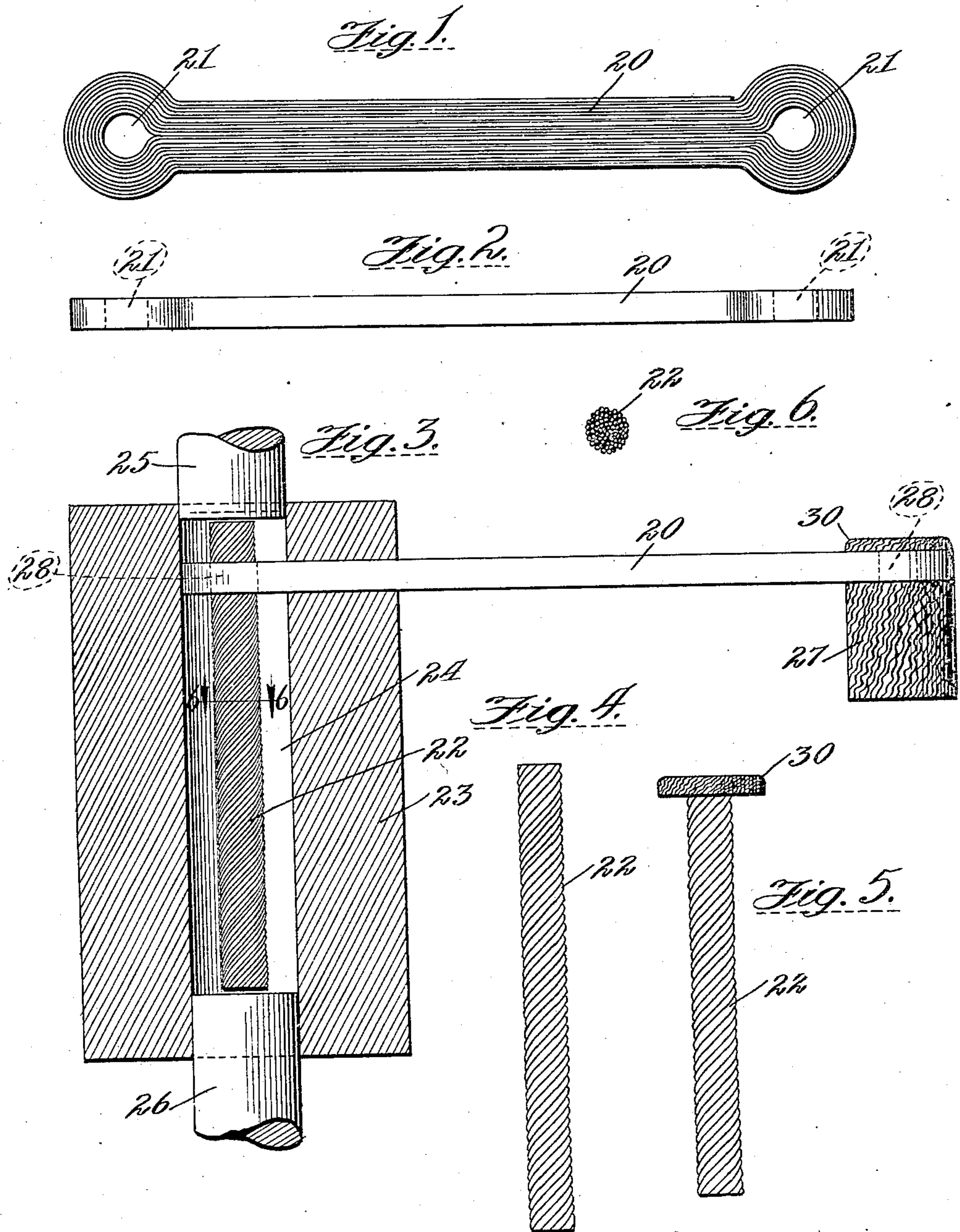


G. A. MEAD.
 MANUFACTURE OF RAIL BONDS.
 APPLICATION FILED NOV. 2, 1906.

943,438.

Patented Dec. 14, 1909.
 2 SHEETS—SHEET 1.



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Fig. 7.

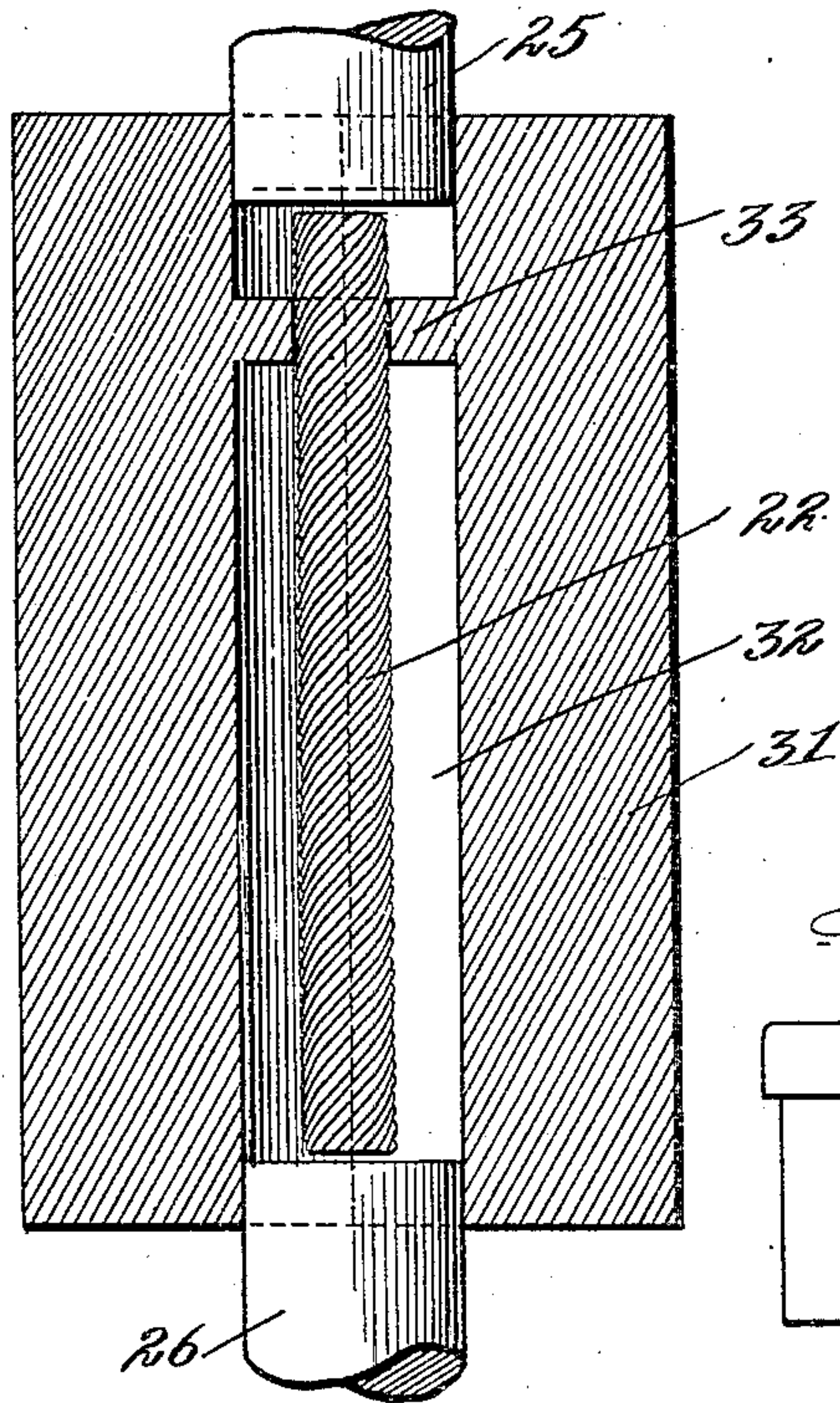


Fig. 8.

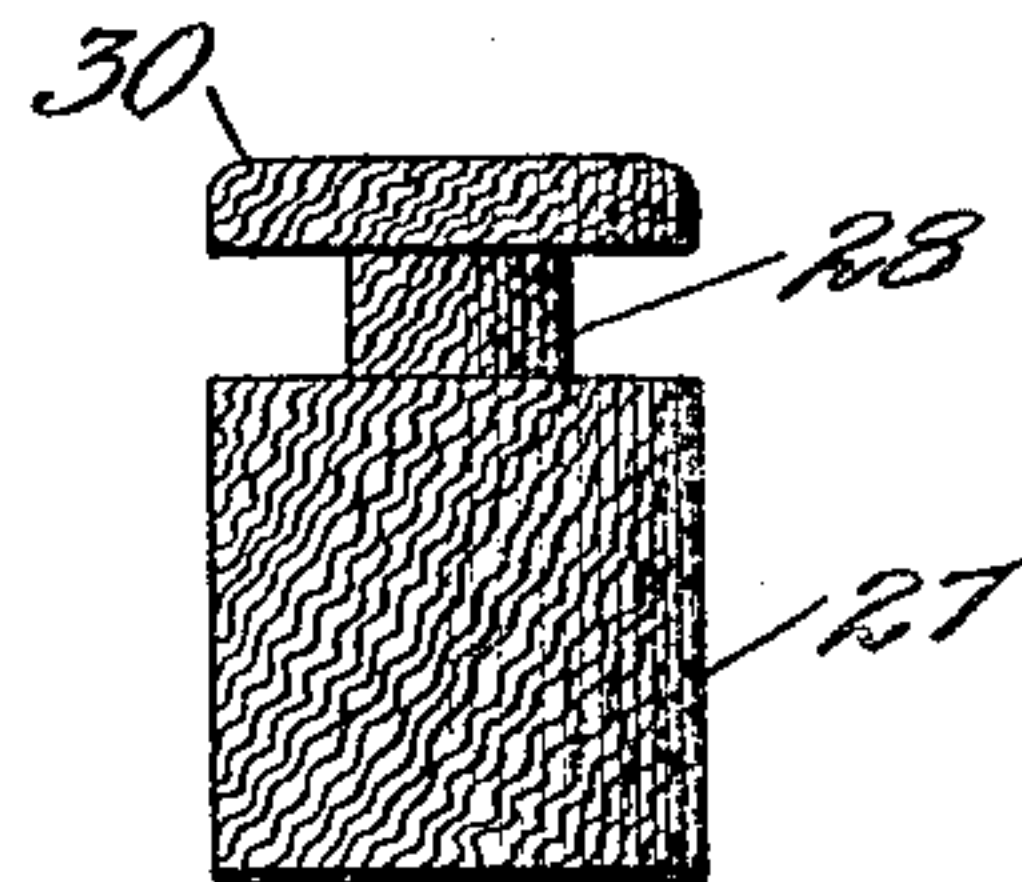


Fig. 9.

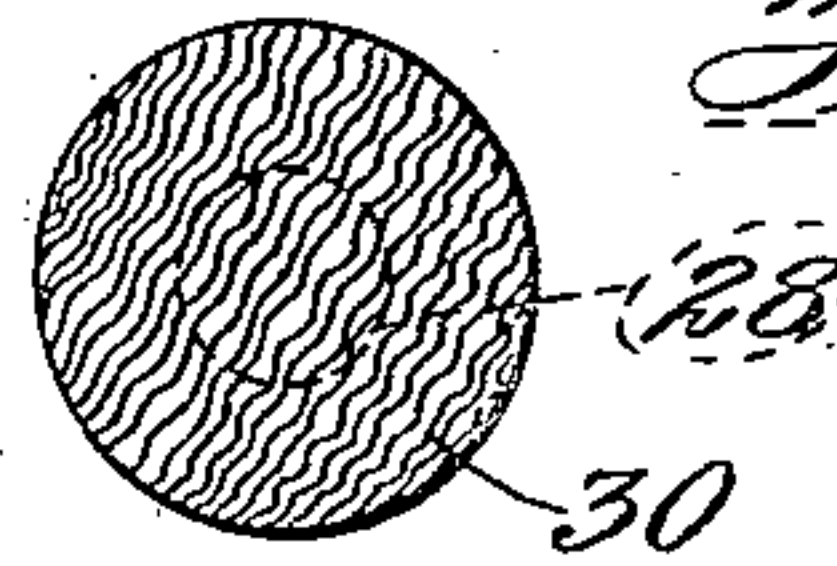


Fig. 10.

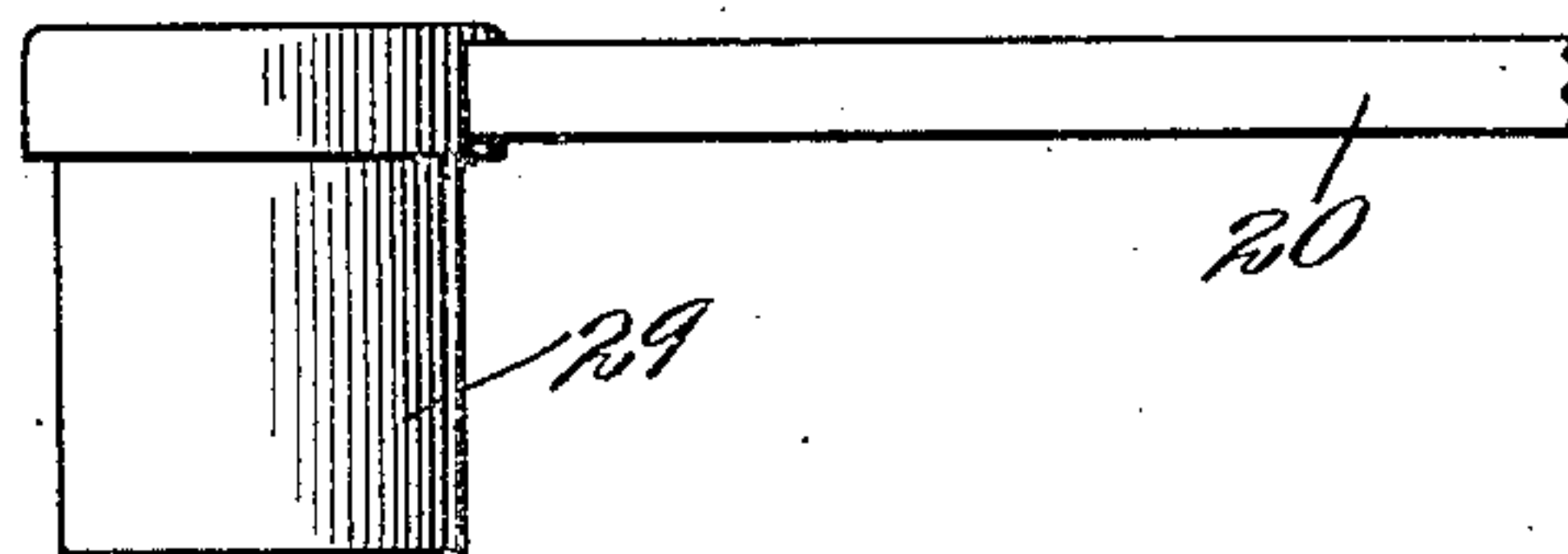


Fig. 11.

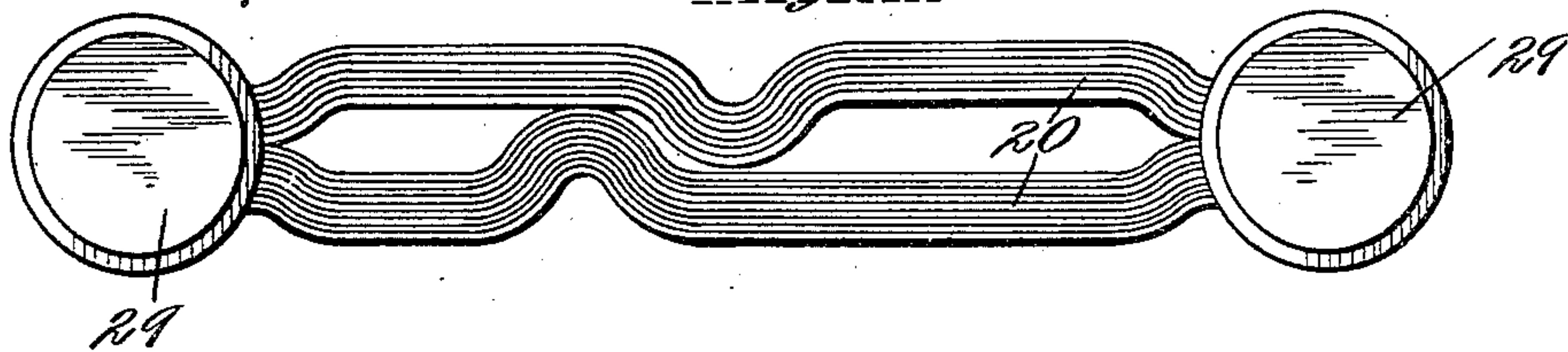
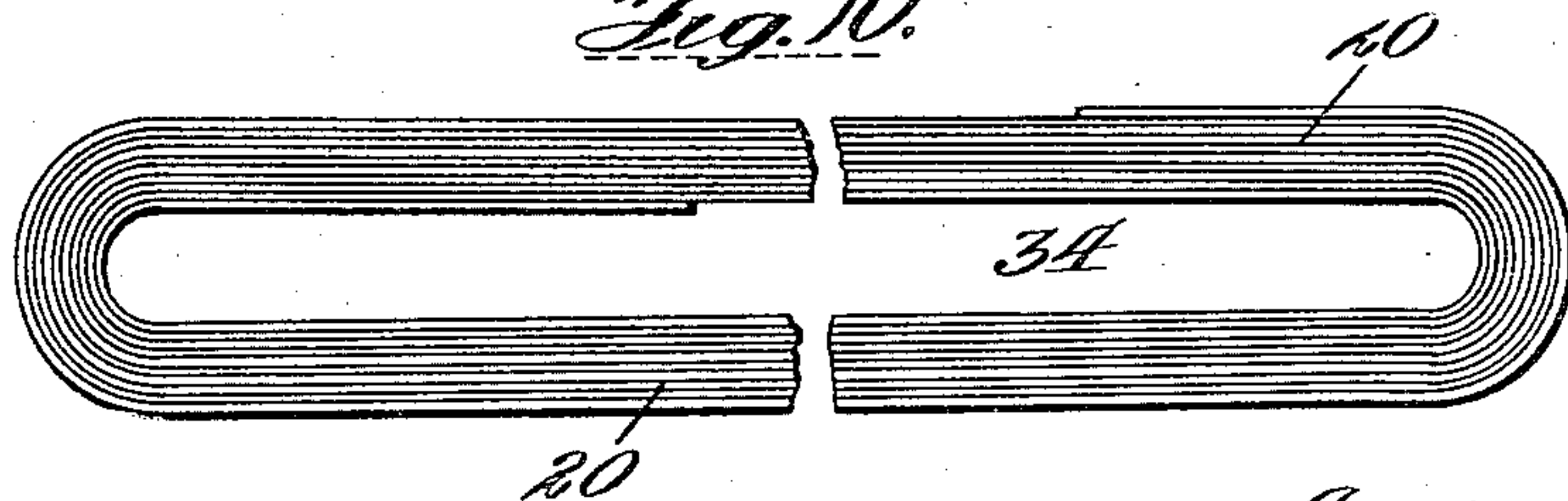


Fig. 12.



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF RAIL-BONDS.

943,438.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed November 2, 1906. Serial No. 341,689.

To all whom it may concern:

Be it known that I, GEORGE A. MEAD, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Rail-Bonds, of which the following is a full, clear, and exact specification.

This invention relates to improvements in the manufacture of rail bonds, and more particularly to that class of bonds comprising a stranded or laminated body portion provided with integral terminals.

A further object is to provide an improved device of this character comprising a stranded or laminated body portion, and stranded terminals, the ends of the body portions and the terminals being united to form a solid homogeneous mass.

A further object is to provide an improved device of this character in which the terminal is separate from the body portion, and is so shaped as to secure the same to the body portion before converting the extremity of the body and the terminal into a solid homogeneous mass.

A further object is to provide an improved method wherein the terminal stud is first secured to the end of the body portion without heating, and the said end and terminal are finally heated and converted into a solid homogeneous mass.

A further object is to produce an improved device of this character which will be simple and cheap in construction and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed, and shown in the accompanying drawings illustrating the exemplification of the invention, and in which:—

Figure 1 is a top plan view of the stranded or laminated body portion; Fig. 2 is a side elevation of Fig. 1; Fig. 3 is a view partly assembled, and partly in section, illustrating the manner of shaping the terminals and securing the parts in the cold; Figs. 4 and 5 are views of two forms of terminal members; Fig. 6 is a detail sectional view on line 6—6 of Fig. 3; Fig. 7 is a view, partly in section, of a modified manner of

forming the terminal member before being inserted into the body portion; Fig. 8 is an elevation of a terminal formed in the manner shown in Fig. 7; Fig. 9 is a top plan view of Fig. 8; Fig. 10 is a top plan view of a modified arrangement of the body portion; Fig. 11 is a bottom plan view of a completed bond, constructed in accordance with the principles of this construction. Fig. 12 is a side elevation of one end of a completed bond.

Referring more particularly to the drawings, the same reference characters designate similar parts throughout the several views, and in the exemplification shown in Figs. 1 to 3, the numeral 20 designates the body portion of this improved bond which is preferably composed of a continuous strip of suitable metal, such as copper or the like, wound or folded upon itself to produce a laminated or stranded body. The strands or laminations intermediate the extremities of the body are preferably arranged close to each other, and separated adjacent the extremities to form centrally disposed apertures 21.

A piece of suitable material 22, such as copper or other conducting material, preferably of a stranded construction, and of a size to contain the proper amount of conducting material, is inserted, preferably by one end, into the aperture 21 of the body portion, and, if desired, the external diameter of this piece of material may be slightly smaller than the diameter of the aperture 21, so as to temporarily retain the two pieces together, although this is not necessary to the construction of the bond, as the diameter of the piece 22 may be considerably smaller. The extremity of the body portion 20 with the inserted piece 22, may be then inserted in a suitable die 23, preferably split, so that the piece 22 stands within an aperture or recess 24 therein, and between two rams or plungers 25—26, with the extremities adjacent these rams or plungers. When in this position, the rams or plungers 25—26 may be removed or forced toward each other in any suitable manner, so as to engage and force the extremities of the piece 22 toward each other, thereby compressing or upsetting the said piece 22, to form a terminal piece, as shown at 27, which will clamp the top and bottom of the extremity of the body portion 20, and with the reduced portion 28 standing within the

aperture 21 therein. The ram or plunger 26 is adapted to move a greater distance than the ram or plunger 25, so as to form a head or mass of the piece 22, on each side of the stranded body portion 20. This formation is accomplished, or this step of the process is completed, preferably in the cold, although, if desired, it may be done while the material is at a dull red heat. After both ends of the bond have been thus compressed or formed, the terminals are then brought to a welding heat, in any desired manner, preferably by placing them in a forge; after which the terminals may be placed in a suitable die, and suitable pressure applied, so that the terminal piece 22, and the extremity of the body portion 20 will be united into a solid homogeneous mass of any suitable configuration, as shown at 29 in Figs. 11 and 12. The flexible body portion 20 between the terminals may be then bent or formed into any desired shape or to meet the required necessity.

If desired, the terminal piece 22 may be provided with a head 30 before being inserted into the aperture 21 in the body portion 20.

In the exemplification shown in Figs. 7 to 10, the terminal piece 22 is formed into the shape shown in Fig. 8 before being placed in the body portion 20, by means of the die 31 provided with an aperture 32, and a circumferential flange or shoulder 33, projecting into the aperture. The terminal piece 22 is arranged to project slightly above the collar or shoulder 33, and between the plungers or rams 25—26, and after the rams or plungers have been forced toward each other the terminals will be upset or formed into the shape as shown in Fig. 8, that is, with a contracted portion 28 located between the head and body portion 27. This shaping of the material is also preferably accomplished while the metal is cold, or, if desired, may be accomplished at a dull red heat. The reduced or contracted portion thus formed may be then inserted in a slot or elongated aperture 34 formed between

the strands or laminations in the body portion, so that the extremity of the body will enter and stand within the peripheral groove formed by the reduced or contracted portion 28, after which the extremity of the body portion and the terminal may be brought to a welding heat, and then inserted into a suitable die, and compressed to form a solid homogeneous mass, as shown in Figs. 11 and 12. It will thus be seen that the body portion and the terminals are separate from each other, and so constructed that the extremity of one may be inserted within the other, and both united into a solid homogeneous mass.

In order that the invention might be fully understood, the details of an embodiment thereof have been thus specifically described, but

What I claim is:

1. The improved method of making rail bonds which first consists in forming the body portion, then shaping a separate stranded piece into approximately the desired shape of the terminal, then assembling the body portion and terminal, then subjecting the terminal and the extremity to a welding heat, and finally compressing the same into a solid homogeneous mass.

2. The improved method of making rail bonds which first consists in forming the body portion then forming an aperture adjacent the extremity, then inserting a stranded piece into the aperture, then upsetting said piece to approximately the shape of the terminal, then subjecting said extremity of the body and the terminal to a welding heat, and finally compressing the same into a solid homogeneous mass.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 30th day of October A. D. 1906.

GEORGE A. MEAD.

Witnesses:

WALTER H. WILLIAMS,
FRANK W. MILLER.