe. Surrounding the lower end of the eduction pipe is a base collar or ring 18, preferably formed of similar asbestos-cement material and of somewhat greater wall thickness. Base ring 18 and eduction pipe 12 are secured together as by bolts 20 extending through aligned bolt holes in the two members, the threaded ends of the bolts lying in recesses 22 extending inwardly from the peripheral face of the base ring. Recesses 22 are of such size and character as to receive the nuts to be threaded upon bolts 20. As will be understood, the number of bolts employed will be sufficient to provide secure anchorage of the two parts, the number varying with the size of the ventilator and the size of the bolts.

The eduction pipe 12 and its base ring 18 are supported from a base plate 24 which rests upon the building structure, and which includes a central opening corresponding with the interior cross-section of pipe 12. Base plate 24 is also preferably formed of a hardened, compressed, asbestos-cement material. The base plate may


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be laid over any type of roofing and has interposed between it and the roofing or roof structure a layer **26** of a suitable plastic weather-sealing compound, such as an asphaltic putty. The base plate may be secured to the roof structure as by lag screws or bolts **28**, the particular fastening means depending upon the type of roof construction. Due to the large area of contact between base plate **24** and the roof structure and the use of the sealing compound, no further flashing, such as the metal flashing normally employed, is necessary and a weather-tight joint between these parts is insured.

Between the lower ends of the eduction pipe and base ring and the face of the base plate a gasket **30** is interposed (see particularly Fig. 3). The gasket may be of any suitable material of sufficient thickness to accommodate slight irregularities and of sufficient softness to bed the flat surface of the base ring upon the gasket under the load imposed by the weight of the ventilator and the holddown studs, later described. Also, of course, the gasket must have a satisfactory life for the conditions under which the ventilator is to be used. It has been determined, for example, that a gasket made of standard asbestos, asphalt impregnated roofing felt of, say, 55 lb. weight, is satisfactory in most cases. Better grades of gasketing material may be employed where necessary or desirable.

Collar **18** is secured to base plate **24** by holddown studs **32**. These may be threaded into threads formed in perforations **34** in the base plate, as indicated at **36** (see Fig. 3) or, if desired, the lower end of the studs may project into recesses **38** in the bottom side of the base plate and receive nuts **40**, or both of these means may be employed. In any event the studs are preassembled with the base plate. The studs extend upwardly through aligned bolt holes in gasket **30** and base ring **18** with upper projecting threaded ends lying in recesses **42**, the latter extending inwardly from the peripheral face of the base ring. Nuts **44** are threaded onto the upper ends of the studs within the recesses **42**. A suitable number of the studs **32** are employed, preferably equally spaced around the base ring, to provide sufficient support of the ventilator on the base plate to withstand windload stresses, vibration, shocks and the like, to which the ventilator may be subjected. Nuts **44** are drawn firmly onto the studs to compress gasket **30** and provide a weather-proof seal between the end of the base ring and the base plate. As will be understood, the gasket is compressed to an appreciable extent by the weight of the ventilator resting on it, but the compression is increased by the tension in the holddown studs.

Secured to the upper end of the eduction pipe as by bolts **46** are a plurality of supporting brackets **48**. The brackets are made of flat pieces of material, preferably hardened, compressed, asbestos-cement material. The brackets are preferably spaced at equal distances around the circumference of the eduction pipe. Brackets **48** support a cap **50**, storm band **52** and annular baffle **54**. These several parts are secured to the supporting bracket **48** by bolts or the like **56**. It will be noted that in each instance the ends of the bolts are recessed in the members **50**, **52**, or **54**, as the case may be, the bolts extending through perforations in bracket **48**. These perforations terminate in transverse perforations **58** which receive the nuts or other retaining means on the ends of the bolts.

Storm band **52** and cap **50** are proportioned and arranged so that rain or other precipitation cannot drive directly into the open end of stack **12**. Referring to Fig. 2, it will be noted that a straight line drawn from the inner, upper corner of the storm band connecting with the inner, upper corner of the eduction pipe will touch or intersect the cap, preferably the former to prevent unnecessary restriction to air flow. Cap **50** is supported sufficiently above the end of the eduction pipe and storm band **52** is made of such a diameter that high exhaust capacity is obtained. Annular baffle **54**, supported below the upper end of the eduction pipe, prevents uprunning air from entering behind the storm band and causing a loss of suction head in the ventilator. That is, there is normally a tendency for such uprunning air to pass over the top of the eduction pipe and pocket against the under side of the cap, this condition being enhanced by the storm band overhang. The baffle is extended at least to the inside diameter of the storm band and preferably to the outside diameter, as shown, and reduces such interference with the exhausting function of the ventilator to a minimum.

Referring to Fig. 5, a somewhat modified arrangement is shown, particularly with respect to the cap. As will be appreciated, the several elements of the ventilator head will be supported by brackets, similarly as before, the brackets having been omitted from the figure for clearness of illustration. In this form a double cap **62** is employed comprising two dished members, **63** and **64**, of substantially equal diameter with their outer edges spaced a short distance apart as shown. If desired, members **63** and **64** may be joined at a central point of contact by any suitable means, such as the bolt **66**. The double cap design solves a serious leakage problem which has often been encountered, notwithstanding the fact that there is no direct line on which rain may fall into the eduction pipe or stack. It has been determined that when a driving rain strikes the edge or adjacent the edge of member **63** (the path of rain drops being indicated by the arrows **68** in Fig. 5), the rain drops fall or flow down the edge, and due to their relatively high velocity, swing inwardly as they break loose from the surface tension and fall from the edge. In many instances the inward swing (see arrow **70**), in the absence of the special cap construction here provided, is sufficient to permit the drops to fall into the eduction pipe. The presence of member **64** solves this problem as the swinging drops strike the latter member and flow over its edge to fall substantially vertically outside the eduction pipe (see arrow **72**), as by this time the high velocity of the drops is substantially dissipated.

As previously pointed out, the heads of the bolts or studs employed to secure the several parts together lie in recesses. Upon assembly of the ventilator these recesses are filled with a suitable plastic sealing compound or putty, such as an asphaltic putty, whereby no metal is exposed to corrosive influences, and flush, smooth surfaces are obtained. The heads of bolts **20** and **46** lying in the eduction pipe **12** may similarly be recessed, if desired, or in lieu thereof, the heads may be covered with the putty or sealing compound, as indicated at **74**.

In the erection of a ventilator in accordance with the invention, a base plate **24** is first laid in a mopping or layer of the sealing compound **20** and is located to have its central opening overlie the opening in the roof of the building. The


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ventilator may be erected on a flat roof, pitched roof or at the ridge of the roof. In the first two cases, the base plate is a single flat member but in the latter is made in two sections lying on opposite sides of the ridge and joined at the peak, the joint being sealed by suitable compound, such as that employed at 26. In lieu of laying the base plate directly on the roof, a curb may be built up, and a flat surface provided for the ventilator, as previously explined. The base plate, with the studs 32 previously inserted and extending therefrom, is secured in position by the bolts or lag screws.

After the base plate is in position, gasketing material 30 is positioned to surround the opening. Preferably this is supplied in the form of a sheet with a central opening corresponding with the opening in the base plate. After the ventilator is mounted the gasket sheet is trimmed to size by scoring or cutting it around the periphery of the base ring. If the installation is made on a pitched roof or on the ridge, base ring 18 and eduction pipe 12 are cut at their lower ends to conform with the configuration of the roof, as illustrated, for example, in Fig. 1 where a pitched roof installation is shown. The ventilator, preferably in assembled form, is lowered onto the base plate 24 with studs 32 entering the bolt holes in the base ring. Nuts are then placed on the ends of the studs in the recesses 42 and drawn down firmly to secure the ventilator in position and to compress gasket ring 30. Recesses 42 are then filled with a plastic putty, as previously referred to.

As will be appreciated from the foregoing description, the ventilator, constructed and mounted in accordance with the invention, provides a permanent installation not subject to deterioration through the action of corrosive fumes or weathering conditions. The ventilator may be mounted entirely from the top side of the roof and may be removed from time to time, as required. Mounting or dismounting of the ventilator will in no way interfere with normal activities, as no scaffolding or other erection need be employed within the building.

Having thus described my invention in rather full detail, it will be understood that these details need not be strictly adhered to but that various changes and modifications will suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What I claim is:

1. A stationary ventilator comprising an eduction pipe, a substantially cylindrical base ring surrounding and engaging the eduction pipe, a cap member, a storm band surrounding the end of said eduction pipe and said cap member, and supporting members therefor, said parts being composed of a hardened, compressed and densified asbestos-cement material.

2. A stationary ventilator comprising an eduction pipe, a base plate to rest on a building structure and to be secured thereto, said base plate having an opening leading into said eduction pipe, a relatively thick walled substantially cylindrical, integral base ring embracing and supporting said eduction pipe, a flexible gasketing means between said base ring and base plate, and means securing said base ring and base plate together and compressing said gasket therebetween.

3. A stationary ventilator comprising an eduction pipe, a base plate to rest on a building structure and to be secured thereto, said base plate having an opening leading into said eduction pipe, a relatively thick walled substantially cylindrical, integral base ring embracing and supporting said eduction pipe, a flexible gasketing means between said base ring and base plate, and means securing said base ring and base plate together and compressing said gasket therebetween, said parts, with the exception of the gasketing means, being composed of a hardened, compressed, asbestos-cement material.

4. A ventilator construction comprising an eduction pipe, a base plate resting on a building structure and secured thereto, said base plate having an opening leading into said eduction pipe, plastic material between said base plate and structure, an integral base ring embracing and supporting said pipe, flexible gasketing means confined between said base ring and base plate and securing means projecting from said base plate and extending into said base ring to bind the same together and to compress the gasketing means.

5. A ventilator construction comprising a base plate resting on a building structure and secured thereto, said base plate having an opening therein, plastic material between said base plate and structure, an eduction pipe extending upwardly from said base plate around said opening, a base ring surrounding said pipe adjacent said base plate, a gasket confined between the lower end of the base ring and the base plate, bolt holes extending substantially axially of said ring from the lower end thereof, slots extending inwardly from the peripheral face of said ring at the upper ends of said bolt holes, studs engaged in and projecting from said base plate and penetrating said bolt holes, said studs including threaded ends projecting into said slots, and nuts on the threaded ends of said studs within said slots.

6. A ventilator construction comprising a base plate to rest on a building structure and to be secured thereto, said base plate having an opening therein, an eduction pipe extending upwardly from said base plate around said opening, a base ring surrounding said pipe adjacent said base plate, a gasket confined between the end of said base ring and said base plate, bolt holes extending substantially axially of said ring, slots extending inwardly from the peripheral face of said ring at the upper ends of said bolt holes, studs engaged in and projecting from said base plate and penetrating said bolt holes, said studs including threaded ends projecting into said slots, nuts threaded on said projecting stud ends within said slots, aligned, radially extending bolt holes in said eduction pipe and base ring, recesses in the peripheral face of said base ring at said bolt holes, means extending through said bolt holes for securing said base ring and eduction pipe together, said means including nuts in said recesses, and a hardened, plastic sealing compound filling said slots and recesses.

7. A ventilator construction comprising a base plate to rest on a building structure and to be secured thereto, said base plate having an opening therein, an eduction pipe extending upwardly from said base plate around said opening, a base ring surrounding said pipe adjacent said base plate, a gasket confined between the end of said base ring and said base plate, bolt holes extending substantially axially of said ring, slots extending inwardly from the peripheral face of said ring at the upper ends of said bolt holes, studs engaged in and projecting from said base plate and penetrating said bolt holes, nuts


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threaded on said projecting stud ends within said slots, aligned, radially extending bolt holes in said eduction pipe and base ring, recesses in the peripheral face of said base ring at said bolt holes, means extending through said bolt holes for securing said base ring and eduction pipe together, said means including nuts in said recesses and a hardened, plastic sealing compound filling said slots and recesses, said parts, with the exception of said studs and securing means, being composed of a hardened, compressed, asbestos-cement composition.

8. A ventilator construction comprising a base plate to rest on a building structure and to be secured thereto, said base plate having an opening therein, an eduction pipe extending upwardly from said base plate around said opening, an integral base ring surrounding and embracing said pipe adjacent said base plate and secured to said eduction pipe, gasketing material confined between said base ring and base plate, securing means extending into said base ring and base plate securing the same together and compressing the gasket therebetween, a cap member above said eduction pipe, a storm band surrounding the end of said eduction pipe and cap member and means supporting said cap member and storm band from said eduction pipe, said parts, with the exception of said securing means and gasketing material being composed of a hardened, compressed, asbestos-cement composition.

9. A ventilator construction comprising an eduction pipe, a storm band surrounding the outer end of said pipe, a cap spaced above said outer end and means for supporting said storm band and cap from said pipe, said cap including a plurality of upwardly dished members of approximately equal diameter with their peripheral edges vertically spaced from one another.

10. A ventilator construction comprising an eduction pipe, a storm band surrounding the outer end of said pipe, a cap member spaced above said outer end and lying within the confines of said storm band, the relationship between said pipe, cap and storm band being such that rain cannot drive directly into the pipe, and means supporting said storm band and cap from said pipe, said cap including a plurality of adjacent dished members of approximately equal diameters with their peripheral edges vertically spaced a short distance from one another, whereby water striking the outer one of said dished members and tending to swing inwardly from the edge thereof will strike said lower dished member and be prevented from falling into said eduction pipe.

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