

No. 616,180.

Patented Dec. 20, 1898.

C. BINDER.
ROOF.

(Application filed Oct. 10, 1898.)

(No Model.)

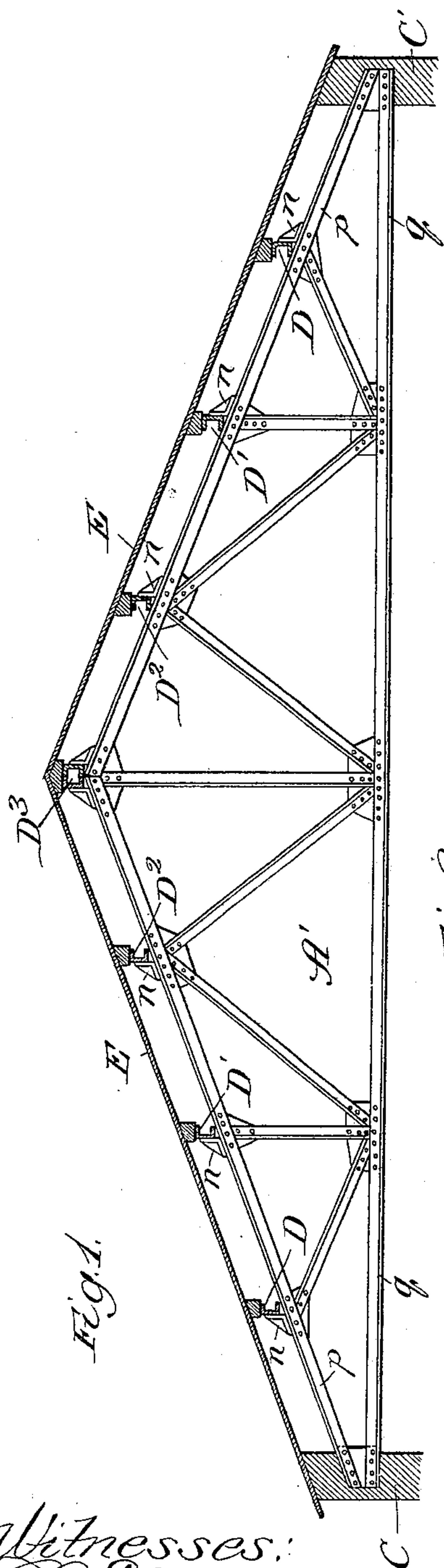
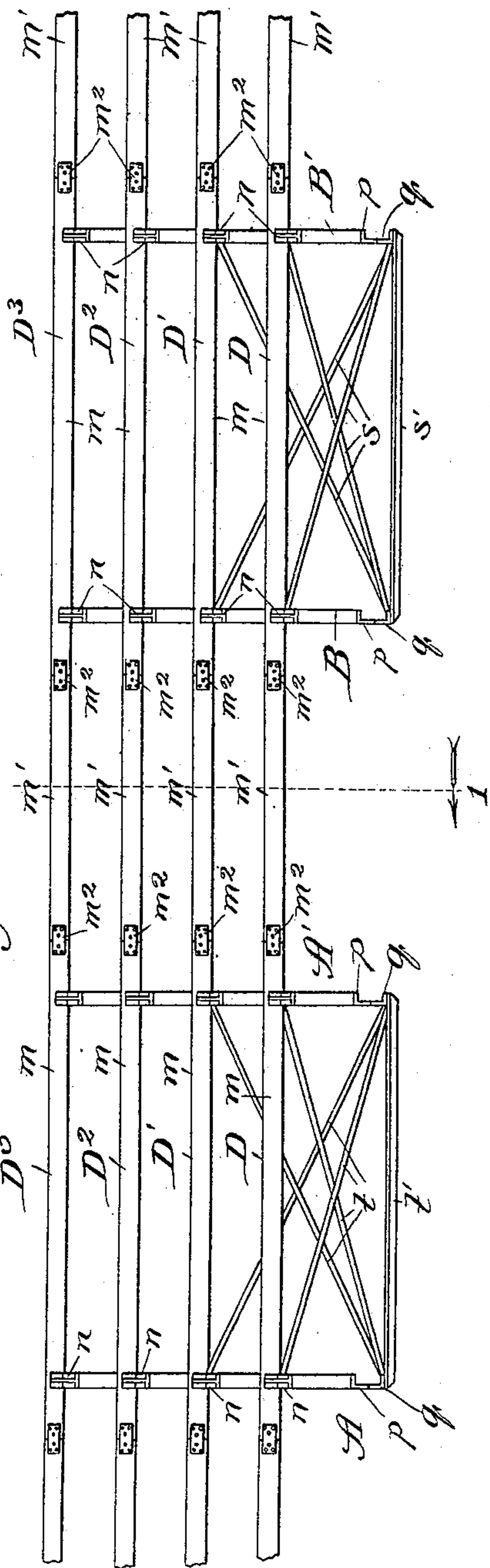


Fig. 1.

Fig. 2.



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ROOF.

SPECIFICATION forming part of Letters Patent No. 616,180, dated December 20, 1898.

Application filed October 10, 1898. Serial No. 693,071. (No model.)

To all whom it may concern:

Be it known that I, CARL BINDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Improvement in Roofs, of which the following is a specification.

My invention relates particularly to an improvement in steel-roof construction; and my
10 object is to decrease greatly the weight and cost of roofs.

In the accompanying drawings, which illustrate my improved construction, Figure 1 is a transverse vertical section of the roof, taken
15 as indicated at line 1 of Fig. 2; and Fig. 2, a view in side elevation of the same.

In the drawings, A A' and B B' represent the trusses (of any suitable form) of a simple construction of roof. These trusses are
20 preferably joined together in pairs by suitable tie-rods $t\ t'$ and $s\ s'$, as shown. The trusses are mounted upon the masonry or wall-plates of the side walls C C' in any suitable manner or on columns.

Each truss is here shown as built up of a horizontal member or tie-beam q , rafters p , and suitable posts and studs connecting the same.

Supported on the rafters are the longitudinally-extending purlins D D', &c., which may
30 be channel-bars, as shown. These purlins are preferably secured to the rafters by means of brackets or shoes n .

In ordinary construction the roof-trusses
35 are located from ten to twenty feet apart, and the common method heretofore has been to have the purlins reach from truss to truss, the joint being located at the rafter. In some cases the purlins have been made to span the
40 distance between alternate trusses; but so far as I am aware it has been the custom invariably to locate the joints immediately over the rafters.

My improvement consists in making the
45 purlins up from sections of such length and so positioned that the joints are situated between trusses, preferably in the manner illustrated in Fig. 2. As there shown, each purlin is formed from members m of sufficient
50 length to rest upon the joined trusses and project at their ends beyond said trusses, and short members m' , joining the adjacent pro-

jecting ends of the members m . The meeting ends of the members m and m' may be joined together in any suitable manner, as
55 by means of plates m^2 , riveted thereto.

It will be observed that by means of the construction described the bending moment on each purlin is greatly reduced over what it is where the joints are over the rafters. In fact,
60 the length of the members m and m' may be so related to each other as to have the bending moments upon the members m exactly counteract each other. The result is that the elastic curve of the evenly-loaded purlins is
65 changed greatly from that of the old construction and the flexure of the purlins greatly reduced, with a consequent lessening of the strain upon them. I am thus enabled to make the purlins of greatly-reduced cross-section,
70 producing a saving of about one-third in material, amounting in one instance (the case of a building now under contract by me) to many tons for this one item in the roof construction.

While it is desirable to tie the trusses together in the manner shown, this is not necessary. Nor is it essential to the broad idea of my invention that any particular section or member of a purlin extend over any given
80 number of trusses, so long as the feature of forming the joints between trusses is preserved. Preferably, however, each purlin is made up of alternating long and short strips, the long strips extending over two trusses, and in some instances over more than two.
85

The purlins serve to support the covering E, which may rest directly upon them or upon common rafters supported by them, the members p being in the latter case regarded as the principal rafters.
90

What I claim as new, and desire to secure by Letters Patent, is—

1. In a roof, the combination of suitably-supported, laterally-extending trusses, and longitudinally-extending purlins supported
95 thereby, said purlins being formed of sections or members joined together, said members being of such relative lengths and so positioned as to bring the joints between trusses, substantially as and for the purpose set forth.
100

2. In a roof, the combination of suitably-supported, laterally-extending trusses, and purlins supported thereby comprising members extending over two or more trusses and

projecting at the ends beyond their supports, and members joining the same, the joints being located between trusses, substantially as and for the purpose set forth.

- 5 3. In a roof, the combination of suitably-supported, laterally-extending trusses, and purlins supported thereby comprising relatively long members extending over two or more trusses and projecting beyond said

trusses and short members joining the adjacent ends of said long members, the short and long members of a purlin alternating and the joints being located between trusses, substantially as and for the purpose set forth.

CARL BINDER.

In presence of—

D. W. LEE,

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