United States Patent [19]

Frangmeier

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[45] **June 17, 1975**

[54] **RAIN GUTTER ATTACHMENTS**

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[51] **Int. Cl.** **E02b 9/04;** E04d 13/06

[58] **Field of Search** ..... 52/16; 61/12, 14, 15; 285/137 R

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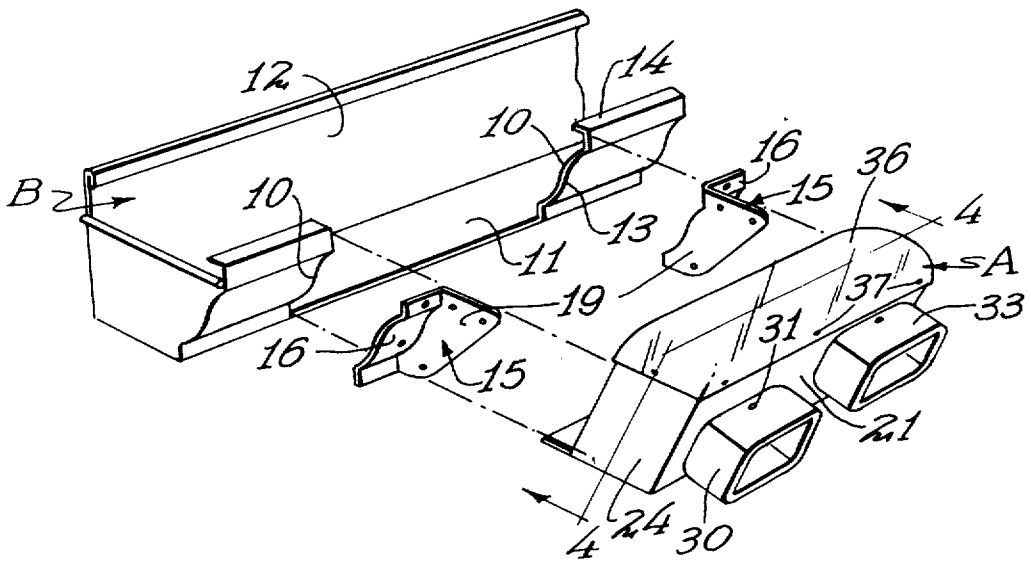
Primary Examiner—Paul R. Gilliam

Assistant Examiner—David H. Corbin

[57] **ABSTRACT**

A rain gutter attachment is adapted to attach in a notch in the front wall of a rain gutter, or in a section of rain gutter having a notched front wall. The attachment has two outlets one near the top of the gutter and the other near the bottom thereof so that when the downspout of the lower outlet becomes frozen or clogged up, the water may still flow through the upper outlet.

9 Claims, 13 Drawing Figures



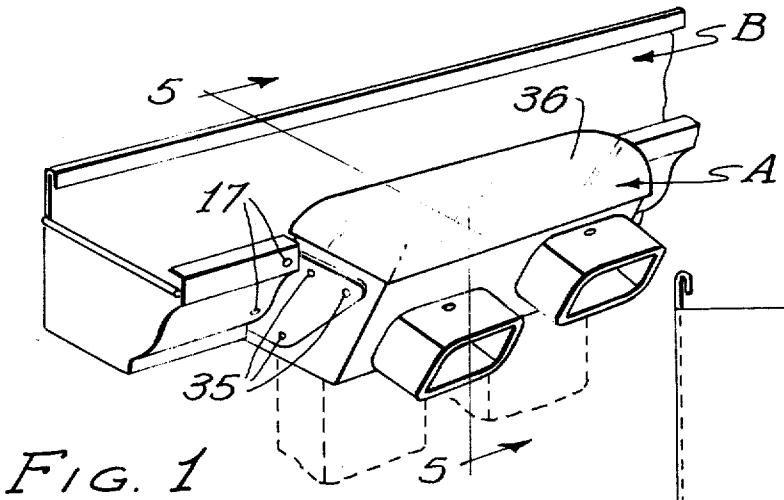


FIG. 1

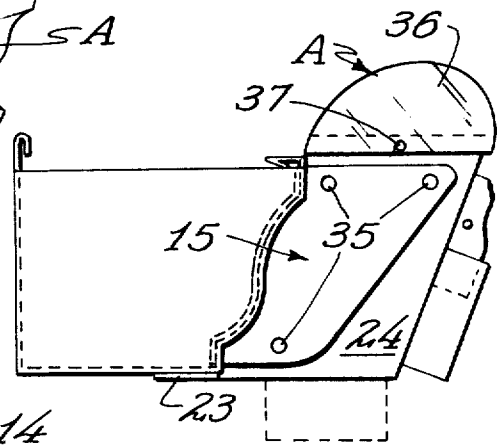


FIG. 2

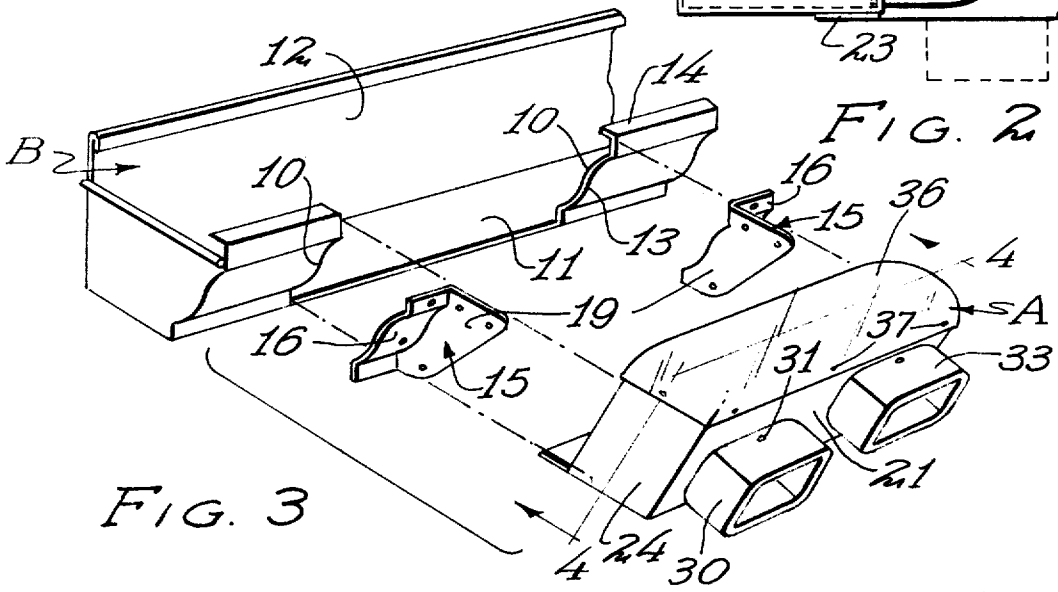


FIG. 3

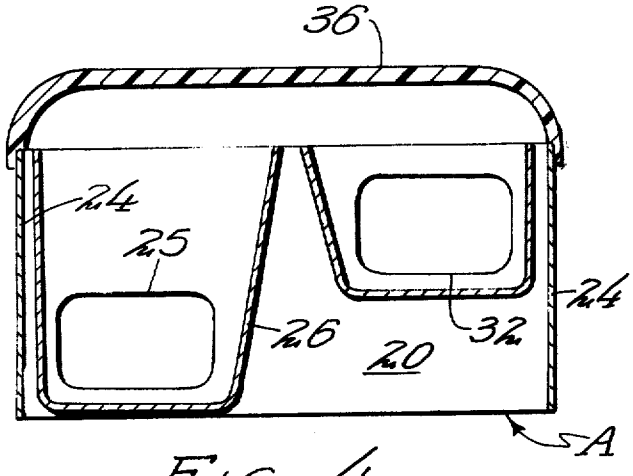


FIG. 4

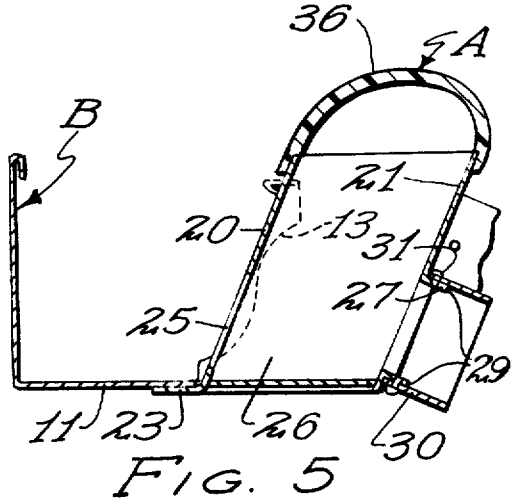


FIG. 5

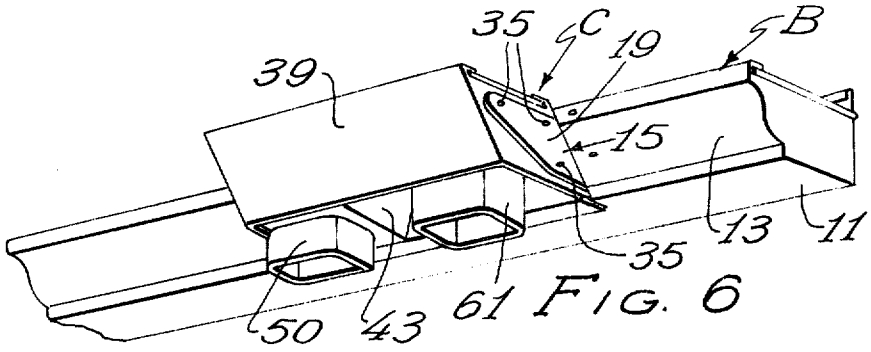


FIG. 6

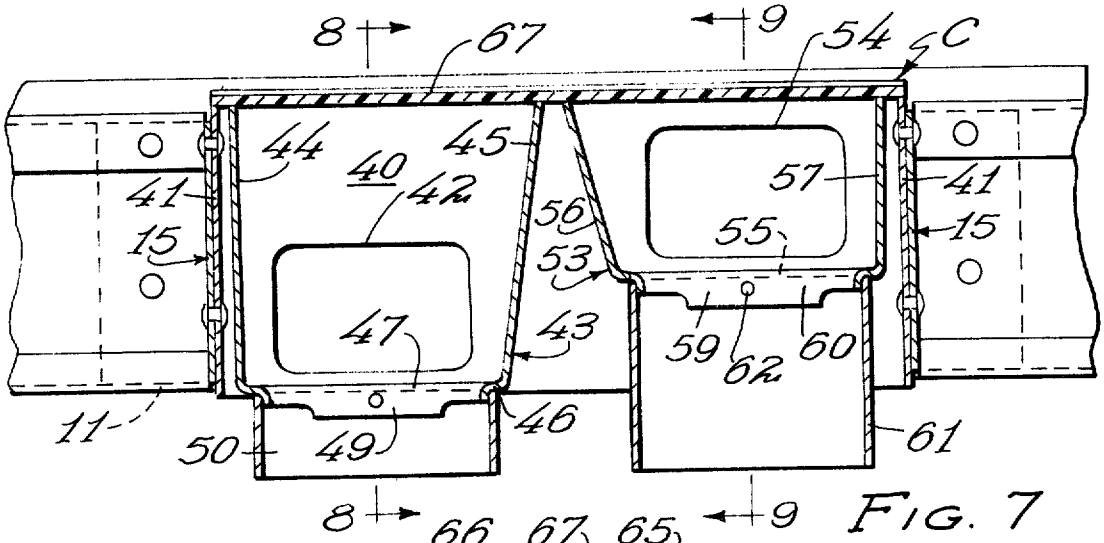


FIG. 7

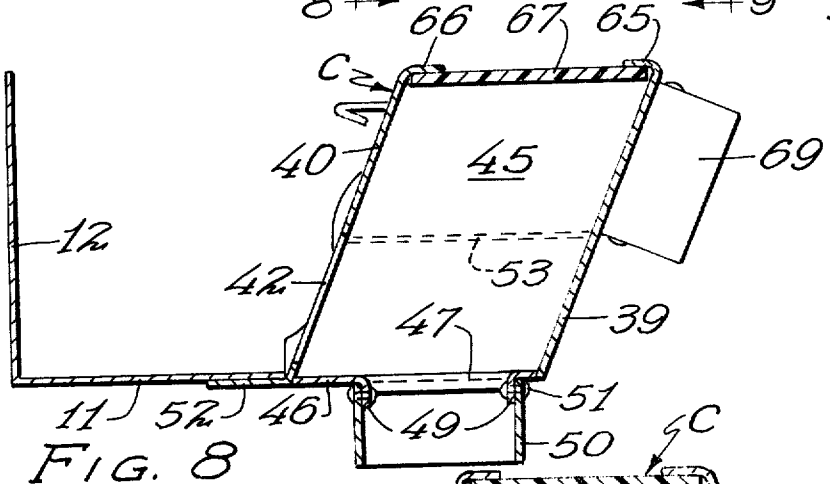


FIG. 8

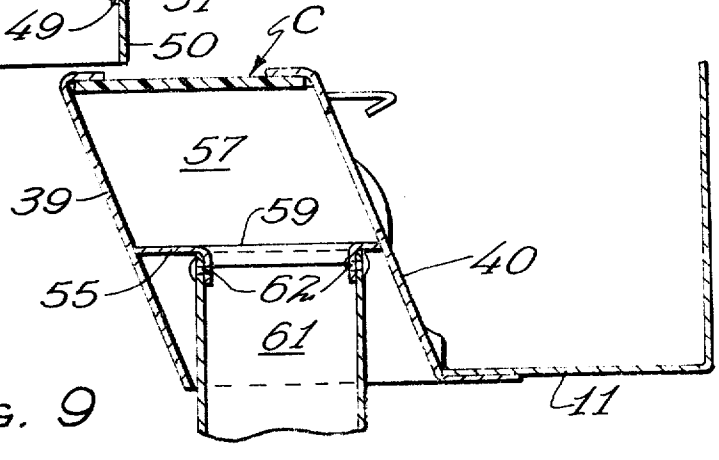


FIG. 9

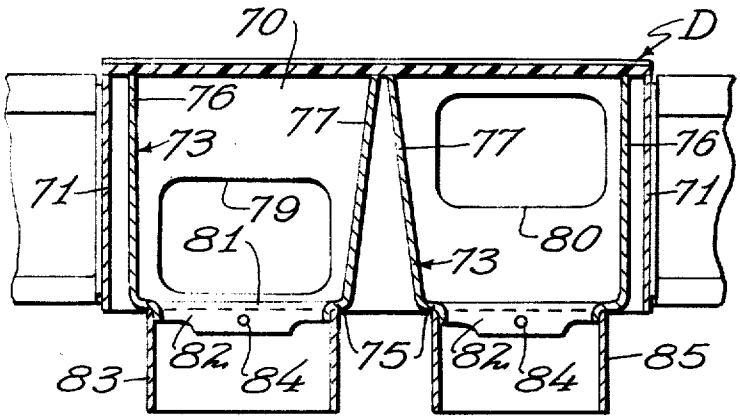


FIG. 10

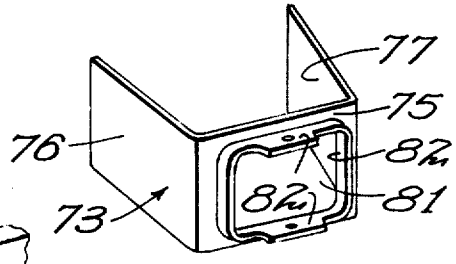


FIG. 11

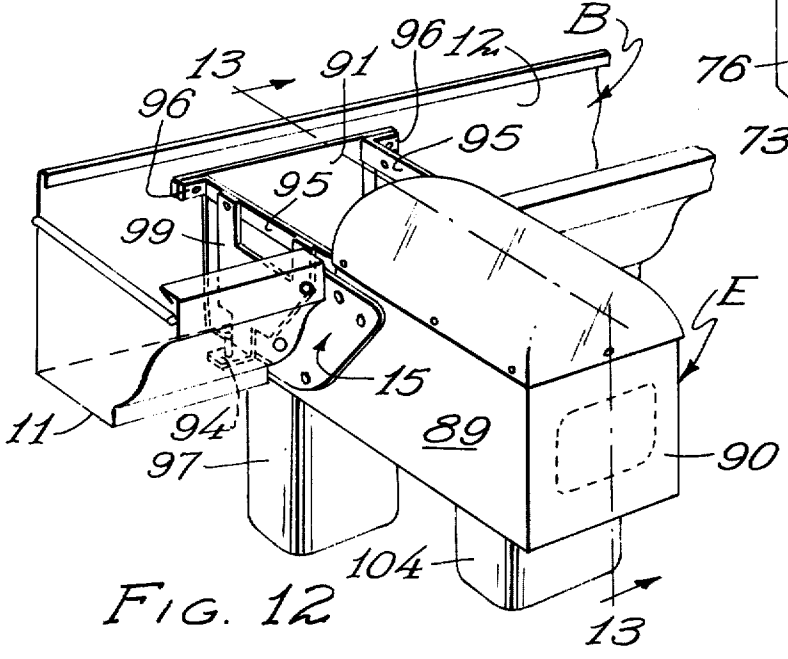


FIG. 12

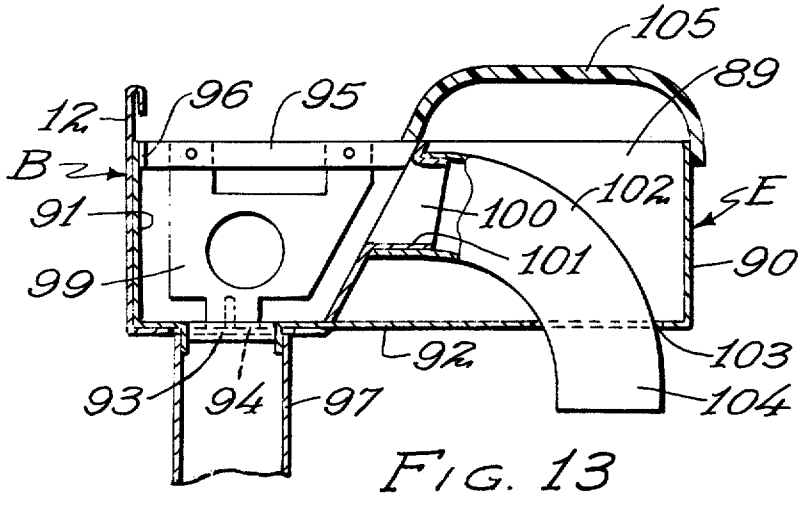


FIG. 13

RAIN GUTTER ATTACHMENTS

This invention relates to a Rain Gutter Attachment and deals particularly with a means of directing the water in a rain gutter to the down spout or the like.

BACKGROUND OF THE INVENTION

Previous application in the colder climates, the water in drain gutters attached to the roofs of the building tend to gradully freeze up. The down spouts which are connected to the rain gutters often tend to freeze up more quickly because they are usually not as well exposed to the sunlight as the rain gutters. When the down spouts freeze up, preventing the flow of fluid therethrough, the liquid in the rain gutters will freeze until the rain gutters are full, and after this time, the liquid caused by rain or by melting snow will merely run over the edges of the rain gutters, and drip upon the ground.

This is particularly true when the down spout is of the usual type in which the water flows through an elbow connected to the bottom of the gutter, a slooping portion which extends toward the outer wall of the building, and is connected by another elbow to a vertical down spout portion. This is normal practice, particularly when the eaves project well beyond the house wall, and it is desired to provide the down spout next to the outer wall of the building where it is least conspicuous. In such an arrangement, even if the water in the rain gutter does not freeze, it must pass through the angular portion and toward the building, the upper portion of the down spout thus being shielded from the sun by the eaves during at least most of the daylight hours. As a result, the shielded portion of the down spout freezes up, preventing the liquid from passing therethrough leaving no alternative but to build up water in the rain gutter which cannot escape through the down spout, and must therefore remain in the gutter until the gutter fills with water.

SUMMARY OF THE INVENTION

A feature of the present invention resides in the provision of an attachment to the rain gutter having outlets at different levels. In the event the down spout connected to the lower portion of the gutter becomes frozen, the water in the rain gutter has an additional outlet which permits the discharge of water for an additional period of time, this at least delaying the filling up and overflowing of the gutters.

In the preferred form of construction, an attachment is provided on a rain gutter having inlet openings which are different levels, one being adjacent the base of the gutter, and the other adjoining the top thereof. This fitting preferably includes a chamber designed to be covered by a transparent panel or by a light absorbant panel which tends to maintain the interior of the chamber at a temperature above that of the outdoor atmosphere. This chamber has outlets, preferably in laterally spaced relation which direct the liquid at different levels to the outlets, and the outlets may either lead to inclined down spout sections which are connected through elbow to vertical down spout portions in side by side relation which may be supported by a decorative grillwork or other similar support and in which the down spout portions preferably terminate in spaced relation to the ground. This acts to support the vertical. In this arrangement, the water from the rain gutter may

be directed to a point several feet from the wall of the house, and the down spouts are completely exposed to the rays of the sun. In this way, the upper portions of the down spout may extend over a sidewalk extending along the building so that the water will drain several feet from the building. Furthermore, by terminating the vertical portions of the down spout well above the surface of the ground, if the water freezes in the down spout, it will normally thaw itself free from the down spout when the structure is heated by the sun, and the ice frozen in the down spout may merely drop as ice upon the ground.

In another form of the invention, the housing may be equipped with elbows which are within the housing, and which lead to separate vertical down spout members which are in spaced parallel relation, and which may be supported by an attractive support so as not to detract from the appearance of the building.

In other instances, the housing may be positioned at a point adjacent to the normal rain gutter down spout, and may include a higher level outlet connected to an angular down spout which may extend away from the house and downwardly to serve in the manner mentioned to be heated by the rays of the sun or by electrical cable means so as to provide a means of draining the water even though the water in the lower portion of the gutter is frozen.

A further feature of the present invention resides in the fact that the chamber may be supported in adjustable relation to the rain gutter so that the angular relation of it may vary depending upon the position of the outlets. In other words, if the outlets are to be connected to angularly extending upper portions of the down spout, the chamber may be tilted to provide the desired angle or slope to these spout portions. On the other hand, if the down spouts are intended to extend through elbows to vertically spaced down spouts, the housing may be adjusted to support the right angular elbows so that the upright portions of the down spouts may be vertical.

A feature of the present invention resides in the provision of a rain gutter attachment including two channel-shaped members leading from the inlets of the chamber to the outlets thereof. These channel-shaped members divide the chamber into two compartments one of which leads from the lower inlet to the lower outlet, and the other of which leads from the higher inlet to the higher outlet. Thus the chamber is divided into two separate compartments each of which is designed to divide the flow of the water. The water will normally flow through the lower inlet to the lower outlet, and the connection with the upper inlet will not function. However, if the lower portion of the rain gutter freezes over, or becomes clogged with leaves and twigs, the water is still free to flow to the upper inlet from the gutter to the upper outlet.

Even in warmer weather, there is always a tendency for the rain gutter to fill with leaves and twigs if there are adjacent trees. It is desirable that the leaves be washed down the down spout by the flow of water. However, twigs tend to block the flow and prevent the leaves from flowing down the down spout in the usual manner. This obviously tends to prevent water from flowing through the lower passage, and the twigs will cause a build up of leaves. In such an event, the water level will raise in the rain gutter and would normally cause the rain gutter to fill with water until it over-

flows from the edges of the gutter. By providing an upper level discharge passage through the chamber, the water can still flow through this upper inlet until the water in the gutter builds up to a point where twigs will cover the upper passage, long before the water overflows the edges of the gutter. By noting the discharge, it can be determined whether or not the lower passage is blocked so that the gutter may be cleaned.

It is a feature of another form of my invention to provide leaf and twig guards which prevent the blocking of the passages while still preventing the flow of the water past the guards.

These and other objects of the present invention will be more clearly and fully set forth in the following specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows a rain gutter attachment showing the general construction thereof.

FIG. **2** is an end elevational view of the structure shown in FIG. **1.**

FIG. **3** is an exploded view of the portions of the attachment illustrated in FIGS. **1** and **2.**

FIG. **4** is a sectional view shown extending longitudinally through the attachment, the position of the section being indicated by line **4—4** of FIG. **3.**

FIG. **5** is a transverse section through a portion of thr rain gutter and attachment, the position of the section being indicated by the line **5—5** of FIG. **1.**

FIG. **6** is a perspective view of the attachment which is generally similar to that shown in FIG. **1,** and in which the outlets from the attachment extend downwardly rather than outwardly.

FIG. **7** is a longitudinal sectional view through the attachment shown in FIG. **6.**

FIG. **8** is a sectional view through the attachment, the position of the section being indicated by the line **8—8** of FIG. **7.**

FIG. **9** is a sectional view through the upper outlet portion of the apparatus, the position of the section being indicated by the line **9—9** of FIG. **7.**

FIG. **10** a longitudinal sectional view through another modified form of construction.

FIG. **11** is a perspective view of a portion of the attachment indicated in FIG. **10.**

FIG. **12** is a perspective view of another modified form of construction in which the outlets extend downwardly in parallel relation, one down spout being forwardly in a direction laterally of the rain gutter.

FIG. **13** is a transverse section through the structure of FIG. **12.**

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. **1** through **5** show a rain gutter attachment A which is designed for attachment to a rain gutter B. As indicated in FIG. **3** of the drawings, a section of the front wall of the rain gutters cut away as indicated at **10,** the cut away portion extending to the bottom panel **11** of the rain gutter B. A rear wall **12** is normally provided for attachment to a facing strip at the lower ends of the eaves, and the front wall normally being curved as indicated at **13** to terminate in an inwardly extending flange **14.** While this particular form of construction is not necessary, the rain gutter B is of generally conventional shape readily available to the public.

The attachment A is secured to the cut out portion of the rain gutter by brackets **15.** The brackets **15** are of angular form and include a first wall **16** which conforms to the shape of the outer wall **13** of the rain gutter and is secured to the rain gutter on opposite sides of the cut away portion **10** in face contact therewith. As indicated in FIG. **1** of the drawings, the brackets **15** are secured to the rain gutter by rivets **17** or other suitable means. The brackets **15** also include right angularly extending flanges **19** which are secured to the attachment A in a manner which will be described. As indicated in FIG. **4** of the drawings, the attachment A includes a rear wall **20** and a forward wall **21.** The bottom of the attachment may be open. The rear wall **20** is provided at it's lower end with an angulary bent flange **23** which is in underlying relation to the bottom panel **11** of the rain gutter B. The attachment is also provided with end walls **24,** which connect the front walls **21** and the rear wall **20** and act to hold the walls in rigid relation. The rear wall is provided with a lower opening **25** communicating with the interior of the rain gutter B at or adjoining the lower wall **11** of the rain gutter. A channel shaped trough **26** extends from the rear wall **20** to the front wall **21.** The front wall **21** is provided with an aperture **27** which is encircled by outwardly projecting flanges **29.** A sleeve **30** is riveted or otherwise secured to the flanges **29** as indicated at **31.** Alternatively, the sleeve **30** may extend through the aperture **27** and have peripheral flanges which attach to the front wall **21** of the attachment A. The rear wall **20** of the attachment may also have an aperture **32** connected to an outwardly projecting sleeve **33.** The aperture **32** is provided near the upper extremity of the rear wall panel **20** of the attachment, and the sleeve **33** is indicated as being above the level of the sleeve **30.**

The device A is secured to the rain gutter B in the manner illustrated. First the opening **10** is formed in the rain gutter, and the brackets **15** are secured, as by rivets **17,** to the front wall **13.** The end walls **34** of the attachment are inserted between the bracket plates **15,** and the attachment A may be angularly related to the brackets **15** to provide the proper slant of the sleeves **30** and **33.** When in proper position, the brackets are secured to the end walls **24** by rivets **35** or other suitable means. In the event the attachment A is tilted downwardly to an extent greater than that illustrated in FIG. **2,** the attachment A may be held in this tilted position the lip **23** bending to accommodate the tilt before the holes are drilled in the end walls **24** and the rivets **35** attached.

As is also indicated in the drawings, the cover may be somewhat dome-shaped or upwardly arcuated, the top closure **36** preferrably overlapping the walls **20** and **21** and being secured to the body by rivets such as **37.** This cover is designed to allow the rays from the sun to enter the attachment A and to allow the interior of the attachment A to heat up to some extent so as to provide ice free passages within the Attachment.

The attachment C which is indicated in FIGS. **6, 7,** 8 and **9** of the drawings is very similar to that illustrated in FIGS. **1** through **5,** the main exception being that the outlets from the attachment C extend downwardly in spaced relation rather than outwardly at an inclined angle. As indicated in the drawings, the attachment C includes a front wall **39,** a rear wall **40** and end walls **41** the end walls being secured to flanges **19** in adjusted relation thereto by rivets such as **35.** The rear wall **40**

is provided with a lower opening 42 which extends to a point adjacent the bottom panel 11 of the gutter. A channel shaped member or trough 43 extends from the front wall 39 to the rear wall 40, these walls preferably being parallel but inclined in the same manner as the front wall 21 to conform to the slope of the outer wall 13 of the gutter B. The trough or channel 43 includes side walls 44 and 45 and a bottom wall 46 which includes an opening 47. Flanges 49 extend downwardly from the marginal edges of the opening 47 and are attached to an outlet sleeve 50 rivets 51 or other suitable means. The bottom wall 46 includes an extension 52 which extends beneath the bottom wall 11 of the gutter B. As a result, water flowing through the opening 42 enters the channel 43 and flows outwardly through the outlet sleeve 50.

As indicated in FIG. 7, a second trough or channel 53 connects the rear wall 40 and the front wall 39 of the attachment C. An aperture 54 extends through the rear wall 40 and communicates with the channel 53 above the bottom panel 55 thereof. The channel includes side walls 56 and 57. The channel 53 is provided with an aperture 59 extending therethrough which is encircled by downwardly extending flanges 60. A sleeve 61 is riveted or otherwise secured as at 62 to the flanges 60 and is designed to connect with a down spout, connecting the outlet sleeves 50 and 61 to down spouts, one extending straight downwardly. The down spout may be supported by an ornamental grill work, a pipe or the like, and may terminate somewhat above the ground level so that any ice formed in the down spout will drop by gravity onto the ground when the ice formed in either down spout melts away from the walls of the down spout.

As indicated in FIGS. 8 and 9 of the drawings, the upper ends of the front wall 39 and rear wall 40 are provided with inwardly opposed flanges 65 and 66 which engage the upper surface of a top panel 67 which is supported by the upper edges of the end walls 41, as well as the end walls of the channels 43 and 53. The panel 67 is preferrably formed of transparent material which permit the rays of the sun to enter the interior of the channels and to tend to heat the same. FIG. 8 of the drawings shows a construction which is identical to that shown in FIGS. 7 and 9 with the exception of the fact that the bottom of the channel 53 is inperforate and the outlet sleeve 69 is connected to flanges such as those shown in FIGS. 1 through 5 and adapted for connection with a down spout portion which slants outwardly and downwardly from the attachment.

The attachment D illustrated in FIGS. 10 and 11 of the drawings is very similar to that shown in FIGS. 6, 7 and 9 of the drawings, the attachment D including side walls including a rear wall 70, a front wall similar to the wall 39 in FIGS. 8 and 9 in the drawings, and end walls 71 which connect the front and rear walls. Two identical channels 73 are provided each including spaced outer side walls 76 and inner side walls 77 and a channel bottom 75 connecting the lower ends of the side walls 76 and 77 of the channels 73. A lower opening 79 is provided in the rear wall 70 communicating with the interior of one channel 73, and an upper aperture 80 also in the rear wall 70 with a second channel 73. Both apertures 79 and 80 communicate with the interior of the rain gutter. The lower edge of the aperture 79 is close to the bottom panel 11 of the rain gutter, and the aperture 80 extends upwardly to a point near the top of the rain gutter. An aperture 81 is provided in the bottom 75 of the channel 72 and is encircled by flanges 82 to which an outlet sleeve 83 is connected by rivets 84 or other suitable means. An outlet sleeve 85 is connected to the flanges 82 by the rivets 84.

FIG. 11 merely shows the general form of the channels, it merely shows one of the channels before it is attached between the front and rear walls of the attachment. FIGS. 12 and 13 show an alternate form of construction which is indicated in general by the letter E. In this construction, the attachment includes a pair of parallel walls 89 one of which is shown in FIG. 13, a front wall 90, and a rear end wall 91 attached to the bottom wall 92. The bottom wall 92 defines an opening 93 which is encircled by flanges such as 94. A supporting strap 95 extends from each side of the side walls 89 and is secured to the rear wall 12 of the gutter B. Each strap is provided with an angularly turned end 96 which is secured to the end wall 91 of the attachment E. A discharge sleeve is riveted or otherwise secured to the flanges 93 to extend therefrom. A baffle 99 is secured to the strap 95 and to the bottom wall 11 of the gutter B. This baffle 99 is mainly for the purpose of preventing twigs and such material from building up and entering the attachment C. One such baffle 99 is provided on either side of the attachment E.

An upper outlet opening 100 is encircled by projecting flanges 101 and support an elbow 102 which extends through an opening 103 in the bottom panel 92. (The opening 103 could be in the front wall 90 if a straight pipe were substituted for the elbow 102, as indicated in broken lines in FIG. 12). An upwardly bowed top panel 105 forms a cover for the attachment and is of a material which will allow the heat rays from the sun to enter the attachment E exteriorly of the elbow 102.

Down spouts (not shown) are connected to the sleeve 97 and the lower end 104 of the elbow 102, in this arrangement, the down spouts are preferrably parallel and vertical with one down spout forwardly of the other. The two down spouts are preferrably connected by a decorative grill or an intermediate pipe so that down spouts may terminate short of the ground, and so that when any ice is formed therein, it will slide downwardly through the open lower end of the down spout and thawed sufficiently to become unattached to the inner suface of the down spout.

It will be noted that all of the devices illustrated in the prior art are similar in that a lower opening is provided which is closely adjacent to the bottom surface 11 of the rain trough, and a second opening is provided communicating with the interior of the rain trough close to the upper edge of the front wall. This arrangement has the advantage which is believed unique, and is believed to accomplish a somewhat unusual purpose. Under normal curcumstances, where the down spout extends un usual manner from the edge of the eave inwardly beneath the eaves to the wall of the house or builking, and then downwardly toward the groung. Quite often, the portion of the down spout which underlies the eaves tends to freeze up due to down spout which underlies the eaves tends to freeze up due to the fact that it is not subject to the rays of the sun. Even where the down spouts incline outwardly at an angle to the norizontal and then extend downwardly, water tends to freeze in the gutter until the down spout opening is frozen over. Accordingly, any additional liquid will merely cause

the ice to build up in thickness until the rain gutter is full. From then on, any water in the rain gutter will merely overflow the edges thereof and drip upon the ground or form icicles suspended from the edge of the rain gutter.

Much the same thing is likely to occur when the rain gutter is located in a wooded area. Leaves and twigs blow into the gutter, and while it there is sufficient flow in the rain gutter, the leaves will pass downwardly through the down spout with the water. However, the twigs tend to block the opening to the down spout causing the rain gutter or overflow.

With the present arrangement, after ice has prevented the flow of water through the down spout which is connected near the bottom of the rain gutter, the water can escape through the upper aperture and flow through a second down spout. In view of the fact that no water flows through the upper opening as long as the lower opening is opened, the water may flow from the rain gutter to a second down spout which is clear of ice. As a result, the water will escape from the rain gutter for a long period of time and usually conditions are such that the ice in the rain gutter and down spouts will fall or melt from time to time sufficient to prevent overflow of the rain gutters.

In accordance with the Patent Statue I have described the principles of operation of my rain gutter attachment and while I have endeavored to set forth the best embodiment I desire to have it understood that obvious changes may be made without departing from the spirit of my invention.

I claim:

1. A rain gutter attachment for use in conjunction with a rain gutter having a rear wall, a bottom wall, and a front wall, a portion of said front wall being cut away to provide a notch, angular clips including one flange having a contour to fit the contour of said front wall of said gutter, and a second right angularly extending flange extending forwardly from the front wall of said gutter, an enclosure having a rear wall, a front wall, and a parallel end wall connecting each of the ends of said front and rear walls of said enclosure, means securing the end walls of said enclosure to the second flanges of said clips, said rear wall of said enclosure including a lower inlet opening, the lower edge of which is adjacent to the bottom wall of said gutter, said rear wall of said enclosure communicating with the rain gutter, said rear wall having an upper inlet opening therethrough near the upper extremity of said rear wall, conduit means within said enclosure communicative with each of said upper and lower inlet openings, and means for connecting each said conduit means to a downspout.

2. The structure of claim **1** and in which said connecting means are provided in the front wall of said enclosure.

3. The structure of claim **1** and in which said conduit means in said enclosure comprise channel-shaped members connecting said front and rear walls of said enclosure.

4. The structure of claim **1** and in which said connecting means extend through the lower end of said enclosure.

5. The structure of claim **1** and in which one of said connecting means extends through the front wall of said enclosure and the other extends through the lower end thereof.

6. The structure of claim **1** and including a ton for said enclosure through which sun rays may penetrate.

7. The structure of claim **1** and including reinforcing members connecting the upper portion of said enclosure adjoining the ends thereof to the rear walls of the rain gutter.

8. The structure of claim **1** and including baffle plates connecting each of said strips and said bottom wall of said rain gutter.

9. The structure of claim **1** and in which said conduit means comprises an open topped channel connecting said front and rear walls of said enclosures.

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