Oct. 29, 1940. M. B. FRY 2,219,953

EAVE TROUGH PROTECTOR

Filed Sept. 30, 1938

Fig. 1

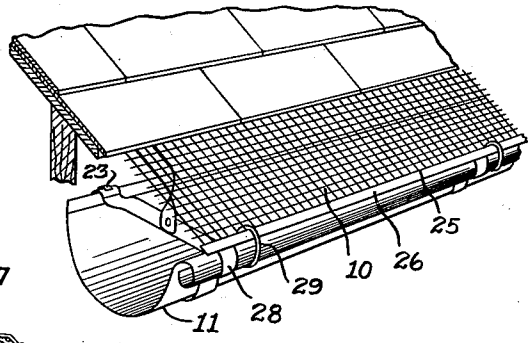


Fig. 2

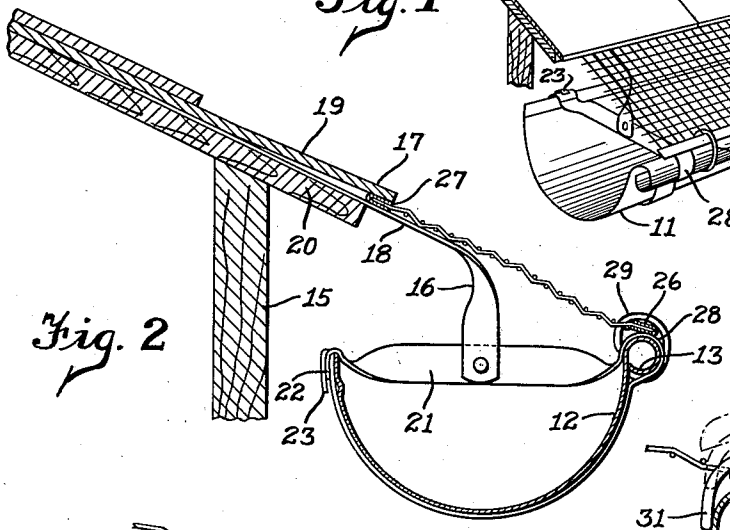


Fig. 3

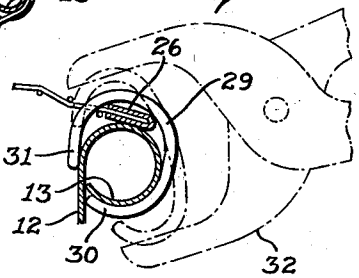
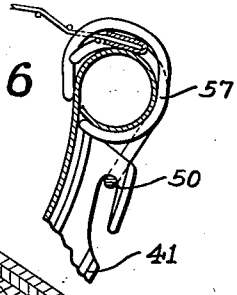


Fig. 6



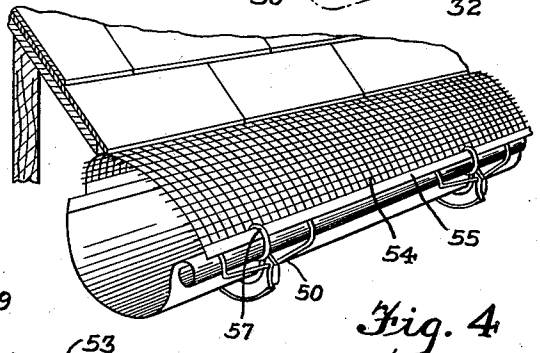
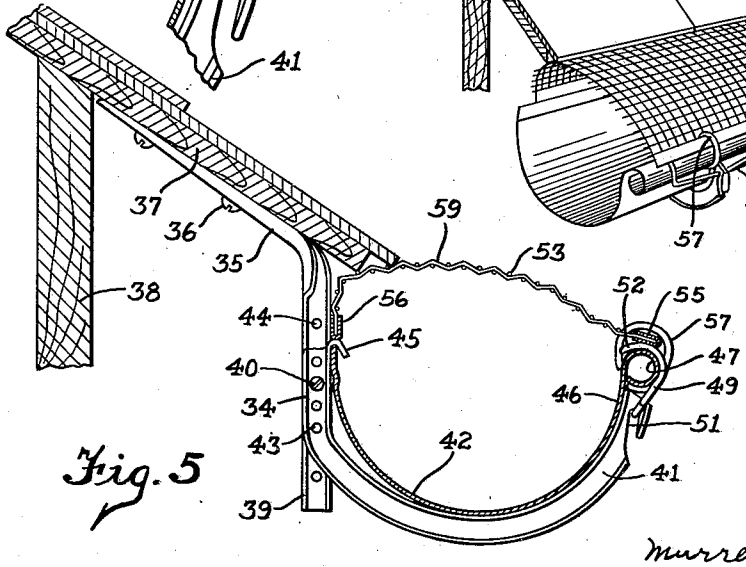


Fig. 4

Fig. 5



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EAVE TROUGH PROTECTOR

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Application September 30, 1938, Serial No. 232,487

1 Claim. (Cl. 108—30)

This invention relates to eave trough screens or protectors.

One object of the invention is the provision of an eave trough screen or protector which may be readily positioned on or applied to an existing eave trough so as to extend downwardly and outwardly from the end of the eave to the edge of the trough and overlying the edge of the trough, and having a connection to the outer part of the trough which is readily applied and which is effective in fastening the outer part of the screen to the outer part of the trough without requiring the trough to be perforated or provided with attaching devices as a part thereof.

Another object of the invention is the provision of an eave trough and a protector or screen cooperating therewith and having its outer portion inclined downwardly and outwardly from the end of the eave and terminating in a rigidifying outer edge strip which overlies the upper outer portion of the trough and which is secured thereto by clamps which hold the screen in proper position with respect to the trough and with respect to the eave.

Another object of the invention is the provision of an eave trough having a screen or protector which is provided with a rigidifying outer edge strip overlying a tubular top portion of the trough and secured thereon by clamp rings which extend through the screen, over the edge strip and under the tubular top portion of the trough.

Other objects and advantages of the invention will be apparent from the following description, the appended claim and the accompanying drawing, in which:

Fig. 1 is a perspective view illustrating a part of an installation embodying the present invention, in which the protector screen is arranged on an eave trough supported from the eave;

Fig. 2 is a transverse sectional view corresponding to Fig. 1;

Fig. 3 is an enlarged sectional view illustrating the clamping of the edge strip of the screen to the tubular portion of the trough;

Fig. 4 is a perspective view illustrating a part of an installation in which the protector screen is of arched form;

Fig. 5 is a transverse sectional view corresponding to Fig. 4; and

Fig. 6 is an enlarged sectional view showing the connection between the screen and the tubular portion of the trough and corresponding to the form of construction illustrated in Figs. 4 and 5.

Referring to the drawing by reference numerals, 10 generally designates an eave trough protector or screen, which is applied to an eave trough 11 of any suitable construction. This trough, as shown in Figs. 1 and 2, is of substantially half-round section, having the upper portion of its outer wall 12 overturned to provide an upper tubular portion 13. The trough is secured at a suitable distance from the supporting wall 15 of a building by means of spaced trough supports 16 so that the trough is arranged below the overhanging eave 17, the screen 10 being effective to prevent leaves and other foreign matter from entering the trough.

The hangers or supports 16, in the form illustrated in Figs. 1 and 2, each comprises a metal strap 18 which may be secured by screws or the like below the shingles 19 and on the upper side of the roof wall 20. The strap 18 is fixed to a transverse strap 21 which is provided with an inner lip 22 extending over the inner upper edge of the trough, the strap 21 being turned over the tubular portion 13 and extending under the trough and connected to the lip 22 by means of an interlocking tongue 23 which projects through an opening in the lip 22.

The screen 10 is formed of suitable foraminous material, preferably a wire mesh fabric of a semi-rigid character but having some flexibility. The screen is formed in sections of suitable length such for example as 8 feet, each section of the screen comprising the wire mesh strip 25 having a marginal edge strip 26 rigidifying the outer edge of the screen. This outer edge strip 26 is preferably a flattened substantially U-shaped piece of sheet metal clamped or squeezed over the edge of the screen mesh as indicated in Fig. 2. The opposite side of the screen, as shown, is also provided with a rigidifying sheet metal edge strip 27, these rigidifying strips extending only along the inner and outer lateral edges. The material of the screen may be galvanized iron or copper or other suitable metal similar to that of the trough with which the screen is to be used.

The inner upper portions of the screen rest on the outwardly projecting portions of the straps 18, in engagement with the end of the eave, the screen being preferably inserted under the shingles and over the roof wall 20 for a small distance as shown in Fig. 2. The screen inclines outwardly and downwardly so that leaves and other foreign matter that may be flushed down along the roof will be kept from entering into the trough, and will slide out over the edge of the trough. The outer edge strip 26 extends above the tubular portion 13 of the trough, resting on

the overturned portions 28 of the straps 21, and is held in this position so as to maintain the inner edge strip 27 in engagement with the eave, by means of clamp rings 29 which extend around the tubular portion of the trough, projecting through the screen and pinching the edge strip down toward or against the tubular portion 13. The rings 29 are preferably applied to the screen and to the trough at some little distance from the overturned portions 28 of the supporting straps so that the rings will bend the edge strip slightly downwardly and hold the edge strip tensioned toward or against the top of the tubular portion 13 of the trough. The rings, before being applied to the trough, are generally C-shaped as shown in dotted lines in Fig. 3, with a considerable distance between the opposite ends or legs. The opposite sides of the rings are squeezed together as by means of a suitable clamping or squeezing pliers the ends of which are shown at 32 in Fig. 3, so as to bring the lower leg 30 of the ring substantially against the outer wall 12 of the trough, the upper leg 31 extending over the edge strip 26 and projecting through the screen and contacting the inner side of the trough portion 12, as shown. These rings have sufficient rigidity so that the edge strip will be clamped tightly in position, and since the rings engage the upper side of the edge strip it will be seen that a downward holding force is applied to the screen, holding the inner portion of the screen down against the supporting straps 18. With the edge strip overlying the outer portion of the trough and held to it by means of the clamp rings it will be apparent that the space between the rings and above the edge strip is left free so that leaves or other trash can readily slide outwardly and will not be caught and held by the outer portion of the screen.

In the form of construction illustrated in Figs. 4, 5 and 6, the inner portion of the protector screen extends under the end of the eave, the inner edge strip projecting downwardly and engaging the outer sides of the trough supports, below the eave. As shown, the trough supports 34 comprise rigid angle pieces 35 spaced along the length of the trough, these pieces being connected by screws 36 to the under side of the roof wall 37, outwardly of the building wall 38. The downturned portion 39 of each angle piece is adjustably connected by a bolt 40 to a rigid curved arm 41 which interfits with and underlies the half-round trough 42 so as to support the trough at the proper distance below the end of the eave. The bolt 40 may be positioned in any of a series of holes 43 in the arm 41 and holes 44 in the downturned portion 39 of the angle piece so that the height of the trough with respect to the eave can be varied. The upper inner portion of each of the arms 41 has an overturned lip 45 projecting over the top of the inner wall of the trough, while the outer wall 46 of the trough terminates in a rounded or tubular portion 47 which is held down by means of bent rigid retaining wires 49. Each of the retaining wires 49 is provided with a bight portion 50 fitting in a notch or recess 51 in the arm 41, the spaced upper curved ends of the retaining wires reaching over the top of the tubular portions as indicated at 52.

The trough protector 53 comprises a metal screen 54 having rigidifying outer and inner edge strips 55 and 56 respectively, the screen construction being similar to the screen 10 except that in the construction shown in Figs. 4, 5 and 6, the screen is arched upwardly so that its maximum height is closer to the inner wall of the trough than to the outer wall and substantially underlies the outer end of the eave, which holds the inner edge strip 56 down against the lips 45 and against the downwardly projecting portions 39 of the angle pieces.

The outer edge strip 55 overlies the tubular portion 47 of the trough and is held securely in its proper position by means of the clamp rings 57, which extend from the outer side of the upper portion of the trough, under and around the tubular portion 47, over the edge strip 55, through the holes in the screen and against the inner upper portion of the trough wall, as shown in Fig. 6, thus clamping the edge strip down towards or against the tubular portion of the trough and holding the edge strip securely in position against any outward movement and also tensioning the screen downwardly to some extent and maintaining the inner edge strip 56 against the portion 39 of the angle pieces. The clamp rings 57 are preferably located at a suitable distance from upper curved portions 52 of the retainer wires 49 so they may pinch or squeeze the edge strip downwardly towards or against the tubular portion of the trough at the location of the clamp rings.

The slope of the outer portion of the trough is adequate for the leaves or other substances washing or moving down along the roof to slide or wash downwardly over the top of the outer edge strip 55, and such leaves as are not washed over rest on the screen and may quickly dry out so they may be blown away. The upwardly bowed or arched portion 59 is preferably so arranged as to be at the approximate level of the horizontal plane through the lower edge of the eave, and has a gradual curvature so that its upwardly arched formation offers a high degree of strength resistance to downward deformation such as might be caused by a heavy load on the exposed screen surface. Because of different installation conditions and different distances between the lower end of the eave and the top of the trough, the top arched portion of the screen may be some little distance below the lower end of the eave, but the protector screen may accommodate itself to the particular installation notwithstanding considerable variation in the distance between the eave and the trough, as the screen has sufficient flexibility so that it may be manually bent to adjust itself to the proper protecting relation. A few standard screen widths have been found to take care of practically all varying conditions and to effectively close the top of the trough and prevent collection of leaves and debris within the trough as well as the building of bird nests therein. At the end of the trough the space between the end wall of the trough and the top of the screen may be closed by having the middle portion of the screen project beyond the trough end some little distance and then bent downwardly in contact with the end wall from one side of the trough to the other, the rigidifying end strips 55 and 56 being cut off even with the end of the trough so as to terminate just inside of the trough end.

As will now be quite apparent, the clamp rings form a means for attaching the outer part of the screen to the outer part of the trough without requiring the perforations in the trough such as might result in leakage, rusting, and weakening of the structure. Neither the screen nor the trough need be made with fastening projections

or pieces made as parts thereof. The clamp rings may be positioned in any convenient position as desired by the installer, after he inserts the screen in its desired position, and will hold the screen securely in such position.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claim.

What is claimed is:

The combination with an eave trough having the top of its outer side overturned to provide a tubular top portion and being supported in predetermined spacing with respect to the lower end of the eave, of a protector screen therefor having rigidifying outer strips along each longitudinal edge thereof, the inner portion of said screen being bent upwardly to cause the screen to contact the lower side of the eave, said screen extending downwardly and outwardly with an upward arch in front of the eave and clamp rings extending through the screen over the edge strip and under the tubular portion thereof abutting substantially opposite sides of an imperforate portion of the trough for pinching the outer edge strip down toward the tubular portion of the trough to position said screen against outward movement and to maintain an upwardly arched condition in the screen to accommodate the screen to the varying height of the eave and to provide reinforcement for the action of material falling thereupon.

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