

(No Model.)

2 Sheets—Sheet 1.

E. M. BOYNTON.
Railway Systems.

No. 232,109.

Patented Sept. 14, 1880.

Fig. 1.

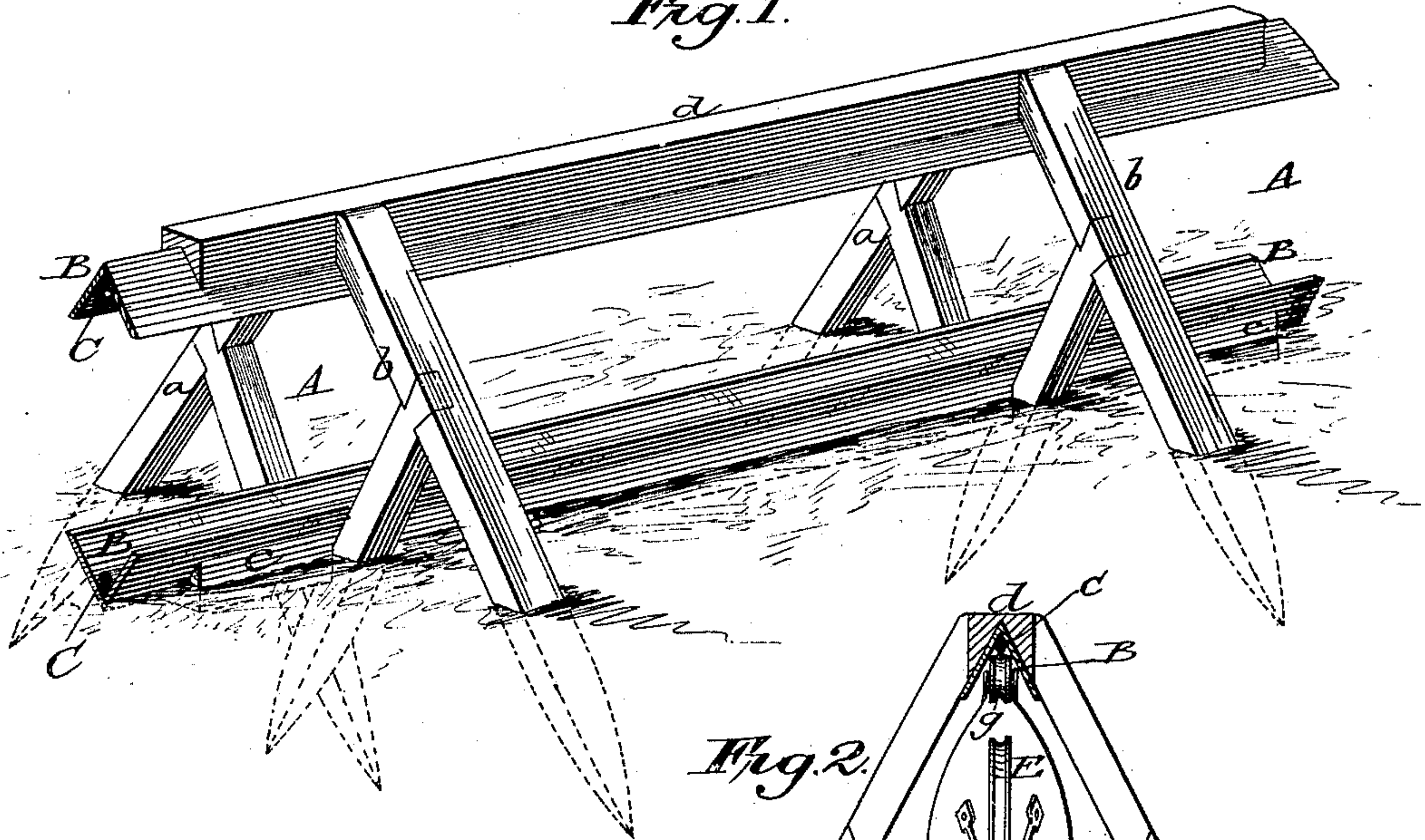


Fig. 2.

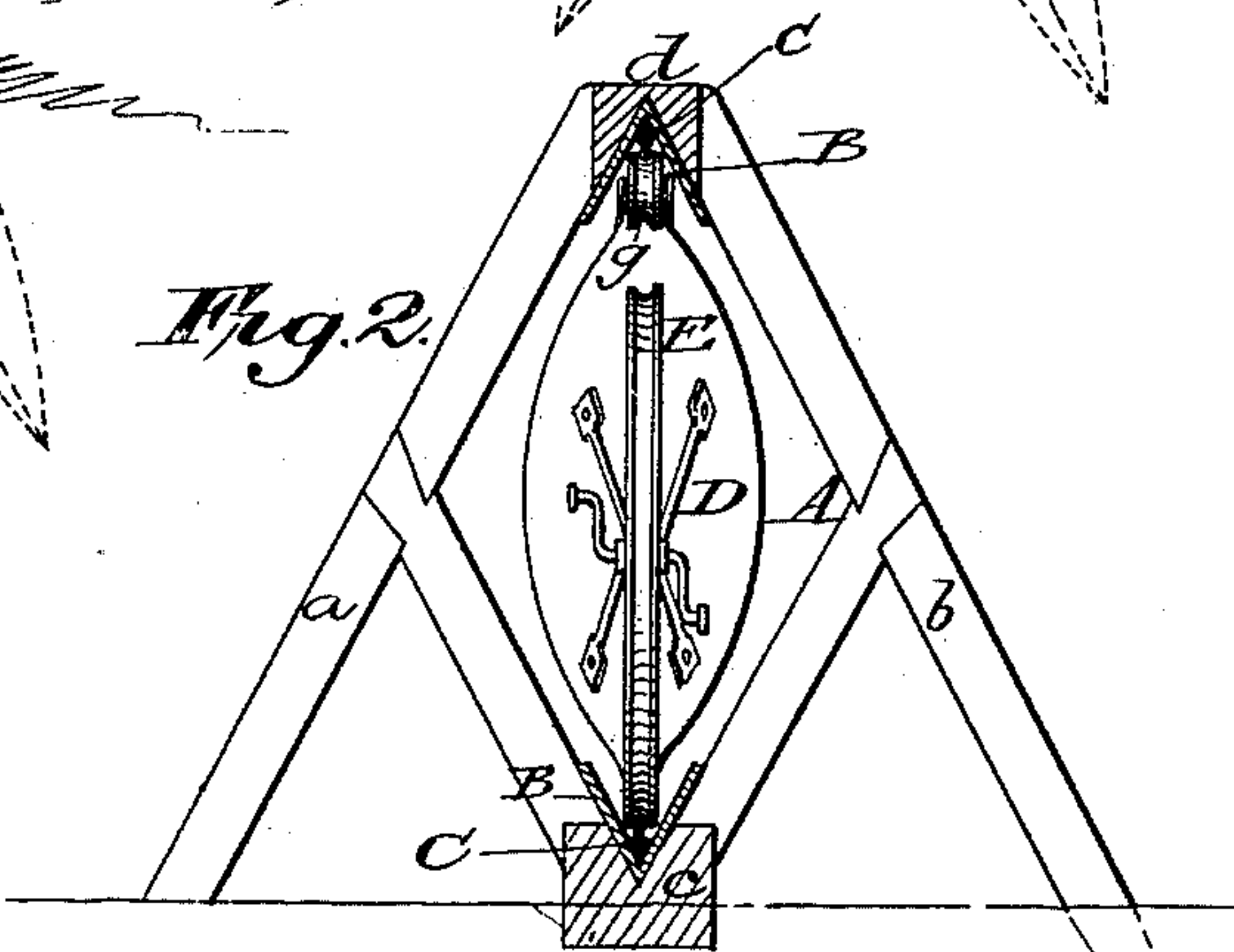
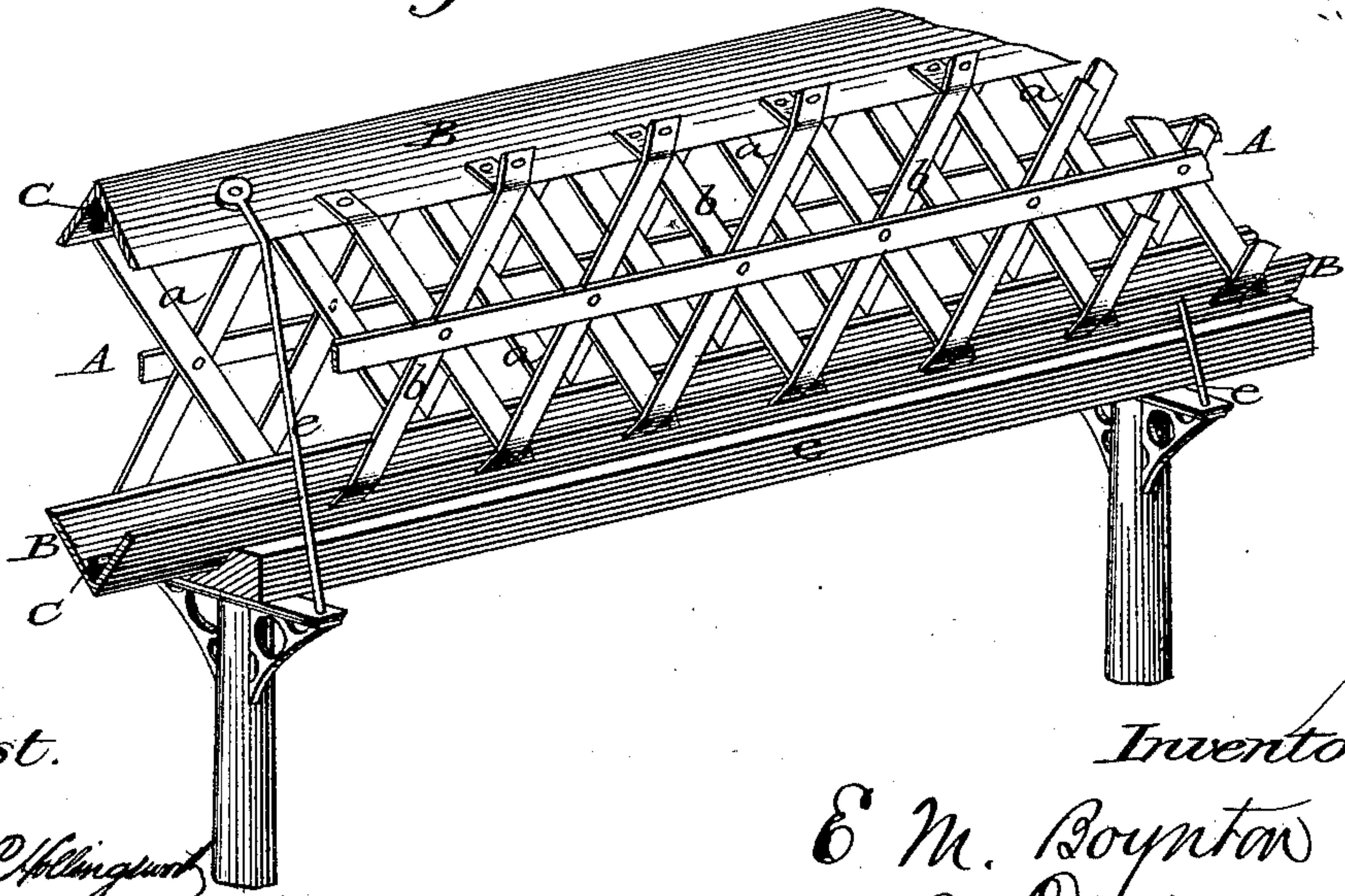


Fig. 3.



Attest.

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Fig. 4.

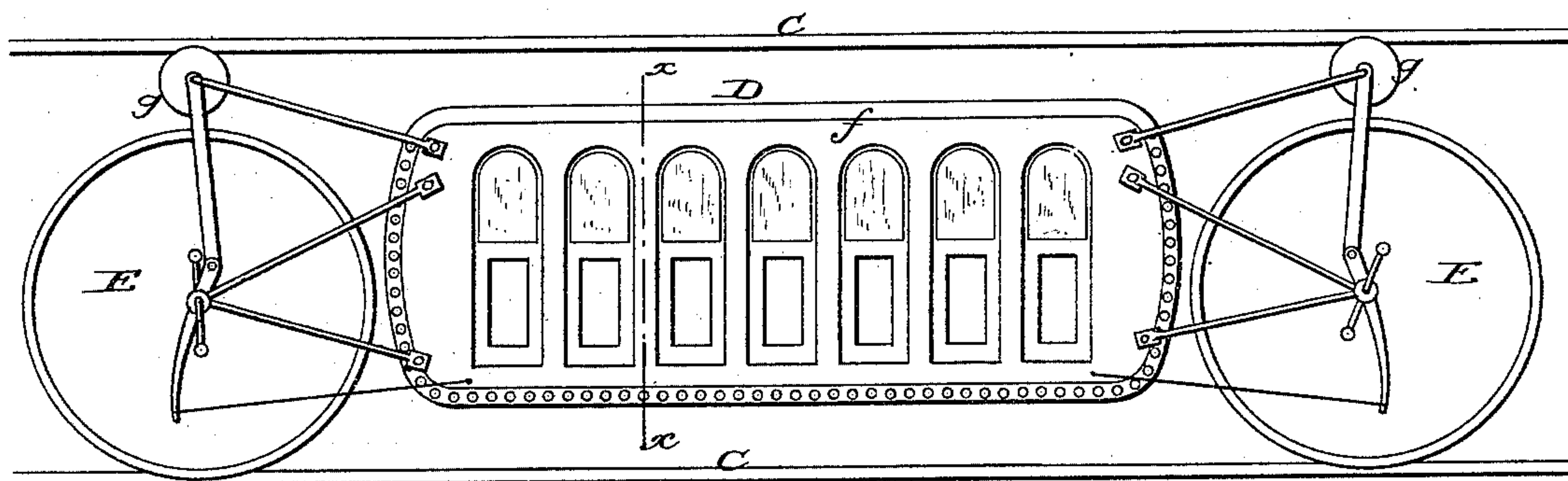


Fig. 5.



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UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 232,109, dated September 14, 1880.

Application filed July 3, 1880. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, of West Newbury, in the county of Essex and State of Massachusetts, have invented certain
5 Improvements in Railway Systems, of which the following is a specification.

My invention relates to an improved system of railways and rolling-stock; and it consists in a framing or trestle-work constructed of a
10 tubular or tunnel-like form, and provided with continuous V-shaped plates or supports in which the rails are mounted, and in a vehicle especially adapted for use in connection with such roadway, constructed of oval or
15 diamond form in cross-section by rolling or bending one or more plates of iron or steel into the desired form, and riveting together or otherwise securing the edges.

In the accompanying drawings, Figure 1
20 represents a perspective view of my improved roadway; Fig. 2, a cross-section of the same; Fig. 3, a perspective view of a modified form of framing or trestle-work; Fig. 4, a side view of a conveyance constructed in accordance
25 with my plan; Fig. 5, a transverse vertical section of the same on the line $x x$ of Fig. 4.

The present invention relates to the same system of railways described in previous applications for Letters Patent filed by me, and
30 is intended to secure a much higher rate of speed than is practicable or possible with railways of existing systems, while at the same time preventing the possibility of accident.

To this end I employ, as heretofore, one or
35 more supporting or bed rails and one or more guiding and retaining rails, and I mount said rails in V-shaped supporting-plates, which extend beyond the face of the rails, and serve both to stiffen and support the rails and to pre-
40 vent the escape of or injury to the vehicle in the event of the wheels leaving the rails.

I also propose to construct the vehicles, whether containing the motive machinery or not, of steel or iron, giving to the same such
45 form that it shall resist any and all strains to which the vehicle may in any case be subjected, and at the same time avoiding all complicated trussing and bracing or framing of any kind, the body of the vehicle being constructed simply of one or of two plates of metal rolled or
50 bent to form an oval or diamond in cross-section and in horizontal longitudinal section,

the adjoining edges being secured together in any suitable manner.

Referring now to the drawings, I will first
55 describe the roadway and then the vehicle designed for use thereon.

The precise arrangement or construction of framing or trestle-work is not essential; but I have illustrated two forms which combine in
60 an eminent degree the two important qualities strength and simplicity.

A in the several figures represents a tubular or tunnel-like structure composed, essentially, of uprights $a b$, approaching each other above
65 and below, and carrying at said points a V-shaped or trough-like supporting and retaining girder, B, in the angles of which are seated the rail C, as shown. The girders or plates B are preferably carried in or supported by beams
70 or girders $c d$; but these may be omitted above or below, or at both points, the angular form of the said trough-like girders giving them great stiffness and strength.

When constructed as in Figs. 1 and 2, with
75 the sill or timber e resting upon the ground, and the timbers a or a and b extended well into the ground, an exceedingly rigid and safe structure is secured.

For elevated roadways the form shown in
80 Fig. 3 is more especially adapted, the uprights a and b being in that case of metal, held against spreading by a longitudinal brace or tie applied at the points of intersection, and the upper girder braced against side strain by
85 means of lateral braces or rods e , the whole being mounted upon any suitable elevated way.

It will be seen from the above that an exceedingly strong and safe roadway may be constructed at a very small expense as com-
90 pared with the present system.

Referring now to Figs. 4 and 5, D represents the body of the car, which may be composed of a single sheet, f , of steel or iron folded longitudinally through the middle and riveted along
95 the ends and open side or edge, as shown in Fig. 4, the space or portion between the connected edges being bowed or bulged out in diamond or oval form, as shown, or of two separate plates, each bent or rolled to form
100 one-half of the complete figure. It may in building large cars become necessary to unite a number of smaller plates in order to produce one of sufficient size to form the side of

the car; but this will be avoided when possible so to do, or when plates of sufficient size can be obtained otherwise. The ends of the sheets being united in the same manner as the
 5 sides or edges, it will be seen that the ends will be of a narrow or wedge form, thus offering little resistance to the air in passing. The interior of the car may be arranged in any convenient manner; but as speed is the first ob-
 10 ject sought for in my plan, it is preferred to make the cars of sufficient width only to comfortably seat one person, the seats being placed in a single line, one behind another, and a door being provided through which to reach each
 15 seat.

It is contemplated in the present case to employ the central driving, supporting, and guiding wheels, the former of great diameter, as described in my former applications.

20 The guide-wheels may be applied as shown and arranged to travel on the overhead rail, or guide-wheels may be placed on the sides of the cars and arranged to travel upon guide-rails mounted in V-shaped supports or girders se-
 25 cured in the side walls of the tunnel-like structure, or both arrangements may be used at once.

From the above description it will be seen that should either the supporting or driving
 30 wheels E, or the guiding-wheels *g* leave their rail, or were they all to leave the rails simultaneously, the wheels would simply drop into the trough-like girders or plates B, from which they could not possibly escape, and along
 35 which they would travel until the engineer could stop the train and the cars be replaced on the rails.

I am aware that railways have been carried through tunnels, and that a pneumatic railway has been proposed in which guide-rails 40 and guide-wheels were to be used. I lay no claim thereto.

My tubular or tunnel-like structure is open at the sides to admit light and air, and is not intended or designed for passing under ground 45 or water or through closed ways, except in rare cases.

When the structure is composed largely of metal suitable material will be used at joints to deaden the sound of passing trains. 50

Having thus described my invention, what I claim is—

1. In a railway, the combination of a V-shaped girder or support adapted to receive a rail and to prevent the vehicle from leaving 55 the roadway, and a track-rail seated in said support, substantially as shown.

2. A tubular or hollow roadway for railroads, provided with a trough-like or V-shaped girder to receive and support the bed-rail, and a simi- 60 lar girder to receive a guiding-rail.

3. The herein-described roadway, consisting of the uprights *a b*, girders B, and rails C.

4. The herein-described vehicle-body, consisting of two dish or curved plates of metal 65 united at their upper and lower edges, as described, whereby a body of oval or diamond form in cross-section possessing great strength is secured without the use of framing or bracing.

EBEN MOODY BOYNTON.

Witnesses:

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 F. J. C. MILLER.