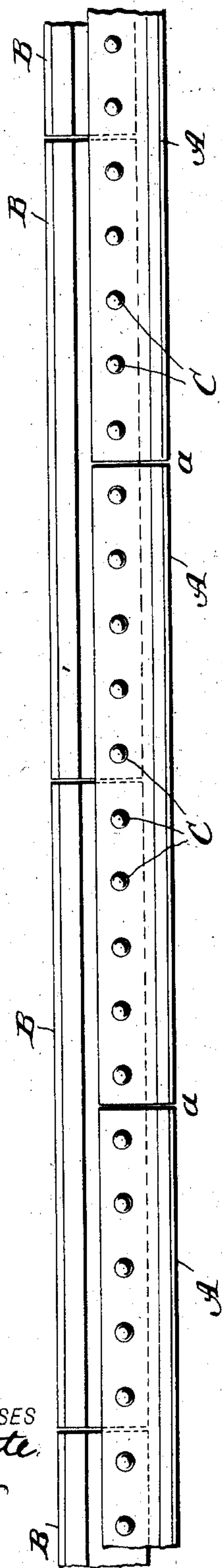


No. 864,867.

PATENTED SEPT. 3, 1907.

A. E. SMITH.  
COMPOUND RAILWAY RAIL.  
APPLICATION FILED OCT. 10, 1906.

Fig. 1.



WITNESSES  
*C. H. Grote*  
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Fig. 3.

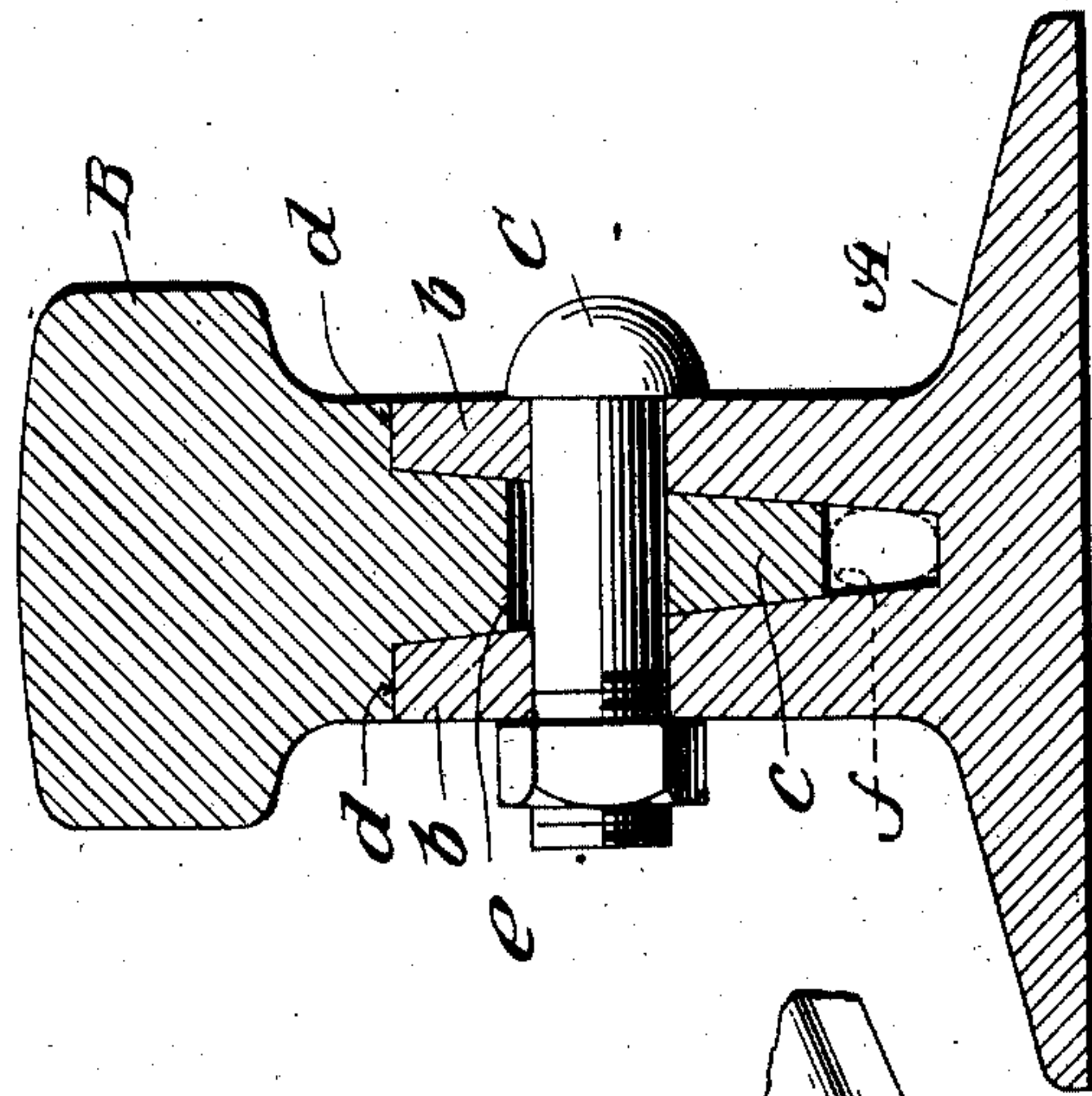
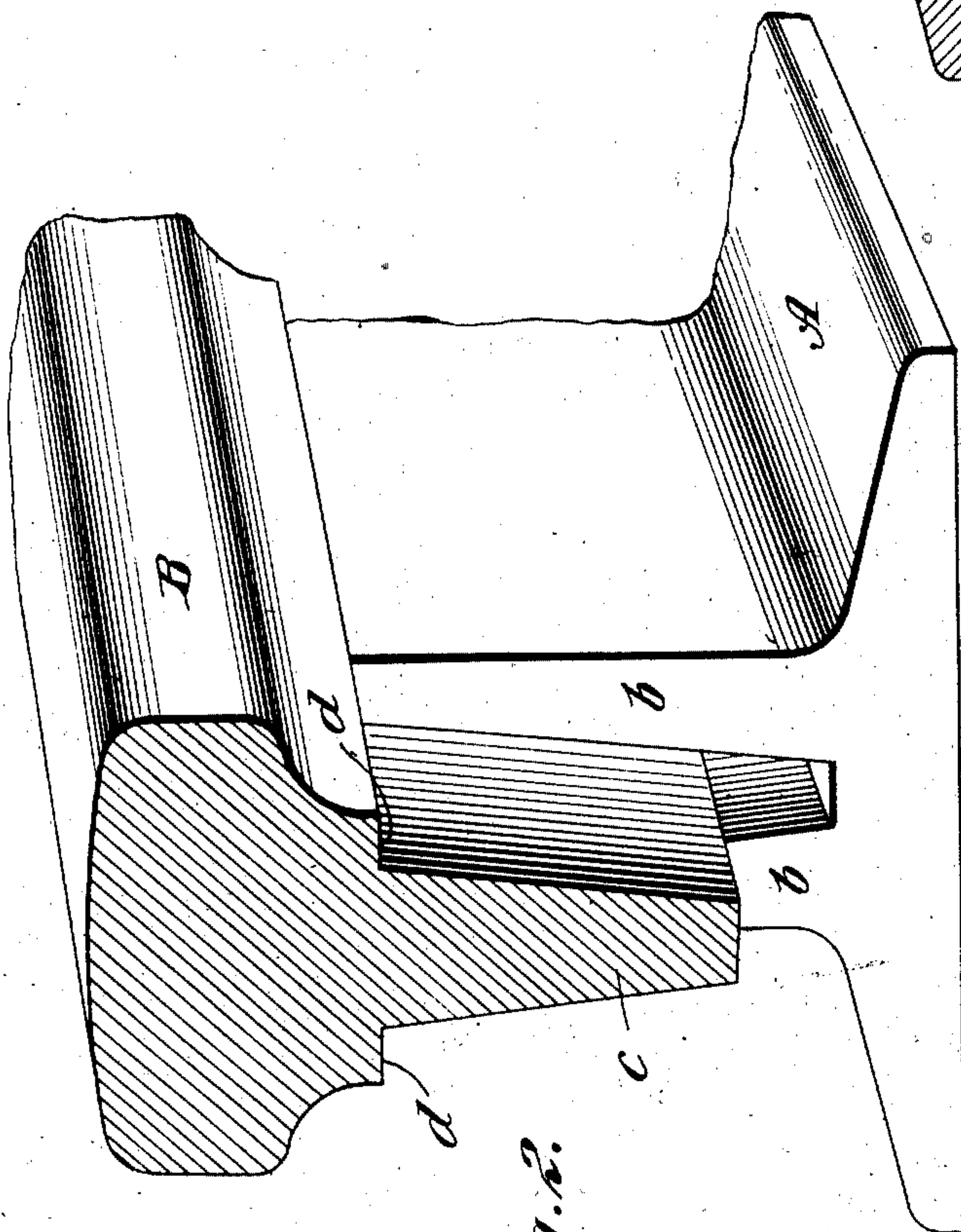


Fig. 2.



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ATTORNEY



# UNITED STATES PATENT OFFICE.

ALONZO E. SMITH, OF NEW YORK, N. Y.

## COMPOUND RAILWAY-RAIL.

No. 864,867.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed October 10, 1906. Serial No. 338,215.

*To all whom it may concern:*

Be it known that I, ALONZO E. SMITH, a citizen of the United States, residing at the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Compound Railway-Rails, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings and the reference characters marked thereon.

10 This invention has relation to railway rails composed of a base or bed portion and a top or tread portion united to form a completed rail.

15 The object of my invention is to provide or produce a compound rail which shall be capable of being easily and cheaply constructed and assembled for use, forming a practically continuous rail, whereof the ends of the sections are cut square so that they will abut against each other after the manner of ordinary railway rail sections, wherein the two sections are uniformly supported and united with respect to each other, whereof 20 the upper or tread sections may be removed and interchanged or replaced by others and wherein the tread sections may be cut to remove any portions thereof and the same replaced by other portions without interfering with the stability of the entire rail.

25 To accomplish all of the foregoing object and to secure other and further advantages in the matters of construction, emplacement, operation and repairs, my improvements involve certain new and useful peculiarities of construction and relative arrangements or combinations of parts, as will be herein first fully described and then pointed out in the claim.

30 In the accompanying drawings which form part of his specification, Figure 1 is a side view of a portion of a compound continuous rail constructed and arranged for operation in accordance with my invention and involving my improvements. Fig. 2 is a perspective view showing the end of one of the base sections with a tread section in place therewith but cut across near the 40 end of the base section. Fig. 3 is a cross section and elevation upon a plane at right angles with the tread of the rail and through one of the tie bolts showing an electrical coupling piece or conductor in dotted lines.

45 In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

50 A, A, are the base sections or pieces of the rail, the same being intended to be secured upon the ties of the road bed according to any of the approved manners of securing rails. The ends of these sections are cut square across, as at *a, a*, so that these ends will abut against each other when the rail is laid down and so that the rail may be built in position without difficulty. The base flange of this base section is of the usual width and the two webs rising therefrom, represented at *b, b*, 55 are separated by a space which gradually increases in width from the bottom to the top, and this space is in-

tended to receive the tongue or flange with which the tread section is supplied. The outer surfaces of the webs *b, b*, are substantially parallel and the tops of these webs are flat so as to form plain flat bearings for 60 the upper part of the tread section. The distance between the upper parts of the inner faces of the webs *b, b*, is about twice the width of the top of one of the webs to properly distribute the strength of the material of which the rail is made, but these proportions may be 65 slightly varied within the usual limits without departing from my invention. The base sections are of such shape and proportions that they may be easily rolled in an ordinary rolling mill and thus produced without unnecessary additional cost. Being so produced and 70 properly perforated to receive the tie bolts, these sections are ready to be laid upon the road bed and secured thereon as may be desired. They may, if desired, be made of cheaper metal than are the tread sections which are alone subjected to being worn or damaged by 75 contact of the traveling wheels therewith.

The manner of spacing the perforations through the base and tread sections is peculiar and will be explained hereafter.

80 B, B, are the tread sections. These are simple in form and easily produced in a rolling mill as will be apparent from an inspection of their cross sections. They are cut square across and provided each with a depending flange or web, *c*, having inclined sides and formed to fit in the space between the webs, *b, b*, of 85 the base section, plane, square shoulders, as at *d, d*, being formed near the top of the web *c* and below the upper part of the tread section to rest upon the correspondingly flat upper faces of the webs *b, b*. The upper part of the tread sections may be of any of the ap- 90 proved forms for the corresponding portion of ordinary railway rails.

In the manufacture of the two portions of the completed rail, the lengths of the base sections and the tread sections are preferably uniform, and the tread 95 sections are located in the base sections so as to extend about equally on each side of the joints between said base sections. Thus the parts of the rail are made to "break joints" perfectly, and when they are finally bolted to place, the improved rail is quite as rigid and 100 secure at all points as if made in a single piece, and this throughout the entire length of the construction.

105 C, C, are the tie bolts passing through from one side to the other and being tightened by nuts on one end which may be locked by any preferred means. To receive these tie bolts, the two webs *b, b*, and the web *c* are suitably perforated, as indicated. The perforations are spaced at equal distances from each other, the end perforations being located at a distance from the adjacent ends of the section equal to one-half the 110 distance between two of the perforations. For example, if the holes are spaced two feet apart, those at the



ends are each one foot removed from the ends; and this is the preferred manner of locating them, but the measured distance between them may be slightly varied without departing from the invention. The passages for the bolts through one of the parts are made slightly larger in diameter than the bolt to allow for expansion and contraction under the effects of heat or cold. The larger passages may be made through either part as may be preferred. In the example shown in Fig. 3 the larger passage is formed in the flange *c*, as at *e*.

When the parts are in place and the bolts tightened up, the flange *c* is firmly pinched between the webs *b*, *b*, and the tread section B is rigidly held in its position in connection with the base section. The security of this union is made equally at all points of the rail, as will be apparent from the uniform distribution of the tie bolts.

The base sections will seldom need to be removed from the road bed. Any of the tread sections may be removed and replaced whenever necessary. A tread section being removed, it may be cut and replaced in divisions, if desired, it being only necessary to have the holes properly punched through the flange *c* and suitably spaced. Thus it will be apparent that the improved rail may be easily repaired upon the road as all the joints are of extreme simplicity.

As will be seen, the flange *c* does not extend to the bottom of the space between the two webs *b*, *b*, thus leaving a chamber below the flange *c* when the latter is

in place. This chamber forms a convenient receptacle for an electric conductor, shown at *f*. By locating the square shoulders *d*, *d*, below the upper part of the tread section, the flange *c* and the webs *b*, *b*, are made comparatively narrow so that they may be easily rolled in an ordinary rolling mill and so that the necessary stability of the completed rail will not be impaired.

Being constructed and arranged substantially in accordance with the foregoing explanations, the improved rail will be found to admirably answer all the purposes or objects of the invention hereinbefore alluded to.

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

The herein described continuous rail comprising a plurality of base sections, a plurality of head or tread sections and a series of tie bolts uniformly and equally spaced throughout the length of the entire rail, the abutting ends of the tread and base sections being located midway between two tie bolts, the base sections having each a base flange and two web flanges and the tread sections being each provided with a depending flange, the upper faces of the said web flanges being flat and the depending flanges on the tread sections having flat shoulders located below the upper parts of said depending flanges for bearing on said web flanges.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ALONZO E. SMITH.

Witnesses:

GEO. A. MARSHALL,  
WORTH OSGOOD.