

(No Model.)

R. M. HUNTER.

## GIRDER RAIL AND PROCESS OF MANUFACTURING THE SAME.

No. 486,211.

Patented Nov. 15, 1892.

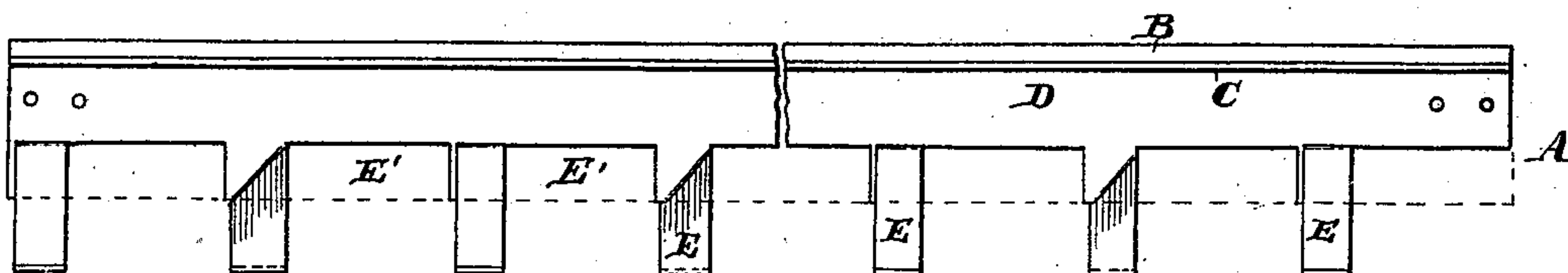


FIG. 1

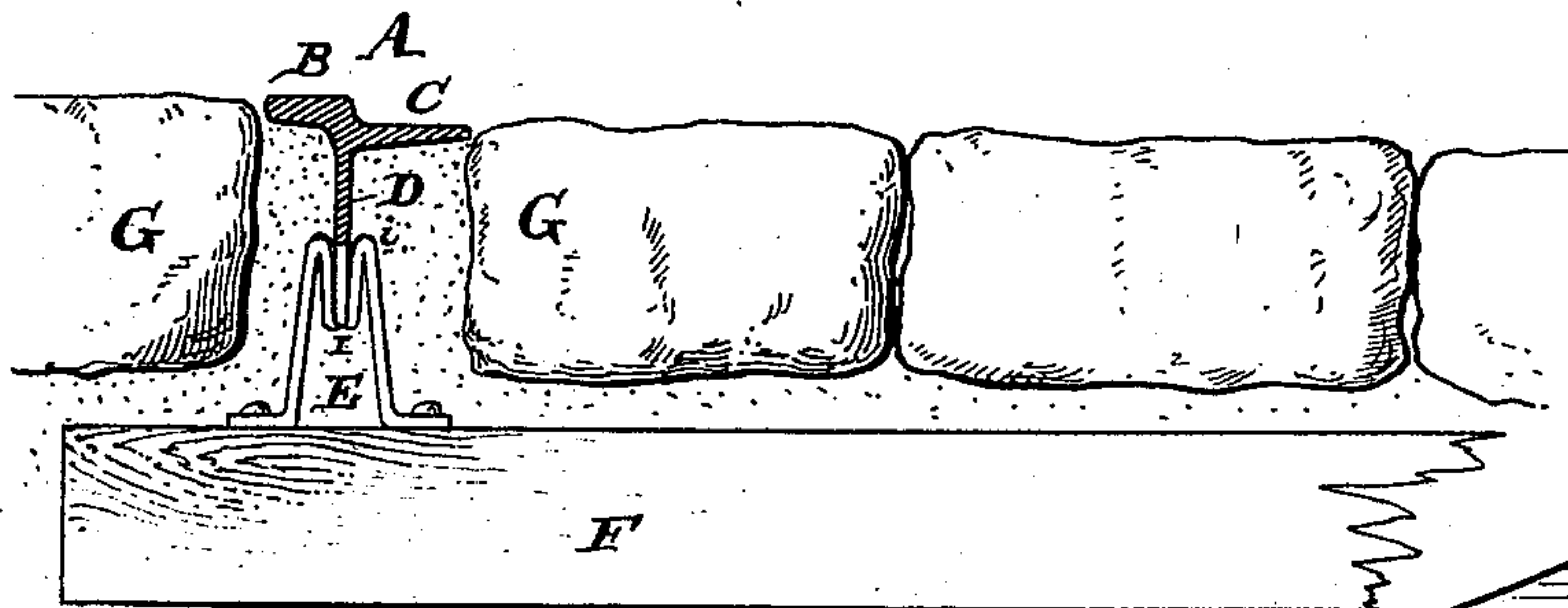


FIG. 2

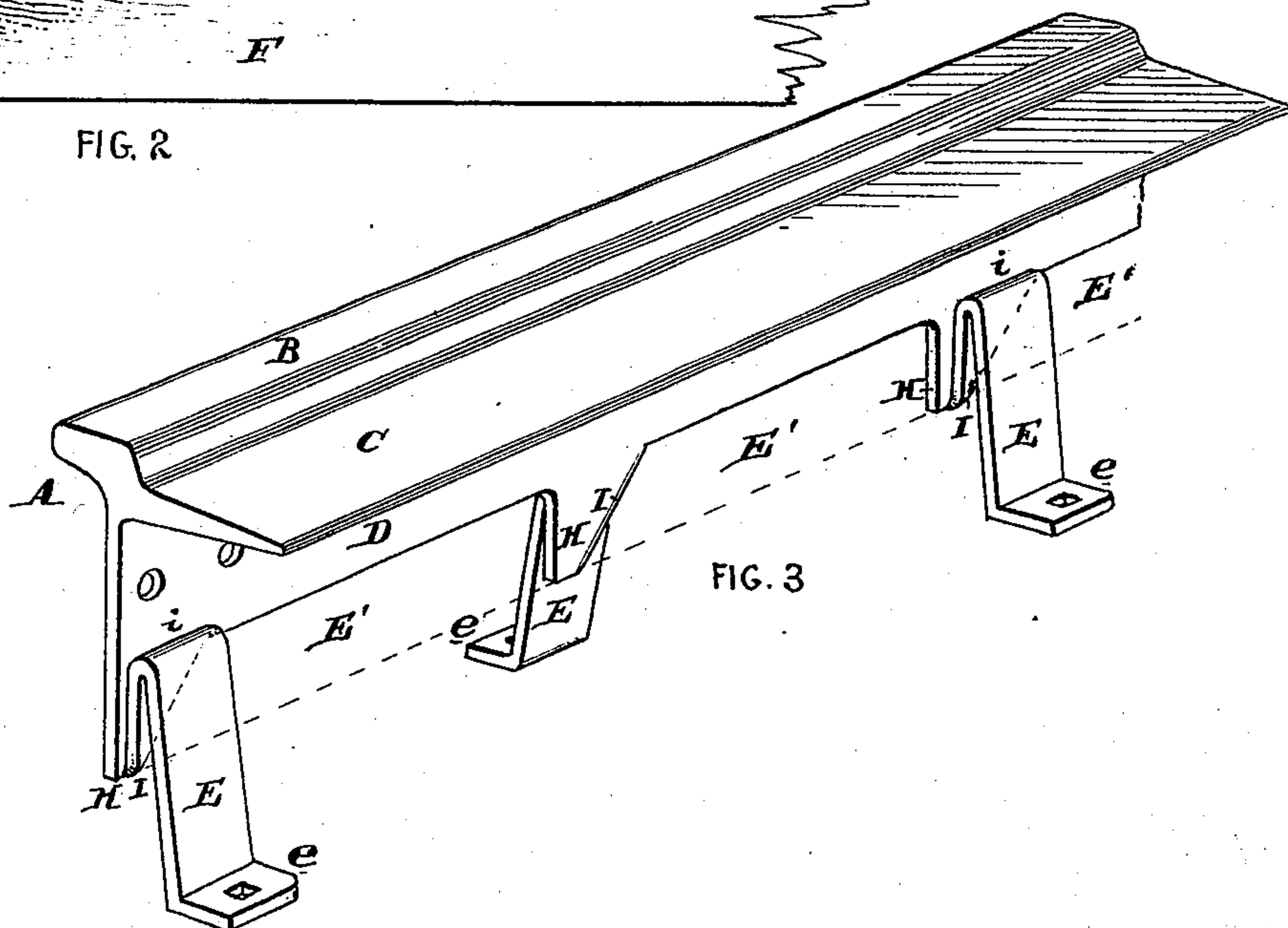


FIG. 3

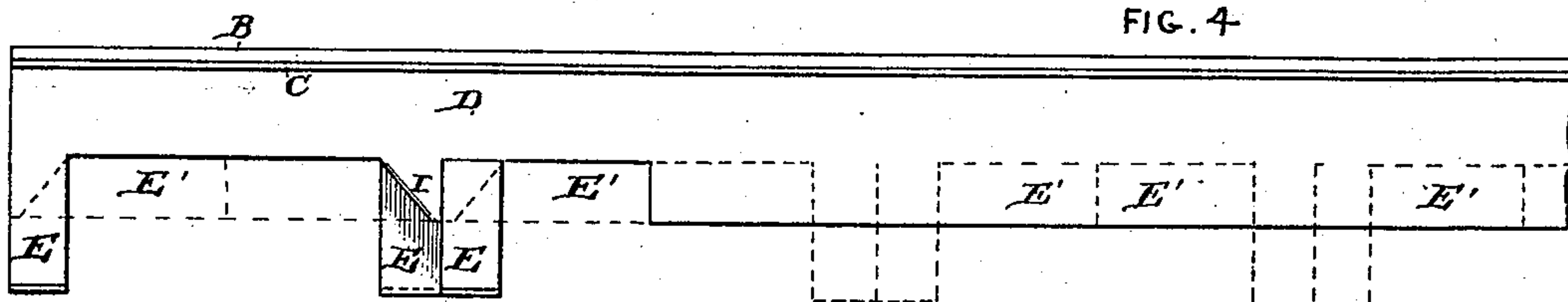


FIG. 4

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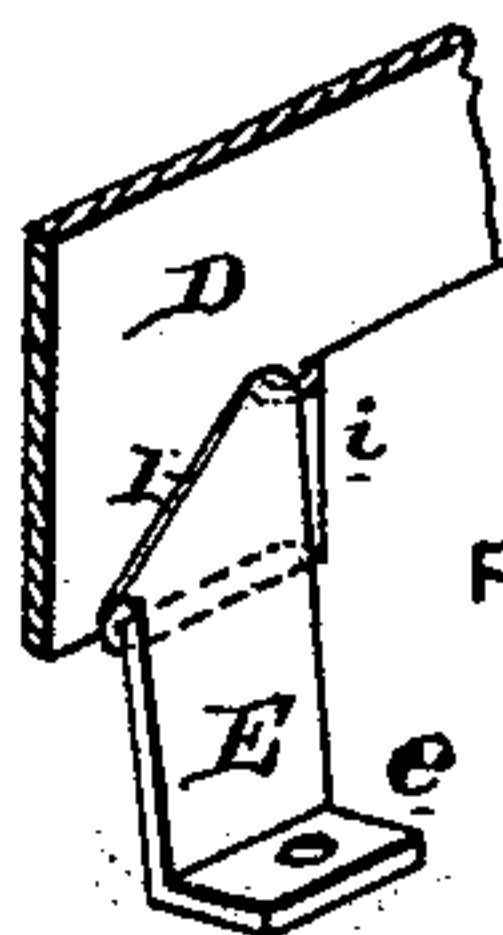


FIG. 5

Inventor

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# UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, ASSIGNOR TO THE JOHNSON COMPANY, OF JOHNSTOWN, PENNSYLVANIA.

## GIRDER-RAIL AND PROCESS OF MANUFACTURING THE SAME.

SPECIFICATION forming part of Letters Patent No. 486,211, dated November 15, 1892.

Application filed February 23, 1892. Serial No. 422,364. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Girder-Rails and the Process of Manufacturing the Same, of which the following is a specification.

My invention has reference to girder-rails and the process of manufacturing the same; and it consists of certain improvements, which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part hereof. This application (Case No. 215) has special reference to rails adapted to street-railway purposes, and has for its object the construction of a rail and foot in one integral piece to obviate the necessity of independent chairs.

Heretofore it has been customary to roll a girder-rail with the head and tram portions at the upper part of the web and foot-flanges at the base thereof and to support the said girder-rail upon cast or wrought iron chairs, which are spiked to cross-ties arranged at a level below the paving. The use of chairs is a necessity for the purpose of bridging the space between the foot of the rail and the cross-ties, which necessarily are located at a depth below the bottom of the ordinary Belgian blocks or paving-stones.

The object of my invention is to reduce the expense in the manufacture of girder-rails of great depth in the web or the distance between the base-flanges and the head, and at the same time to form the entire rail of one integral structure.

In carrying out my invention I roll a rail with a deep web and the usual head and tram, and then as a subsequent operation cut the lower edge of the web, so as to form strips of metal parallel with the length of the rail, which strips are then bent at an angle to the length of the rail and formed into foot-flanges at a lower depth than the original lower edge of the said web, thereby giving to the rail the great depth required without the necessity of using independent chairs. In practice one of the foot-pieces will preferably project to one side of the web and the next foot-piece to the opposite side, and so on, whereby great stability is given to the rail as an entirety. It

is immaterial to my invention how these portions which form the foot parts of the rail are bent to extend below the original depth of the web; but I show the preferred methods of bending said foot portions.

Referring to the drawings, Figure 1 is a side elevation of a girder-rail embodying my invention. Fig. 2 is a cross-section of a portion of a railway, showing my improved rail in its relation with the paving-stones and cross-tie. Fig. 3 is a perspective view of one end of my improved rail shown in Fig. 1. Fig. 4 is a side elevation of a modification of my improved rail, and Fig. 5 is a perspective view illustrating a modified manner of bending the foot portions.

A is the rail proper, and is provided with the head B and the side tram C, which may be of the usual construction.

D is the vertical web, and as originally rolled is of the depth indicated by the dotted line in the several figures. At given distances along the lower edge of this web D pieces E' are cut so as to form longitudinal strips, which may then by any suitable machine or by hand be bent downward at an angle to the length of the rail to form the integral portions E, the lower parts of which are bent to a horizontal position to form the feet e, which may be perforated to receive the spikes. These perforations may be made at the same time that the strips E' are cut. The preferred method of bending the foot portions E is shown in Figs. 1, 2, and 3, in which the strip E' is first bent backward and upward on the diagonal bend I and then bent outward and downward on the horizontal bend i. The foot E is preferably extended out at a slight angle away from the web as it approaches the cross-tie F. It will thus be seen that the web D is provided with a series of downwardly-projecting portions H, to which the foot portions E are directly or integrally attached. This structure, it will be seen, will give great strength coupled with a given amount of elasticity, and will permit the greatest depth between the head and the foot required, combined with the least depth in the web D permitted. The full height of the rail is only limited by the length of the portions E', and this may be increased or decreased, as desired.



In the construction shown in Fig. 4 I have simply shown the foot portions E arranged in pairs, one of which projects in one direction from the web and the other of which projects in the opposite direction. In this case the portions E' on one side of the rail are bent in the opposite directions from those of the portions E' on the opposite side of the rail. Otherwise the construction is the same as that shown in Figs. 1, 2, and 3. In place of bending the portions E' first upon the diagonal I and then upon the horizontal *i* they may be bent first upon a vertical line *i* and then upon a diagonal line I, as indicated in Fig. 5. It is immaterial to my invention how the foot portions E are formed upon the web D so long as they are integral with it and are connected thereto by bent portions. Therefore I do not limit myself to the details herein shown.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A girder-rail formed of a longitudinal web and head portion and a series of foot portions formed integral with the web and connected thereto by bends.

2. A girder-rail formed of a longitudinal web and head portion and a series of foot portions formed integral with the web and connected thereto by bends and in which some of said foot portions project to one side of the web and some to the other side of the web.

3. In a girder-rail, the combination of the head, web, and foot portions formed integral and in which the web is provided with a se-

ries of downwardly-projecting portions connecting integrally with the foot portions by means of bent portions of the metal.

4. In a girder-rail, the combination of the head, web, and foot portions formed of one integral piece of metal and in which the foot portions extend below the web and are connected at the extreme lower portion thereof by bent portions interposed between the said web and foot and in which the depth of the finished rail is greater than the extreme depth of the web prior to the formation of the foot portions thereon.

5. In a girder-rail, the combination of the web D, formed with the head B and tram C at the top and integrally connected with the foot portions E by means of the bent portions I and *i*.

6. The herein-described method of forming a girder-rail of great depth between the foot and the head, which consists of first rolling a girder-rail with head and tram and web, but without foot portions, then cutting or notching the lower edge of the web to form longitudinal strips, and subsequently bending the said strips at an angle to the length of the rail and downward or away from the head portion thereof to form feet.

In testimony of which invention I have hereunto set my hand.

R. M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,  
S. T. YERKES.