

No. 675,867.

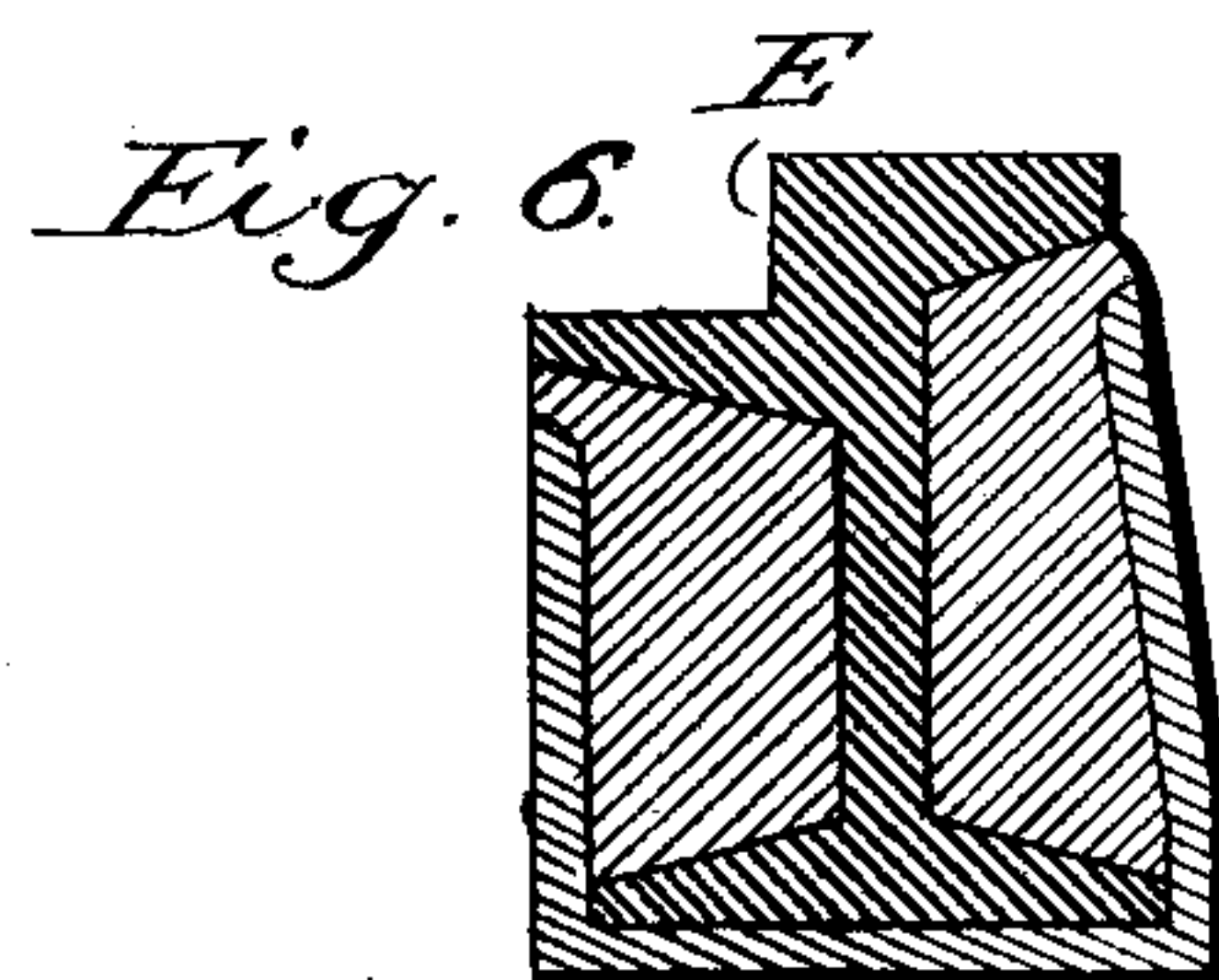
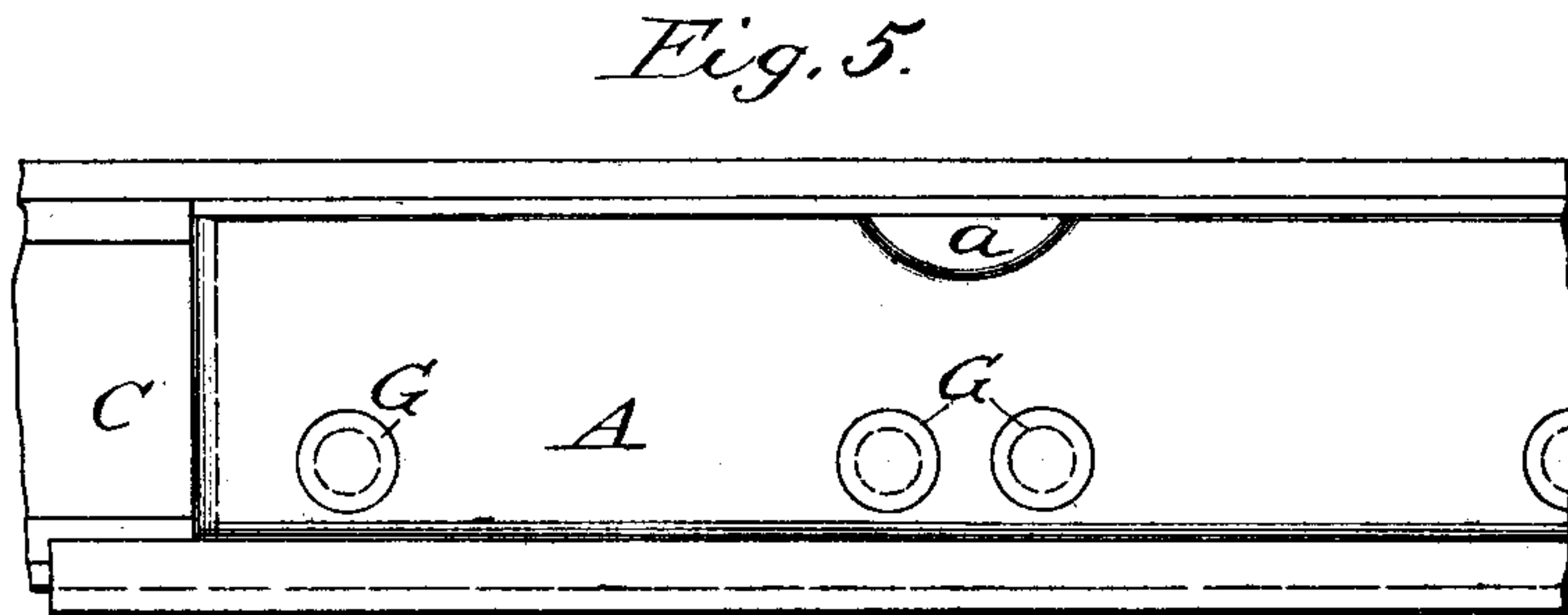
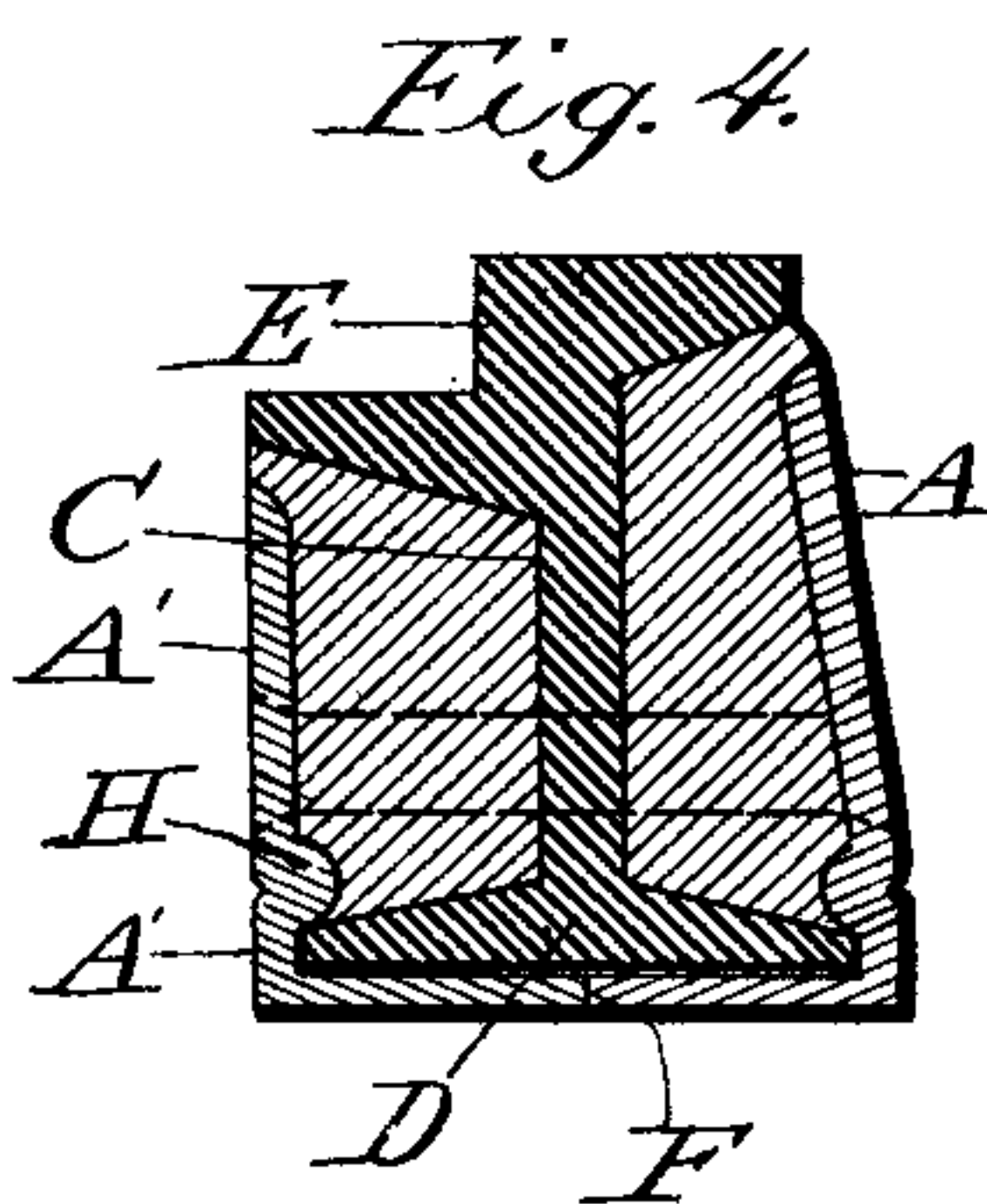
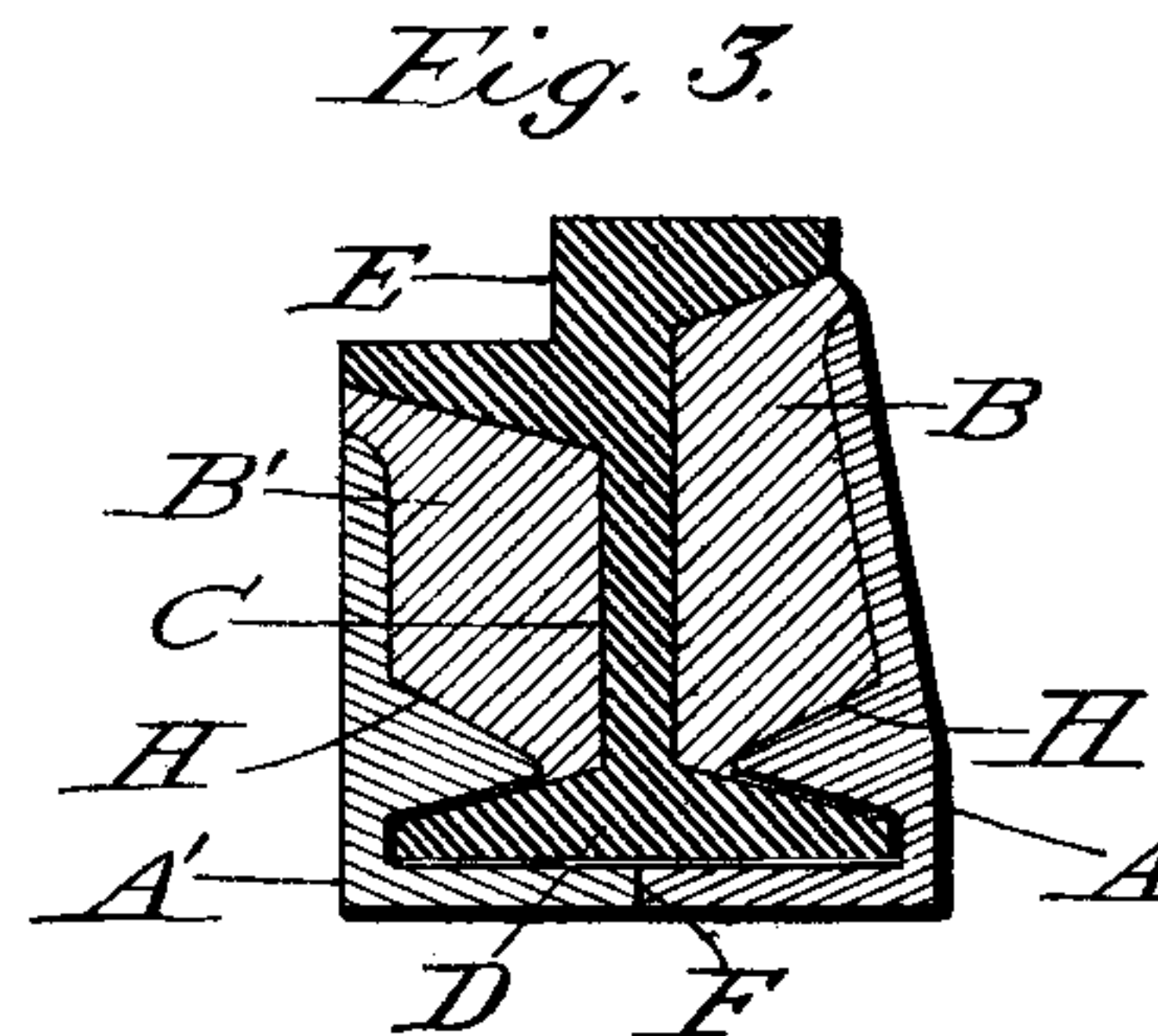
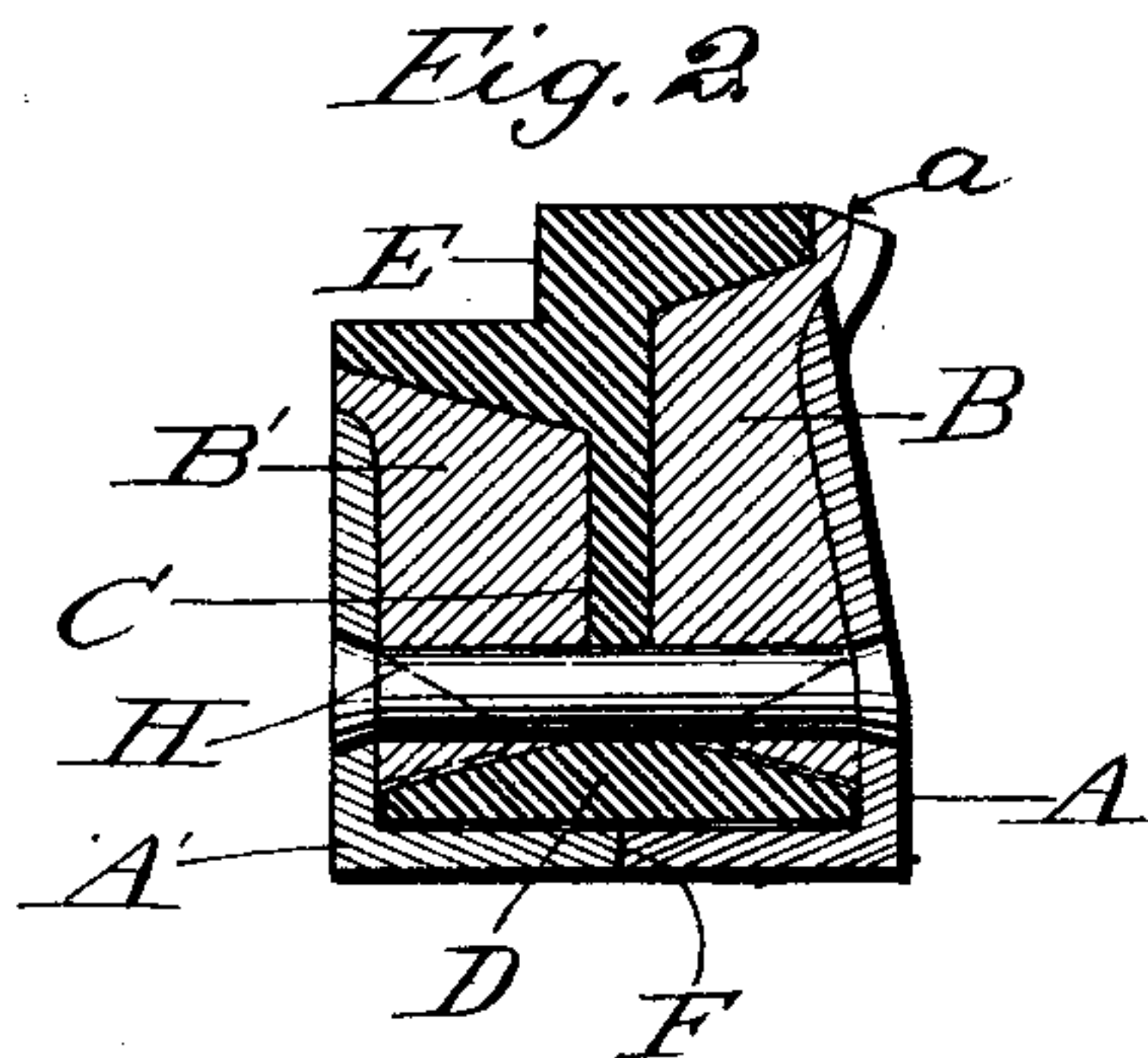
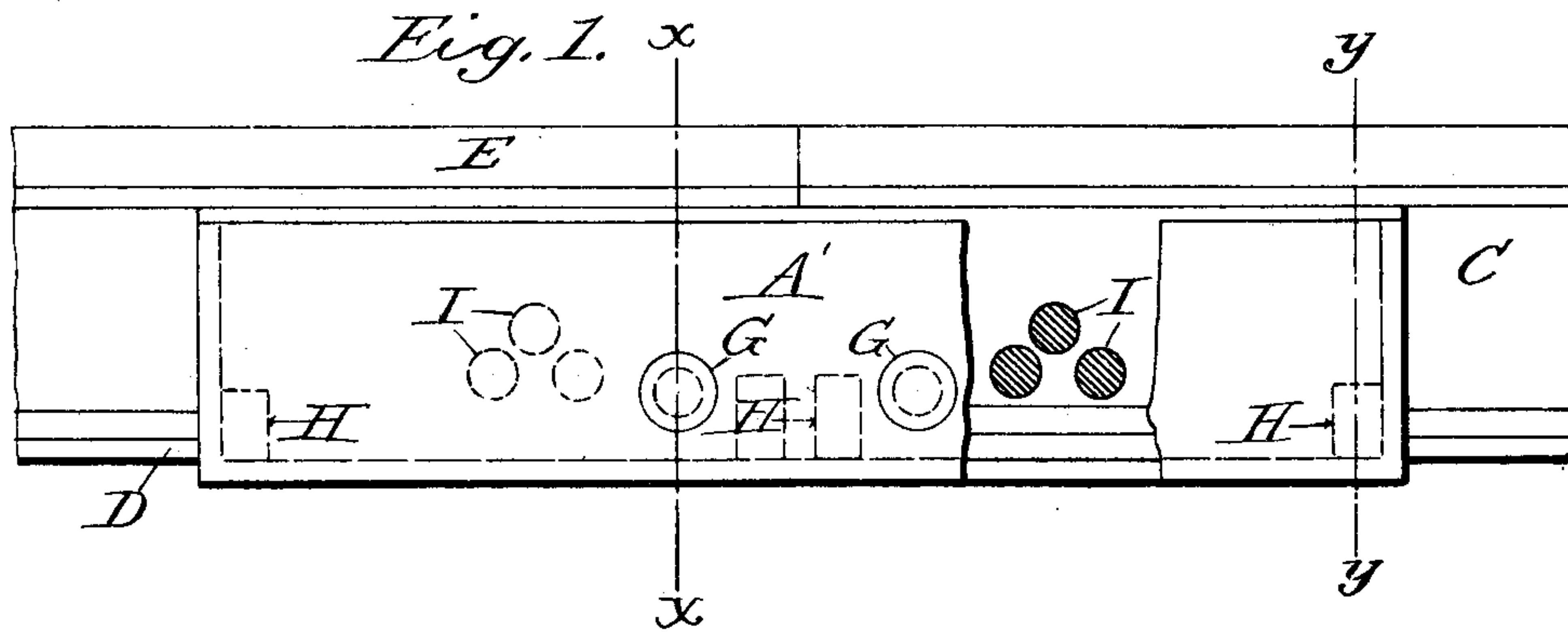
Patented June 4, 1901.

W. J. AUSTIN.

METHOD OF AND MEANS FOR FORMING RAILWAY JOINTS.

(Application filed Mar. 3, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM J. AUSTIN, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PERMILLIA J. AUSTIN, OF SAME PLACE.

METHOD OF AND MEANS FOR FORMING RAILWAY-JOINTS.

SPECIFICATION forming part of Letters Patent No. 675,867, dated June 4, 1901.

Application filed March 3, 1898. Serial No. 672,422. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. AUSTIN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Methods of and Means for Forming Railway-Joints, of which the following is a specification.

My invention consists in a novel method of and means for connecting the ends of railway-rails, as hereinafter set forth, the invention being in the nature of a modification of or improvement upon that set forth in Letters Patent No. 593,345, granted to me under date of November 9, 1897, and being also for a method of producing the structure described and claimed in a divisional application executed by me on the 29th day of October, 1900, preparatory to procuring Letters Patent of the United States for improvements in railway-rail joints.

The present invention contemplates fusion of the faces of the rails and the inner walls or faces of the sleeve or coupling by and with the molten metal poured into the space between them under all working conditions and the consequent formation of an exceedingly strong and perfect joint well adapted to constitute an electrical bond between the rail-sections. The improved construction also permits of ready application or use of the invention in connection with rails already in position without detaching them from their ties, yokes, or other supports.

In the accompanying drawings, Figure 1 is a side elevation of the meeting or proximate ends of a pair of rails, showing my invention applied thereto, a portion of the sleeve being broken away to show certain openings formed in the web of the rail; Fig. 2, a transverse sectional view on the line $x x$ of Fig. 1; Fig. 3, a similar transverse section on the line $y y$ of Fig. 1; Fig. 4, a transverse sectional view showing a modified form of a sleeve which may conveniently be made of rolled steel or other metal; Fig. 5, a side elevation of the same; Fig. 6, a transverse sectional view of a rail provided with a sleeve or coupling of modified form.

The same reference-letters are used through-

out the following description to indicate like parts.

Briefly stated, the joint or coupling comprises the meeting ends of two rails, a sleeve or coupling member extending a suitable distance lengthwise of said ends in each direction from the joint or line of meeting and encompassing the base and sides of the rails to or about to the level of the under side of the tread portion E, and a filling of metal poured into the sleeve or coupling, filling the space within the same and uniting with the metal of the rails and with that of the sleeve or coupling by fusion of the meeting surfaces, followed by solidification or congealment.

So far as I am aware, the idea of uniting the rails and an outside sleeve or coupling member by an intervening body of molten metal which first fuses the surfaces with which it comes into contact and later cools and unites the several parts to form an integral body is new and original with me. This constitutes the leading feature of my invention; but incidental thereto are other features which will be more fully explained in the course of the following description.

Referring first to Figs. 1, 2, and 3, I will describe an embodiment of my invention well adapted to be carried out through the aid of cast-metal sleeves or coupling members. In these figures, A and A' indicate two angular metal sections of like length and of substantially like form, which being placed with their lower flanges in edge contact, as at F, constitute a sleeve or coupling member, the base-flanges of the members A and A' being of such width as jointly to extend across the under faces of the rail-bases or bottom flanges. When formed of cast metal and, if desired, when formed of any other metal or alloy, the end portions of the members A and A' may be made to conform to the contour of the rails, so as to fit closely over the base-flanges and against the vertical webs thereof. The parts so made and applied may be tied together in any convenient manner, either by clamps or, as is preferred, by means of bolts or rivets G, passing through the members A A' and through the web of the rail and headed or provided with nuts, as found expedient. In Figs.

1, 2, and 3 the fastenings are represented as in the form of rivets.

The member A is formed with an outwardly-bent lip or edge to constitute a pouring-mouth *a*, through which to introduce molten metal to form the filling B B'.

In practice it is deemed advisable to form perforations in the web C, so that molten metal poured in through the pouring-mouth *a* may fill the space between the web C and the member A of the sleeve or coupling and passing through the perforations fill also the space between the web C and the member A'; but obviously the two sides may be separately poured, if desired. When the perforations are provided, uniting bodies I, of metal, connect the two bodies B and B', of cast metal, and fusing the walls of the perforations and uniting therewith they insure a more perfect electrical bond than would be in all cases obtainable without such perforations. This is because the metal so long as hot enough to find its way through the openings will be able to fuse the exposed edges of the relatively thin web where it might not be hot enough to fuse the flat faces of the web or to do so perfectly and efficiently.

As shown in Fig. 3, the members A and A' of the sleeve or coupling are formed with lugs or projections II, extending inward therefrom and designed to bear upon or overhang the base-flange D, thereby preventing the members A and A' from dropping below their proper level or from rising.

It will readily be seen that the sleeve, consisting of the parts A and A', applied to the rails and held in place by the lugs or projections II and the bolts or rivets G, constitutes in itself a quite strong and firm connection between the rail-sections, which connection is vastly strengthened by the cast-metal body introduced between the rail and the sleeve and united by fusion to both. The electrical conducting capacity of the joint so formed is very great, and there is, in fact, no increase of resistance offered by them over that of the rails themselves.

Figs. 4 and 5 represent a construction in all material respects the same as that of Figs. 1, 2, and 3, except that the members A and A' are somewhat lighter and have projections II formed in them by rolling, said projections taking under such construction the form of a continuous rib or bead. This embodiment of the invention is more particularly designed with reference to the use of wrought metal, as rolled steel or iron.

As shown in Fig. 5, the vertical wall of each member A and A' may be cut or severed along the line of the bead and bent inward to bear against the web of the rail to form a closure for the end of the sleeve or coupling. This will of course be done before the parts are assembled, and the inturned portion will be cut or fashioned to conform more or less closely to the contour of the web and base. Obviously, however, temporary closing blocks

or plugs may be employed and the inturning of the ends dispensed with.

In Fig. 6 I have represented the sleeve as made in one integral piece or body without the joint at the point F. In all other essential particulars this sleeve may be the same as that of Figs. 1, 2, and 3 or of Figs. 4 and 5.

I deem it preferable to employ ordinarily the divided sleeve or coupling, for the reason that it may be readily applied to rails in position and while fastened to their ties, yokes, or other supports without other disturbance than the mere lifting of the rails to a height of about half an inch or sufficient to permit the lower flanges of the sleeve-sections to be passed beneath the bases of the rails, whereas with the solid sleeve represented in Fig. 6 it is necessary to completely separate the ends of the rails and to apply the sleeves by passing them longitudinally over or upon the ends of the rails.

Two sections will be sufficient for all ordinary purposes; but I do not mean to restrict myself to making the sleeve of only two parts, since it may be further divided if for any reason it seems desirable so to do.

It is obvious that the form and dimensions of the sleeve or coupling may vary considerably without departing from the scope or spirit of my invention, which, as before stated, consists, primarily, in uniting the rail-sections and the sleeve or coupling by an intervening body of cast metal fused to both.

The rivets or fastenings by which the members A and A' of the sleeve or coupling are held together may be permanent or temporary, as preferred, and when the integral sleeve is employed they may be wholly omitted. Rolled-steel sleeves are found admirably suited to the purposes of the present invention; but cast metal, alloys, or other substances possessing the requisite strength and conducting capacity may be made use of.

In the drawings I have represented the upright walls of the sleeve or coupling as set some distance away from the web C on both sides; but this is a matter of option, the space on either side or on both sides being made greater or less, as shall be found expedient in any given case.

The fusion of the faces of the sleeve and web by the introduced metal effects a perfect and exceedingly-strong joint or connection, which enables me to dispense with bolts, rivets, or even interlocking shoulders to be engaged by the filling, though it is preferred to make use of the through connections I as a means for better insuring a firm and indestructible joint.

Since the mode of manipulating molds, the use of fluxes, and like matters incident to fusion and casting of metals are within the common knowledge of founders and metallurgists, it is, perhaps, unnecessary, after stating that fusion is in all cases to be effected, to add that in cold or damp weather or when the metal is not sufficiently heated or when

the sleeve or coupling contains so great a mass as to unduly chill the poured metal the sleeve or coupling may be heated to advantage and suitable flux may be employed to facilitate the union of the contacting surfaces by fusion. The heating is in some cases effected by placing the sleeve directly in a heating-chamber before setting it in position, and in other cases it is heated by causing the molten metal to overrun sufficiently for the purpose. It is frequently unnecessary to perform the heating of the sleeve, however, and hence I do not confine myself thereto.

Having thus described my invention, what I claim is—

1. The herein-described method of uniting rails, which consists in applying to the proximate ends of two rail lengths, a metallic sleeve or coupling, and introducing within the sleeve or coupling a body of molten metal, which coming in contact with the rails and the sleeve, fuses the surfaces of both and forms therewith an integral body.

2. The herein-described method of uniting rails, which consists in applying to the proximate ends of two rail lengths, a metallic sleeve or coupling, and introducing within the sleeve or coupling a body of molten metal, which coming in contact with the rails and the sleeve, fuses the surfaces of both and forms therewith an integral body, the sleeve or coupling being heated when necessary, to insure such fusion.

3. The art of joining and electrically connecting railway-rails, which consists in applying to the proximate perforated ends of

two rail lengths, a sleeve or coupling partially encompassing the same, and introducing into the interior of the sleeve a body of molten metal which filling the interior of the sleeve, passes through the perforations of the rails and fuses the surfaces with which it comes in contact, thereby uniting the sleeve, the rails, and the introduced metal, and forming one integral mass or body.

4. An improved method of forming rail-joints, which consists in adjusting a jacket composed of similar half-sections to the rail ends, said jacket formed of a material capable of adhesion thereto of molten or fused metal, pouring molten metal into and through said jacket, and allowing said molten metal to harden and adhere to the rail ends and to the jacket-sections, whereby said jacket-sections, the filling metal, and the rail ends are united.

5. An improved method of forming rail-joints, which consists in adjusting a jacket to the rail ends, passing adjusting-bolts transversely through openings in the sides of the jacket and through openings in the webs of the rail-sections, pouring molten metal into and through said jacket, and allowing said molten metal to harden and adhere to the rail ends, whereby the filling metal and the rail ends are united.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM J. AUSTIN.

Witnesses:

E. M. McVICKER,

A. B. BRIGGS.