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GUTTER HANGER

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2 Sheets-Sheet 2

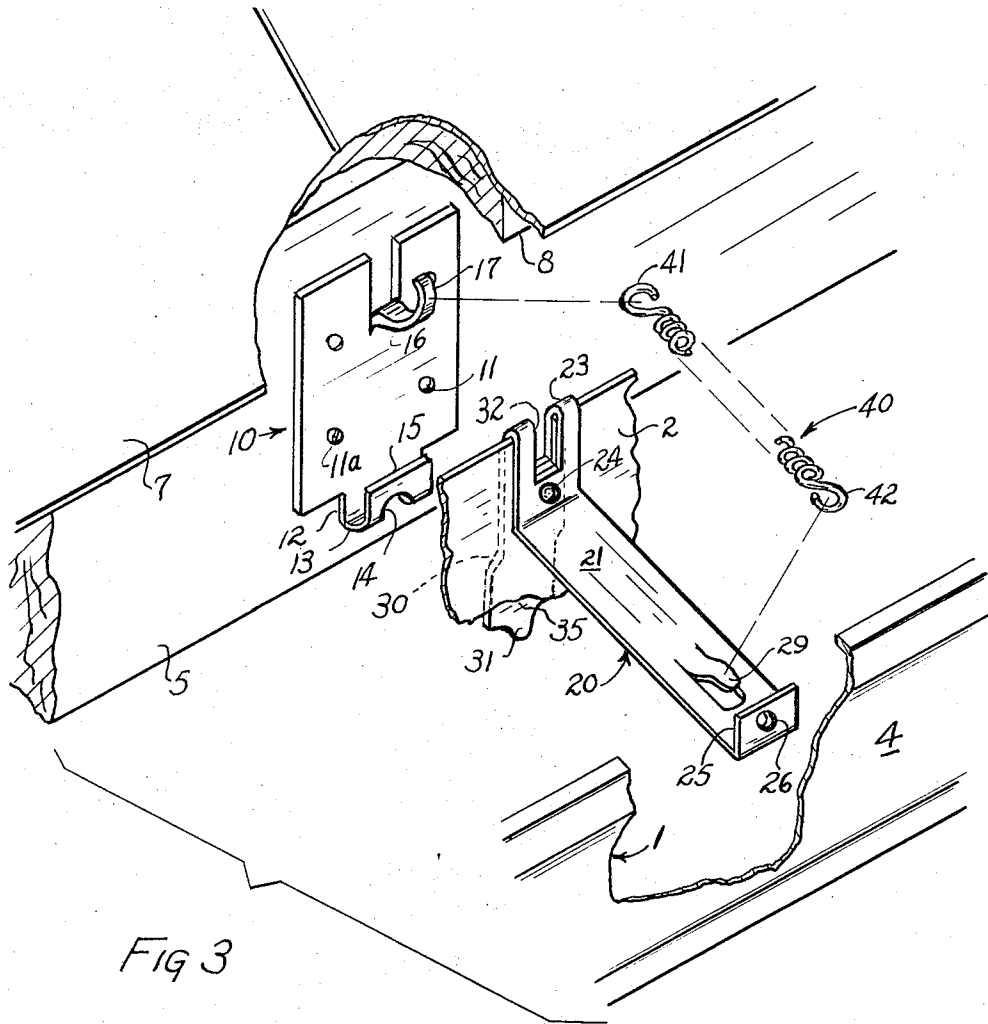


Fig 3

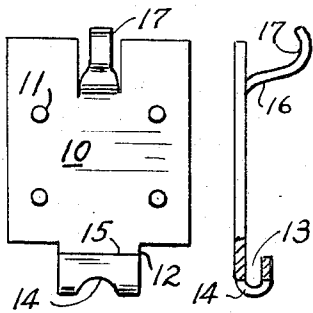


Fig 4

Fig 5

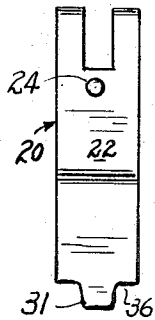


Fig 6

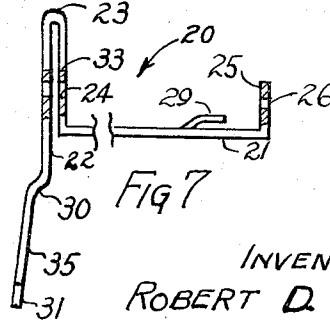


Fig 7

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1

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GUTTER HANGER

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2

This invention relates to an improvement in the structure of hangers for gutters.

Gutters, sometimes termed eaves trough, are applied to buildings for the purpose of collecting and carrying away roof water and debris to a downspout and thence to a sewer system. Normally the gutters are permanently fastened to the building beneath the roof edge and intended to remain for their useful life after which they are removed and replaced with new ones. Certain problems are encountered in the original placement of the gutters and in their maintenance and repair while in use. Furthermore, in certain climatic regions, where heavy icing conditions or heavy snow loads are encountered, it is advisable to support the gutter so that it is not damaged by these heavy loads and further so that it does not contribute to roof damage because of the build-up of ice or snow between the gutter and the shingles of the roof.

It is an object of this invention therefore to provide a hanger mechanism that permits relatively simple original installation of a removable gutter system, by either the home owner or the artisans of the trade. A further object consists in providing a means by which the gutter can be readily dismantled for the purpose of taking maintenance measures including painting of the gutter and of the building area against which the gutter is normally mounted. To accomplish this latter object the invention comprehends a form of device that can be repeatedly mounted and dismantled without adverse effects on the function of the device and which will assure a continuing factor of safety in the extended use of the equipment.

It is a further and important object of the invention to provide a hanger means that will furnish a yieldable support for the gutter system. That is to say, the invention is designed to permit the accurate original placement of the gutter which insures proper drainage, and thereafter operates to permit temporary deviation or yielding of the gutter from its original position in order to compensate for extremely heavy ice-loads and to avoid the build-up of excessive forces or pressures between the gutter and the roof and shingles. These forces have been known to displace shingles or to throw the gutter system permanently out of line with resultant interference with proper drainage.

More specifically, the present invention contemplates the use of a springloaded suspension means by which the gutter is permitted to yield against heavy loads and then, after the origin or cause of the load has disappeared, to return to normal alignment.

A further object of the invention contemplates an arrangement of parts for a demountable gutter which assures the accurate and safe support of the gutter so that it will not be dislodged from its support on the building by either accidental means or by the pressure of forces described aforesaid in connection with ice and snow loads.

It is a further object of the invention to provide a suspension means for a gutter or eaves trough device by which the gutter is supported in a position away from the fascia strip of the building to thereby minimize the tendency of corrosion of the gutter to stain the side of the building along which it is mounted. In addition the form of suspension described herein is intended to permit adequate ventilation behind the gutter and under the eaves, thereby avoiding deterioration of the building in that area.

Finally a further object of the invention is to provide a means of suspension that is relatively simple and fool-proof in installation and use and one which is hidden from view so as to present no unsightly structural members along the gutter line.

Other advantages and objects of the invention will appear in the following description of a preferred and practical embodiment of the invention.

The drawings which accompany and form part of this specification disclose a preferred embodiment of the invention in which:

FIGURE 1 is a perspective view showing part of a house or building and a section of gutter supported thereon by means of a gutter hanger assembly disclosed in accordance with the invention.

FIGURE 2 is a sectional view taken along line II—II of FIG. 1. This figure also illustrates diagrammatically the manner in which the gutter system yields under load.

FIGURE 3 is an exploded view illustrating pertinent parts in perspective.

FIGURE 4 is a detail front elevational view of the mounting plate of this invention.

FIGURE 5 is a side elevational view of the mounting plate of FIG. 5.

FIGURE 6 is a view of the brace member in rear elevation, and

FIGURE 7 is a side elevational view of the brace member of this invention.

With reference to the accompanying drawings, a conventional gutter 1 is disclosed having a rear wall 2 a bottom wall 3 and a contoured front wall 4. Although the invention is disclosed with reference to a molded gutter, the invention is equally applicable to the conventional half-round gutter configuration, or any other conventional form. Referring particularly to FIG. 1, a section of the gutter 1 is seen to be support by two identical hanger assemblies 9 that are mounted on the fascia board 5 of a building 6 having a roof 7 with an overhanging eaves portion 8 beneath which the gutter 1 is normally mounted. From FIG. 3 it will be seen that the gutter hanger assembly is comprised essentially of three parts: A mounting plate 10, a brace or support member 20 and a resilient tie member 40.

The mounting plate 10 is in the form of a flat sheet metal part having openings 11 through which nails 11a are driven or screws are turned to mount the plate against the fascia board 5 or other appropriate part of the building. Normally these plates are mounted in a line along the fascia board 5 so that the line of support provides a slope sufficient to allow proper drainage along the gutter 1 under the eaves 8. Along the bottom edge of the mounting plate 10 is a depending hook formation 12 which extends downwardly and thence forwardly and upwardly (terminating in an upper edge 15) to form a receiving support or pocket 13. An opening 14 is provided in the bight portion of the hook for a purpose that will shortly appear. The upper portion of the mounting plate 10 has a tongue 16 struck from the plate that extends forwardly at 16 and terminates in an upwardly-turned hook portion 17. The vertical spacing between the edge 15 of the lower support 13 and the upper tongue 16 is carefully chosen for a purpose that will be apparent as the description proceeds.

Referring to FIGS. 3 and 7, the brace member 20, also of sheet metal material, is designed to fit over and be attached to the upper rear edge of the rear gutter wall 2 and has a forwardly extending front portion 21, the front end of which terminates at, and is attached to, the upper front wall 4 of the gutter; a rearward portion of this brace 20 is in the form of a supporting member 22 that extends downwardly behind the gutter wall 2, generally parallel

therewith, and terminates in an offset portion 35 that is designed to be removably received in and supported by the aforesaid pocket 13. Brace member 20 has in intermediate or bight portion 23 (connecting the brace and support portions) that extends over the upper edge of the rear wall 2 of the gutter and is riveted thereto by means of conventional rivets or bolts indicated at 24 (FIG. 2). The front portion 21 of the brace member 20 terminates at its forward end in an upturned flange 25 that is provided with an opening 26 to register with a corresponding opening 27 in the front wall of the gutter, and is attached to said gutter by means of a rivet 28 or the like. Tongue 29 is struck upwardly from the front portion of the brace member in the reach section 21 to provide a hook for a purpose that will shortly appear. The rearward portion 22 of the brace 20 runs down and closely parallel to the back face of the gutter rear wall 2 for a short distance and then is interrupted by a rearwardly extending joggle or offset 30 (FIG. 7); then this offset portion 35 continues downwardly at an angle away from the wall 2, terminating in a tongue 31. This tongue 31 is of such shape and dimension as to be receivable in the opening 14 of the support 13. The bight portion 23 extends for a short distance upwardly from the rear end of the front reach portion 21 and then folds back on itself to extend down behind the gutter wall 2 as described above. In the embodiment shown, the rear wall 4 of the gutter is clamped in the bight section 23 and the assembly riveted or bolted together by a fastener 24 passing through registering openings in the brace and gutter wall below the notch 32. This notch 32 is cut in the bight portion 23 and extends downwardly to terminate at a lower edge 33; a similar registering notch is cut in the rear wall 4. The width of these notches are sufficient to permit clearance for the mounting plate hook 17.

The dimensions of the foregoing parts, including the distance between the bottom of the support 13 and hook 16, 17 and the distance between the tongue 31 at the lower edge 33 of notch 32, are so chosen that tongue 31 can be engaged in opening 14 of pocket 13 and then the portion 22 of brace member 20 brought against the face of mounting plate 10. In this condition the tongue and hook portion 16, 17 will extend through the notch 32 with the under surface 16 of the hook 17 just clearing the edge 33 of notch 32, whereby the lower surface of hook 16, 17 prevents the displacement of the assembly 22 by direct upward movement. It will also be noted that the front upstanding wall of the support 13 terminating at edge 15 keeps the tongue 31 from becoming disengaged forwardly from the pocket 14 when the foregoing condition exists i.e. when part 22 lies against the face of the mounting bracket 10.

In the embodiment showing the resilient tie member 40 is comprised of a spring means having a connecting hook or loop at its rearward and also at its forward end designated, respectively, 41 and 42. Loop 42 is hooked over the tongue 29 in the brace member 21 and the rear loop 41 is engaged over the mounting plate hook 17. The length of the resilient tie 40, as well as the span of the reach portion 21 of the brace is primarily determined by the width of the gutter; in any event the resilient tie 40 is chosen of such length as to cause it to draw the assembly against the mounting plate 10 with a substantial force.

In employing this invention, the party installing the gutter system first lays out the gutter line in the conventional manner by striking a line along the fascia board 5 beneath the edge of the eaves 8. In laying out this line, the necessary slope is provided to assure proper drainage. The mounting plates 10 are then spotted along this line as determined by conditions; for example, the mounting plates 10 may be secured to the ends of the roof rafters in certain constructions, or as is more general, are spotted along the fascia board at 30- to 36-inch intervals as illustrated in FIG. 1. The mounting plates 10 are secured

by screws 11a or other fastening means which pass through the accommodating openings 11 in the plate. Next the brace members 20 are spotted along the length of the gutter to correspond with the spacing of the mounting plates on the building. The gutters are drilled at the appropriate points on the front and rear walls and the brace members are riveted at the rear and forward edges of the gutter 1 using rivets or other fastening means as indicated at 24 and 28 of the drawings. Prior to assembly of the brace members 20 to the gutter 1, the upper edge of the rear wall of the gutter is cut out at appropriate places to provide the notches that register with the notch 32 in the brace member.

After the mounting plates 10 are in place and the corresponding brace members 20 are attached, the gutter 1 is raised to a height that will permit the tongues 31 to clear the support edges 15 and thence is lowered to permit these tongues to enter the openings 14 in the pockets 13. It will be seen that the offset 30 assists in enabling the operator to insert the tongues 31 into openings 14. The height of the upstanding front portion of the support 12 (which terminates at edge 15) is sufficient to keep the support 35 from falling forward and disengaging the opening in pocket 13. Thus the gutter assembly is self supporting at this stage of the installation procedure. The operator then proceeds to install the spring members 40. He does this by engaging the forward loop 42 of each spring member 40 over tongue 29 in the corresponding brace member and stretching the spring to engage rear loop 41 over the hook 17 on the corresponding mounting plate. When this has been accomplished the gutter and brace assembly is held with a tensional force against each of the mounting plates 10. Also the gutter is supported vertically by the downwardly extending portion 35 and tongue 31 of the brace members 20 as they seat in the support or pocket 13. It will also be noted that when the parts are assembled, the mounting plate hooks 17 extend through the slots 32 in the bight portion 23 and project forwardly from this bight portion so that the loop 41 of the spring member 40 can readily be engaged over said hooks. Once loop 41 is placed around the hook 17 it acts as a lock to prevent the bight portion 23 from passing forwardly over the end of the hook. By the same token, tongue 31 is prevented from disengaging from the mounting plate opening 14 so that the lower end 35 of the brace member 20 is maintained in and engagement with the mounting plate 10 and thereby the gutter assembly is safely and securely supported. Whereas the joggle 30 in the depending portion 22 facilitates the engagement of tongue 31 into the opening 14 of the mounting plate support 13, there is a further advantage in spacing the offset portion 35 away from the rear wall of the gutter in that it also serves to space said gutter wall away from the wall of the building. When the springs 40 are put in place they draw the brace members 20 against the mounting plates 10 at the top of the assembly and the gutter is held in this position under normal operating conditions. Through proper choice of length for the mounting plate hook 17 there is provided a clearance between the front face of the bight portion 23 and rear extremity of the loop 41 when the gutter is in the aforesaid position, as will be seen in FIG. 2. In the construction shown, the gutter assembly is able to rotate clockwise a limited amount by pivoting in the pocket 13; this in effect causes the gutter 1 to tip down and away from the eaves 8. The amount of this clockwise rotation is determined by the space between the front face of the bight portion 23 and the loop 41. Normally this is of order of magnitude of  $\frac{1}{4}$  to  $\frac{1}{2}$  inch. Thus if the gutter is subjected to a very heavy load of ice or snow it is able to yield downwardly and pivot forwardly (as shown in dotted lines in FIG. 2) until finally it moves to its furthest clockwise rotational position limited by the contact of the front face of the bight 23 with loop 41. Even in this depressed position there is no possibility of loss of support since the upward-

ly hooked portion 15 holds the tongue 31 in place and loop 41 holds bight 23 on the hook 17. After the heavy overload is reduced—for example by the melting of the ice or heavy snow load—the gutter returns to its original position by virtue of the spring action.

It will thus be seen that this invention has provided a novel means for relieving excessive load on the gutter by permitting the same to yield against forces that sometimes build up between the gutter and the roof. By this relief action lifting the roof shingles and/or deformation of the gutter proper is avoided.

It will also be seen that the subject construction has a further advantage that allows the gutters to be repeatedly removed and remounted without diminishing the supporting ability of the assembly. In certain of the prior art clamping is accomplished by bending or otherwise deforming certain parts of the supporting device, but this has the disadvantage that after removing the gutter such rebending and reclamping of the prior devices is rendered ineffective or impossible. In this invention the spring member 40 is readily disengaged as desired and no deformation of parts occurs which would interfere with their proper subsequent performance. By the aforesaid construction and interaction of parts, the subject invention incorporates a safety feature in the form of a positive lock to hold the gutter to the building that is not found in any of the known prior art dealing with demountable gutter supporting mechanisms.

Summarizing, in the subject invention, the gutter system is initially readily installed, it is easily removable at will from the building for maintenance, repair or renewal, and once in place is securely held in a yieldably supported fashion regardless of the number of times the gutter has been removed and reinstalled.

The foregoing description is intended merely as an illustration of the presently preferred form of the invention. It will readily occur to those acquainted with the art that minor modifications could be incorporated into the disclosed device and it is intended that the scope of the following claims cover all such modifications.

What I claim as new is:

1. A hanger assembly for gutters of buildings wherein said gutters have a front wall and a rear wall, comprising: a mounting plate having a lower support socket and an upper hook formation and adapted to be secured to the side of the building; a brace member that has a first portion that spans the distance between the rear wall and the front wall of the gutter and is adapted to be secured to the walls at its respective ends, and a second portion forming a support that extends downwardly behind the rear wall of the gutter and having a means at its lower end for engaging the support socket of the mounting plate, and a hook formation in the first portion of the brace member near its forward end; and a resilient tie having its ends adapted to engage respectively the hook on the brace member and the hook on the mounting plate, whereby the brace member is supported on the mounting plate and carries the gutter while the resilient tie draws the gutter and brace assembly against the mounting plate in a yieldable fashion.

2. A hanger for gutters as claimed in claim 2 wherein the brace member has a third portion, intermediate the first and second portions, provided with a notch which permits said section to clear the upper hook member in the mounting plate and lie against said plate prior to the engagement of the end of the resilient tie with said latter hook and whereby movement of the third portion past said tie end is subsequently prevented until said tie is disengaged from the hook.

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