

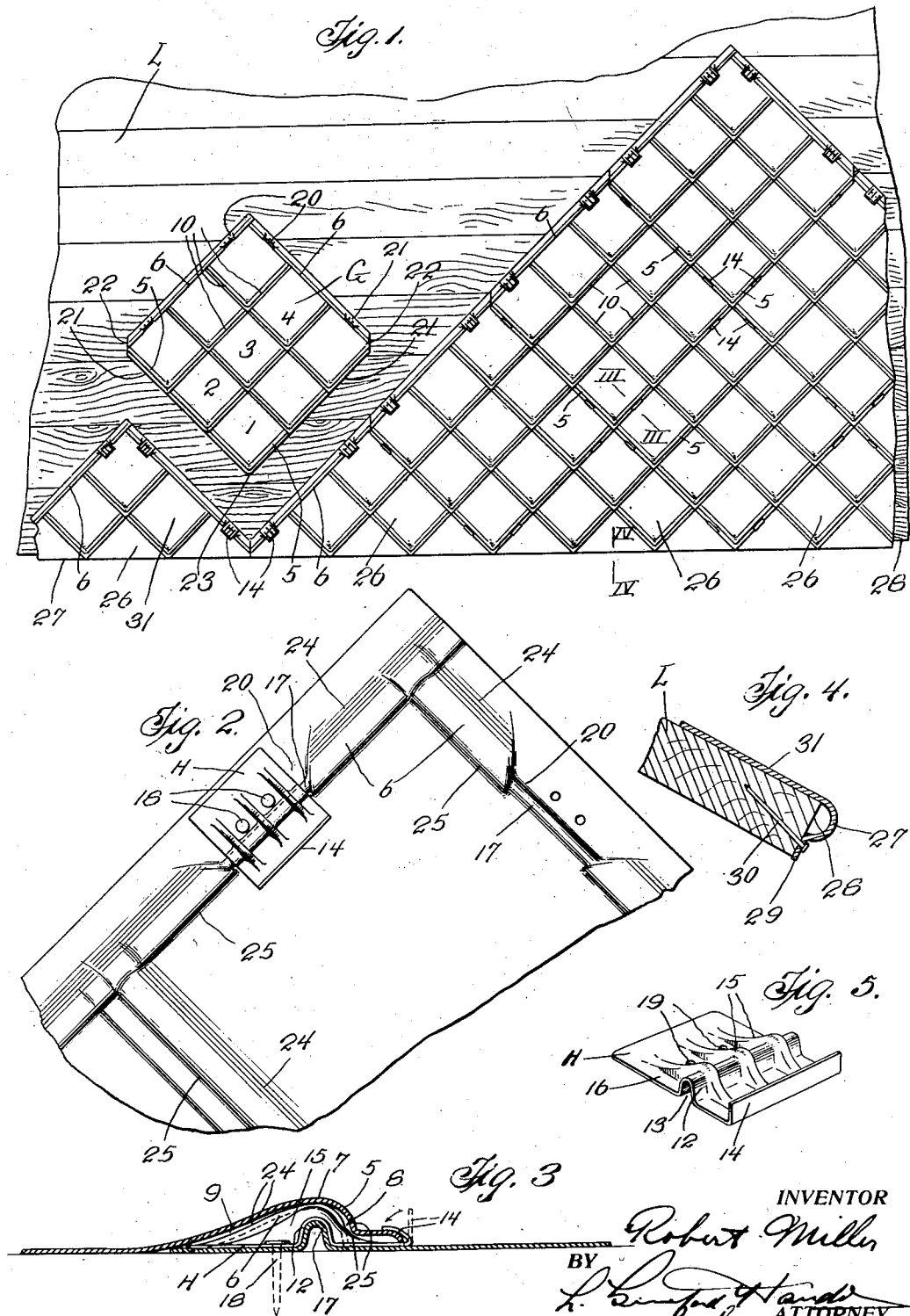
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ROOFING SHINGLE

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UNITED STATES PATENT OFFICE.

ROBERT MILLER, OF BROOKLYN, NEW YORK.

ROOFING SHINGLE.

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To all whom it may concern:

Be it known that I, ROBERT MILLER, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Roofing Shingles, of which the following is a specification.

This invention relates to a roofing shingle, and particularly to a shingle which may be made of sheet metal, or like material, stamped, or pressed, into suitable shape so that the shingle when applied will so cooperate with each other as to effectively shed water.

A further object is to so design the shingles so that the greater portion of their extent will rest flat upon the roof, thus permitting the roof to be freely walked upon without likelihood of injury to any of the seams, or joints, or without likelihood of interfering with its water shedding properties.

A further object is to provide retaining means for the shingles of a character such that portions of the shingles which are exposed to the weather will be firmly and securely held against any tendency to lift away from the roof and to accomplish this result without necessity for driving nails, staples, or other devices, through said portions of the shingles.

A further object is to so shape the shingles as to fully provide for all expansion and contraction after the shingles have been laid.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention, and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:—

Figure 1 is a top plan view of a roof showing a plurality of the improved shingles applied thereonto, and with one shingle illustrated in the act of being moved into position.

Figure 2 is an enlarged detail plan view of a portion of one of the shingles illustrating the details thereof and showing the improved retaining device.

Figure 3 is an enlarged transverse sectional view taken substantially upon the plane of line III of Fig. 1, for illustrating the details of the joint and the manner in which the retaining device operates.

Figure 4 is an enlarged detail sectional view taken substantially upon the plane of line IV of Fig. 1 for illustrating the manner in which the shingles are attached to the edge of the roof, and

Figure 5 is a detail perspective view of one of the retaining devices.

Referring to the drawings for describing in detail the structure which is therein illustrated, the reference character L indicates a roof, or rather the roofing boards, or other foundation, upon which the roofing shingles of this invention may be applied.

One of the complete shingles is shown in Fig. 1, represented by the reference character G. This shingle consists of a single integral rectangular piece of sheet metal, or other appropriate material, pressed, or stamped, into shape by suitable machinery so that its upper surface is made to represent a plurality of smaller shingles, as 1, 2, 3 and 4. Extending along the two lower marginal edges are raised beads 5 and along the two upper marginal edges are raised beads 6. When the shingles are assembled to cover a roof, as shown at the right hand side of Fig. 1, the beads 5 of one shingle overlap the beads 6 of two previously applied shingles. Accordingly, the beads 5 are made sufficiently larger than the beads 6 so that they will nest together in the manner as clearly seen in Fig. 3.

The shingles are laid in a diagonal position, and the nested, or interengaging, beads 5 and 6 operate to effectually prevent any passage of rain water, or the like, through the joint, and particular note is here made that the beads are continued across the upper and lower corners of the shingles.

The relative size of beads 5 and 6 is important with relation to the expansion and contraction of the shingles under the effects of varying degrees of temperature, etc., and in this connection it is desired to point out, as clearly seen in Fig. 3, that altho the uppermost portion, as 7, of the bead 6 is sufficiently large to fit closely against the inner surface of the uppermost portion of the bead 5, the width of bead 6 is sufficiently less than the width of the opening, or pocket, within the bead 5 so that there

are open spaces, as 8 and 9, at opposite sides of bead 6, which spaces will permit of a sufficient movement so that there will be no tendency of the shingles either to buckle, or to tear away from each other under changing temperatures.

In this connection also it should be noted that in shaping the sheet metal to represent the shingles 1, 2, 3 and 4, intersecting raised beads, as 10, are formed which are substantially the same as the beads 5, and that these beads 10, being formed as are the beads 5 and 6 by bending up the material of the sheet, naturally provide for a certain amount of elasticity in the sheet such that expansion and contraction of the sheet may take place without injury even though for any reason the lost motion provided in the spaces 8 and 9 is not sufficient.

The retaining devices H employed are clearly seen in Fig. 5. These are formed from sheet metal stamped into shape for providing an upwardly projecting rib 12 and a corresponding downwardly facing groove 13, and for providing a marginal flange 14. A plurality of stiffening ribs 15 extend transversally across the rib 12 and to opposite sides of said rib 12 along the flat portion 16 which is designed to rest upon the flat adjacent surface portion of the shingle.

The beads 6 in each shingle are formed with one or more portions 17 of reduced cross section, said portions being of a size to fit and be received snugly within the groove 13.

When a shingle has been moved to position upon the roof a retaining device H is applied over each of the reduced portions 17 and is fastened in position by means of one or more nails, screws, or like devices, 18 which extend therethrough and through the underlying material of the shingle and into the roofing boards. The nails 18 are applied as close as possible to the rib 12 and in position between ribs 15, suitable openings, as 19, being preferably formed through the flat portion 16 of the retaining device for this purpose.

The ribs 15 serve a double purpose; first, of so strengthening the retaining device that the edge portion thereof, carrying the flange 14, is made sufficiently rigid with the portion thereof held by the nails 18, that said nails will serve to hold the portion carrying flange 14 against bending, or lifting, upwardly away from the roof at any time; and second, to collectively provide a suitable support beneath the adjacent portion of the rib 5 of an overlying shingle so that said portion, when stepped upon, for instance, will not be likely to sink into the recess, as 20, which is provided in the underlying shingle by the formation, in the beads 6, of the reduced portions 17.

As the laying of the roof progresses, each

shingle is moved to position with its beads 5 overlying the beads 6 of adjacent previously laid shingles and with its lower edges, as 21, in close proximity to the flanges 14 of the retaining devices. The desired number of new retaining devices is fastened in position over the newly laid shingle and the flanges 14, adjacent the edges 21, are folded over said edges 21, as best seen in Fig. 3, and the operation is complete.

By arranging the shingles diagonally, that is so that their lower edge portions extend diagonally relative to the slant of the roof, and by placing the retaining devices in such position as to engage said diagonally disposed edges, the formation of pockets is avoided and an efficient watershed thereby provided at the retaining devices.

The opposite side corners of each shingle are preferably cut off, as at 22, so as to avoid multiple thickness of metal where adjacent shingles meet. The joints thus formed are, of course, covered by the lower corner portion, as 23, of overlying shingles, as will be clearly apparent from inspection of Fig. 1.

In order to give the maximum water shedding properties to the beads 5 and 6, it is preferable that said beads be shaped with their upper sides, as 24, of gradual incline, whereas the lower sides, as 25, are of a more abrupt incline. The gradual incline on the upper side of beads 5 provides a surface by which water may flow uninterruptedly over the beads even though the roof be only of slight incline. The corresponding shape of the upper side of beads 6 provides reinforcing and supporting means for the overlying portions of beads 5. The steeper incline of the lower sides of beads 6 forms a more perpendicular wall opposing passage of any water upwardly through the joint between the two shingles. And the steeper incline of the lower sides of beads 5 provides definitely defined lines upon the finished roof for denoting the contour of the shingles.

At the eaves of the roof shingles, as 26, are employed which may be conveniently referred to as "starter" shingles. These are the same as those already described except that their lower halves have been omitted and in their stead the lower edge of the shingle is formed with a bead 27 extending from one side corner to the other of the shingle and adapted to project downwardly over the edge portion, as 28, of the eaves. Below the bead 27 is preferably provided a flat portion 29 adapted to receive nails, or the like, 30 by means of which the lower edges of the shingles may be held in position.

The beads 27, in addition to being ornamental, provide for easy expansion and contraction of the roof portion, as 31, of the shingle.

In laying a roof there is first applied a number of "starter" shingles corner to cor-

ner along the eaves of the roof, each being held along its upper edges by its proper quota of retaining devices H and along its lower edge by nails, or the like, as 30.

5 After these "starter" shingles have been applied then the regular full size shingles are placed in position one after the other, as has been already described, each having its upper edges held by a proper number of retaining devices, and having its lower edges held by flanges 14 of previously laid retaining devices.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter contained in the above description, or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

20 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A roofing shingle of rectangular shape and being made from sheet material pressed to provide beads extending along the margins of the shingle, the shingle being adapted to be laid diagonally upon a roof, the beads which extend along the lower marginal edges being relatively larger than the beads which extend along the upper marginal edges so that the lower beads of each shingle will fit over and receive the upper beads of previously laid shingles, and means for engaging and retaining the four edges of each shingle in said position.

2. A roofing shingle of rectangular shape and being made from sheet material pressed to provide beads extending along the margins of the shingle, the shingle being adapted to be laid diagonally upon a roof, the beads which extend along the lower marginal edges being relatively larger than the beads which extend along the upper marginal edges so that the lower beads of each shingle will fit over and receive the upper beads of previously laid shingles, and separately formed retaining means for said shingles of a character to fit over said upper beads of a laid shingle and to interengage with the lower edge portion of a shingle being laid.

3. A retaining device for roofing shingles, said device comprising a substantially flat plate portion adapted to rest flat upon the surface of the shingle and to be covered by a second shingle except that an edge portion of the retaining device is to extend beyond the second shingle, the portion of said device which is intended to be covered being adapted to be held in position upon the shingle by retaining means engaging therebetween and the shingle at a point spaced from said mentioned edge, said edge being

of a character to be engaged with said second shingle to hold said second shingle in position, and stiffening means comprised in said plate extending from adjacent said edge to the vicinity of said mentioned retaining means.

4. The combination with a pair of roofing shingles, one of said shingles having a bead raised thereon and the other having a groove in its under surface into which the bead of the first shingle fits, and said bead having a portion of reduced size intermediate its length, of a retaining device for said shingles, said retaining device comprising a member arranged to rest flat upon the shingle, and having a groove in its under surface to receive the reduced part of said bead, means whereby said member may be fastened to said first shingle and to said second shingle, and said member having a stiffening rib thereon rising therefrom to substantially the plane of the main portion of said bead, for the purpose set forth.

5. The combination with a pair of roofing shingles, one of said shingles having a rib raised thereon and the other having a groove in its under surface into which the rib of the first shingle fits, of a retaining device for said shingles, said retaining device comprising a member adapted to rest flat upon the ribbed shingle at opposite sides of the rib, having a groove in its under surface to receive said rib, having also a stiffening rib thereon extending transversally of said groove, means at one side of said rib whereby said retaining device may be fastened to one of said shingles and said retaining device at the opposite side of said rib being adapted to be fastened to the other shingle.

6. Roofing shingles, said shingles being of rectangular shape and being made from sheet material pressed to provide beads extending along the margins thereof, the bead which extends along the relatively lower margin of a shingle being laid, being hollow and adapted to receive the bead which extends along the upper margin of a previously laid shingle, and separately formed retaining means for said shingles, said retaining means comprising a part adapted to be connected with the laid shingle by being nailed therethrough at a point above the upper bead of said laid shingle, comprising also a part to extend downwardly across the upper bead of the laid shingle, comprising also a part to engage the upper shingle at a point below the upper bead of said laid shingle, and comprising also stiffening means extending thereacross from the point of connection with one shingle to the point of connection with the other shingle.

In testimony whereof I affix my signature.

ROBERT MILLER.