

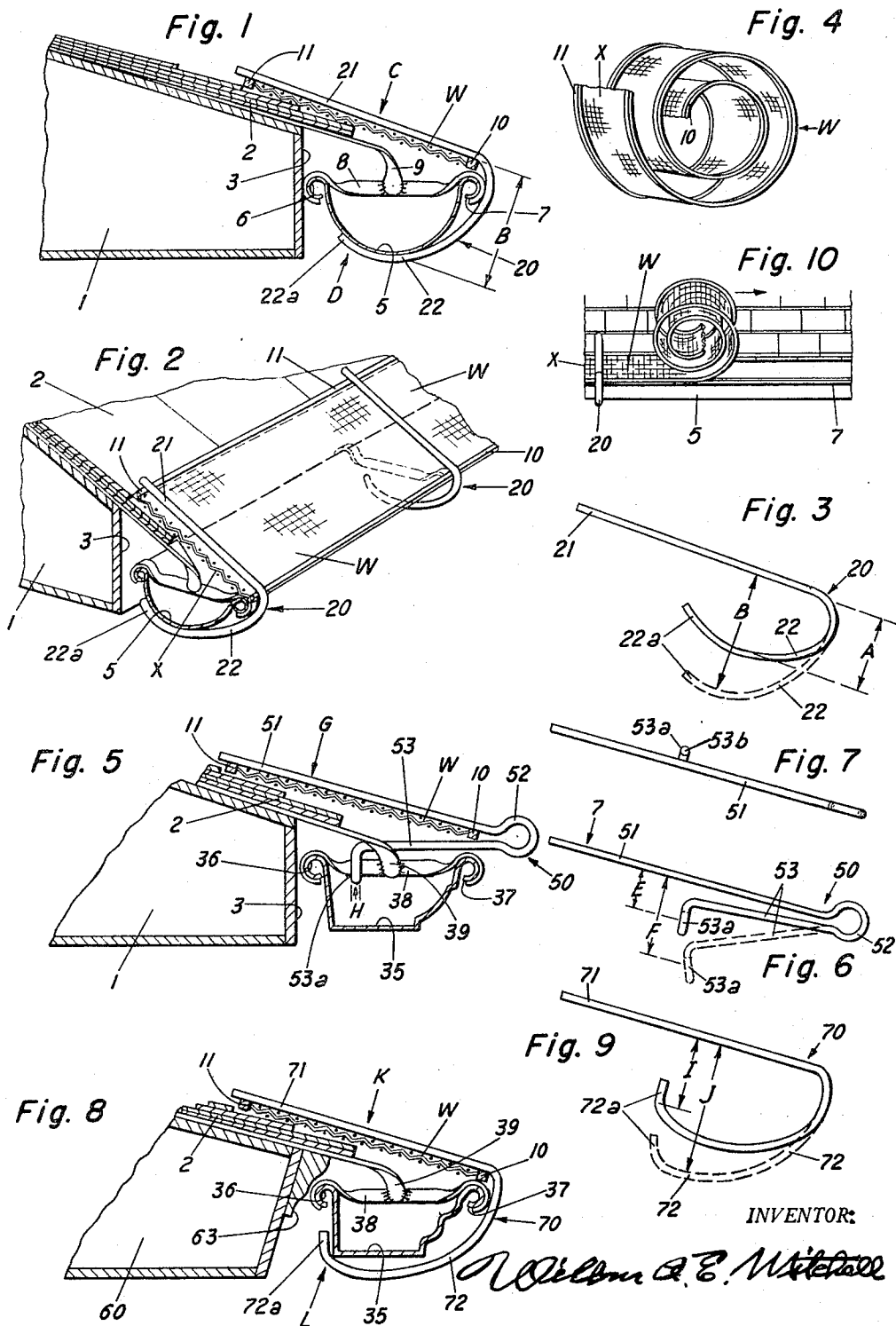
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W. A. E. MITCHELL

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GUTTER GUARD

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GUTTER GUARD

Wilbur A. E. Mitchell, P.O. Box 1073,
Greeley, Colo. 80631

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ABSTRACT OF THE DISCLOSURE

A gutter protector, comprising a normally spring-tensioned reticulated protector strip adapted to be clamping-ly positioned and held over the cornice edge of a roof and across the adjacent eaves trough thereof, and a single expandable and normally inwardly-compressible spring-tensioned and removable clamping means adapted to extend between and from under substantially the center part of the eave trough onto an upper part of said cornice and over and across said reticulated strip for effecting a holding of said strip over said cornice edge and over the adjacent eave trough of the cornice.

This invention generally relates to building eaves, and more specifically to the gutter or eave trough at the cornice thereof, and to a removable spring clamp-held gutter-cover screen for an eave trough, for protection of the trough against the entry of leaves and such foreign matter.

Residential buildings in cities having a normal growth of trees, suffer much damage in the fall of each year from leaves collected in the eave troughs and from winter setting in before the troughs are emptied, resulting in a frozen mass in the trough all winter long and with resultant moisture damage to the cornice of the residence.

The problem of leaves entering residential building gutters in the fall of each year is a very real problem, and, as far as known, most screen-guard means heretofore used to prevent such are of complicated construction, usually requiring permanent affixation to the building, and having a plurality of parts, and most thereof require a material alteration in the removal thereof, when necessary to clean the trough or to replace parts of the trough or screen. I have perfected a simple, durable and economical gutter guard of just two parts, having only a screen member and a single removable spring-tensioned clamp member which can be applied and removed by hand and without the need of any tools and without any permanent deforming or attachment of parts.

It is a primary object of this invention to provide a screen gutter guard to overlie the eave trough or gutter by extending from the outer edge thereof across the gutter and up onto the adjacent roof, in substantial prolongation of the roof, and with that screen being normally held in place by spaced apart single and individually removable spring-tensioned clamp members, which can be manually applied and removed without the need of any tools.

Another primary object is the provision of such a tensioned single-clamp member adapted to extend under a portion of the eave trough and across the top of the trough and onto the top of the adjacent roof, and adapted normally to exert pressure upwardly against a part of the trough on the one hand and downwardly onto the roof on the other hand, to thereby removably hold a screen stripe in place in extension of the roof and across the eaves trough, so that leaves falling upon said screen will be blown off by the wind and not into the eaves trough.

Another object of my invention is the provision of a suitable screen mesh wire strip having outer longitudinal spring-tensioned edge members formed integrally

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therewith and normally formed in a roll in manufacturing, and so as to normally tensionally resist unrolling thereof, and whereby upon use in being placed on a roof of a cornice and across an eave trough thereof, and being clamped in place at spaced intervals by my novel gutter clamp members, that said spring-tensioned edges of the wire between such clamps will cause said edges of the wire to press downwardly onto the roof and onto the eave trough throughout the distance between such clamps.

Other objects will be apparent to those skilled in the art from the following detailed description and from the drawing. In which:

FIGURE 1 is a vertical sectional view of a cornice having an eave trough, showing the application of my invention;

FIGURE 2 is a perspective view thereof in reduced scale;

FIGURE 3 is an elevational side view illustrating one of my novel gutter spring-tensioned single-clamp members 20, with the dotted lines thereof illustrative of a spring expansion thereof upon use as in FIGURE 1;

FIGURE 4 is a diagrammatic reduced scale perspective illustration of a roll of the mesh screen wire which I use, illustrating its longitudinal edges, 10 and 11, being spring tensioned and to normally form the wire into a spiral roll;

FIGURE 5 is a vertical sectional partial side view of a modification of my invention using a slightly different gutter clamp member 50;

FIGURE 6 is an elevational side view of my modified gutter spring clamp 50, shown in FIGURE 5, with its dotted lines illustrative of its spring expansion upon use as in FIGURE 5;

FIGURE 7 is a top view of the clamp 50 taken in the direction of the arrow 7 of FIGURE 6;

FIGURE 8 is a vertical sectional view of a different cornice having a square lower edge eave trough and having one of my novel modified clamps 70 therewith.

FIGURE 9 is an elevational view of my novel gutter guard modified clamp 70, of FIGURE 8, and with the dotted lines thereof illustrating the spring expansion thereof upon use as shown in FIGURE 8.

FIGURE 10 is a perspective view illustrating the unrolling application of the wire strip W, onto the roof and eave trough, into the positioning thereof shown in FIGURE 2, on a reduced scale.

In FIGURES 1, 2 and 5, I illustrate the conventional cornice of a building, such as a residence, by reference numeral 1, having the flat vertical face board thereof shown by reference numeral 3, and with the overlying roof shingles thereof shown by numeral 2. In FIGURES 1 and 2, a conventional eave trough of semi-circular construction is illustrated as 5, having a longitudinal inner rolled edge 6, and an outer longitudinal rolled edge 7, normally held apart by a spacer bar 8, clamped over these outer edges as shown. Such a trough is suitably suspended from the roof as in the manner shown, by a hanger stripbar 9, which is usually welded in place to the spacer bar 8.

I use a mesh wire, indicated as W in FIGURE 4, being an elongated strip thereof about a foot wide, and I form that wire with suitable integral spring-tensioned strip members 10 and 11. Strips 10 and 11 are secured to the longitudinal sides thereof as shown and said edge members are preformed spring-tensioned to normally roll together as a serpentine coil and to cause the wire to roll in a serpentine roll formation, as illustrated in FIGURE 4. That wire is usually constructed of about 1/2 inch cross-mesh, but the exact mesh dimension may be varied as may the other proportions thereof. The wire is made in a long roll, and as used it would be cut

into whatever length may be desired. In the use of said mesh wire, I place the end X of the wire with the roll positioned as illustrated in FIGURE 10 over the cornice edge and unroll the roll in its normal manner to the right as shown, so that when held in place, as illustrated in FIGURE 2, by my spring clamps 20, that the spring-tensioned outer edge strips 10 and 11 will normally tend to press downwardly onto the roof and also onto the eave trough outer rolled edge 7 between each pair of my novel spring clamps 20.

I provide a single spring-tensioned clamp member, illustrated generally as 20 to removably spring-tensionally secure the roll of wire W in place as shown in FIGURE 2, by placing one of the clamps 20 at spaced intervals over the cornice and trough as shown and as may be desired. Such intervals may be about 3 feet to 6 feet apart. The roll of wire is placed as shown with the outer spring-tensioned edge 10 thereof resting substantially on and even with the top of the outer rolled edge 7 of the trough 5, and so that the width of the wire extends it from that point up onto the top of the roof, in substantial prolongation of the roof. I hold the wire in such position by my novel single spring-tensioned gutter clamps 20 at spaced intervals along the trough 5. I simply manually separate the straight-leg portion 21 of each clamp and its curved, shorter arm, portion 22 thereof, against its spring tension constituency to a point substantially equal to the dotted-line position of the portion 22 as shown in FIGURE 3, and then the clamp member 20 is manually pushed in place, as shown in FIGURE 1, across the trough with said leg portion of extending above the wire W and up onto the roof, and with its arc arm portion 22 pushed across and below the under curved side of the semi-circular trough 5, until the extreme end of the curved portion 22 at 22a is beyond the lower center point of the trough. When the outer end 22a of the clamp is inserted beyond the lower center of the arc of the trough it will be seen that the upward spring tension of arm 22 then exerts pressure at the point indicated by the arrow D which normally acts to hold that arm in place against that lower surface of the trough and due to its substantially concentric formation therewith, and that then clampingly holds the leg portion 21 in place on the wire and on the roof as shown.

It will be seen that the normal spring tension of my novel clamp 20, upon use as just explained, will cause its straight-leg portion 21 to press in the direction of the arrow C, downwardly toward the top of the roof and thereby hold the outer spring edges 10 and 11 of the wire W as shown in FIGURE 2, and as explained. It will be further seen that my single spring clamp 20 may be easily manually removed, by simply grasping it at its rounded portion just below the outer rolled edge 7 of the trough 5 and pulling it outwardly of the building which will cause the leg 21 and the arm 22 thereof to spring tensionally separate as the so-called hook end portion 22a is pulled from under the trough. No tools whatsoever are needed to apply or to remove my novel gutter guard combination as explained, as same is not physically permanently attached to the building. My simple construction has only two parts, being: the mesh wire with its spring tensionally preformed edges forming it into a roll as explained; and the single novel spring tensioned manually operable identical clamp members of the configuration shown.

Of importance is the substantial prolongation of the roof by the screen for a distance and over the trough and thereby forming a self-cleaning screen as the leaves are blown off the screen by the wind.

One of the teachings of my invention is the provision of a single removable spring-tensioned substantially V-shaped clamp member means for holding the wire at spaced intervals across the top of the eave trough and with that clamp means normally substantially extending from the outer edge of the trough across it and up onto

the roof and normally exerting a spring-tensioned clamping holding upwardly against a portion of the eave trough and also normally exerting a clamping holding downwardly onto the wire extending across the trough and on the roof.

In the event of a building having a modern design eave trough, having substantially a square corner on its under side adjacent to the cornice of the building, as illustrated in FIGURE 8, I preform the aligned outer end 72a of the aligned underlying curved arm 72 of my clamp member 20 of FIGURE 8 and 9, to adjust to that square corner by suitably bending that end as a hook end portion, shown as 72a of that modification, by bending that end upwardly or toward the leg portion 71 suitably, as illustrated, so as to adapt that end 72a to conform with that square corner, as shown, during use. Otherwise the function and use of that modification of my clamping means 70 is identical with that provision explained and shown in FIGURES 2 and 3. The type of cornice illustrated in FIGURE 8 is sometimes found in residences, with its cornice face-board at a right angle to the roof surface and with a molding, as shown, which places the eave trough in close proximity thereto. Therefore, my first preferred clamping member of the type shown as 20 in FIGURE 3, but adapted by suitably bending the arm end, 72a, of the clamp arm upwardly, as explained, is practical for the square lower corner type of eave trough illustrated.

Many changes and modifications may be made in my invention without deviating from the spirit, scope and teaching thereof. One would be illustrated in FIGURES 5, 6 and 7. In that modification I provide a single clamping member, 50, within the teaching on my invention. That clamping member 50 has a straight-leg portion 51 adapted to extend over the wire and well up onto the roof from the outer edge of the trough 35, and instead of the reverse overlapping aligned arm portion being crescent shaped and of shorter length than the leg, as before, I provide a straight arm 53 overlapping the leg about halfway thereof, and with a downwardly extending right angle upwardly open V-shaped hook portion 53a at the outer end of the arm 53, as illustrated in FIGURES 6 and 7. The full lines of FIGURE 6 illustrate the normal position and design of my clamping member 50 in this modification, and the dotted lines thereof illustrate the position of the arm 53, with reference to the leg 71 as manually moved against the spring tension of the member 50 at its loop portion 52, and as is done manually upon application thereof to the trough 35 as in FIGURE 5.

In applying this modification of my novel clamp 50 to that cornice and trough, it will be seen that the operator would first place the upwardly open V-notch, of the arm 53, of the clamp 50, so as to cause that notch to upwardly engage the spacer arm 38 of the trough 35. Then straight-leg 51 of the clamp is placed as shown above the trough and upwardly above and onto the roof, with the mesh wire positioned below and held by that arm 51, as shown in FIGURE 5. In that mounting, just explained, the operator would manually spring-tensionally spread or move the arm 53 of 50, in affect, downwardly from and with relation to leg 51, as illustrated in FIGURE 6, to a point with relation to the leg 51 substantially equal to the positioning shown in the dotted lines thereof, or so that the upper edge 52b of the V-notch or hook 53a could be slid transversely under the spacer bar 38 of the trough, then the V-wedge 53a is permitted to raise so as to have the spacer bar 38 rest in the V-notch of the arm 53, as the spring-tension action between 51 and 53 is released, with 51 resting, as shown, on the wire on the roof, for thereby tensionally holding the wire in place.

My single spring-tension clamp member means modification shown in FIGURE 3 is normally of a design with the leg and arm thereof apart as illustrated by the distance A thereof, and in use is manually moved against

its spring tension to a distance shown as B and then is positioned in place on the trough, as shown in FIGURE 1, where it exerts opposing pressure in the direction of the arrows and at points C and D as illustrated in FIGURE 1, for purpose explained.

The modification thereof illustrated in FIGURES 8 and 9 is also spring tensioned, and normally has its leg 71 and reverse aligned arm 72 designed as a Shepherd's staff-crook as shown in the full lines of FIGURE 9, and normally apart as shown by the reference character I. That leg 71 and arm 72 are manually moved against the spring tension thereof into substantially the dotted-line position illustrated in FIGURE 9 when in use thereof on the trough as shown in FIGURE 8, where the leg 71 and arm 72, at its end 72a exert opposing pressure, indicated by the reference characters and arrows K and L, respectively, for thereby removably tensionally holding the screen wire W in place, as shown, on the roof and across the trough. The modification of my novel clamping member means, here shown as 70, also in affect accomplishes a spring-tensional removable jaw-clamping of the wire to the roof and trough as shown.

Similarly, it will be understood that my modified clamp member 50, FIGURES 5, 6 and 7, is of the same principle as the other two modifications, namely having an arm spring tensionally exert an upward pressure on a point of the trough and a straight-leg portion exerting a downward pressure on the wire and the roof, as illustrated. In FIGURE 6 the full lines illustrate the normal formation design with the distance between the leg 51 and the V-hook 53a of the arm 53 illustrated as E and with the manual positioning of the arm 53 with reference to the leg 51, against its spring tension, being manually moved to a point illustrated by the dotted lines of that figure for application, as explained, of hook 53a to the spacer bar 38 portion of the trough, and during such use thereof with said operational distance between the arm 51 and the hook 53a of leg 53 there illustrated by reference character F. This clamp in use also spring-tensionally adheres to the trough and roof and exerts down pressure at point G, holding the wire W in place, and exerts pressure up on the trough at point H, as shown in FIG. 5.

The so-called square cornered eave trough 35, of FIGURES 5 and 8, has similar rolled inner and outer edges illustrated respectively as 36 and 37 thereof, and the hanger bar affixing the trough to the roof is illustrated in each instance as 39.

The construction of my novel wire strip W is the same as previously explained in each modification use as explained with reference to the first modification, and the application of the roll of wire onto the cornice roof edge and over the trough is the same, namely, with the outer spring-tensioned edge 10 of that wire resting substantially at a point on and along the top outer rolled edge of the trough. That spring tensioned strip edge 10 of the wire, in the use thereof with the modification shown in FIGURES 5, 6 and 7, rests as illustrated, on the arm 53 of my novel tension clamp member 50, at the point thereon as illustrated. It will be seen that the upper tension at point H of the V hook end 53a of my modified member 50, against the spacer bar 38 of the trough, and the downward pressure of the outer end of the leg 51 of that clamp 50, together, cause substantially a clock-wise movement tendency of the loop end 52 of that clamp or downward towards and onto the outer rolled edge 37 of the trough, which acts to hold the wire W across the upper open part

of the eave trough and in prolongation of the roof, to prevent falling leaves from entering the trough.

Many other modifications and changes may be made in my invention without deviating from the teaching and spirit thereof, and therefore I wish to be bound only by the hereunto appended claims.

What I claim and desire to secure by Letters Patent is:

1. In combination, a roof having a gutter at the edge thereof and a gutter guard overlying said gutter and clampingly engaged thereto, said gutter being suspended from the roof edge by a hanger means, said hanger having one end fastened to the roof and a second end having a cross-bar thereon spanning the trough of the gutter and fixed to the gutter adjacent the edges thereof, said guard comprising an elongated strip of wire mesh extending along the length of the gutter, one edge of the strip overlying the roof surfacing and the other edge overlying and resting on the edge of the gutter remote from the roof edge, a plurality of clamping members spaced along the length of the gutter and each clamping said strip to the roof edge and gutter, each clamping member including one leg overlying the guard strip and a second leg extending inwardly of the remote edge of the gutter and engaging the cross-bar of said hanger means, said legs being integrally joined at corresponding ends by a tensioned return bend disposed outwardly of said remote edge, said tensioned return bend urging the free ends of said legs toward each other to thereby clamp said wire mesh strip to said roof and gutter.

2. In combination with a roof having a gutter suspended from the edge thereof and a gutter guard screen mesh strip extending and overlying said roof edge and said gutter and being clampingly held thereover, said strip extending above the length of the gutter and with one edge of the strip overlying the roof surface and the other edge of the strip pressing on the outer edge of the gutter remote from the roof edge, a plurality of manually-spreadable single spring-tensioned manually-spreadable retainer rod member means, each rod means having one end extended as a first leg portion overlying onto and across the gutter guard screen and having its other end as a second leg portion extending in return bend spring-tensioned relationship to the first leg portion and underlying and engaging a major portion of the lower surface of the gutter, with the spring bias of each retainer rod means clamping the gutter guard strip to the roof and said gutter edge.

References Cited

UNITED STATES PATENTS

2,841,100	7/1958	Moller	52—12 X
3,023,544	3/1962	Hughes	52—12
453,948	6/1891	Smith	52—12
608,844	8/1898	Dick	248—48.1 X
706,333	8/1902	Meuser	52—12
846,238	3/1907	O'Dond	52—11
870,165	11/1907	Hagler et al.	52—12 X
1,160,124	11/1915	Andreas	248—48.1
2,209,741	7/1940	Sullivan et al.	52—11 X
2,948,083	8/1960	Steele	52—12
2,977,081	3/1961	Austin	248—48.1
3,067,881	12/1962	Goosmann	52—12 X

HENRY C. SUTHERLAND, *Primary Examiner*.

FRANK L. ABBOTT, *Examiner*.

M. O. WARNECKE, *Assistant Examiner*.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

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Wilbur A. E. Mitchell

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 66, for "stripe" read -- strip --;
column 3, line 12, for "20 to" read -- 20, to --; line 31,
strike out "of"; column 4, line 9, for "72a" read -- 72a, --;
line 65, for "52b" read -- 53b --; column 5, line 15, for
"72a" read -- 72a, --.

Signed and sealed this 22nd day of April 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents