

(No Model.)

S. G. TUFTS.

ROOFING FOR BUILDINGS AND OTHER STRUCTURES.

No. 315,977.

Patented Apr. 14, 1885.

Fig. 1.

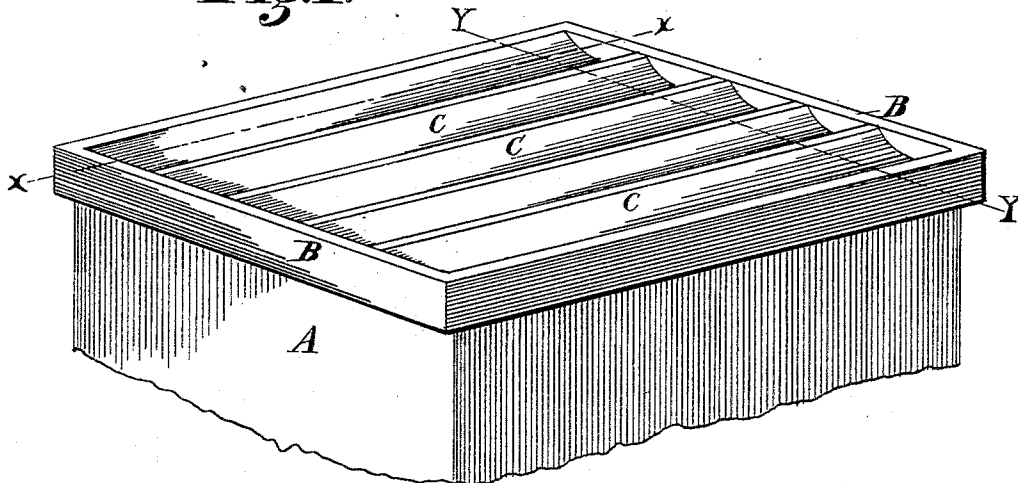


Fig. 2.

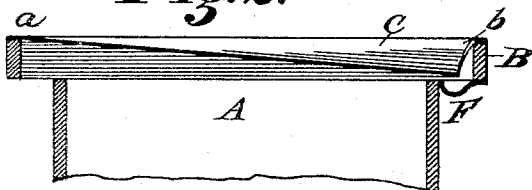


Fig. 3.

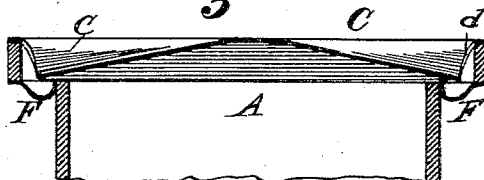


Fig. 4.

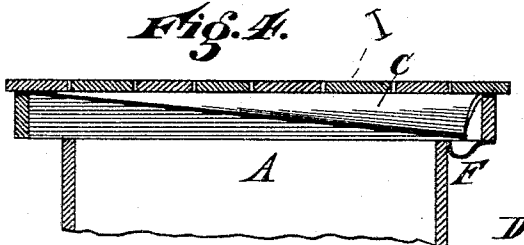
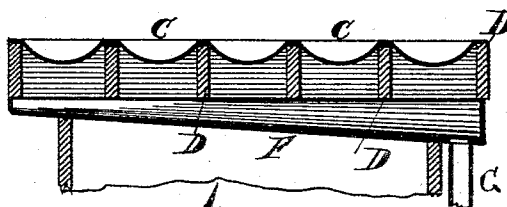


Fig. 5.



Attest

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UNITED STATES PATENT OFFICE.

SETH G. TUFTS, OF MAINEVILLE, OHIO.

ROOFING FOR BUILDINGS AND OTHER STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 315,977, dated April 14, 1885.

Application filed September 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, SETH G. TUFTS, a resident of Maineville, in the county of Warren and State of Ohio, have invented certain new and useful Improvements in Roofing for Buildings and other Structures, of which the following is a specification.

My invention relates to an improvement in roofing of buildings or other structures.

The object of my invention is, first, to avoid the use of rafters, and to use in lieu thereof joists running horizontally, or nearly so, thereby saving a large amount of material hitherto necessarily employed in a saddle or pitched roof; second, to obviate the liability of roofs being blown off by making the joists flat, and much lower than the ordinary pitched roofs required.

Another object of my invention is to save a large amount of material, as level joists are used in place of rafters pitched or inclined so as to obtain the water-shedding facilities, hence decreasing the superficial area of surface of the roof with a correspondingly less amount of material required in covering the roof.

Another object of my invention is to provide a protected eave-trough which will carry off the water shed by the roof without being opened or exposed.

These objects are accomplished by using graded troughs secured to the top edge of level joists, all of which will be fully set forth in the description of the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my improvement; Fig. 2, a cross-section on line *xx*, Fig. 1; Fig. 3, a similar cross-section showing a modification of the graded troughs; Fig. 4, a cross-section on line *xx*, Fig. 1, with a slatted floor resting upon the roof. Fig. 5 is a cross-section on line *yy*, Fig. 1.

A represents the frame of a building or structure upon the top of which my improved roof rests.

B represents the finishing-boards of the cornice.

C represents graded troughs, which are attached to the top edge of joists D. Between each of these joists D the roofing material is made concave, so as to form between each a reg-

ular graded trough, the pitch for the fall of the water being formed by a gradual increase in the concave depth of the bent roofing material, which may be of sheet metal, tar-paper, or other similar composition usually employed for roofs. Figs. 1 and 2 represent the shallow portion of the trough, commencing at one side of the building, as at *a*, Fig. 2, and gradually increasing in depth to the opposite portion, *b*. Where the buildings are large I employ a double graded trough, as shown in Fig. 3, the troughs being inclined from the center of the building outward.

I represents a floor resting upon the top of the joists D. It is shown in Fig. 4 as slatted, so that the water may pass down through openings in the floor into the troughs C. Any mode, however, of allowing the water to pass through the floor I into the trough may be employed instead of a slatted floor. By the use of this slatted floor I, or its equivalent, I obtain an outdoor platform of an area equal to that of the building, on which articles may be placed, which in case of porches would be a convenient place for sitting; or it may be employed on the roofs of houses for hanging clothes, or other platform conveniences.

I do not wish to limit myself exclusively to the use of level joists D, as a slight inclination of the joists would not materially increase the expense or prevent the pitch or shedding capacity of the roof from being substantially obtained by gradually increasing the pitched or graded concave troughs secured to the upper edges of the joists forming the frame of the roof and occupying the space between the joists.

I believe I am the first to construct a roof which employs joists the upper surfaces of which are level, or nearly so, and still a sufficient shedding capacity is obtained by graded troughs secured to the top surface of the joists and lying between them, and only occupying the space between the joists. I have found by experience that the pitch of the troughs alone will furnish sufficient fall to carry off the water.

Another important advantage is derived from the use of my graded troughs C to form the roof or shedding-surface of the top of the building. Great difficulty has been occasioned by the use of eave-spouts, because of

their liability to become filled with leaves, sticks, and other material lodging in the open surface of the eave-trough, which stops up the spouts that carry the water down to the ground, or to the cistern, by reason of which a large amount of filth is either carried into the spouts or to the cistern.

By the use of my improved trough-roof eave-spouts can be effectually protected by being covered and yet perfectly shed the water.

d represents an opening formed at the ends of trough C, between the ends of the trough and the facing-board D. Fig. 5 represents the eave-trough F inclined to carry off the water through spout G.

Strainers or wire gauze may be attached to the top of the joists for covering the troughs, which will allow the water to pass through into the trough B, and yet prevent leaves or trash from being carried into the troughs or spouts.

It will be obvious that my improved eave-troughs can be used with any form of troughed roofs, whether pitched rafters or level joists are employed.

I desire to claim the construction and arrangement of the eave-trough, broadly, without regard to the form of joists or rafters employed.

I claim—

1. A roof composed, substantially, of joists D, the upper edges of which are substantially level, and the shedding-surface formed of gradually-graded troughs C, attached to the

upper edge of the joists, which troughs incline to one or more sides of the building in a gradually-increasing pitch sufficient to shed the water, substantially as specified.

2. A roof composed, substantially, of the substantially-level joists D, facing-board B, and gradually-inclined troughs C, substantially as specified.

3. In combination with substantially-level joist, D, double graded troughs C, pitching from the center outward, and forming a double water-shed for a roof, substantially as specified.

4. In a roof, in combination with the joists D, the graded troughs C, attached to the upper surface of said joists and lying between them, and formed with a water-opening, *d*, at the end of the troughs and inside the facing-board B, substantially as specified.

5. In combination with a graded troughed roof, the eave-trough F, secured upon the under side of the coping, so as to receive the water discharged by the troughs C through the opening *d*, substantially as specified.

6. In combination with the troughed roof C and substantially-level joists D, the slatted floor I, or its equivalent, resting upon the upper surface of the roof, substantially as specified.

In testimony whereof I have hereunto set my hand.

SETH G. TUFTS.

Witnesses:

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