A. CUMMINGS.

Roofing.

No. 161,762. Patented April 6, 1875.

Fig 1.

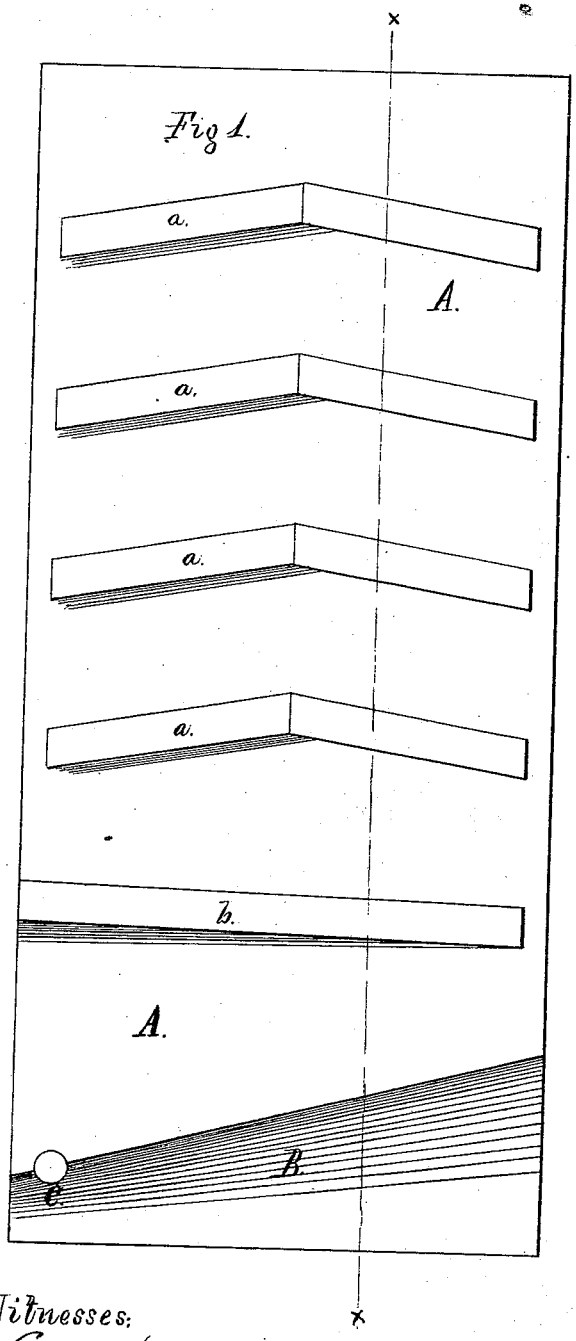
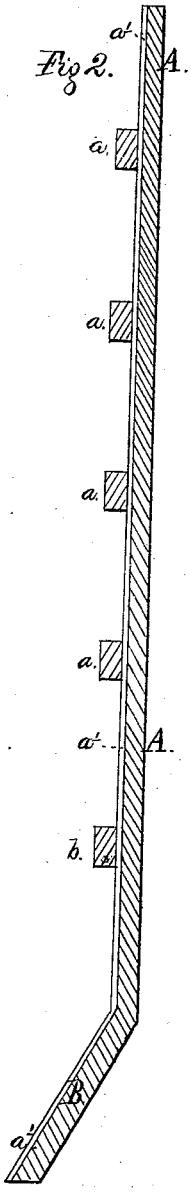


Fig 2.



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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

ALLAN CUMMINGS, OF NEW YORK, N. Y.

IMPROVEMENT IN ROOFING.

Specification forming part of Letters Patent No. **161,762**, dated April 6, 1875; application filed March 17, 1875.

To all whom it may concern:

Be it known that I, ALLAN CUMMINGS, of the city, county, and State of New York, have invented an Improvement in Roofing, of which the following is a specification:

My invention relates to that class known as composition roofing, in which a coating of tar, coal-tar, asphalt, or other preparation from similar substances, combined with gravel or sand, is applied upon a base of tarred or similarly treated felting, in order to form on the surface of the roof a water-proof coating. The object of my invention is to provide a method or means of so applying and affixing to the roof the said tar, asphalt, or other composition, that it will remain in place and be comparatively unaffected by the heat of the sun during the summer months. The method of accomplishing this purpose, the advantages, and the details of the same, will be fully described and pointed out.

In the drawings, which form a part of this specification, Figure 1 is a front elevation of a roof, showing the application of my invention, and Fig. 2 is a sectional elevation of the same, taken on line *x x*.

Similar letters of reference indicate corresponding parts.

It is a well-known fact that a large proportion of the roofs of buildings, of all classes, throughout the country are covered with what is generally designated as composition roofing.

The base or first covering of the ordinary wood roof is of a prepared felting or paper, which is usually rendered impervious to water or dampness by undergoing certain treatment with tar, coal-tar, asphalt, or other similar preparations. Upon this waterproof base of felting or paper is placed a coating of prepared composition of tar, asphalt, or similar material. This composition coating is applied in a semi-liquid form while hot, and is in turn treated to a coating of sand and gravel. In the case of flat roofs, or roofs having a moderate pitch from apex to base, this coating of composition and gravel remains in place and fully answers the purpose for which it was applied. In the case of roofs having a steep pitch or inclination from the peak to the eaves it has been found to be almost impossible to retain the composition coating in place during the hot season, the action of the heat from the sun rapidly softening the composition to such a degree of partial liquefication, that, by reason of its own weight, together with the additional weight of the gravel and sand, the whole mass gradually slides down the incline of the roof, gaining in quantity and weight as it descends, until it is deposited in the gutter. The usual tendency of the moving mass is to gravitate toward the center of the roof until the whole mass is there concentrated; consequently it very frequently happens, as the center is the weaker portion of the roof, that the weight of the material loosens, cracks, and breaks down the roof at that point. The spout or conductor in such case is usually filled up and clogged at once, causing the water to gather and concentrate at the points where the roof is damaged, thus entering the building and causing much damage. By reason of the coating of composition and gravel sliding from place, the entire roof, from peak to gutter, is soon laid bare to the felting, and, if not at once replaced the felting soon becomes weather-worn and leaky. This form of roofing, as now applied, calls for frequent and costly repairs. It is to obviate all of the defects named, that I have made my present invention. Another point accomplished by my system of roofing, is the fact that it enables the applying of composition and gravel to roofs that have a very steep pitch or incline.

A represents the ordinary roof of a building prepared for the reception of composition roofing. B is the gutter at the eaves. C the spout or conductor for conveying the water from the gutter. *a' a'*, in Fig. 2, represent the base or first covering applied to the wood roof. It is of any of the well-known water-proof feltings or papers prepared for that purpose by any of the well-known processes, and is affixed to the roof in the usual manner. After the roof is wholly covered with this water-proof felting or paper, I nail, or otherwise attach to it, on the surface of the felting, a series of strips of wood, *a a a a*. These strips are preferably not less than one inch in thickness, and of suitable width for the purposes of strength. They are placed at such

intervals as may be found necessary and desirable, and are inclined from the center of the roof toward the sides of the building, as shown in Fig. 1, to within about four inches of the edge. The angle of this inclination can be varied as may be best suited for the purpose. The strips might be parallel with the peak of the roof, but I prefer to set them at an angle, as shown, for the purpose of rapidly carrying away any water to the sides of the roof, where it readily descends to the gutter.

At the base of the roof, and immediately above the gutter, I attach a strip of wood, *b*, of similar size to those above, which extends nearly the entire width of the roof; it is also inclined at an angle, and is carried to the extreme side of the roof, above where the conductor or spout is attached to the gutter, thus causing all water, &c., to be carried to the opposite side before entering the gutter B, prior to being discharged by the spout. In attaching these strips of wood to the roof the workmen first attach the strip *b* in place, rising to the strips *a a* in turn. This insures safety to the workman, and provides a means of readily reaching any portion of the roof during the application of the roofing, or afterward, for the purpose of repairs. After these strips are all in place the entire roof, including the strips, is treated to a coating of composition, and afterward to a finishing coat of sand and gravel, applied in the usual manner. It is of course understood that the strips *a* and *b* will project a suitable height above the coating of composition and gravel.

It is obvious that the operation of my improved system of roofing will be as follows: Whenever the heat of the sun softens the coating of composition to that degree of liquefication that it has a tendency to run or slide, that tendency will be greatly lessened, for the reason that the mass of composition and gravel being divided into sections the weight of the same is also divided and distributed, and it follows as a matter of course that the tendency to run is correspondingly diminished—that is to say, the quantity of the substance of composition and gravel contained in a section between any two of the strips of wood is so small that, comparatively speaking, its weight is not sufficient to move it from its place in ordinary cases to any perceptible extent. But in case the coating should become loosened from the felt in any section the extent of its movement is determined by the lower strip of each section, which catches and holds the portion moving, preventing it from reaching the section beneath; and as the inclines of these strips will divide and divert the softened composition from the center of the roof, its weakest point, to the sides of the same, its strongest points, it is evident that no injury to the roof can occur by reason of the weight at any one point. This will prevent cracks, leakages, and other deterioration.

This system of construction renders repairs less frequent, and also affords easy access to any part of the roof when such becomes necessary.

It will be seen that should any of the composition and gravel escape from the sections at the sides of the roof, and pass down toward the eaves, it will be caught by the lower strip *b*, and prevented from entering the spout *c*. For this reason the lower strip *b* may be increased in thickness. The shape of the strips of wood, which may be the ordinary "furring," is preferably square, but they may be formed triangular or half-round; but the shape of the same, however, is no part of my invention.

I am aware that very thin strips of wood are now, and have long been, used for fastening the felting to roofs, and applied in an irregular manner for that purpose alone. Such application does not accomplish the purposes of my invention, neither will the use of strips of wood applied vertically. I make no claim to the use of strips of wood for fastening the felting or paper to the roof; but

What I do claim as new, and desire to secure by Letters Patent, is—

In combination with the roof A of a building covered with water-proof felting or paper *a'* the strips of wood *a a* and *b*, fastened thereto at suitable intervals, dividing the roof into a series of sections inclined from its center, into which sections is placed a coating of composition and gravel, substantially as and for the purposes as herein shown and described.

In testimony whereof I have hereunto set my hand this 1st day of March, A. D. 1875.

ALLAN CUMMINGS.

In presence of—
A. L. MUNSON,
HOMER S. BEARDSLEY.