Dec. 26, 1944. M. RACHLIN 2,365,973

INTERLOCKING GUTTER CIRCLE

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FIG. 1.

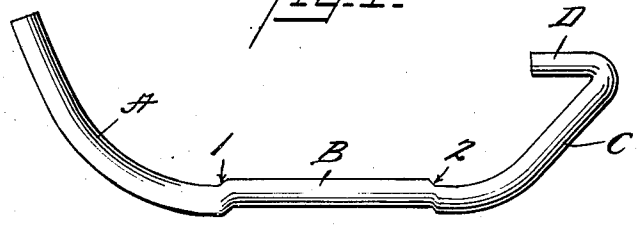


FIG. 2.

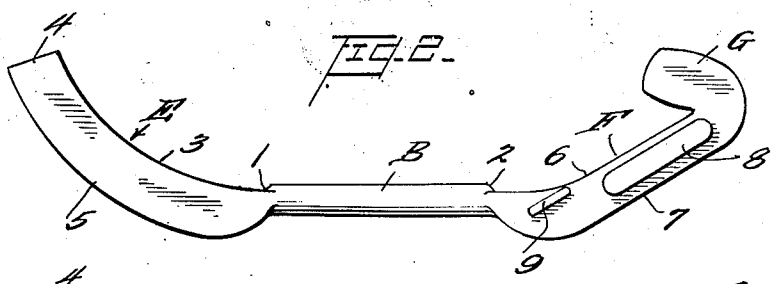


FIG. 3.

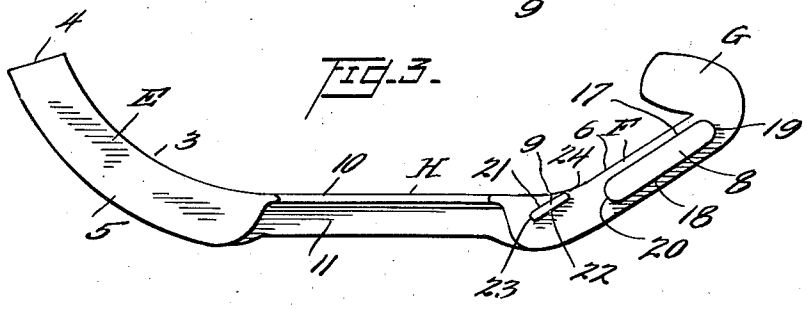


FIG. 4.

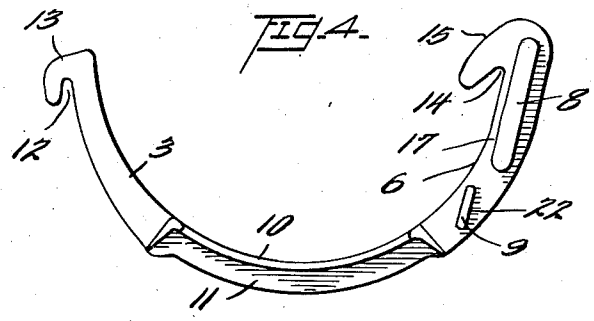
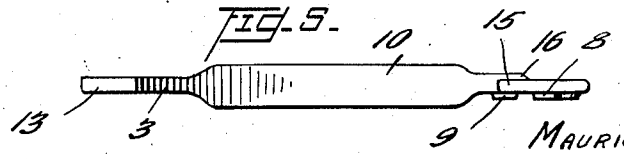


FIG. 5.



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FIG. 6.

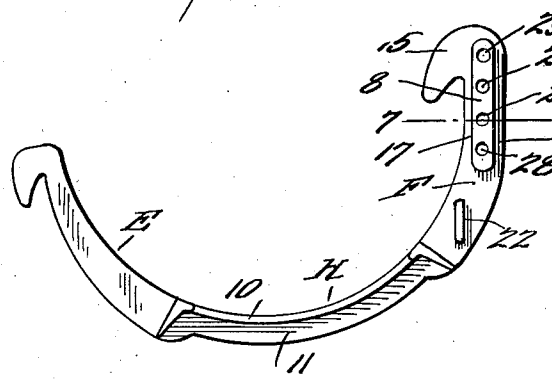


FIG. 7

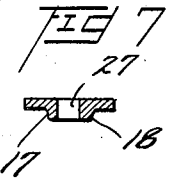


FIG. 8.

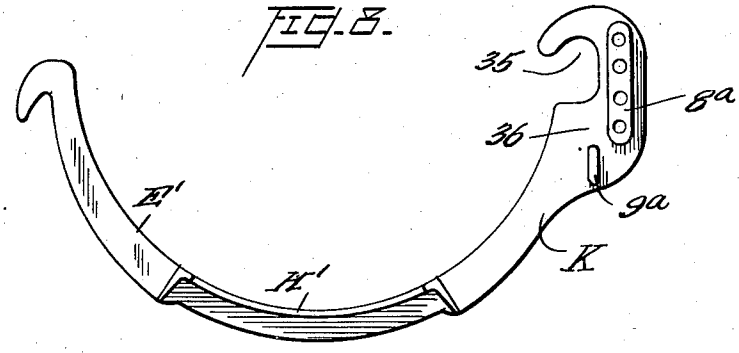
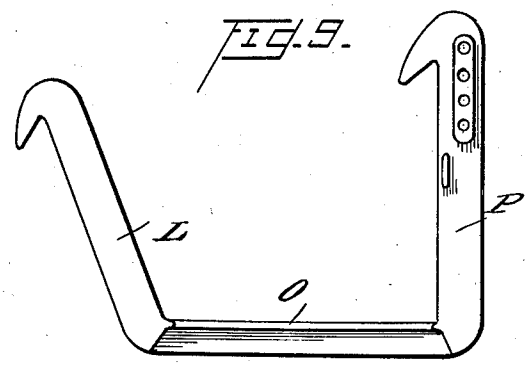


FIG. 9.



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UNITED STATES PATENT OFFICE

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INTERLOCKING GUTTER CIRCLE

Maurice Rachlin, Flushing, N. Y.

Application October 31, 1941, Serial No. 417,380

4 Claims. (Cl. 248—48.1)

This invention is directed to a gutter circle. The present application is a continuation-in-part of my copending application entitled "Method of making a gutter circle and article formed thereby," Ser. No. 392,003, filed May 5, 1941.

The present application departs from the above identified application in that reinforcing projections are formed during a flattening operation, the initial material, in each case, being wire.

Briefly stated, it is an object of this invention to form a gutter circle from wire by flattening two ends of a piece of wire and during such flattening operation, to provide reinforcing projections on one side of a flat face at one end of said piece while maintaining the other flat face substantially smooth and in a single plane. In the above identified parent application, the ends of a piece of wire are described as being flattened and then in a subsequent operation, projections are forced out of the flattened end, leaving small depressions in one flat face of the end of the gutter circle.

It is believed that the present invention represents an improvement over this process because the circle is weakened where the metal is forced outwardly leaving a depression. This process is also objectionable because the dies will, in many cases, force the metal completely through the flat end of the circle with the result that the circle is left unfit for use since it has no interlocking projections. The circle contemplated in the present invention, is designed to be used with a channel shaped shank and it may be stated that a shank is known in this art as a piece of metal having two angularly related parts, one of which extends under the shingles or other roof covering and the other of which extends in a vertical direction downwardly immediately below the eaves.

A particular object of the present invention is to form a flattened end and at the same time, to form interlocking projections which, instead of weakening the circle, strengthen the same. As far as I am aware, interlocking projections in the prior art, that have been formed by prior methods, have a tendency to weaken the gutter circle.

It is a further object of the invention to provide a gutter circle adapted to receive a double beaded gutter, such circle being formed from wire and in a single, integral piece. In the prior art, gutter circles adapted to receive double beaded gutters have been formed from channel shaped material to which it has been necessary to rivet a separate member on one end of such circles in order to embrace the bead of a double beaded gutter. As far as I am aware, I am the first to provide what is known as a double beaded gutter circle having end portions which are cut out of flat material.

It is another object of the invention to provide a gutter hanger as distinguished from a gutter circle which is formed from wire and is adapted to receive gutters that are square or rectangular in general cross section.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail one method and three products exemplifying my invention, such disclosed procedure and products constituting, however, but a few of various applications of the principle of my invention.

In said annexed drawings:

Figure 1 is a side elevation of the blank immediately after the same has been cut from a length of wire and bent.

Figure 2 is a side elevation of the blank after the first pressing or flattening operation.

Figure 3 is a side elevation of the blank after the second pressing operation.

Figure 4 is a side elevation of the blank after the same has been bent into substantially the form of a semi-circle.

Figure 5 is a plan view of Figure 4 taken from above.

Figure 6 is a side elevation of the completed gutter circle.

Figure 7 is a horizontal section on line 7—7 of Figure 6.

Figure 8 is a side elevation of a completed gutter circle, this being a modification of the circle shown in the previous figures, and

Figure 9 is another modification, this being also a side elevation.

Referring now to the drawings and more particularly Figure 1, it will be seen that my gutter circle, in its first stages, comprises a piece or length of wire which has been bent into four portions, namely, terminal portion A, central portion B, terminal portion C and reverse bend D. This blank is formed as the wire is drawn from a coil and it may be formed as the wire is cut. Stated more specifically, the blank shown in Figure 1 can be formed in one operation as the wire comes from a coil or from any other source. It is, of course, possible to cut a straight length of wire and then bend it as shown in Figure 1. It is important to note that small shoulders 1 and 2 are formed between central portion B and ter-

minal portions A and C for a purpose which will be described more in detail hereinafter.

The blank of Figure 1 is subjected to a pressing or flattening operation in which the terminal portions are preferably squeezed by means of appropriate dies to form elongated, flat members. It will be noted that the terminal portion A, which is a circle in a cross section, has been converted into the terminal portion E which is substantially rectangular in cross section. It is, of course, understood that the lateral edges 3 and 5 are somewhat rounded and that the cross section is not in the form of a rectangle having sharp corners. The particular outline of the edge 4 is of no importance because this edge is subsequently trimmed to provide a hook for a gutter bead clip. The central portion B retains its circular configuration and the terminal portion C is flattened to provide the member F shown in Figure 2. The reverse bend D assumes the shape G shown in Figure 2 and during the same operation of flattening A, C and D, reinforcing and interlocking projections 8 and 9 are formed. Stated briefly, the blank shown in Figure 1 is die pressed or otherwise acted upon in a single operation to provide the blank shown in Figure 2. The lateral edges of the portion F are somewhat rounded, which is a natural consequence since the portion C was circular prior to the flattening operation. It is important to note that the projections 8 and 9, sometimes referred to as hill portions in this art, are formed without taking any metal away from the opposite face of the portion F and without forming any depressions in such opposite face. It is also important to note that since the projections 8 and 9 extend longitudinally of the portion F, they will reinforce and strengthen this portion.

In Figure 3 the blank is shown after the third operation in which I preferably die press the portion B so as to impart a somewhat T-shape cross section to such portion. The portion B is identified by the reference character H in Figure 3 and it consists of a flat upper surface 10 and a downwardly extending rib 11, it being noted that the lateral edges 3 and 5 now merge into the upper flat surface 10.

In Figure 4 the blank of Figure 3 has been bent into a substantially semi-circular formation so as to snugly receive a gutter. It will also be noted that the end of portion E has been trimmed to provide a clip receiving recess 12 and a curved upper surface 13. Similarly, the opposite end of the circle has been trimmed to provide a recess 14 adapted to receive one lateral edge of a gutter. The upper portion of part G is trimmed to provide a smoothly rounded upper edge 15. The trimming operation whereby ends 13 and 15 are formed, may, as just described, be a separate step taken either before or after the blank is bent into the shape shown in Figure 4. It is shown in connection with Figure 4 for ease of illustration, but I prefer to trim the terminal portions so as to provide ends 13 and 15 at the same time that holes 25, 26, 27 and 28 are formed, these being shown in Figure 6. Thus, it will be seen that both ends may be trimmed and the bolt receiving holes formed in a single operation.

The reinforcing projections 8 and 9 are spaced longitudinally of the portion F and transversely so that one flange of a channel shaped shank may lie between the edge 17 of the projection 8 and the edge 22 of the projection 9. Ordinarily, for a five inch gutter, the edge 22 is spaced 1/64 of an inch from the edge 17 and this spacing will vary for various sizes of gutters inasmuch as larger sized shanks must be used for larger gutters. It is obvious, from an inspection of Figure 5, that the parallel edges 17 and 18 of projection 8 are bevelled as are the end edges 19 and 20. Similarly, the projection 9 has bevelled end edges 23 and 24 and bevelled side edges 21 and 22. These edges are bevelled slightly because it facilitates the die pressing operation and insures snug engagement between the surfaces 17 and 22 on both sides of one flange of a channel shaped shank since the flanges of such channel shaped shanks normally flare slightly with respect to the base.

The completed circle is shown in Figure 6 wherein the holes 25, 26, 27 and 28 are indicated as being formed through the projection 8. This is particularly important because the formation of the holes through the added thickness, occasioned by the projection 8, has very little tendency to weaken the circle. Heretofore, such holes have been provided in gutter circles but they have a decided tendency in such prior constructions to weaken the circle.

Referring now to Figure 8, it will be seen that I have provided a gutter circle adapted to receive what is known as a double beaded gutter, one bead of which is adapted to lie in the recess 35. The portions E' and H' correspond exactly to the portions E and H respectively in the preceding figures but the portion K is entirely different. This portion K is made by providing more metal in the right-hand end of the blank shown in Figure 1. Otherwise, the process is the same as that described with respect to Figures 1 to 6.

In Figure 9, I have shown a gutter support adapted to receive what is known as a square gutter. In this instance, the support comprises three major parts L, O and P. L and P are flattened similar to E and F of Figure 6, and O is exactly the same as central portion H of Figure 6. The bends between L and O and P and O are, of course, imparted by appropriate machinery which need not be described in detail as the machinery forms no part of the present invention. It should be observed that the support shown in Figure 9 is formed from wire which comprises flattened terminal portions L and P having projections in the portion P spaced in the same manner as the projections in the portion F of Figure 6.

The trimming of the terminal portions and punching of the holes in the modified form shown in Figures 8 and 9, may, of course, be done in a single operation as described in connection with Figure 4.

It will be noted from the foregoing description that my improved gutter support is made from wire and that I have provided spaced interlocking projections on one terminal portion of a blank without detracting from the strength of the finished gutter support. It will also be noted that the end of the blank or gutter support is flattened and provided with the interlocking projections in a single operation. This not only reduces the final cost of the circle but strengthens the gutter support instead of weakening the same. The annoyance and expense occasioned by dies pushing through the interlocking projections, as heretofore formed, is entirely obviated.

Other forms may be employed embodying the features of my invention instead of the one here

explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:

1. A gutter hanger formed of wire and having flattened end portions, one of such portions having a shank engaging projection, said projection extending from one side of one of the end portions, such end portion having an oppositely disposed flat unbroken surface and fastener engaging apertures provided in the projection for securing said hanger to said shank, said apertures extending at right angles to said flat surface.

2. A gutter hanger formed of wire and having flattened end portions, one of such portions having a shank engaging projection, said projection extending from one side of one of the end portions, such end portion having an oppositely disposed flat unbroken surface and fastener engaging apertures provided in the projection for securing said hanger to said shank, said apertures extending at right angles to said flat surface, said one of such flattened end portions also having another projection spaced from said first named projection for engaging an exterior surface of said shank.

3. A gutter hanger formed of wire and having flattened end portions, one of such portions having a shank engaging projection, said projection extending from one side of one of the end portions, such end portion having an oppositely disposed flat unbroken surface and fastener engaging apertures provided in the projection for securing said hanger to said shank, said apertures extending at right angles to said flat surface, the end portion from which said projection extends being of sufficient width to provide a recess for receiving the inner bead of a double beaded gutter.

4. A gutter hanger formed from wire and having a central portion and two flattened end portions, said central portion being substantially T-shaped in cross-section, one of such portions having a shank engaging projection, said projection extending from one side of one of the end portions, such end portion having an oppositely disposed flat unbroken surface and fastener engaging apertures provided in the projection for securing said hanger to said shank, said apertures extending at right angles to said flat surface, said end portions extending in substantially straight lines, said central portion extending in a straight line and having a flat gutter engaging surface extending at right angles to said flat unbroken surface.

MAURICE RACHLIN.