No. 606,996. Patented July 5, 1898.

L. C. MARSHALL.

CAR ROOF.

(Application filed Feb. 11, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

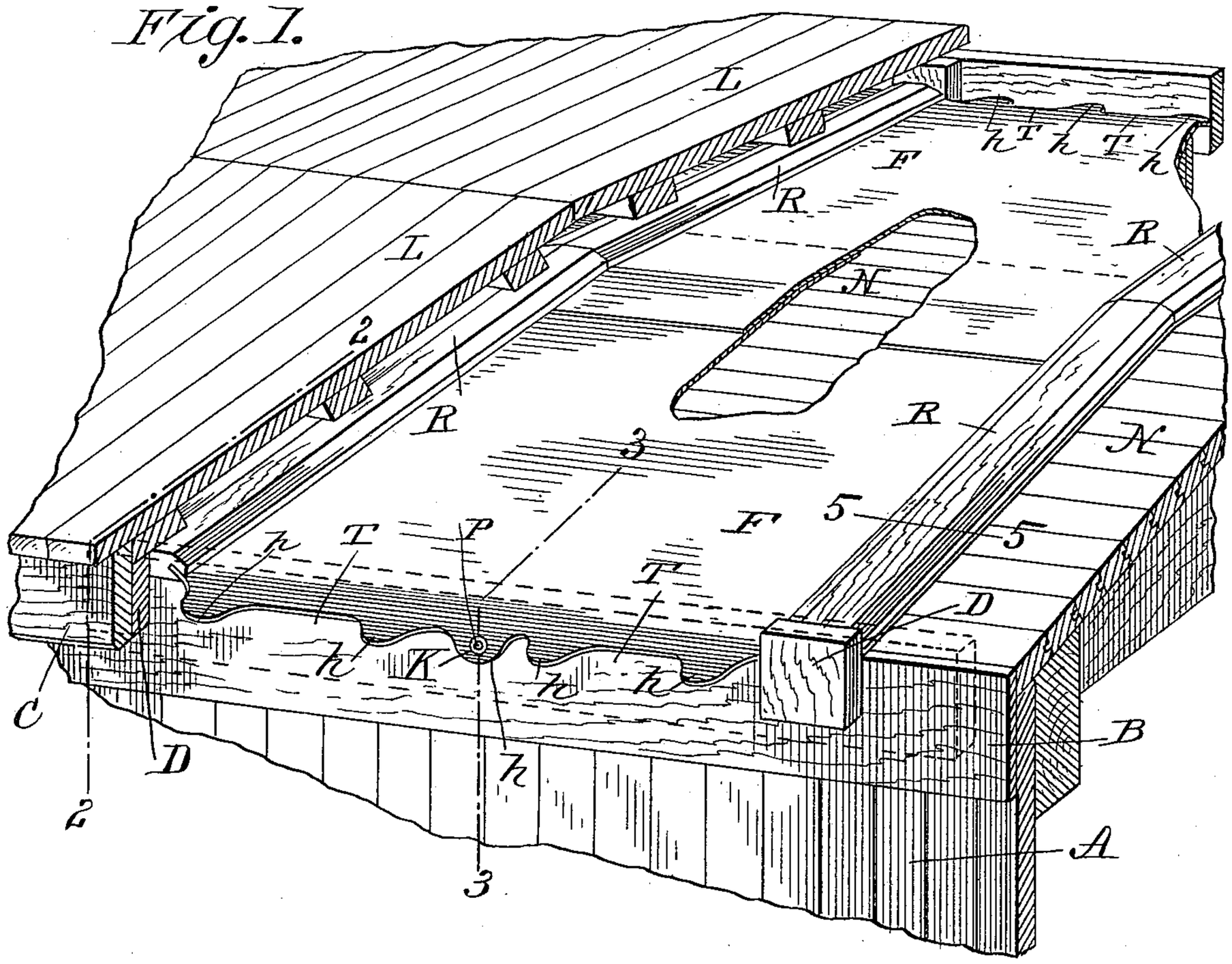

Fig. 2.

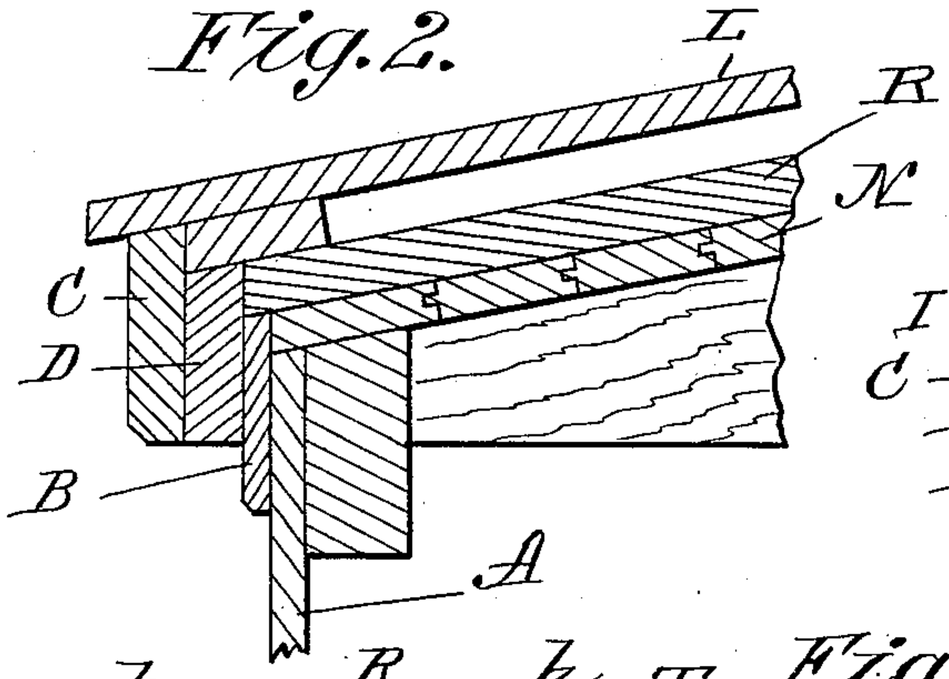

Fig. 3.

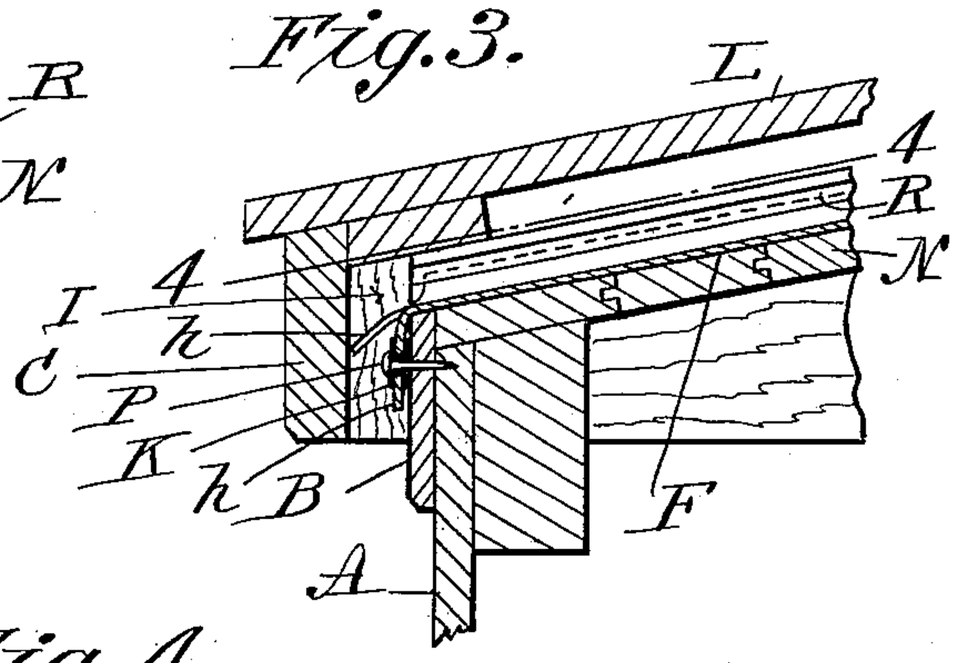

Fig. 4.

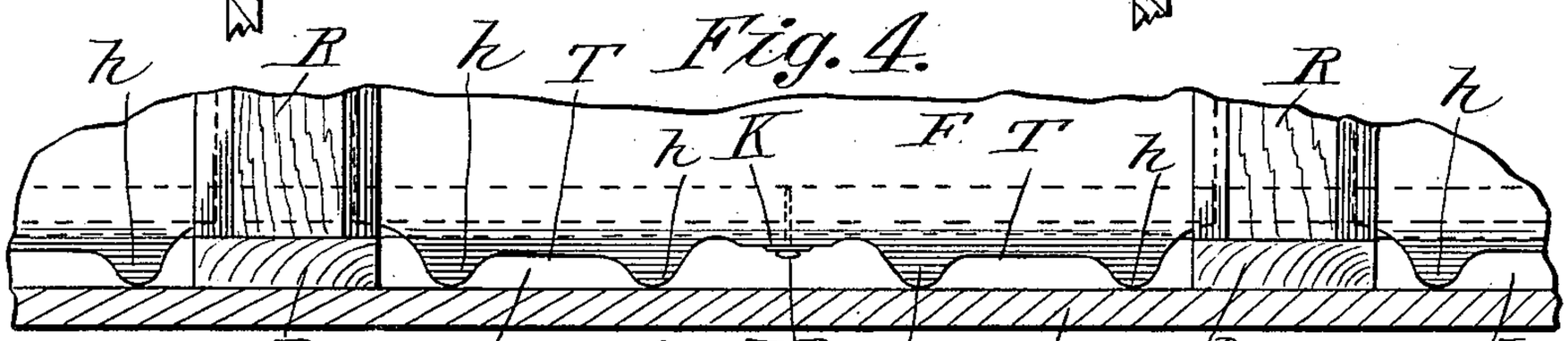

Fig. 5.

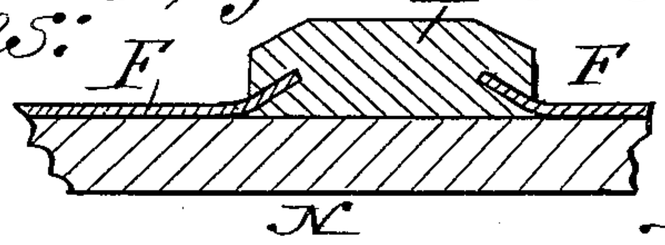

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Fig. 6.

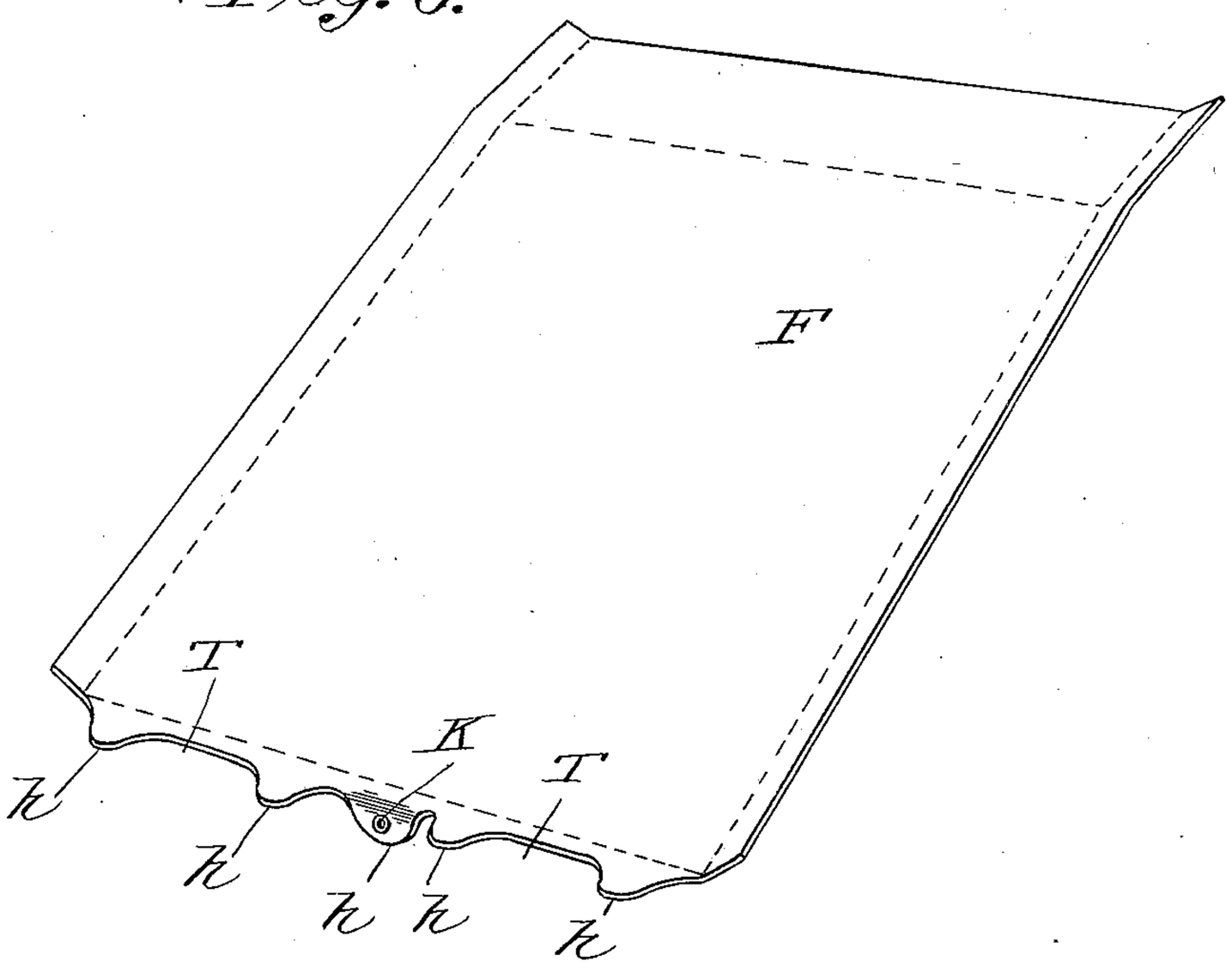
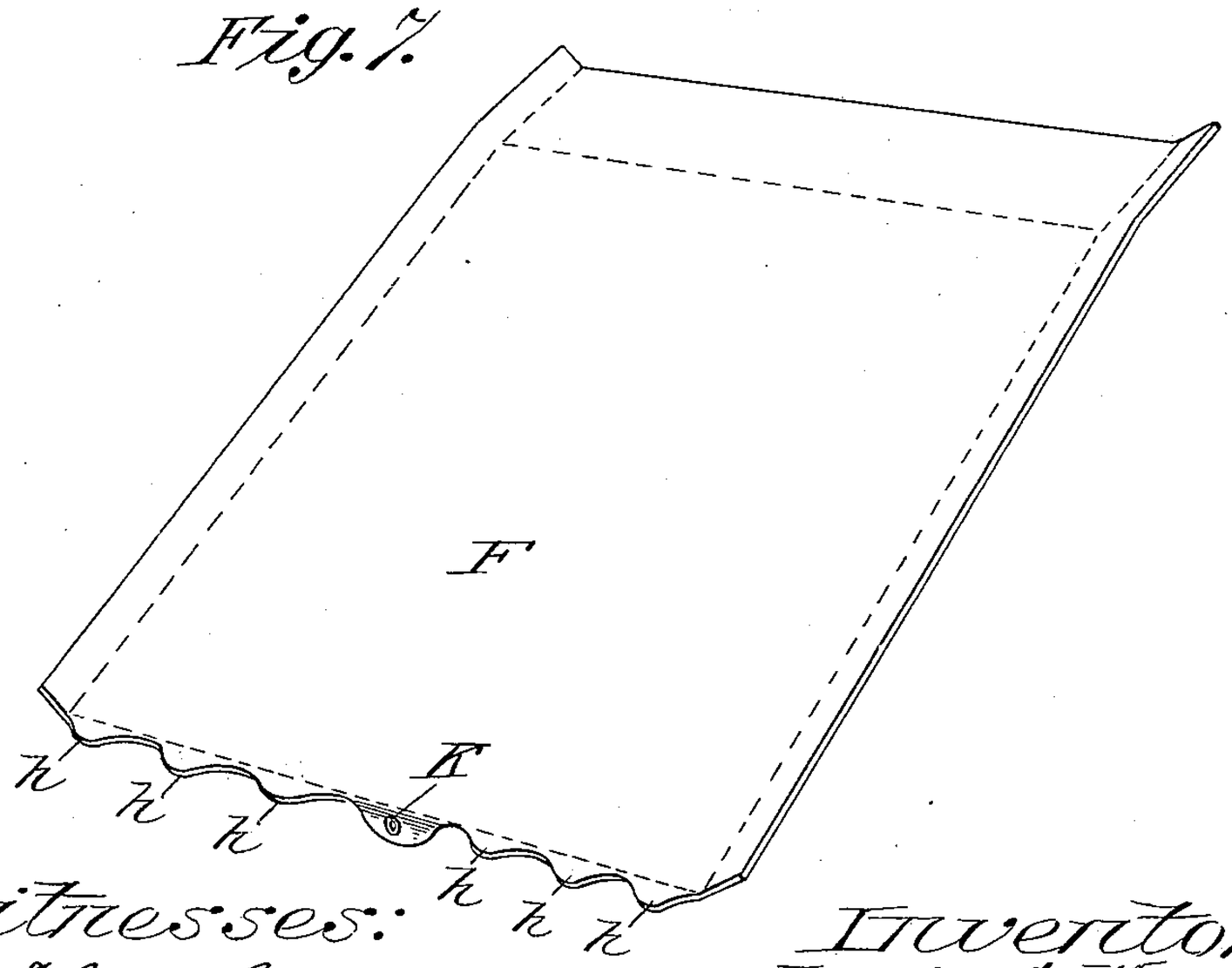


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

SPECIFICATION forming part of Letters Patent No. 606,996, dated July 5, 1898.

Application filed February 11, 1898. Serial No. 669,897. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. MARSHALL, a subject of the Queen of Great Britain, residing at East Walpole, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Car-Roofs, of which the following is a specification.

This invention relates to car-roofs, and particularly to roof constructions for freight-cars, and is in the nature of an improvement upon the roof construction described in United States Letters Patent issued to me July 7, 1896, No. 563,718, the object being to provide an improved roof-covering strip of paper or like flexible material, and improved means for attaching or securing said material to a car-roof, and improved construction of detail parts of the roof, whereby free egress is provided for cinders and other matter from the roof, and at the same time providing an improved construction of the eaves portion of the car, whereby the lower partially-attached border or lower end of the said roof-covering material is fully protected against the entrance of wind or rain thereunder and conducing substantially to its permanent attachment to the roof; and the invention consists in the peculiar construction of said roof-covering strip, of portions of the roof adjacent to the lower end of said strip, and in improved means for attaching said lower end of said strip to the car, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a perspective partly-sectional view of a portion of the roof of a car, illustrating the relative positions of the upper and the sub roofs thereof and the position of the roof-covering material or strip as applied to the subroof; and Figs. 3 and 4 illustrate, respectively, cross and longitudinal sections of the roof, said two figures illustrating a roof construction embodying my improvements. Fig. 2 is a view on line 2 2, Fig. 1; Fig. 3, on line 3 3, Fig. 1; and Fig. 5, on line 5 5, Fig. 1. Figs. 6 and 7 illustrate in perspective views strips of said roof-covering material, Fig. 7 showing, as hereinafter described, a modified form of the border of said material which is adjacent the eaves when applied to the car-roof.

In the drawings, N indicates the subroof of the car, and A the side of the latter, said subroof terminating on a line with the outer face of said side, as shown. On said subroof are applied the subrafters R, having grooves in their borders, as in my aforesaid United States Letters Patent, to receive the borders of the strip of the roofing paper or material F, as further described below. Said subrafters divide the surface of said roof into several cross-sections. B is an inner facial board fixed on said side of the car and against the edge of said subroof N, over the upper edge of which the lower ends of said subrafters R lie, as shown. Said inner facial board constitutes, substantially, a portion of the side of the car below the roof-border or eaves. Preferably at the lower ends of said subrafters R are fixed blocks D against said inner facial board B, and against the outer face of said blocks is fixed an outer facial board C. Thus, as will be clearly seen and especially in Figs. 3 and 4, an open space or chamber I is provided, into which the lower scalloped border of said strip of roofing material F projects, reaching across the same and having contact with the inner side of said outer facial board C, whereby certain portions or projections *h* of the scallops on the lower end of said strip of roofing material are held in downwardly-inclined positions, as seen in Figs. 3 and 4, while the longitudinal borders of the strip are held for more or less free movement in the grooves in the opposite borders of said rafters R, as in my said Letters Patent. The said roofing material is preferably a heavy suitably-prepared waterproof paper, and the said projections *h*, on the lower border thereof, when bent downwardly, as shown in Figs. 3 and 4, behind the outer facial board C, so that their extremities spring up against said board to the position shown in Fig. 3, tend, together with the fastening element below described, to retain the parts of the lower border of said roofing material which lie between the central fastening element P and the subrafters R on either side of said fastening element against that part of

the surface of the subroof adjoining the eaves thereof and prevent rain or dust from blowing thereunder. The openings or recessed spaces T, between the said projections *h* on the lower border of the said roofing strip or material F, provide for the free and quick escape of water, cinders, and dirt from between the outer and the sub roofs, which matters fall freely to the ground through the open spaces intermediate of the said facial boards B and C. The lower edge of said roof-covering material has, preferably, a border conformation, as illustrated in Figs. 1, 4, and 6, thereby leaving fairly long spaces T for the free discharge of the above-named matters therefrom, which are more effective than the narrow spaces shown in Fig. 7.

The swaying movements of heavily-laden freight-cars cause, as is well known, quite a torsional action of the roof thereof, the effect of which action is, if the lower border of the roofing material be nailed or similarly fastened to the eaves of the roof at several points, to cause said fastened border to tear from its fastenings in one or more places and thus seriously disturb the connection between the lower edge thereof and the car-roof. Therefore provision is made as follows for a roofing-strip fastening which, while coöperating with said grooved subrafters R to hold said roofing-strip securely and flatly upon the roof, guards against any damage to said strip resulting from said torsional roof action: Said fastening is effected at a point on the lower end of said roofing-strips or sheet F about midway between its longitudinal borders by a pin or screw P, as shown in Figs. 1 and 3, which passes through one of the centrally-located projections *h* after the latter shall have been bent down against the inner facial board B under the eaves of the car. To strengthen said single fastening, it is preferable that a metal or similar gromet K be fixed to said bent-down piece through which said pin or screw passes. The said projections *h* of said sheet F each side of said attached point are then bent downwardly within the said open space or chamber I and engaged, as aforesaid, with the inner face of said outer facial board C, thereby maintaining those portions of the end of said sheet between the inner borders of the grooved subrafters R and said gromet K in the positions relative to the subroof N. (Shown in the drawings.) The upper ends of the strips of roofing material F overlap each other across the ridge of the subroof N, as shown in Fig. 1.

The within-described roof construction provides a complete housing for each of the sections or strips of the roof-covering F, consisting of the subroof N thereunder, two grooved subrafters R at the borders thereof, the outer roof L, and the inner and outer separated facial boards B and C, between which is the open space or chamber I, intercommunicating with the open space between said two roofs and receiving the lower scalloped end of said roof-covering strip, thus providing such protection for the said covering F as conduces to its proper action as a roof-covering in connection with a fastening device for the lower end thereof which permits the requisite freedom of movement, as described, between the same and the car-roof.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a car-roof construction, a subroof, a facial board secured on the side of the car opposite the edge of said roof, but out of contact therewith, thereby forming one or more chambers or open spaces between said roof edge and said board, a roofing-strip of flexible material applied to said subroof having several projections thereon entering said chamber, and means for attaching one of the said projections on said lower end in a bent-down position against the side of the car, whereby the lower end of said strip is secured to said car side, substantially as described.

2. In a car-roof construction, a subroof, a facial board secured on the side of the car opposite the edge of said roof, but out of contact therewith, thereby forming one or more chambers or open spaces between said roof edge and said board, a roofing-strip of flexible material applied to said subroof having several projections thereon entering said chamber, and having the extremities of certain of the said projections of said strip extending across said chamber and held in a downbent position by engagement with the inner side of said facial board, and means for attaching one of the said projections in a bent-down position against the side of the car whereby the lower end of said strip is secured to said car, substantially as described.

3. In a car-roof construction, a subroof, a facial board secured on the side of the car opposite the edge of said roof, but out of contact therewith, thereby forming one or more chambers or open spaces between said roof edge and said board, a roofing-strip of flexible material applied to said subroof having several projections thereon entering said chamber and recessed spaces extending therebetween of a length exceeding the base of said projections, and means for attaching one of the said projections on said strip in a bent-down position against the side of the car, whereby the lower end of said strip is secured to said car side, substantially as described.

4. A roof-covering for cars consisting of a strip of prepared roofing-paper having several projections on its lower border, and having a metal gromet fixed in one or more of said projections for engagement with a strip-fastening object passing through said gromet into the side of the car, substantially as described.

5. In a car-roof construction, a subroof, a facial board secured on the side of the car opposite the edge of said roof, but out of contact therewith thereby forming one or more

chambers or open spaces between said roof edge and said board, a roofing-strip of flexible material applied to said roof having several projections thereon entering said chamber, a gromet fixed in one of said projections, and a fastening object forced through said gromet into the side of the car thereby securing said last-named projection against said car side and the lower end of said strip to the car, substantially as described.

6. In a car-roof construction, a subroof whose lower edge terminates at the outer face of the side of the car, an inner facial board secured against the side of the car adjoining said lower edge of the roof and covering said edge, subrafters applied to said subroof having in their borders longitudinal grooves whose lower ends extend over and terminate at the outer face of said board, an outer facial board secured to the side of the car outwardly opposite said inner board and out of contact with the latter, thereby forming an open chamber between said boards opposite the lower edge of said subroof, a strip of flexible roof-covering material applied to said subroof between said subrafters whose longitudinal borders enter said grooves in said rafters having several projections on the lower end thereof entering said chamber, certain extremities of which extend across said chamber and are held in downbent positions by engagement with the inner side of said outer facial board, and having one of said projections bent downwardly against the side of the said inner facial board, and means for securing the same thereagainst whereby the said lower end of said strip is attached to the car, substantially as described.

7. In a car-roof construction, a subroof divided into cross-sections by subrafters fixed thereon and having chambers on the sides of the car opposite the lower ends of each of said sections, a strip of roof-covering material applied upon each of said sections having its lower end entering said chamber, and a part thereof turned down against the inner facial board below the eaves, and a strip-fastening device passing through said turned-down part, thus attaching said covering material to the side of the car at a single point between the longitudinal borders of said strip, substantially as described.

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