Oct. 17, 1950 E. PROBST 2,526,271

GUTTER SHIELD

Filed March 30, 1948 2 Sheets-Sheet 1

Fig. 1.

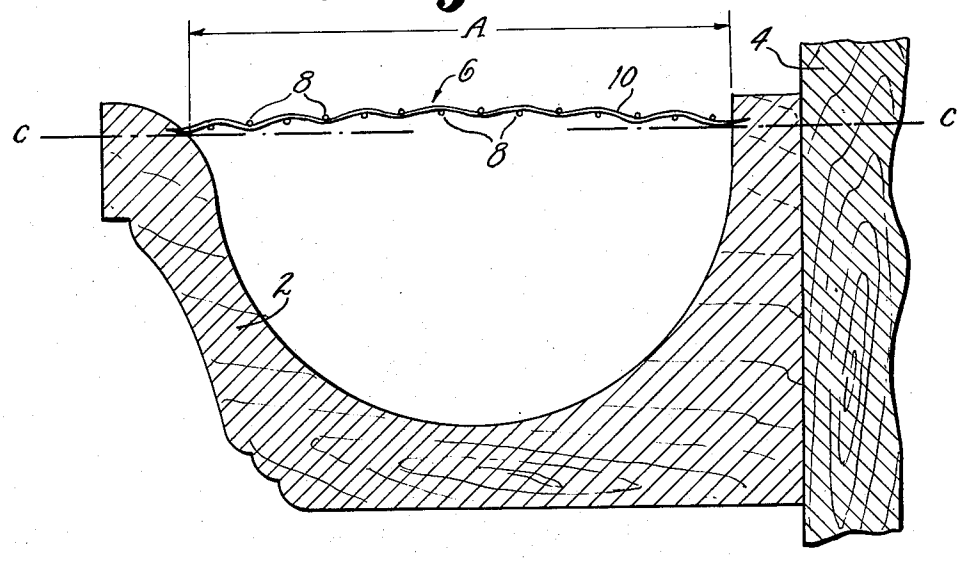


Fig. 2.

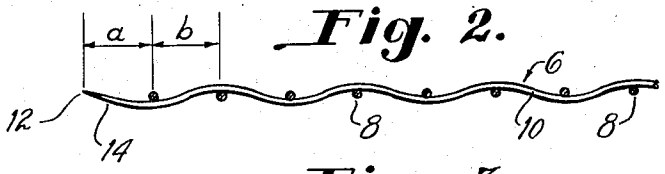
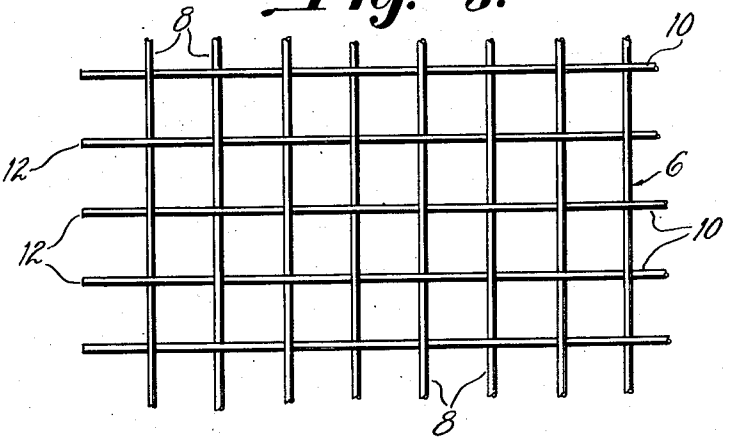


Fig. 3.



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Oct. 17, 1950 E. PROBST 2,526,271

GUTTER SHIELD

Filed March 30, 1948 2 Sheets-Sheet 2

Fig. 4.

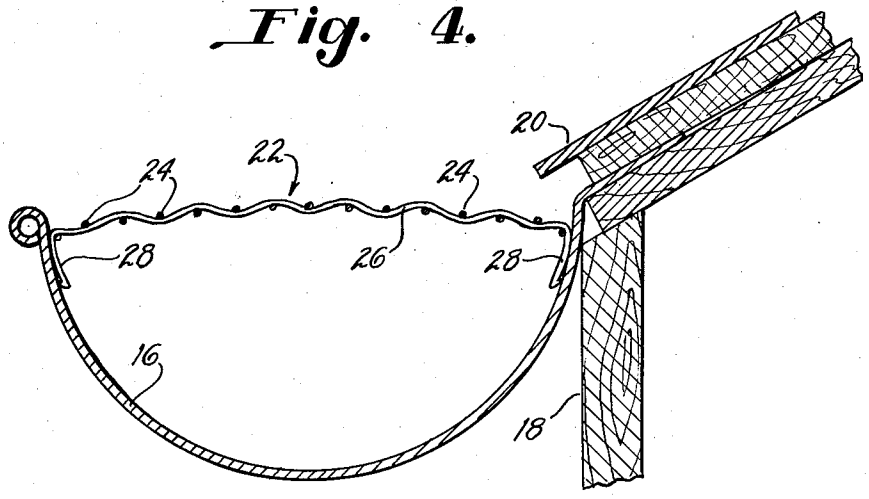


Fig. 5.

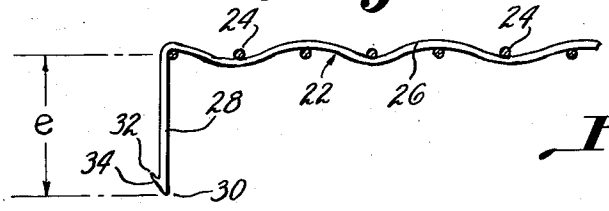


Fig. 6.

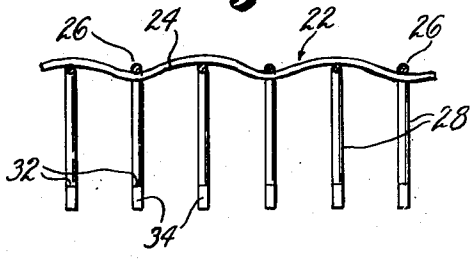
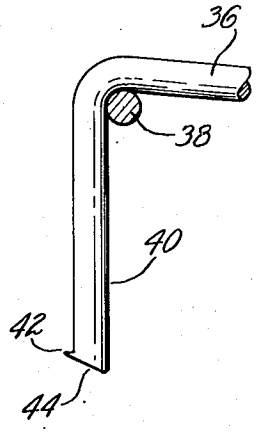


Fig. 7.



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GUTTER SHIELD

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Application March 30, 1948, Serial No. 18,039

5 Claims. (Cl. 108—30)

1

This invention relates to an improved shield for a roof gutter which will exclude therefrom leaves and other flow-obstructing debris while permitting roof-drainage to the gutter.

The invention has among its objects the provision of an improved shield of the type indicated which is simple in construction, economical to manufacture, and easy to apply.

The invention has as a further object the provision of a gutter shield which substantially completely covers the gutter and remains securely in applied position without the necessity of external securing means, in spite of winds to which it is exposed, and in spite of snow and ice which may fall upon it.

This application is a continuation-in-part of now abandoned application Serial No. 714,010, filed December 4, 1946.

The gutter shield of the present invention is formed of a netting made of spaced longitudinal and transverse strands such as wire. The shield has a width substantially the same as the width of the mouth of the gutter and is applied thereto, in the described embodiments, so that the protruding ends of spaced transverse strands engage and dig at least slightly into the respective margin of the gutter. In one embodiment of the shield the protruding ends of the transverse strands are bent downwardly so that they may be introduced within the gutter at its mouth, the protruding ends of the transverse strands being provided with upwardly facing barbs such as hooks or burrs which engage the inner surface of the gutter. In the shield of the invention the transverse strands are relatively stiff and are preferably springy or resilient, whereas the longitudinal strands are preferably substantially devoid of spring.

The invention will be more readily understood by reference to the accompanying drawings in which:

Fig. 1 is a view in vertical cross-section through an assembly including a wooden gutter and the first described embodiment of the shield;

Fig. 2 is a fragmentary view in section through the left-hand edge of the shield as shown in Fig. 1;

Fig. 3 is a view in plan of the edge portion of the shield shown in Fig. 2;

Fig. 4 is a view in vertical section through an assembly including a metal gutter and the shield of the second described embodiment;

Fig. 5 is a fragmentary view in vertical section through the left-hand edge of the shield shown in Fig. 4;

2

Fig. 6 is a fragmentary view in end elevation of such shield, the view being taken in a direction from left to right in Fig. 5; and

Fig. 7 is a fragmentary view in vertical section through a third embodiment of the shield of the invention, the section being taken at one longitudinal edge thereof.

The first described embodiment of the gutter shield is shown in Figs. 1, 2 and 3. In Fig. 1 the shield, generally designated 6, is shown in assembled position on the wooden gutter 2 supported on surface 4, which may be the side of a house. Shield 6, as shown clearly in Figs. 2 and 3, is composed of a series of spaced parallel longitudinal wires 8 and a series of spaced parallel wires 10 positioned transverse thereto, the longitudinal and transverse wires being interwoven in a conventional manner. The mouth of the gutter has a width A at the level denoted by the line *c*—*c*. Shield 6 is made of such width that when it lies in a plane its width somewhat exceeds the dimension A. At each longitudinal edge of the shield, transverse wires 10 protrude past the outer longitudinal wire 8 a distance *a*, which is preferably made substantially equal to the spacing *b* between adjacent longitudinal wires 8. The thus protruding ends of the transverse wires are preferably bent at least slightly upwardly, and are pointed at 12 as by providing the bevelled lower surface 14. The thus described shield is applied so that it assumes the position shown in Fig. 1 by forcing the two longitudinal edges of the shield somewhat toward each other to bow the shield, the bowing preferably being in an upward direction. Release of the shield after it has been positioned in the gutter causes points 12 of the transverse wires to dig into the mouth of the gutter so that the shield is retained firmly therewithin.

Such action will occur in the most advantageous manner when the transverse wires are made of material such as metal distinctly springy in character. For this purpose, transverse wires 10 may be made of various noncorrodible spring metals such as Monel metal, phosphor bronze, or spring brass, a typical analysis of such last metal being 67%–72% copper, 28%–33% zinc, both by weight, with small amounts of lead and iron. It is usually preferred, however, for the sake of economy, to make such wires of high carbon steel provided with a corrosion-resistant coating such as zinc, the wire having been heat treated prior to the coating operation by heating above the critical point followed by quenching, to render it markedly springy. A typical steel suitable for

such purpose is one having the following analysis by weight:

0.55%–0.70% carbon
0.90%–1.20% manganese
0.04%–maximum phosphorus
0.045%–maximum sulphur
Balance—substantially all iron

The longitudinal wires 8 are preferably made of strong durable material which possesses no marked resilience. For this purpose, copper is suitable, although it is relatively expensive. It is preferred to use for wires 8 a low carbon steel, likewise coated with a corrosion resistant coating. A low carbon steel containing from 0.08% to 0.10% carbon is typical of metals suitable for use as wires 8. Wires 8 are substantially non-resilient, and preferably are in dead-soft, annealed, state. When the shield above decsribed is made in the preferred manner, that is, with the transverse wires springy and the longitudinal wires essentially non-resilient, it may be applied most easily, since it offers no appreciable resistance to blending to the described configuration longitudinally, but by reason of its transverse spring it is held very securely in the gutter.

The second described embodiment of the shield, designated 22 in Figs. 4, 5, and 6, is shown in Fig. 4 as applied to a metal gutter 16, the latter being positioned on the side of a house 18, by means not shown, immediately below the depending edge of the roof 20. Shield 22 is likewise made up of a woven netting and both the longitudinal strands 24 and the transverse strands 26 are preferably metal wires. Wires 26 are also, as in the first embodiment, made of metal which is markedly resilient, and longitudinal wires 24 are made of metal which lacks substantial resilience and such wires are preferably dead-soft.

In this embodiment of the shield there is provided a strip of netting which preferably has a width between the marginal longitudinal strands at least slightly exceeding the width of the gutter at its mouth. At each edge there are provided a series of spaced protruding downwardly extending ends 28 of the transverse wires, the length *e* of the protruding ends preferably being twice the spacing between aforesaid longitudinal wires. The lower end 30 of wire portions 28 are bent upwardly and outwardly as shown, such upturned ends being provided with sharp points 32 provided by bevelled surface 34.

Shield 22 is applied to the gutter which, although shown as being of metal, may be of wood as well, by forcing the outer edges of the shield somewhat toward each other and releasing them after the shield has been put in place with ends 28 of the transverse wires within the gutter, as shown. The resilience of the transverse wires causes points 32 of the protruding ends to dig at least slightly into the inner surfaces of the gutter.

The first described shield 6 may conveniently be made by weaving a length of netting the width of which is a multiple of the width of the desired shield. Preferably, two longitudinal wires 8 are omitted, one on each side of the boundary between shields to be formed, the netting then being cut longitudinally along the line midway between the margins of the shields. By the choice of a suitably designed cutter, points 12 and bevelled surfaces 14 on the transverse wires may be formed simultaneously with the cutting operation.

Shield 22 of the second embodiment may be formed in somewhat the same manner except that, in this instance, four longitudinal wires 24 are omitted from the netting stock at each boundary between the shields to be formed therefrom, and that the line of cut between shields leaves protruding transverse wire ends 28 which are substantially twice as long as the distance between the aforesaid longitudinal wires. Here, likewise, a suitable cutter will form point 32 and bevelled surface 34 on the transverse wire coincident with the cutting operation. Ends 28 may then be bent downwardly and the upturned hook at the end thereof may be formed in a subsequent operation.

It is not necessary in some cases to make the barb in the shape of an upbent hook on the lower end of the downbent portion of the transverse wires of a shield of the type shown in the second embodiment. In such cases it is sufficient to rely upon the burr forming on the protruding end of the wire as a result of the cutting operation as a retaining means. In Fig. 7 a portion of the shield so formed is shown, the transverse wire being designated 36, the longitudinal wire 38, and the downbent portion of the protruding end of the transverse wire 40. In this case there is formed the outwardly protruding burr or barb 42 on portion 40, such burr being formed coincident with the cutting operation which produced bevelled surface 44.

Whereas for purposes of illustration I have described preferred embodiments of the gutter shield of my invention, it is to be understood that the shield is capable of considerable variation as to details. Thus, while it is preferred that every transverse wire in the shield have its protruding ends formed, as shown, to engage the gutter, it is sufficient in many cases thus to form the transverse wires at fairly closely, substantially regularly, spaced intervals longitudinal of the shield. The invention is therefore defined within the scope of the following claims.

I claim as new the following:

1. In combination with a gutter, a shield formed of a strip of netting and extending lengthwise of and supported at and in the mouth of the gutter, the netting being made up of a series of parallel longitudinal wires and a series of parallel transverse wires, the longitudinal wires being made of non-resilient metal and the transverse wires being made of spring metal, the shield having the transverse wires thereof at close intervals spaced longitudinally thereon extending at their ends outwardly of the marginal longitudinal wires, the ends of the transverse wires being provided with points, the resilience of said transverse wires being such as to cause said points to dig into the walls of the gutter, such points on the transverse wires each being engaged with the adjacent inner surface of the gutter.

2. In combination with a gutter, a shield formed of a strip of netting and extending lengthwise of and supported at and in the mouth of the gutter, the netting being made up of a series of parallel longitudinal wires and a series of parallel transverse wires, the longitudinal wires being made of dead soft metal and the transverse wires being made of spring metal, the shield having each of the transverse wires thereof extending at their ends outwardly of the marginal longitudinal wires, the ends of the transverse wires being sharpened to points, the resilience of said transverse wires being such as to cause said points to dig into the walls of the gutter, such points on the transverse wires each being engaged with the adjacent inner surface of the gutter.

3. In combination with a gutter, a shield formed of a strip of netting and extending lengthwise of and supported at and in the mouth of the gutter, the netting being made up of a series of parallel longitudinal wires and a series of parallel transverse wires, the longitudinal wires being made of dead soft metal and the transverse wires being made of spring metal, the shield having its longitudinal margins bent downwardly, the shield having the transverse wires thereof at close intervals spaced longitudinally thereon extending at their ends substantially downwardly from the marginal longitudinal wires, the ends of the transverse wires being provided with upwardly facing barbs, the resilience of said transverse wires being such as to cause said points to dig into the walls of the gutter, such barbs on the transverse wires each being engaged with the adjacent inner surface of the gutter.

4. A gutter shield formed of a strip of netting and adapted to extend lengthwise of and to be supported at and in the mouth of the gutter, the netting being made up of a series of parallel longitudinal wires and a series of parallel transverse wires, the longitudinal wires being made of non-resilient metal and the transverse wires being made of spring metal, the shield having the transverse wires thereof at close intervals spaced longitudinally thereon protruding at their ends extending beyond the marginal longitudinal wires, the ends of the transverse wires being provided with points, such points on the transverse wires each being adapted to form and to engage an

indentation at the adjacent inner surface of the gutter, the netting being adapted to be bowed to engage the walls of the gutter, the resilience of said transverse wires being such as to cause said points to dig into the walls of the gutter thus to form such indentations.

5. In combination with a gutter, a shield formed of a strip of netting and extending lengthwise of and supported at and in the mouth of the gutter, the netting being made up of a series of parallel longitudinal wires and a series of parallel transverse wires, the longitudinal wires being made of non-resilient metal and the transverse wires being made of spring metal, the shield having the transverse wires thereof at close intervals spaced longitudinally thereon extending at their ends substantially downwardly from the marginal longitudinal wires, the ends of the transverse wires being provided with outwardly facing points, the resilience of said transverse wires being such as to cause said points to dig into the walls of the gutter, such points on the transverse wires each being engaged with the adjacent inner surface of the gutter.

EMMET PROBST.

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