No. 732,883. PATENTED JULY 7, 1903.

L. P. NORMANDIN.

ROOF.

APPLICATION FILED SEPT. 16, 1902.

NO MODEL.

Fig. 1.

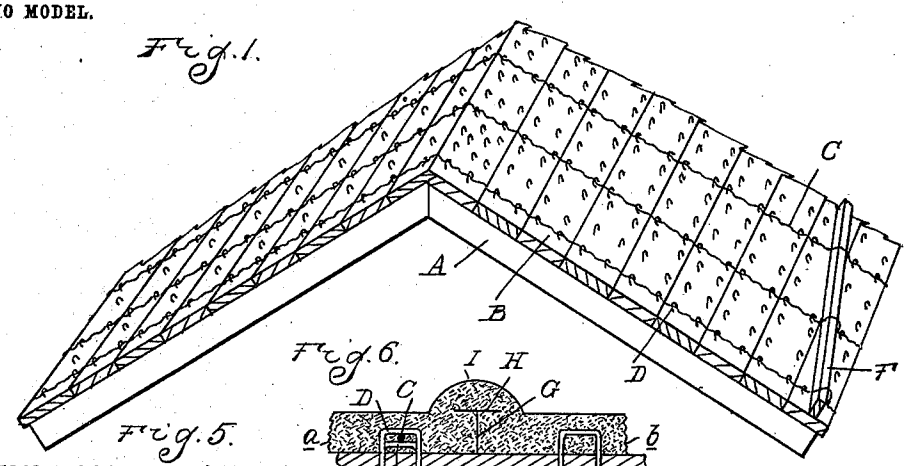


Fig. 6.

Fig. 5.

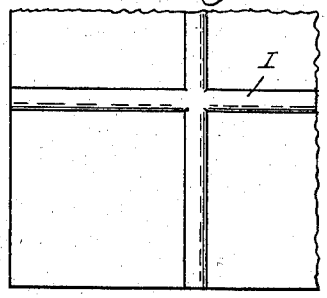


Fig. 3.

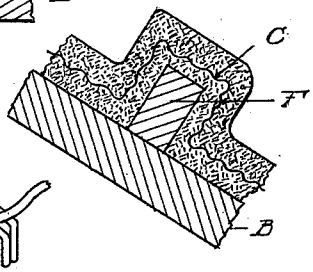


Fig. 4.

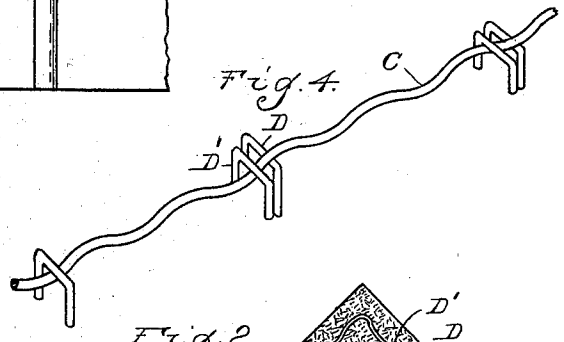
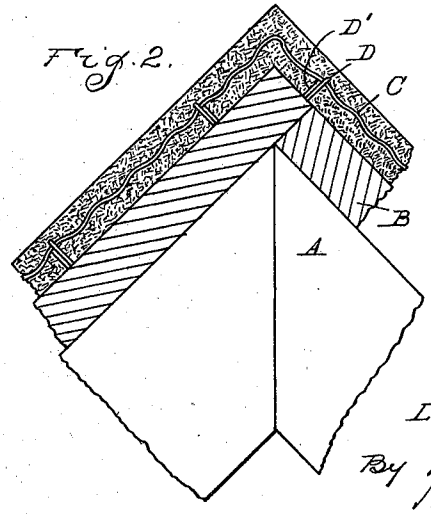


Fig. 2.



Witnesses
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No. 732,883. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

LEVI P. NORMANDIN, OF JACKSON, MICHIGAN, ASSIGNOR OF THREE-FOURTHS TO WILLIAM F. COWHAM, OF JACKSON, MICHIGAN.

ROOF.

SPECIFICATION forming part of Letters Patent No. 732,883, dated July 7, 1903.

Application filed September 16, 1902. Serial No. 123,575. (No model.)

To all whom it may concern:

Be it known that I, LEVI P. NORMANDIN, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Roofs, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to improvements in roofs, and more particularly to that class in which the substructure is covered with a cementitious coating which renders the whole waterproof.

It is the object of the invention to obtain a construction which may be readily applied and one which when completed will be durable and entirely waterproof.

The invention therefore consists in the construction as hereinafter described, and particularly set forth in the claims.

In the drawings, Figure 1 is a sectional perspective view of the substructure with the metallic portions of the superstructure secured thereto ready to receive the coating of cement. Fig. 2 is a cross-section through a portion of the roof complete. Fig. 3 is a section through the eaves-trough, showing the manner of forming the same. Fig. 4 is a perspective view of one of the metallic strengthening members, together with the means for securing the same to the substructure of the roof. Fig. 5 is a plan of a portion of the roof complete, and Fig. 6 is a section through one of the expansion-joints.

The substructure of the roof may be formed of any suitable material and of any construction which is capable of forming a support for the cementitious coating.

In Fig. 1 the structure is shown comprising rafters A and boards B, secured thereon and extending longitudinally of the roof. Upon this substructure a waterproof covering is placed, which consists, essentially, of a cementitious coating strengthened with metallic members and held in position by anchors secured to the substructure.

The metallic strengthening members, which I preferably employ, are formed of crimped metallic bars or wires C, which are preferably arranged to extend from the upper to the lower edge of the roof. Where the roof is formed with a double slope, these members C are preferably extended over the ridge and downward upon each side thereof.

In order that the members C may be entirely embedded in the cementitious coating, they are preferably first secured in position upon the substructure, so as to be supported slightly above the same. This, as shown, is accomplished by driving staples D into the boards B of the roof and then placing the crimped members C, so as to rest on said staples, after which they are firmly secured by a set of staples D'. When thus formed, the cementitious material may be placed upon the board, so as to completely surround the metallic members, as shown in Fig. 2.

The staples D and D' not only serve to support the metallic members C during the coating operation, but also form anchors for attaching the cement covering to the substructure. I preferably, however, provide additional anchors, which may also be formed by staples driven into the board-covering intermediate the metallic strengthening members.

The eaves-trough may be formed by a strip, such as F, secured to the substructure, near the lower edge thereof, and suitably inclined from one end to the other. This strip is then coated with a cementitious material; but in order to give additional strength and prevent liability of fracture I preferably extend the metallic members C over the strip F, as shown in Fig. 3. The result will be that a continuous metallic tie connects the projecting portion of the cement with the body thereof.

Where a roof is of considerable extent, it is desirable to divide the same into a plurality of sections capable of a slight independent movement, thereby providing for expansion or contraction or for any slight change in the form of level of the substructure. In order that the roof may be thus divided and at the same time the waterproof character maintained, I have provided a construction of flexible joint which is formed in the following manner: When the roof is first coated with the cementitious material, it is divided into sections of the desired size by any suitable severing instrument, so as to form the slits or cuts G. As soon as this is

done a thin strip of material—such, for instance, as a paper strip H—is placed over the slit G, after which a rib I is formed of the cementitious material above said strip and uniting upon opposite sides thereof to the separate sections. When the cement has hardened, adjoining sections, such as *a* and *b*, of the roof will be separated from each other in the plane of the roof, but will be joined by the rib I, formed integral with each. This rib I will also be separated from the ends of the sections *a* and *b* by the strip H. The result will be that any strains upon the roof causing a relative movement of the adjoining sections will be taken care of by the elasticity of the rib-section I without causing rupture in the waterproof coating.

It is obvious from the above description that a roof of this character may be cheaply manufactured and without the requirement of any great degree of skill on the part of the workman. It will also be understood that the cementitious coating is securely attached to the substructure and the liability of fracture is guarded against.

What I claim as my invention is—

1. A roof comprising an inclined substructure capable of supporting plastic material, a strip for forming an eaves-trough arranged along adjacent to the lower edge of said structure, a layer of cementitious material covering said substructure and strip and a series of tie or strengthening members embedded in said cementitious material said tie members extending downward in the direction of inclination and over said strip whereby said eaves-trough is securely fastened to the body portion of the roof.

2. The combination with a layer of cementitious material slitted to form a plurality of sections, a strip of non-cementitious material covering said slit, and a rib of cementitious material above said strip and having its edges cemented to the opposite sections.

3. The combination with a layer of cementitious material slitted to form a plurality of sections, of a strip of non-cementitious material covering said slit.

4. The combination with a layer of cementitious material slitted to form a plurality of sections, of a strip of non-cementitious material covering said slit, said cementitious material extending over said strip and secured at its edges to the opposite sections.

5. A roof comprising a substructure capable of supporting plastic material, a strip arranged lengthwise of the substructure, a metallic strengthening means extending over said strip and spaced therefrom, and a coating of plastic material covering said substructure and embedding said strengthening means.

6. A roof comprising an inclined substructure capable of supporting plastic material, a strip arranged lengthwise of the substructure, a layer of cementitious material covering said substructure and strip, and a series of tie or strengthening members embedded in said cementitious material, said tie members extending downward in the direction of inclination of the substructure and over the strip.

7. A roof comprising an inclined substructure capable of supporting plastic material, a strip for forming an eaves-trough arranged at an angle adjacent to the lower edge of said structure, and a layer of cementitious material covering said substructure and strip.

8. A roof comprising an inclined substructure capable of supporting plastic material, a strip for forming an eaves-trough arranged at an angle adjacent to the lower edge of said substructure, a layer of cementitious material covering said substructure and strip, and a series of tie or strengthening members embedded in said cementitious material said tie members extending downward in the direction of inclination and over said strip whereby said eaves-trough is securely fastened to the body portion of the roof.

9. A roof comprising an inclined substructure capable of supporting plastic material, a strip for forming an eaves-trough arranged adjacent the lower edge of said substructure, and a layer of cementitious material covering said substructure and strip.

In testimony whereof I affix my signature in presence of two witnesses.

LEVI P. NORMANDIN.

Witnesses:
M. B. O'DOGHERTY,
ALBERT G. ROBERTSON.