July 21, 1959 I. J. O'HEA 2,895,399

VENTILATORS

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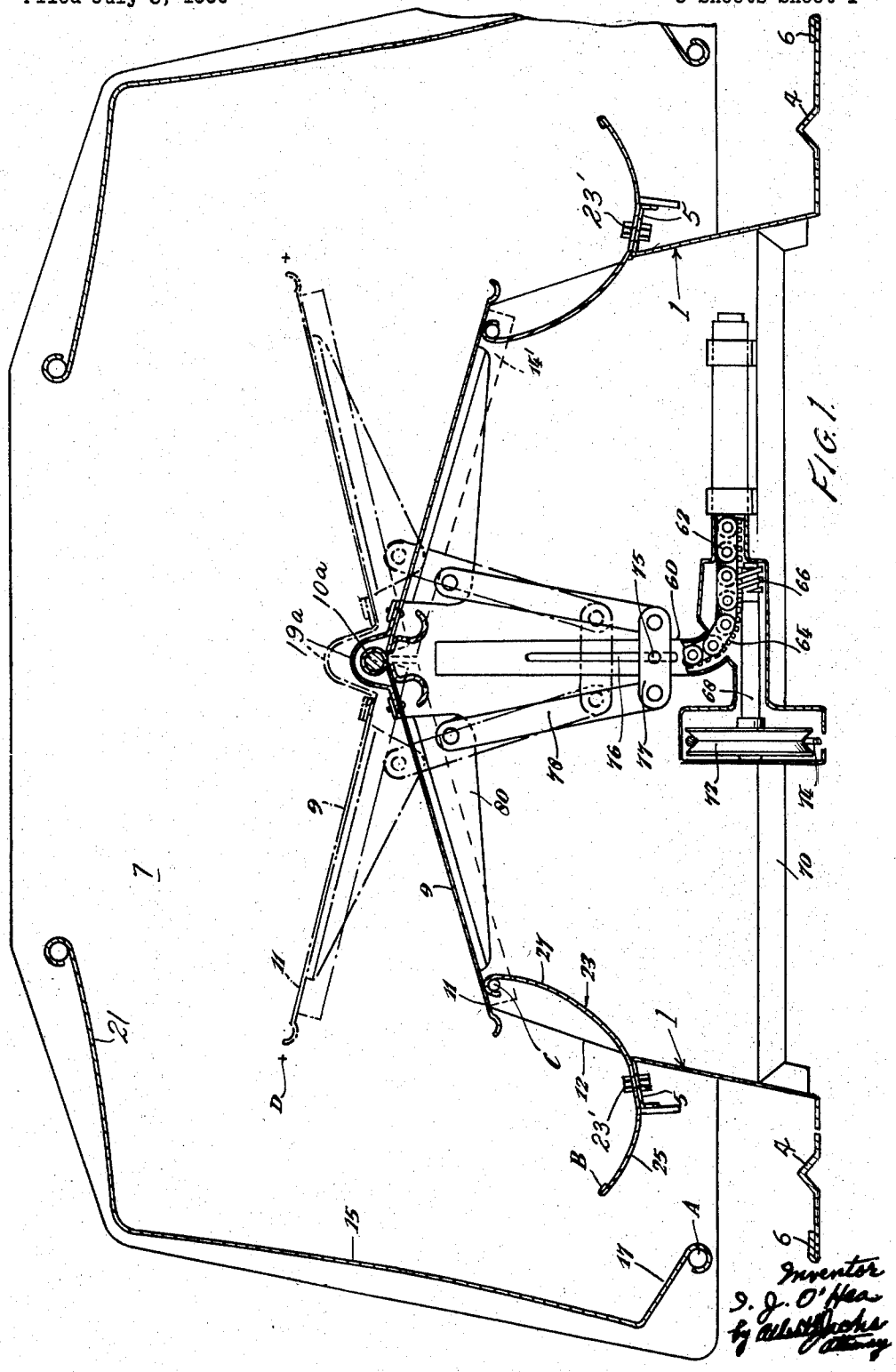


FIG. 1.

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Fig. 4.

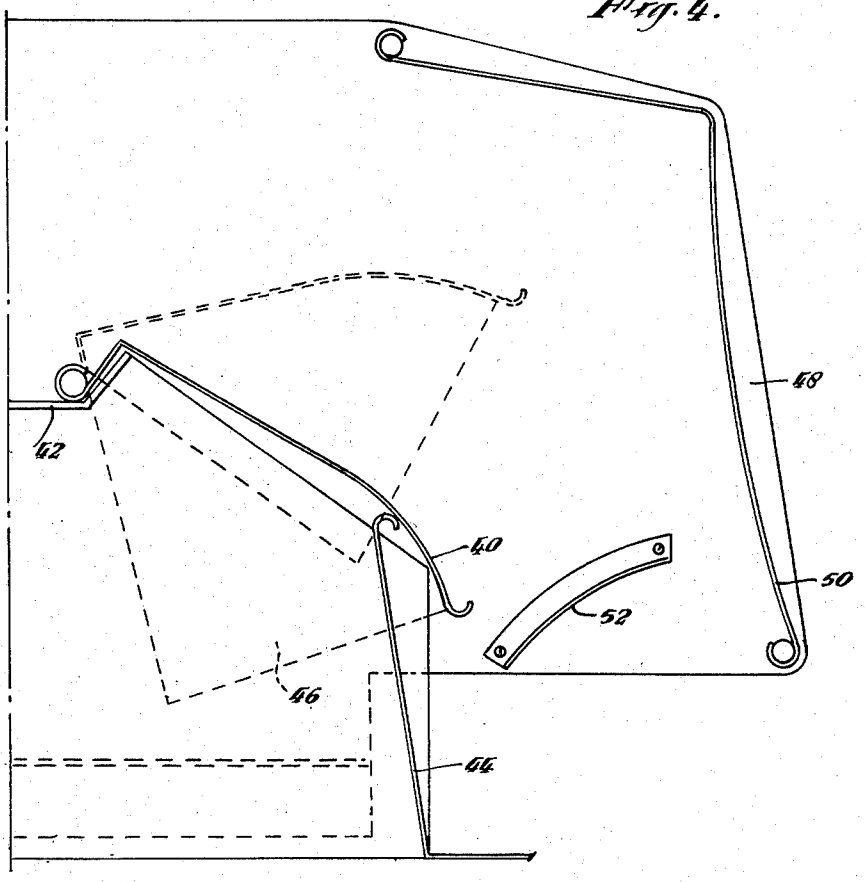
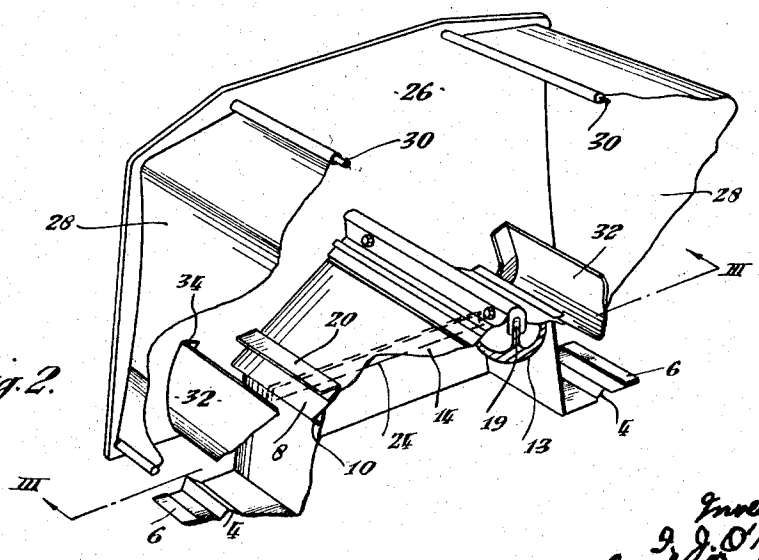


Fig. 2.



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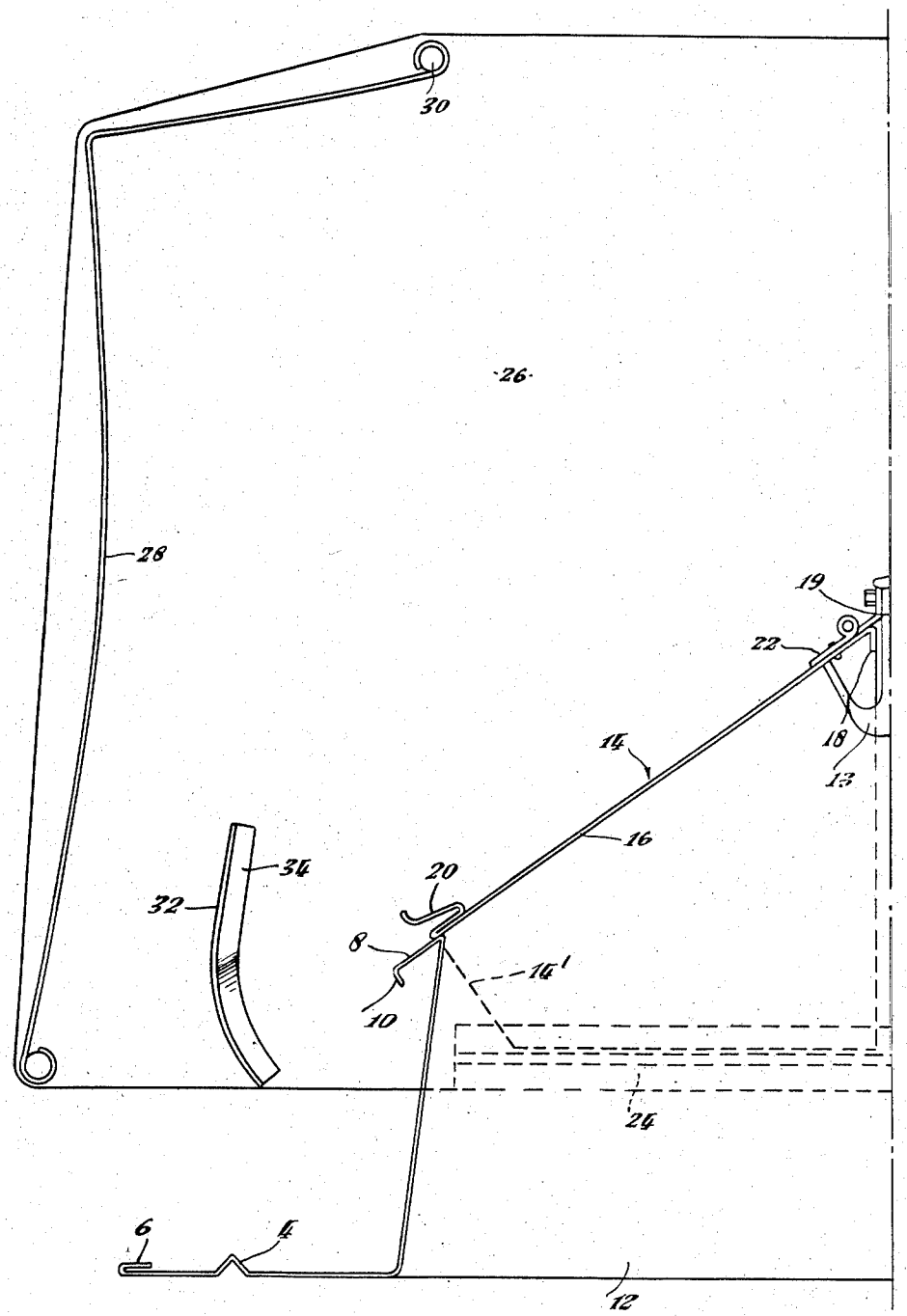


Fig. 3.

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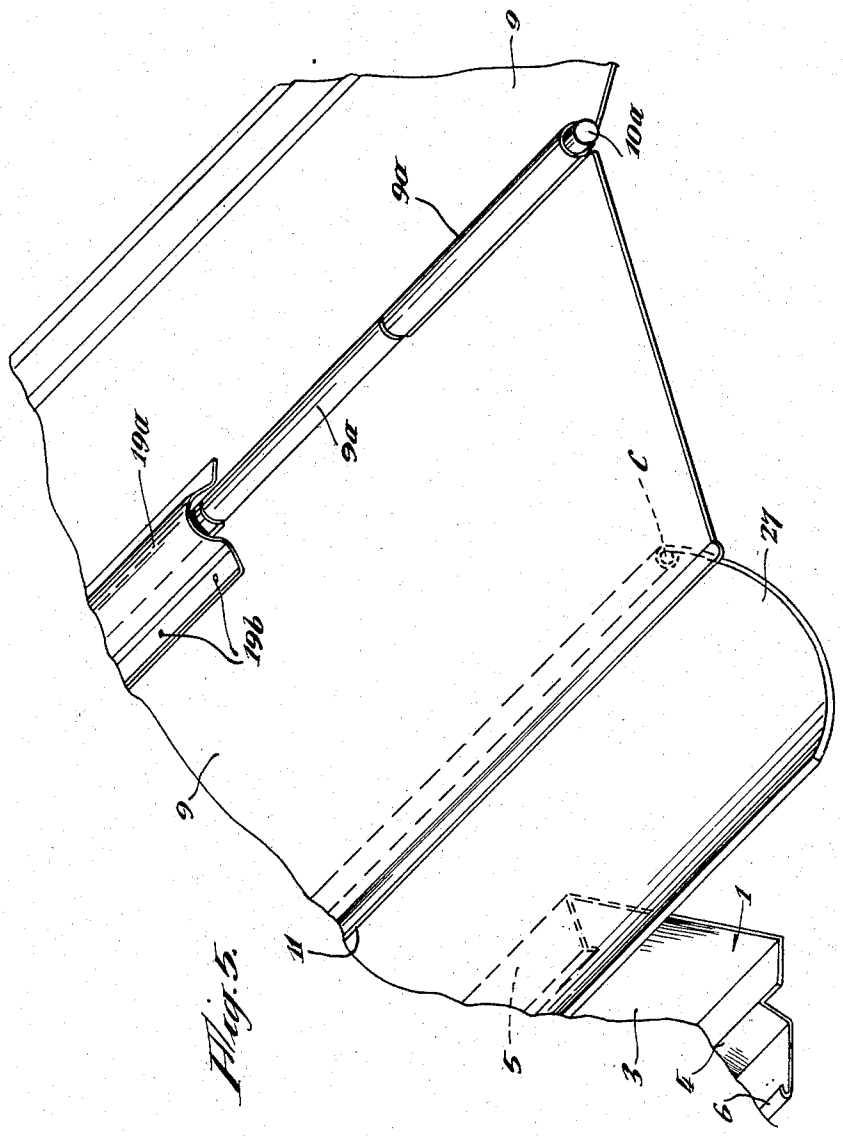


Fig. 5.

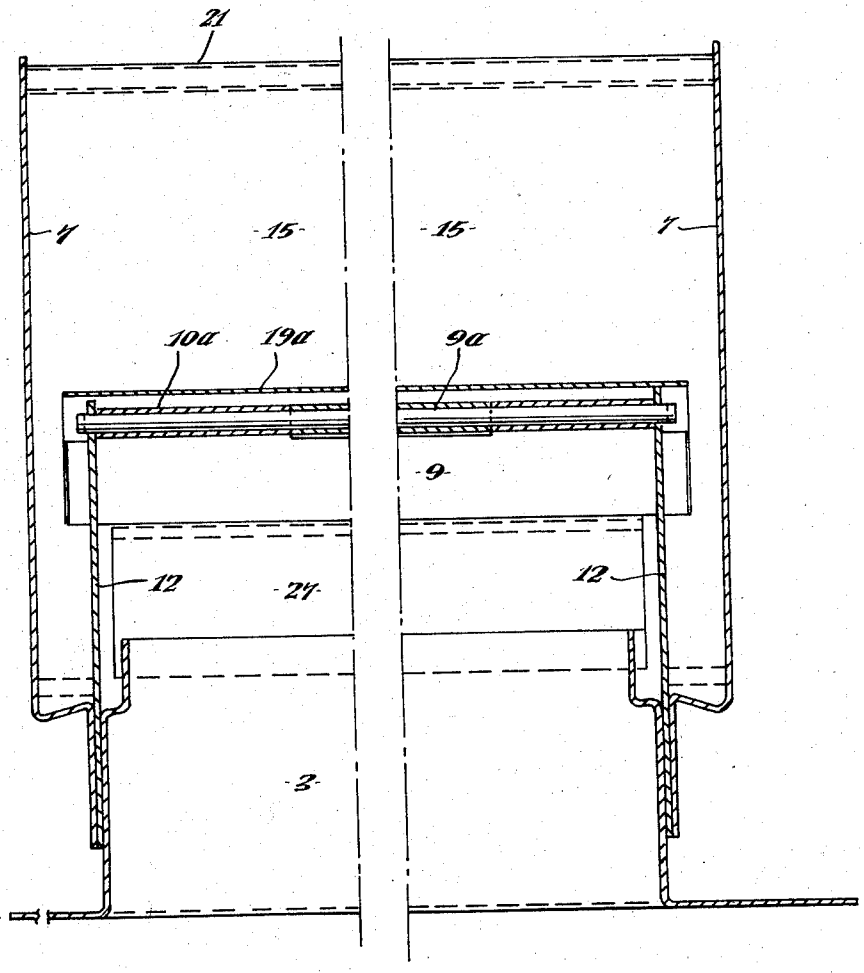
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VENTILATORS

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Fig. 6.



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2,895,399

VENTILATORS

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Application July 3, 1956, Serial No. 595,689

Claims priority, application Great Britain July 6, 1955

2 Claims. (Cl. 98—42)

This invention relates to ventilators and more particularly to a ventilator adapted to cover an opening in the roof of a building and forming a throat above said opening which is screened by a covering member and by the walls of said ventilator and including a baffle spaced from said roof.

With existing ventilators it has been found that when subjected to bad weather conditions consisting of heavy rain and high wind such as are experienced for example during a monsoon, rain splashing off the roof will tend to enter the ventilator apertures.

One of the objects of the present invention is to overcome this disadvantage.

According to the present invention a ventilator is provided with a baffle and with an anti-splash guard associated with the ventilator aperture, said baffle and said anti-splash guard being so located relative to each other, to the said aperture and to the roof on which the ventilator is situated, that the whole or a large proportion of the infinite number of substantially parabolic curved paths of rain drop splashes which could result from rain drops and which would otherwise pass through the said aperture are intercepted by the said anti-splash guard. The ventilator may have at least one variable aperture provided with an adjustable covering member hingedly mounted on said ventilator to co-operate with a wall of said ventilator to provide a variable upwardly extending aperture between said wall and said covering member the height of which last mentioned aperture may be determined by the position of said covering member. A baffle is associated with the ventilator's variable aperture on the outside thereof and an anti-splash guard may be provided at said variable aperture, said baffle and said anti-splash guard being so located relative to each other, to the variable aperture and to the roof in which the ventilator is situated, that for an aperture up to a predetermined size the whole or a large proportion of the infinite number of substantially parabolic curved paths of rain drop splashes able to pass under the said baffle and which splashes would otherwise pass through the said aperture are intercepted by the said anti-splash guard.

Referring to the drawings filed herewith:

Fig. 1 is a section through a ventilator made in accordance with the present invention,

Fig. 2 is a perspective view partly broken away of another form of ventilator made in accordance with the present invention,

Fig. 3 is a section of the line III—III of Fig. 2 and showing half of the ventilator,

Fig. 4 is a section through half of a further form of ventilator made in accordance with the present invention,

Fig. 5 is a fragmentary perspective view of the ventilator shown in Fig. 1 and

Fig. 6 is a longitudinal section of Fig. 1.

Referring now to Fig. 1, the ventilator comprises a box-like member adapted to be fitted over a rectangular ventilating aperture. Two channel members **1** are provided on

two opposed walls of the ventilating aperture. Each of the channel members is disposed with its web substantially vertical and with its flanges **5** substantially horizontal and directly outwardly, the webs of the two channel members are secured by welding or the like in opposite directions. Two end walls **12** extend between the ends of the channel members **1**. Two ventilator end plates **7** are secured by welding or the like to the edges of the channel member. The two channel members and the two end walls **12** define a throat above the ventilating aperture. The two ventilator end plates **7** project beyond the upper flanges of the two channels and outwardly beyond the edges of said flanges and are spaced outwardly from the end walls **12**.

A throat covering member **9** is disposed between and abuts each of the two end plates **7** so as to be disposed at the mouth orifice of the throat and close the latter. The free longitudinal edges **11** of the covering members are spaced from and disposed substantially vertically above the outer edges of the upper flanges **5** of the channels **1**. Said covering member **9** comprises a pair of flaps hinged along one intermittently beaded longitudinal edge **9***a* to a supporting bar **10***a* mounted on the end walls **12** to form a hinge pin, and a U-shaped resilient hinge cover **19***a* secured by its borders to the flaps **9** adjacent the beaded hinge **9***a* by rivets **19***b* or the like in well known manner the cover **19***a* extending the length of the hinge. The hinging assembly forms no part of the present invention and means described infra is provided whereby the angle of the flaps can be adjusted to thus adjust the size of the mouth opening. A substantially vertical baffle **15** is disposed outwardly of each of the mouth openings and each baffle **15** is spaced from the edges **11** of the covering member **9** and from the edges of the upper flange **5** of the adjacent channel **1** the lower projecting flange **17** of the baffle **15** being disposed in a plane lower than the edge of the upper flange **5** of the channel and the upper projecting flange **21** of the baffle **15** being disposed in a plane higher than the edge **11** of the mouth covering member **9**. Said baffles **15** also extend between and abut at the edges thereof the two end plates **7**. The anti-splash guard **23** is formed as a substantially arcuate channel consisting of two arms **25** and **27** extending from the bight of the channel the angle between the ends of the arcuate channel being approximately 120°. One arm **25** of said arcuate channel is shorter than the other arm **27** and nearly half the length of the latter. Arm **25** is flat for about a third of its length from the point of junction with the other arm and gently curved in a regular curve from there to its outer extremity. This anti-splash guard **23** is secured in position by bolts **23'** or welded or otherwise secured in any desired and obvious manner, which forms no part of the present invention, to the upper flange **5** of the channel **1** so that the flat portion of its arm **25** abuts the outer edge of said flange **5**. Consequently the anti-splash guard **23** extends inwardly through the mouth opening between the channel **1** and the end of covering member **9** into the throat of the ventilator with convex arm **27** projecting in the direction of the ventilating aperture to be covered by the ventilator. The anti-splash guards **23** are secured at the edges to the end plates **7** and suitable drainage means may be provided for carrying away any water collected between the arms thereof.

We have found the following relations satisfactory in ventilators made in accordance with the invention. A horizontal datum line D is taken which is about 7¾" from the center line and about 12" from the bottom of the ventilator. Assuming all edges are measured clockwise and from the vertical, the following points are obtained for a ventilating aperture 18" x 30":

A at about 205° to, and about 9½" from D.
B at about 205° to, and about 7" from D.

C at about 163° to, and about 4¼" from D.
E at about 28° to, and about 5" from D.

where

Point A corresponds to the lower extremity **17** of the baffle **15**
Point B corresponds to the outer edge of the arm **25** of the anti-splash guard **23**
Point C corresponds to the inner edge of the arm **27** of the anti-splash guard **28**
Point E corresponds to the upper extremity **21** of the baffle **15**
Point A is thus some 3⅝" to 4½" above the building

In use during heavy weather such as occurs during a monsoon rain splashes are unable to pass directly into the throat through the said openings and are trapped by the anti-splash guards which are suitably drained.

The channels may be inclined toward each other away from the aperture.

In the embodiment shown in Figs. 2 and 3 the ventilator covers a rectangular opening in the roof. Two angle channel members or side walls **2** of general L section are secured back to back and spaced from each other on the longitudinal sides of the opening. The two limbs of each angle channel member inscribe an angle of approximately 100°. A longitudinal V-shaped furrow **4** is pressed at the center of the transverse limb and the free end of this limb turned over or folded to make a double thickness edge **6**. The top of the longitudinal limb is turned out or bent through an angle of approximately 135° to form a downwardly diverging longitudinal flange **8**. A second longitudinal flange **10** is formed on the free edge of the flange **8** by turning it down through 90°. Two end walls **12** are secured to the side walls **2** to complete the frame of the ventilator. The end walls **12** are shaped like the gable ends of a house and support a ridge pole **13** therebetween. Ridge pole **13** is of inverted mushroom cross-section and carries two covering flaps **14** hingedly mounted thereon. Each of said covering flaps **14** comprises a plane portion **16**, one longitudinal edge of which has been turned over to provide a stop **18** cooperating with the vertical stem **19** of the ridge pole **13** and the other edge of which has been formed into an upstanding hook shaped member **20**, and two downwardly depending end portions **14'** which fit outside the end walls **12** when the flap is closed and inside the end plates **26**. Said covering flap **14** is secured to the stem **19** of the ridge pole by hinges **22** riveted to the flap **14** and bolted to the stem **19**. Said covering flaps **14** are adapted to be moved by any known control means from a closed position in which they rest on the flanges **8** of the side walls **2** to a fully open position in which the hooked portions **20** touch each other above the ridge pole **13**. A horizontal bracket **24** is secured halfway up each end wall **12**. Said horizontal brackets **24** run from one side of the end wall to the other and are effective to form a support for end plates **26**. Each end plate **26** is a plane sheet of metal which extends beyond the double thickness edge **6** of the end wall **2** on each side of the ventilator and which also extends above the ridge pole **13** to a height equal to that of the covering flaps **14** when they are fully opened into the vertical position. Supported between the two end plates **26**, one on each side of the ventilator, are two baffles **28**. Each said baffle is of inverted L section, the top transverse limb of the L section being shorter than the stem which is substantially vertical. Said baffles **28** face inwards and extend from the top of the end plates **26** to the bottom thereof, thus protecting the aperture formed by part opening the covering flap from any rain which would otherwise drive in sideways.

The longitudinal edges of the baffles are turned over to embrace rods **30**, on which they are supported in the end plates **26**. Two guards **32** are secured to the end plates **26** inside the baffles **28**. Said guards have the form of curved shields and are secured to the end plates **26** by flanges **34**. The baffles **28** and the guards **32** are so arranged relative to each other and to the aperture which is formed when the covering member **14** is raised that rain drops splashing up off the roof of the building or the transverse limbs of the walls **2** will be prevented from entering the said aperture.

During fine weather the covering members **14** may be raised fully until there is a substantially unobstructed view through the ventilator. As soon as the covering members are lowered until they are beneath the upper edge of the baffles **28** no rain can enter the ventilator from above since any slanting in sideways will be traveling in the wrong direction and it is unlikely that any will splash back off the baffles **28**, unless the rain is very heavy in which case the covering flaps are sufficiently lowered until there is no possibility of this occurring. Any splashes which would tend to rise up off the roof will be deflected by the guard **32** and the ventilator may thus be left open sufficiently to allow adequate ventilation of the building while preventing the entry of the rain.

The hooked portions **20** on said covering members **14** are adapted to act as drains and to prevent rain water being blown up the said covering flap and carried over the free edge to run down inside. Said hooked portions **20** act as a channel shaped drain when the covering flaps have been raised past the horizontal position. The end portions **14'** will prevent rain blown along the ventilator from entering under the covering flap when said flap is partially closed.

In the embodiment shown in Fig. 4 covering flaps **40** are hinged at their upper ends to a trough shaped channel **42** and are downwardly curved over side walls **44**. End portions **46** are secured to the covering flaps **40** and fit outside the walls **44**. End plates **48** and baffles **50** are secured and positioned over the throat as in the second embodiment of this invention and a curved antisplash guard **52** is secured between the said end plates **48**. The baffles **50**, guard **52**, covering flap **40** and side walls **44** are so arranged relative to each other and to the aperture of the ventilator that rain drops splashing up off the roof of the building cannot enter the said aperture.

One of the advantages of this embodiment is that the overall height of the ventilator above the roof in which it is set is less than in either of the other two embodiments.

The opening mechanism which is identical for all embodiments although only shown in Figure 1, comprises a tube **60** serving as a guide for a link chain **62**. Each link has teeth **64** adapted to be engaged by a worm wheel **66** mounted on a shaft **68** journalled in bearings carried on the bracket **60** which is centrally positioned in the ventilator and also acts as a strengthening member. The shaft **68** carries a pulley **72** having a groove wherein an operating cord **74** is positioned. The end of the chain **62** carries a pin **75** guided in a slot **76** in the tube **60**. Pin **75** carries a bar **77** coupled by links **78** to a bracket **80** on the underside of the flaps **9**. In operation, the opening and closing of the flaps **9** is effected by pulling on the cord **74** to rotate the shaft **68** in the desired direction.

Thus it will be seen that any of the three forms of ventilator made as described above may be used in climates where there is very heavy rain to provide ventilation in the roof of a building without allowing the rain splashes to enter the said ventilator.

Having thus described the invention it should be apparent that same is subject to modifications obvious to any one skilled in the art.

What is claimed is:

1. A roof ventilator including channel shaped lateral members mounted on opposite sides of a roof opening with their web portions extending substantially vertically and with their flanges extending away from the opening, end walls secured to the longitudinal ends of the channels, the two channels and the two end walls forming a throat above and around the roof opening, ventilator end plates secured to and spaced outwardly from the said end

walls, arcuate splash guards, means mounting the arcuate portion of the guard on the upper flanges of the channels so that a portion of each guard extends over the throat and extends above the level of the opposite sides portion of each guard, a pair of substantially vertical baffles, on said ventilator end plates spaced outwardly from said splash guards, each said baffle having a substantially horizontal inwardly projecting flange at the top, cover means mounted above said throat and beneath said inwardly projecting flanges and extending substantially over the throat between the end walls and mounted on said end walls, said cover being wider than the space between the edges of the inwardly extending portions of said splash guards and wider than the distance between the edges of the horizontal inwardly projecting flanges of said baffles.

2. A roof ventilator including channel shaped lateral members mounted on opposite sides of a roof opening with their web portions extending substantially vertically and with their flanges extending away from the opening, end walls secured to the longitudinal ends of the channels, the two channels and the two end walls forming a throat above and around the roof opening, ventilator end plates secured to and spaced outwardly from said end walls, arcuate splash guards, means mounting the arcuate portion of the guards on the upper flanges of the channels, so that a portion of each guard extends over the throat above the level of the opposite side portion of each guard, a pair of substantially vertical baffles on said ventilator end plates spaced outwardly from said splash guards

each of said baffles comprising substantially horizontal inwardly projecting flanges at the top, cover means mounted above said throat comprising a pair of covering flaps, each hingedly mounted on a common hinge extending substantially between and carried by said end wall, said hinge extending along the longitudinal axis of the throat, said pair of covering flaps extending to the inwardly extending portions of said splash guards to determine the size of the passage to said throat between fully closed and fully open positions when said flaps are substantially vertical, the width of each of said covering flaps being slightly smaller than the distance between said hinge and the edge of the inwardly projecting flange of the adjacent baffle, said flaps when between the edges of the baffles and the edges of the splash guards providing a cover wider than the space between the edges of the splash guards and between the edges of the baffle flanges.

References Cited in the file of this patent

UNITED STATES PATENTS

2,100,785	McDerment	Nov. 30, 1937
2,127,099	Whitaker	Aug. 16, 1938
2,214,183	Seymour	Sept. 10, 1940
2,232,027	Gunter	Feb. 18, 1941

FOREIGN PATENTS

427,904	Great Britain	Nov. 6, 1934
727	Australia	Feb. 26, 1936
727,817	Great Britain	Apr. 6, 1955