

(No Model.)

W. H. STEWART.

ROOFING.

No. 358,994.

Patented Mar. 8, 1887.

Fig. 1.

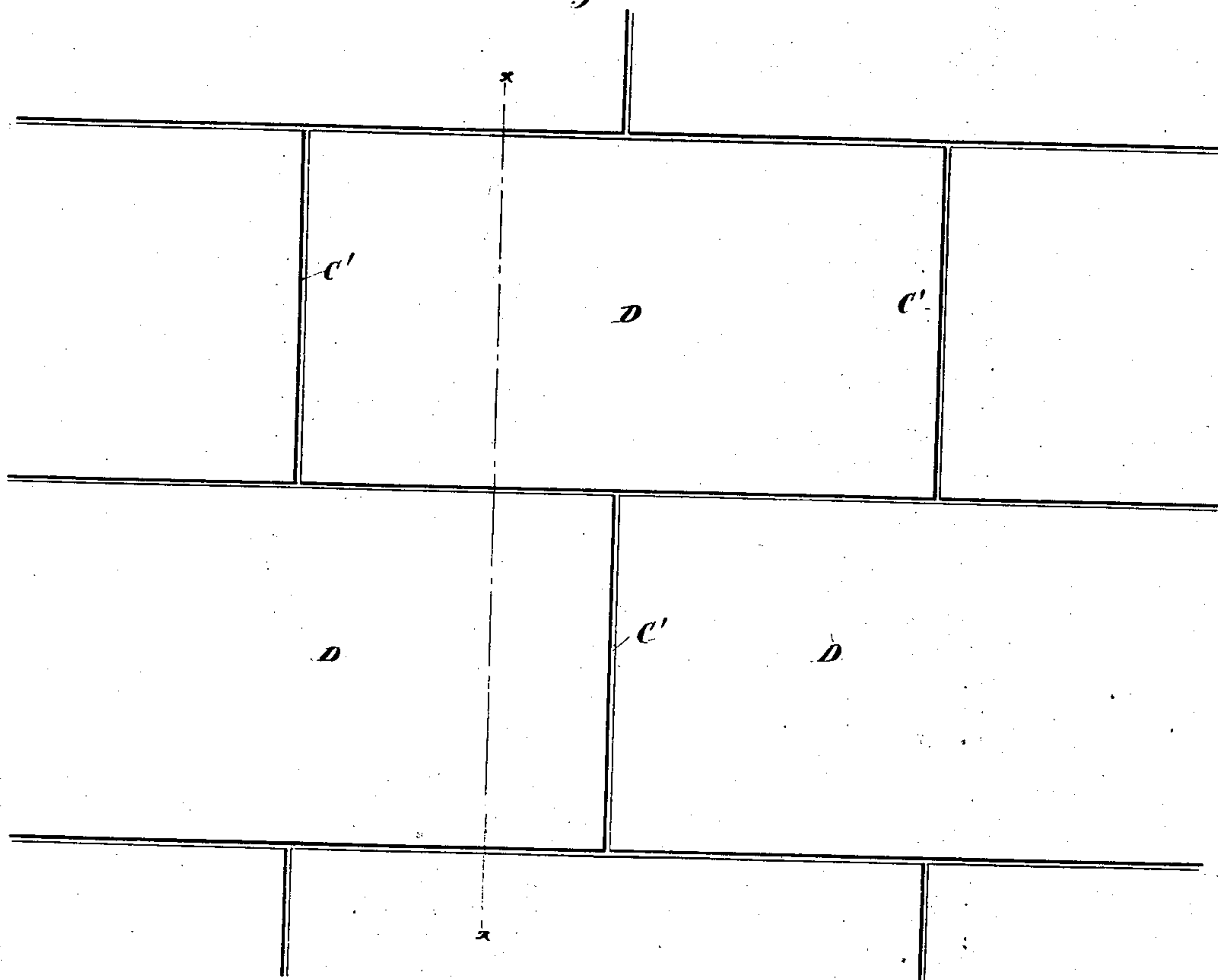
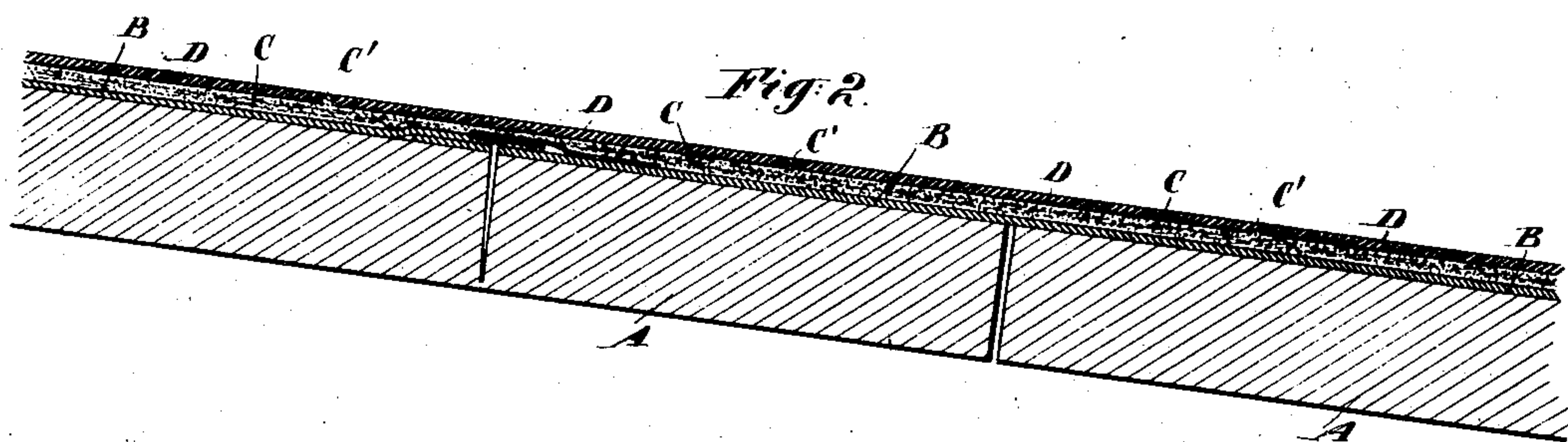


Fig. 2.



Witnesses

Charles R. Searle.
J. H. Richmond

Inventor:

William H. Stewart
by his attorney
Thomas D. Jones & Son

UNITED STATES PATENT OFFICE.

WILLIAM H. STEWART, OF BROOKLYN, NEW YORK.

ROOFING.

SPECIFICATION forming part of Letters Patent No. 358,994, dated March 8, 1887.

Application filed October 23, 1886. Serial No. 217,019. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. STEWART, of Brooklyn, Kings county, in the State of New York, have invented a certain new and useful Improvement in Roofing, of which the following is a specification.

Many efforts have been made to defend the tops of buildings against water, which is the main and most frequently required function of a roof-covering, and also to defend against fire, which is a more rarely required function, but when required is an immensely important one.

It is essential in all roof-coverings to have a sufficient amount of flexibility to allow for the springing of the roofs in gales of wind or when loaded heavily with snow. I have devised a combination of slate with other materials which fulfills all the requirements, is cheap, and gives promise of being unusually durable. I employ the slate in the form of slabs, which may be of the same size and character usually employed for roofing. They are so applied as to aid in protecting a plastic composition from the effects of the air, and to secure perfect protection against fire from outside. My roof-covering will retain a leathery or slightly-flexible quality for a long period.

The invention is intended more particularly for what are termed "flat roofs"—those in which the pitch or inclination is not more than one in ten or twenty; but it may be used with advantage on roofs at all inclinations, or even on upright walls. I will describe it as applied to a flat roof.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a top view of a portion of a roof having my invention. Fig. 2 is a section on the line *xx* in Fig. 1.

Similar letters of reference indicate corresponding parts in both the figures where they occur.

A is a board of the roof, which, it will be understood, is supported upon suitable rafters or other framing. (Not shown.)

B is a layer of roofing-felt. I use three or four ply felt, with the edges joined in the manner set forth in the patent to me, dated December 15, 1885, No. 332,570. Over this I apply a layer of plastic composition, in which,

while the composition is soft, I embed slabs of slate, D. It is important that the composition be of a tough nature, and also that it be just sufficiently soft when fresh, and shall grow harder afterward, but never entirely hard or brittle. It is important that it be not much affected by the extremes of temperature to which it is exposed in ordinary and extraordinary weather.

For the plastic layer I use what is commonly known and on sale in the trade as "Stewart's Iron Fiber Compound Cement." It has been many years in extensive use under that name for cementing around chimneys, skylights, &c., and for repairing defective places in leaky roofs of all kinds. This composition is only slightly softened by heat. It will maintain its consistency under the greatest heat of the summer sun.

The slate may be ordinary roofing-slate, preferably having the edges trimmed straight.

In applying my covering on a roof the workmen lay the felt and nail it to the boards, lapping and covering the joints, as fully described in my patent of December, 1885, above referred to. When they have advanced a sufficient distance, they commence and apply the composition with a trowel or other suitable tool, making an approximately-uniform layer from an eighth to a quarter of an inch in thickness. The same or another set of workmen apply thereon the slabs of slate, laying them edge to edge without any lap. The slates should be pressed down with such force as to raise the composition somewhat in the joints. It is preferable to have the joints flow exactly full. If it rises too much in some places, it can be easily cleaned off; if not sufficiently, the joint can be "pointed." I will now designate the soft composition by the two marks C and C', the mark C' being applied to the portion which fills the joints between the slates.

The action of the air hardens a skin upon the limited surface of the Iron Fiber Compound Cement which is exposed. That skin increases in thickness and the whole composition hardens somewhat as the years advance; but my experiments indicate that it will be a long period before the composition will cease to be moderately flexible in the condition of stiff sole-leather.

I can paint over the roof with any ordinary

paint; but such is not required or expedient except for decorative purposes. In some cases—as for ice-houses—it may be expedient to paint the roof with white to repel heat.

5 The soft material C C' forms a bond between the slate and the felt.

I attach importance to the quality of permanent flexibility possessed by my roof-covering, and I attach importance to the fact that
10 its condition is not appreciably different under the extremes of temperature. The greatest cold of winter does not render it brittle and the greatest heat of summer does not render it soft.

15 Modifications may be made in the details. Instead of three or four ply felt I can use a single ply. Instead of lapping the joints according to my patent of 1885, I can lap them in the ordinary way, or I can simply abut them.

20 It is not important, except for æsthetic effect, that the slate be all of uniform size. Odd lots of different sizes, broken or damaged slate may be used. Any triangular or other spaces which are not covered by the regular slate
25 may be partly covered by fragments of slate, the joints in all cases being filled up with the composition. The slate affords a proper footing for walking or working on the roof.

I can, in applying the covering to the roof,
30 begin at the lower edge and work upward

either on steeply-inclined or nearly-flat roofs. In such case the workman will stand on the freshly-laid slate while he lays the plastic composition a little farther up and beds the slate therein; but the condition of the freshly-laid
35 composition which rises through the joints makes it preferable to avoid this, and in most cases the work should be done either from one side working toward the other or from the top working downward.

I do not claim any roof-covering in which
40 slate or analogous slabs are bedded in asphalt, coal-tar, or analogous material which is softened by heat and hardened by cold.

I claim as my invention—

The roof-covering described, composed of a
45 tough flexible layer, as the felt B, a permanently-plastic layer of Iron Fiber Compound Cement, C C', not influenced by heat or cold, and an outer layer of flat slabs of hard material, D, laid edge to edge, all combined and
50 arranged to serve as herein specified.

In testimony whereof I have hereunto set my hand, at New York, in the presence of two subscribing witnesses.

W. H. STEWART.

Witnesses:

THOMAS DREW STETSON,
M. F. BOYLE.