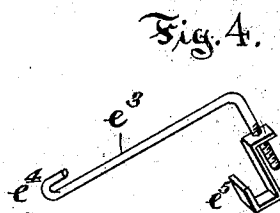
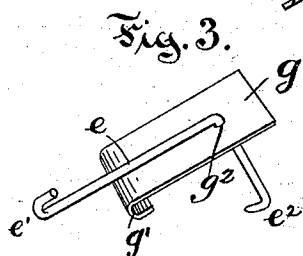
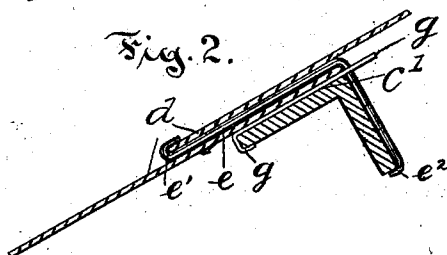
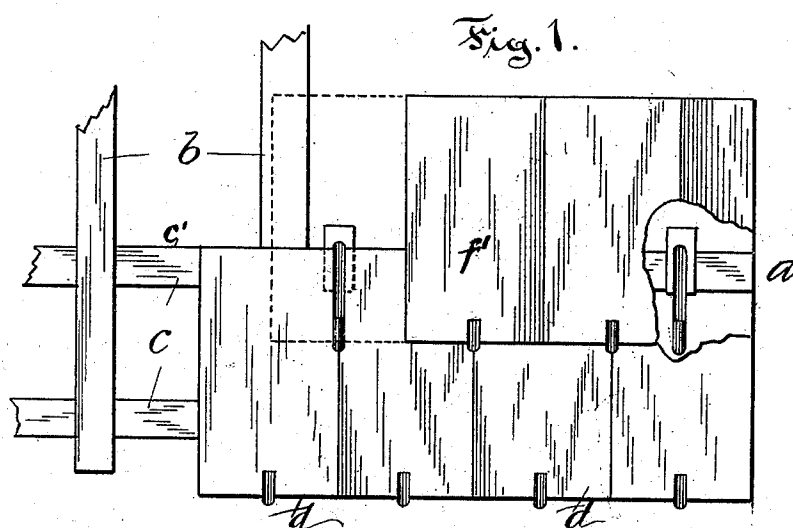


(No Model.)

S. R. HAWTHORNE.
ROOFING.

No. 505,526.

Patented Sept. 26, 1893.



Witnesses:

Joseph Arth. Cantin:

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UNITED STATES PATENT OFFICE.

SAMUEL R. HAWTHORNE, OF HARTFORD, CONNECTICUT.

ROOFING.

SPECIFICATION forming part of Letters Patent No. 505,526, dated September 26, 1893.

Application filed November 1, 1892. Serial No. 450,701. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. HAWTHORNE, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Roofing, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is more particularly to provide means for securing slates to a metal roofing, although the device may also be used in connection with a frame work of rafters and cross pieces, of other material than iron.

My invention consists in the details of the several parts making up the slate holding devices, and in the combination of such parts, as more particularly hereinafter described and pointed out in the claims.

Referring to the drawings: Figure 1 shows a plan view of part of the roof with parts broken away to show construction of the slate holding devices. Fig. 2 is a detail view in vertical section through a portion of the roof showing the details of the slate holding parts. Fig. 3 is a detail view showing the several elements making up the slate holding devices. Fig. 4 is a detail view of a modified form of the invention.

In the accompanying drawings the letter *a* denotes the roofing of a building that is made up in the usual manner of rafters *b* and cross pieces *c* extending transversely along the roof and usually secured to the rafters as they are crossed.

When the roof is constructed of metal, as iron, the cross pieces are riveted or bolted to the rafters, and they are usually of L-shape in cross-section, offering a flat bearing surface *c'* on which the slates *d* are laid. When a roof is made up wholly of a metal frame more or less difficulty is experienced in securing the slates to the roof and special fastening means are required.

In carrying out my invention I make use of a holder *e* made of metal bent midway of its length, usually at about right angles and provided at one end with a clamping hook *e'* and at the other end with a hook *e''*, the whole being adapted to receive the edge of a slate *d* and prevent it from moving downward along

the roof. This holder *e* may be made of wire bent to shape, as shown, or it may be made from sheet copper or other suitable metal cut or stamped to the outline shown and terminating in the hooked ends that form the fastening and slate holding parts. This holder is used in connection with an anchor *g* that consists preferably of a thin strip of metal having a hooked end *g'* that serves to attach it to the edge of the bearing face *c'* of the cross piece and provided near the opposite edge of the cross piece with a hole through which the body part of the holder extends.

The parts are secured to the cross piece of the roof by passing the end of the holder through the hole *g''* in the anchor and then by a swinging movement of the holder the hooked end *e''* is engaged either under the edge of the cross piece or in a groove or socket in its side. The holder in its proper position usually rests at about right angles to the line of direction of the cross piece and the slates are laid so that they extend beyond the holder that lies in or passes through the joint between two adjacent slates. The slates are laid in the usual manner so as to break joints and a slate *f'* of a row next above that between the slates of which the holders are placed is laid with its edge (it may be the end or side of the slate) resting in the hook *e''* that supports the slate and prevents it from sliding out of place.

In Fig. 4 is shown a modified form of the invention in which the holder *e''* is provided on one end with a slate holding hook *e'''* as above described, the other end of the holder being screw threaded and engaging a screw threaded opening in an angular clamping hook that is adapted to engage the cross-piece of the roof, this construction providing an accurate adjustment of the holder to different sizes of cross pieces of which the roof may be constructed.

I claim as my invention—

1. In combination with a cross-piece of a roof an angular slate holder made of metal bent about midway of its length provided at one end with a clamping hook adapted to engage the cross-piece of the roof and at the other end with a slate holding hook, and an anchor secured to the cross-piece and having

an opening through which one arm of the slate holder is passed, all substantially as described.

2. In combination with the frame work of
5 a roof a slate holder composed of an angular
piece of metal provided at one end with a
slate holding hook adapted to engage the
lower edge of the slate and with the other end
adjustably secured to a clamping hook at-
10 tached to the cross-piece of the roof, all sub-
stantially as described.

3. In combination with the frame work of

a roof, a slate holder composed of an angular
piece of metal provided at one end with a
slate holding hook and at the other end with 15
a screw thread, a clamping hook adapted to
engage the cross piece of the roof and pro-
vided with a screw threaded opening adapted
to engage the screw threaded end of the
holder, all substantially as described.

SAMUEL R. HAWTHORNE.

Witnesses:

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J. STERN.