

W. H. WILLIAMS.  
MANUFACTURE OF RAIL BONDS.  
APPLICATION FILED NOV. 14, 1906.

904,663.

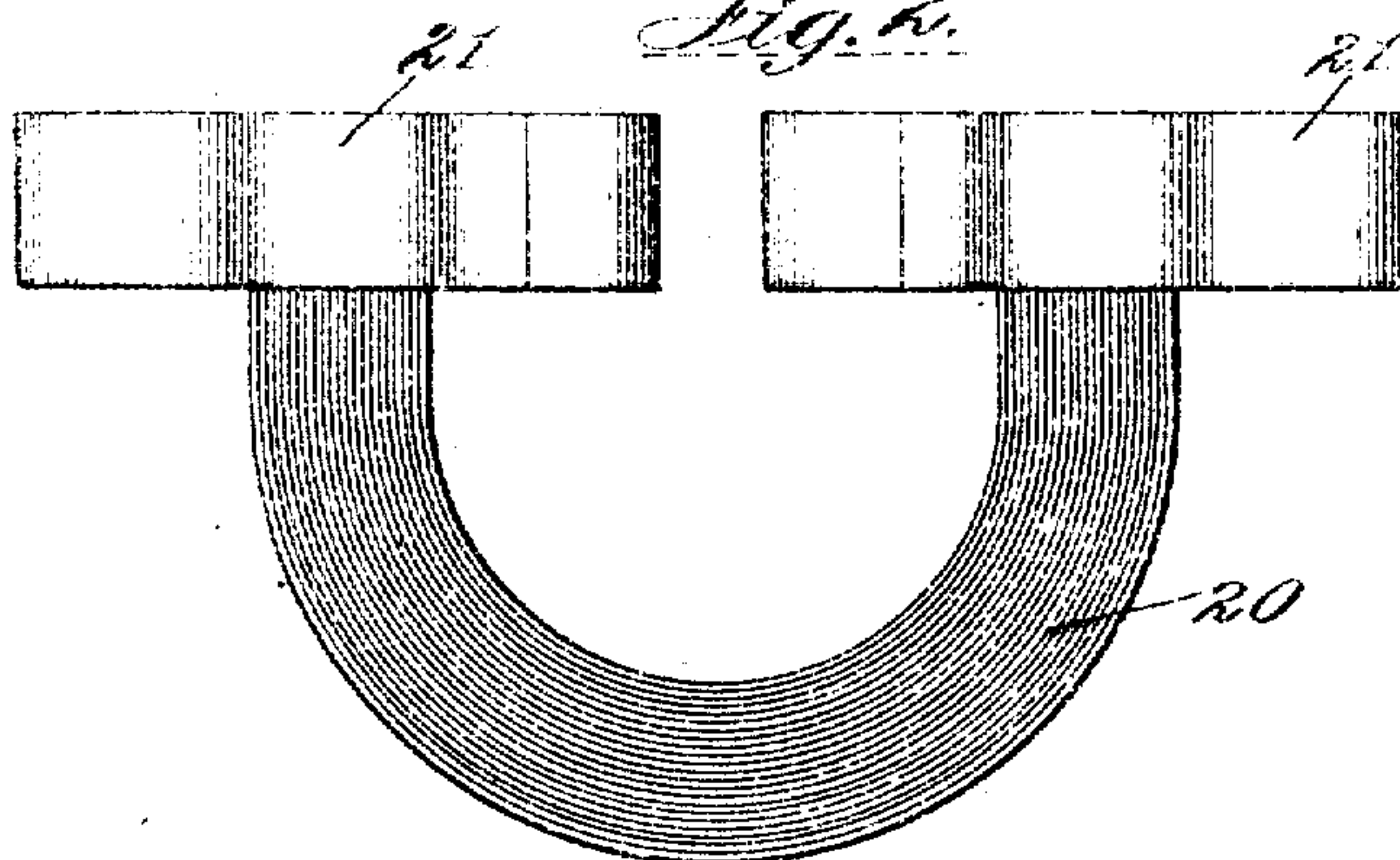
Patented Nov. 24, 1908.

2 SHEETS--SHEET 1.

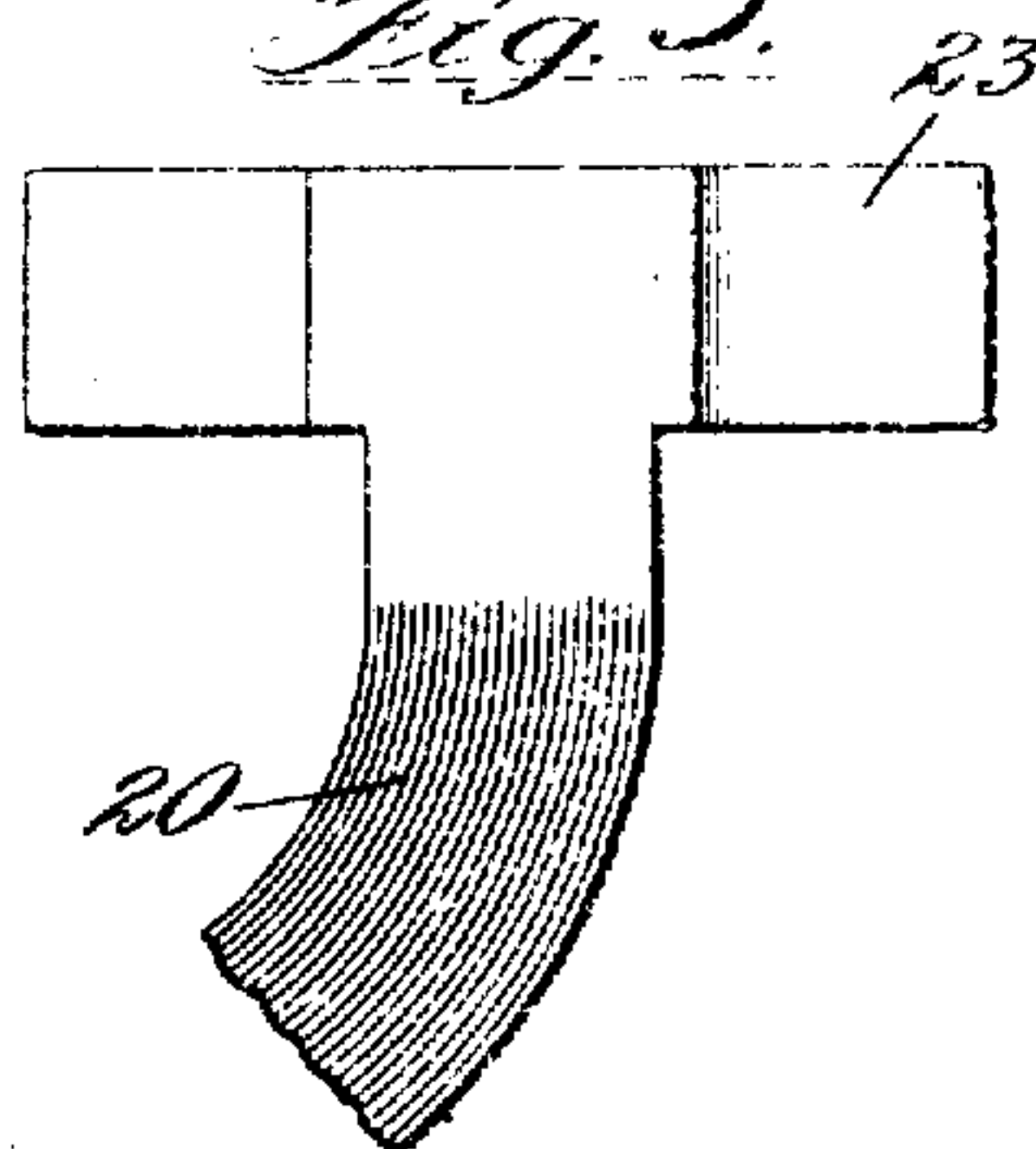
*Fig. 1.*



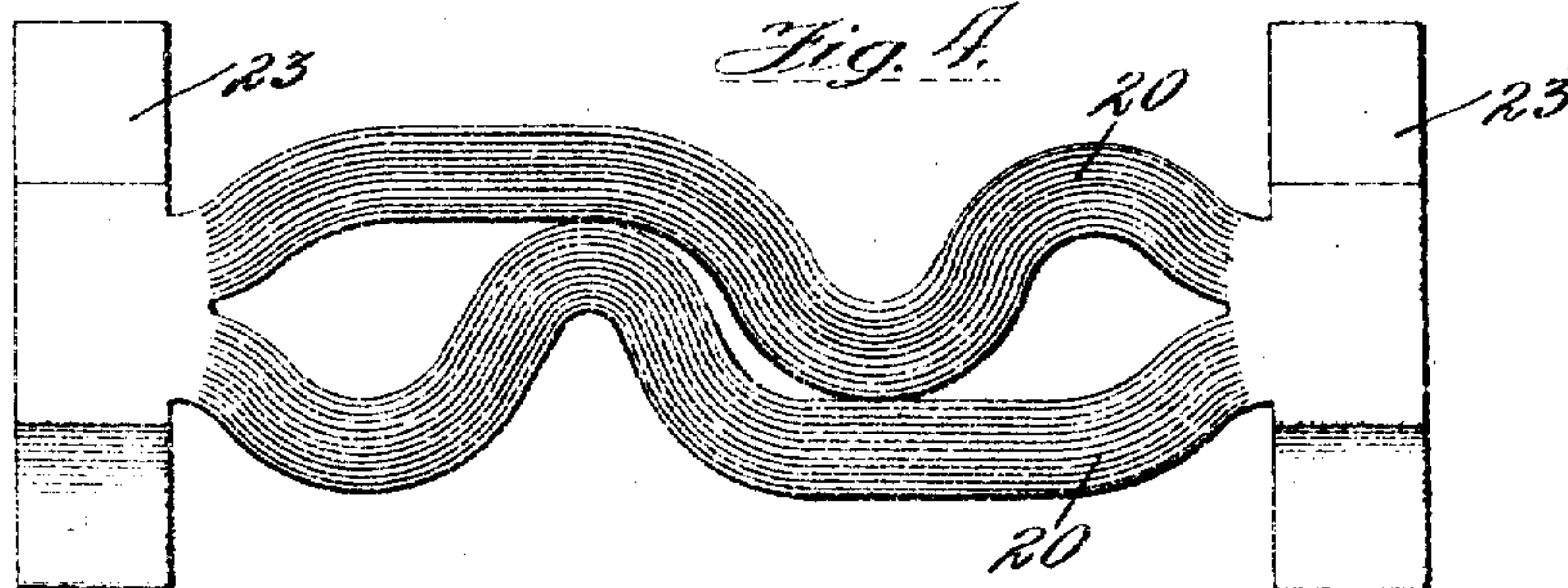
*Fig. 2.*



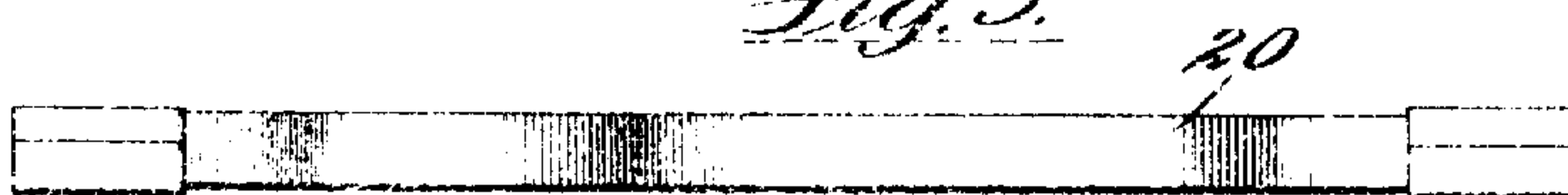
*Fig. 3.*



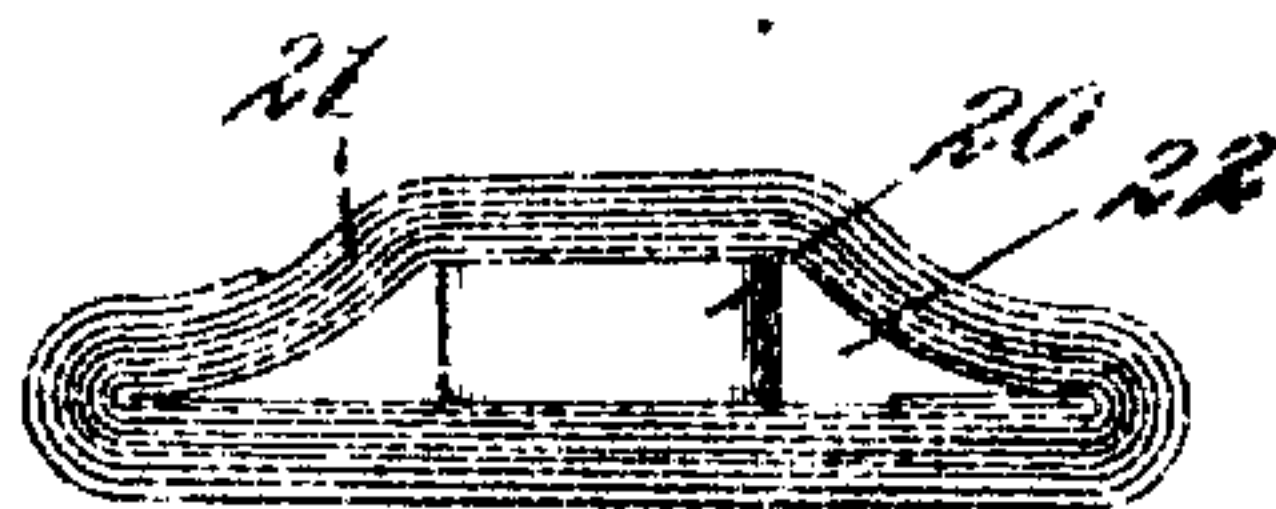
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses:

*Chas. Perry*  
*G. H. Jochum, Jr.*

Inventor:

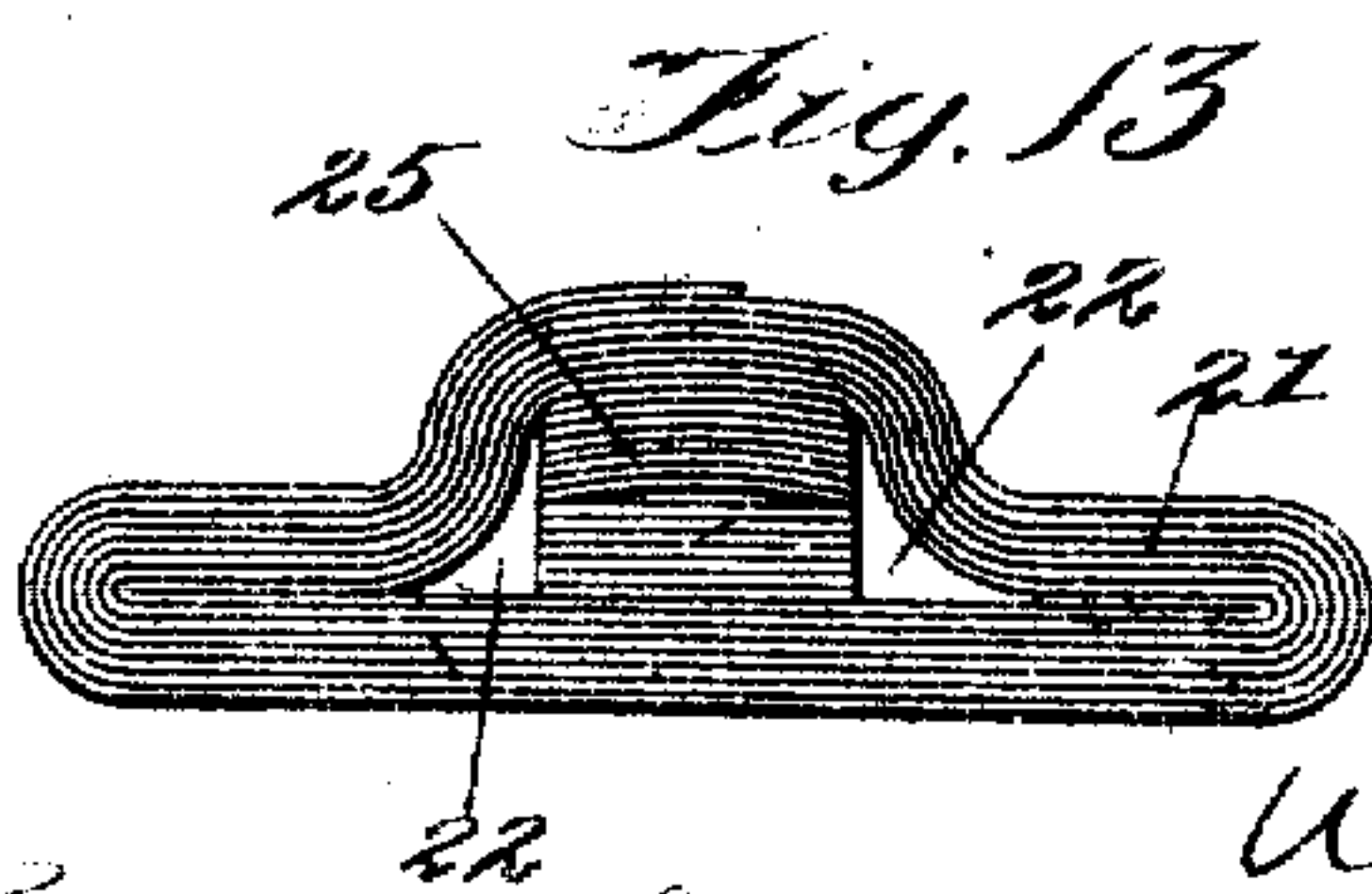
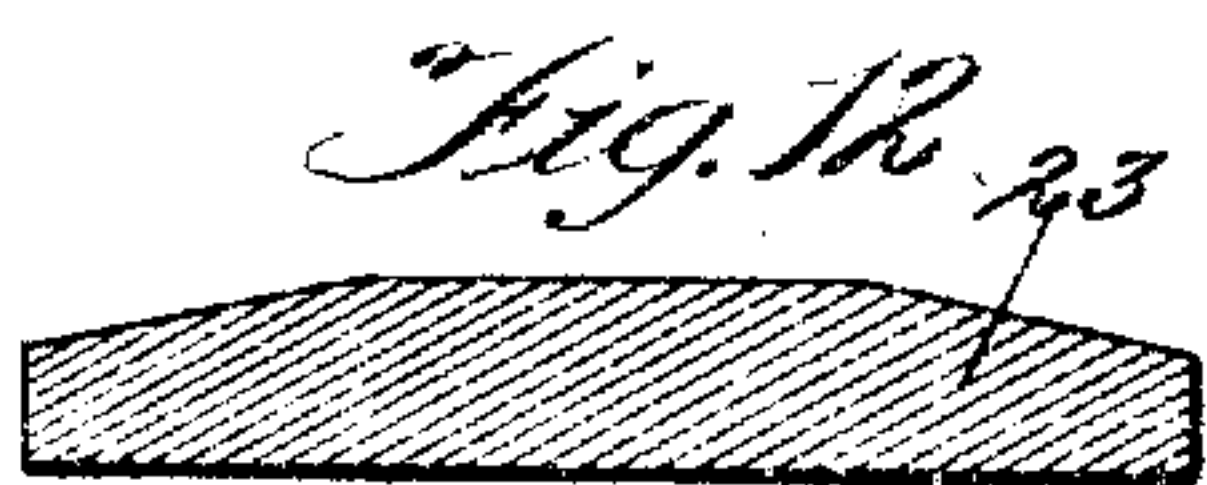
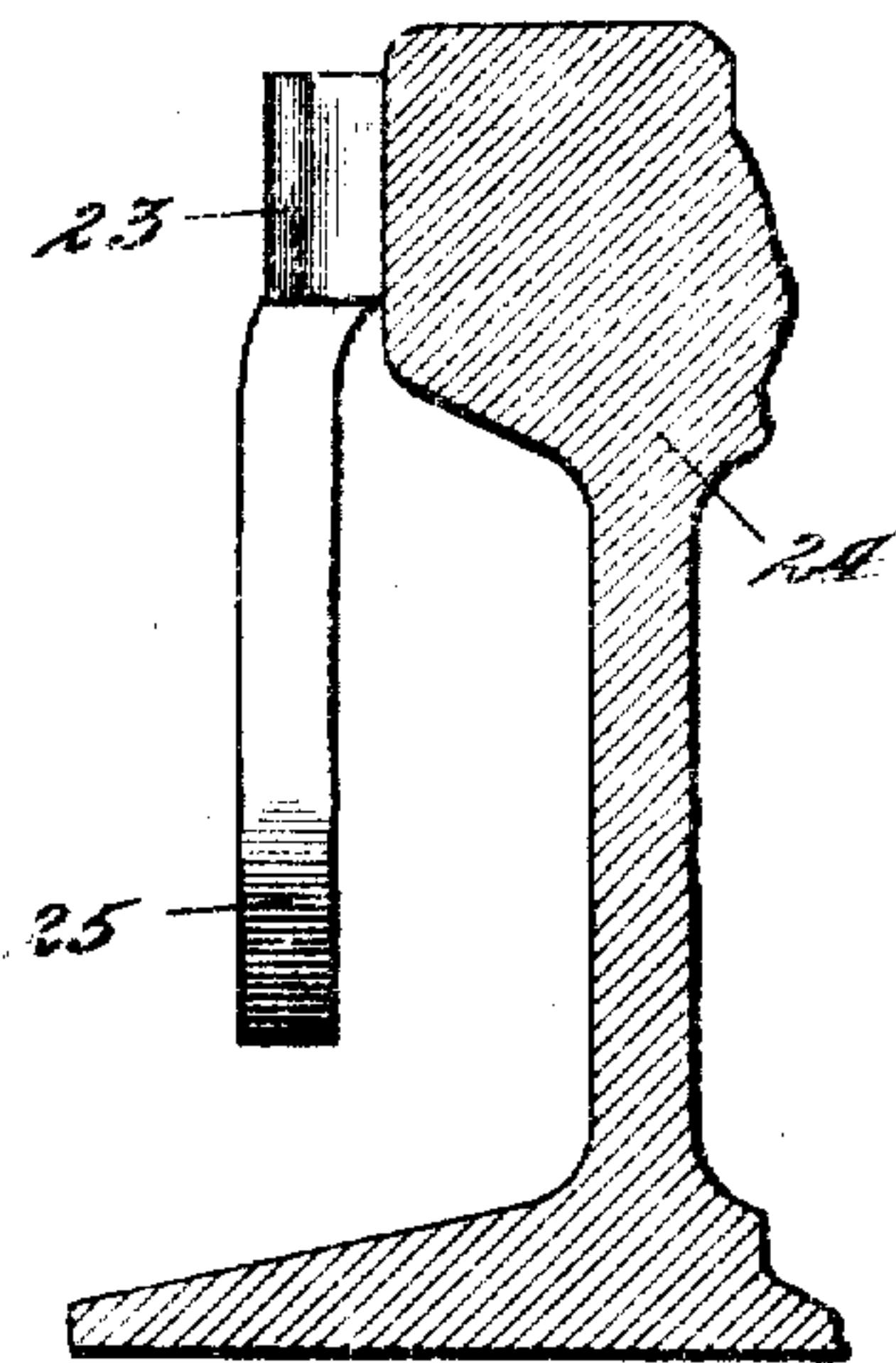
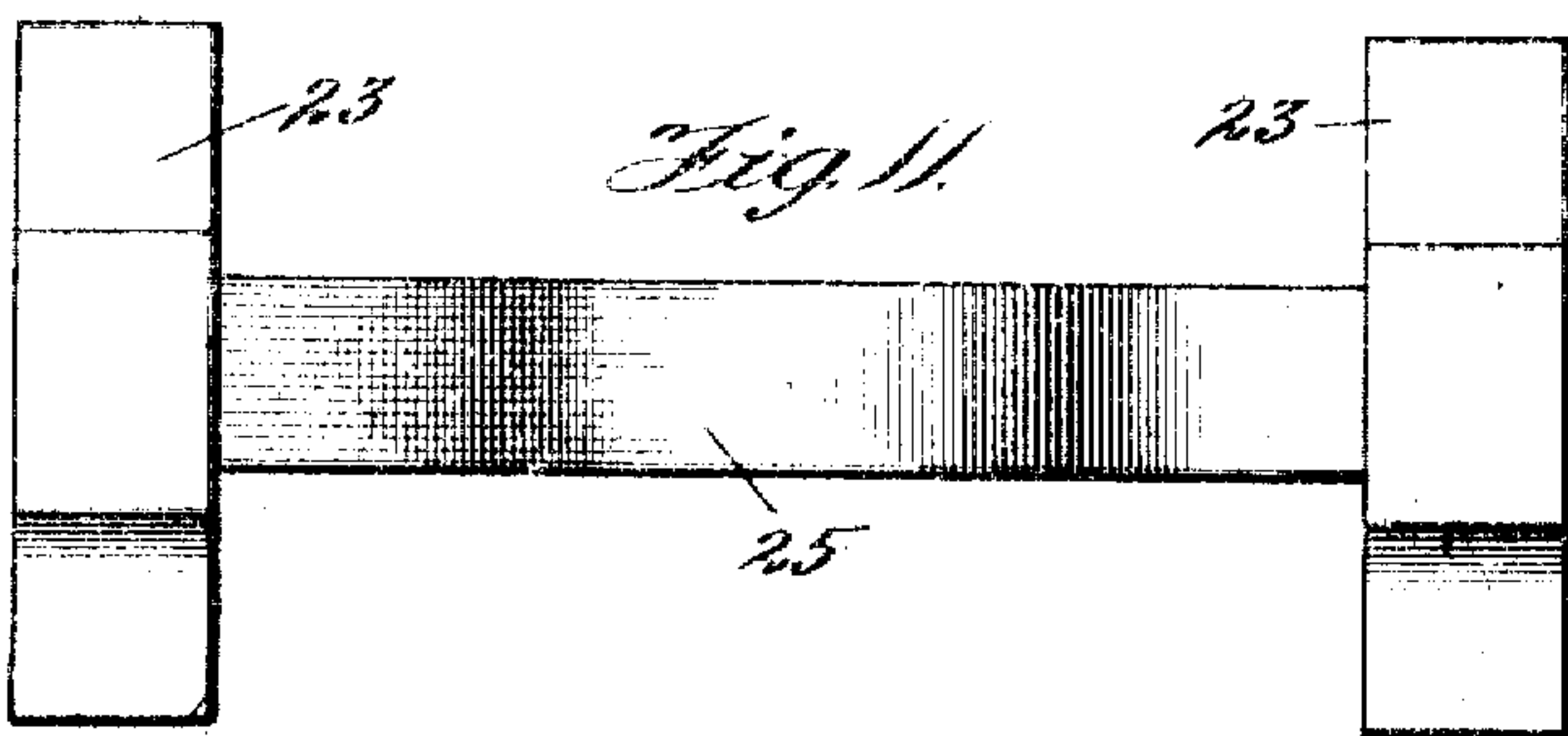
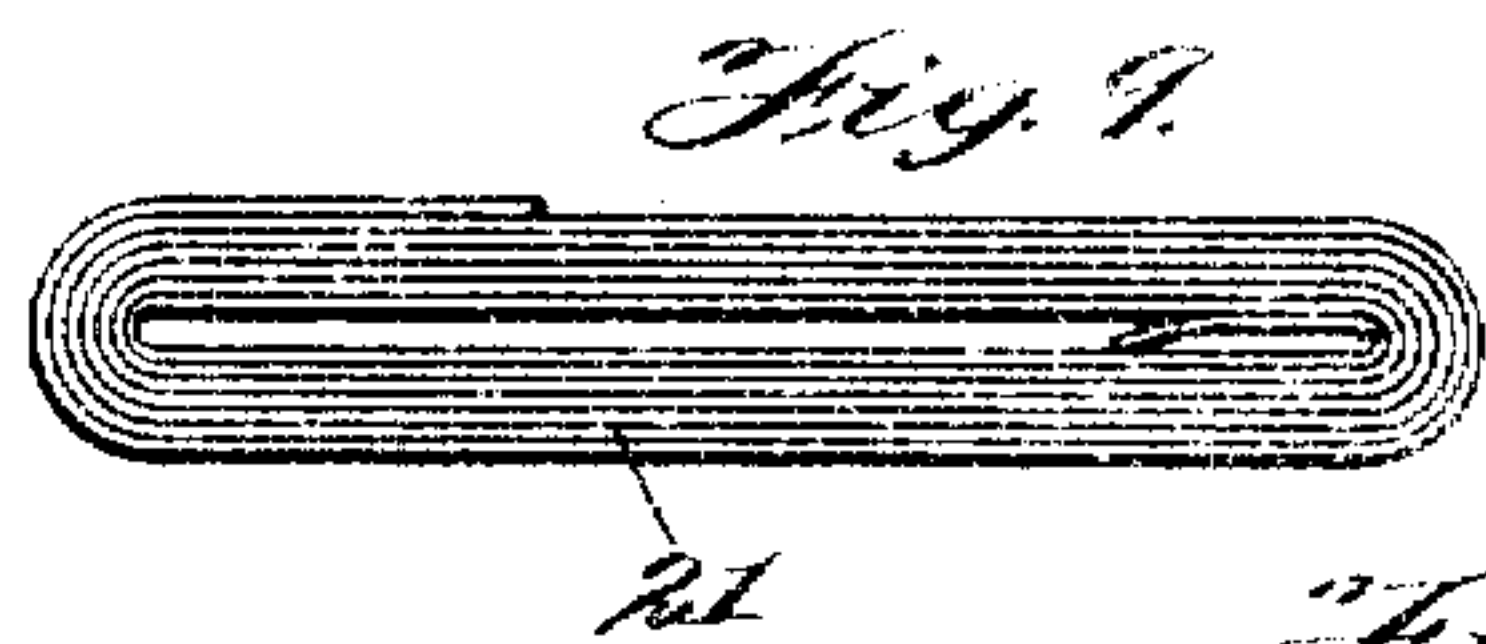
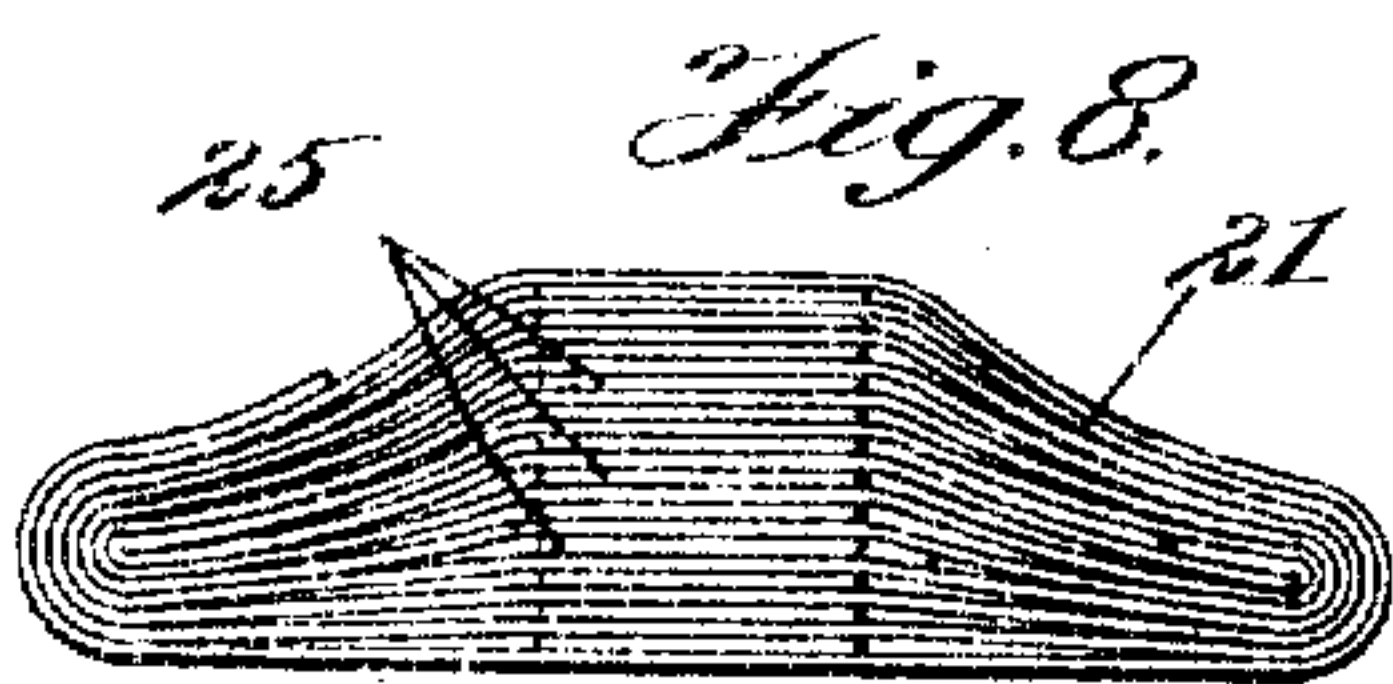
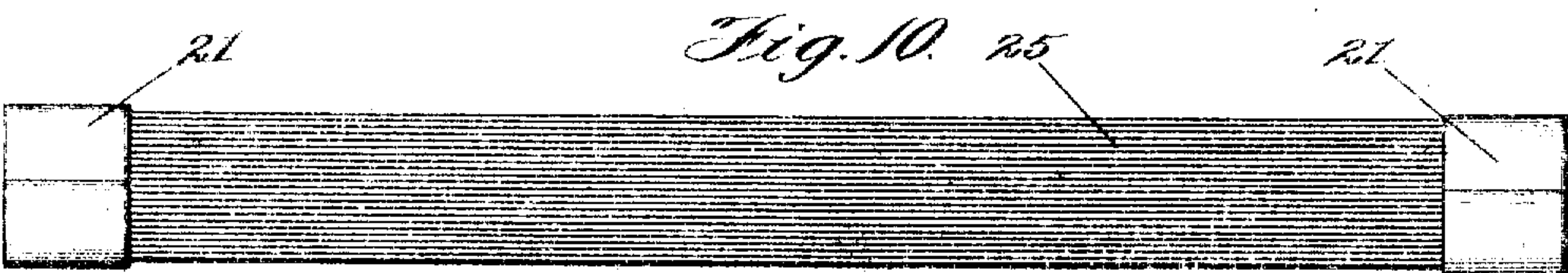
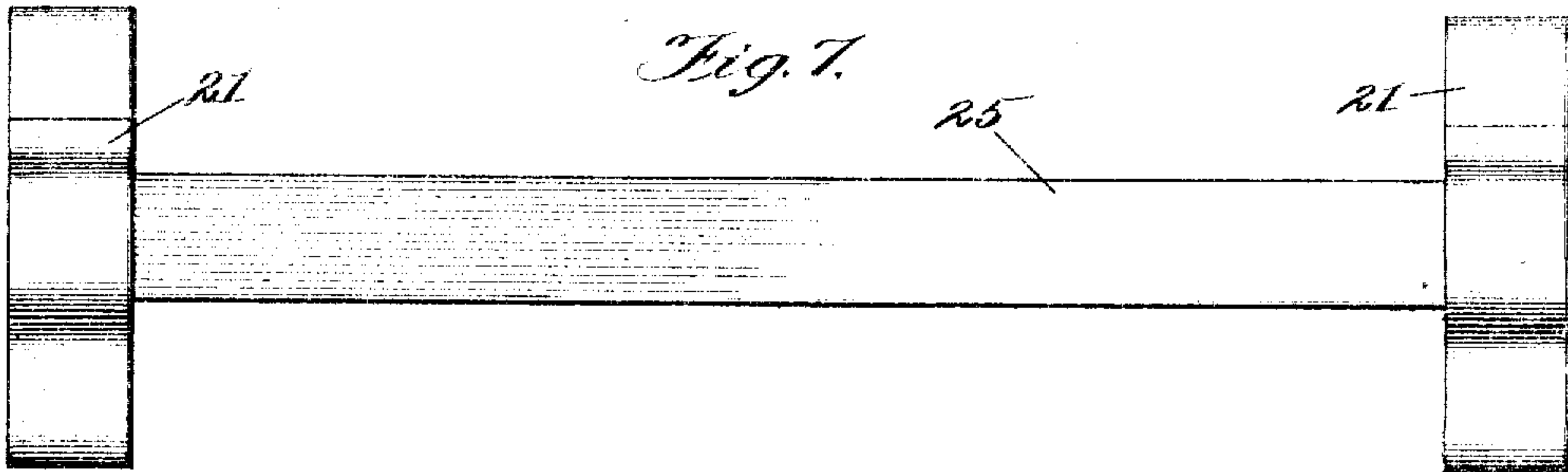
*W. H. Williams*  
*by Brown & Bligh & Co. Attys*

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2 SHEETS—SHEET 2.



Witnesses:  
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Inventor:  
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By Brown, Peckley & Hopkins  
Attorneys



# UNITED STATES PATENT OFFICE.

WALTER HOWARD WILLIAMS, OF MANSFIELD, OHIO.

## MANUFACTURE OF RAIL-BONDS.

No. 804,663.

Specification of Letters Patent.

Patented Nov. 24, 1906.

Application filed November 14, 1906. Serial No. 343,346.

*To all whom it may concern:*

Be it known that I, WALTER HOWARD WILLIAMS, 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 which comprise a flexible body portion and a separate laminated or stranded terminal, the extremity of the body and the terminal being compressed into a solid homogeneous mass.

A further object is to provide an improvement in the manufacture of rail bonds which comprise a flexible body portion and laminated or stranded terminals, the extremity of the body being inserted into or between the laminations of the terminals, and both being compressed into a solid homogeneous mass to form flat terminals adapted to be secured to the surface of the rails.

A further object is to provide an improved device of this character which will be simple and durable in construction, efficient and effective 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 body portion of this improved bond; Fig. 2 is a top plan view of the body portion bent into shape, and the terminal pieces assembled before being compressed into a solid homogeneous mass; Fig. 3 is a plan view of one finished end of the bond; Fig. 4 is a top plan view of the finished bond with the flexible body bent into shape; Fig. 5 is a side elevation of Fig. 4; Fig. 6 is an elevation of one end of Fig. 2; Fig. 7 is a top plan view of a modified form of the bond; Fig. 8 is an elevation of one end of Fig. 10; Fig. 9 is an elevation of the stranded terminal member before the extremities of the strands or laminations of the body portion are inserted, as shown in Fig. 8; Fig. 10 is a side elevation of Fig. 7; Fig. 11 is a top plan view of the completed

bond; Fig. 12 is a sectional view of the completed terminal; Fig. 13 is an end elevation of Fig. 7, showing a modified arrangement; Fig. 14 is a view, partly in section, showing this improved bond secured to the surface of the rail.

Referring more particularly to the drawings, the same reference characters designate similar parts throughout the several views, and in the exemplification of the invention shown in Figs. 1 to 3, the numeral 20 designates the flexible body portion of the bond which is constructed preferably by winding a continuous strip or ribbon of any suitable material, such as copper or the like, upon itself until the proper length and width is obtained to give the necessary electrical capacity, and preferably so that the strands or laminations formed by the folds of the material will stand vertical. The terminal members are formed by winding a continuous strip or ribbon 21, of a suitable width, upon itself until the desired thickness is obtained, as shown in Fig. 9, to produce the necessary electrical capacity, and preferably in such a manner that the strands or laminations produced by the folds of the material will be horizontal. After the terminal members have been thus formed, the upper and lower folds may be separated from each other, or spread apart, as shown in Fig. 6, to produce a central aperture or space 22, into which the extremity of the flexible body portion 20 is inserted, or the aperture may be formed during the formation of the terminal member. After the parts have been thus assembled, the terminal members 21 and the extremities of the body portion 20 are subjected to a welding heat, and then compressed in any suitable manner, such as by means of a die (not shown), into a solid homogeneous mass 23, of the desired shape, as shown in Figs. 3—4 and 5, so as to produce an extended flat contact face adapted to be secured to the surface of the rail 24, as shown in Fig. 14. If desired, the body portion 20 may be bent into the shape shown in Fig. 2, before the extremities thereof and the terminal members are compressed into a solid homogeneous mass; or, shaped in any suitable manner, to meet the necessities, as shown in Fig. 4, after the bond is completed.

In the exemplification shown in Figs. 7—8



and 13, the body portion is comprised of a plurality of separate superposed flat strips or pieces 25, the terminal pieces 21 being secured to the extremities by inserting the said extremities in the space 22 in the terminal members, as shown in Fig. 13, in a manner similar to that shown in Fig. 6. If desired, the terminal pieces may be secured to the ends of the body piece by inserting the extremity of each strand or lamination between two of the strands or laminations of the terminal member 21, as shown in Fig. 8. After the body portion and the terminal members have been thus assembled, they are subjected to a welding heat, and the extremity of the body and the terminal member are compressed into a solid homogeneous mass to form a bond having a flexible laminated body portion and solid integral terminals. The body portion 25 may then be bent to the desired shape, as shown in Fig. 4, and the terminals secured to the surface of the rail in any desired manner, as shown in Fig. 14.

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

What I claim is:

1. The process of making rail bonds which consists in forming a stranded terminal member with the strands separated to form an aperture, then inserting one end of a body portion into the aperture, and then compressing the said extremity and the terminal member into a solid homogeneous mass.

2. The process of making rail bonds which consists in forming a stranded terminal member and separating the strands to form an aperture, then forming a stranded body portion and inserting the extremity of the stranded body portion into the aperture and then compressing the terminal and the extremity of the body into a solid homogeneous mass.

3. The process of making rail bonds which consists in forming a stranded terminal member and separating the strands to form an aperture, then inserting one extremity of a flexible body portion into the aperture and transversely of the terminal and then compressing the terminal and the extremity of the body into a solid homogeneous mass.

4. The process of making rail bonds which consists in forming a terminal member by folding a continuous strip of material upon itself, then inserting the extremity of a flexible body portion between the folds and then compressing the terminal and the extremity

of the body portion into a solid homogeneous mass.

5. The process of making rail bonds which consists in forming a terminal member by wrapping a continuous flat strip of material around itself to form superposed laminations located within the same vertical plane, then forming a stranded body portion comprising laminations, then inserting the extremity of the laminations of the body portion between the laminations of the terminal member, and then compressing said terminal member and the extremity of the body portion into a solid homogeneous mass.

6. The process of making rail bonds which consists in forming a terminal member by wrapping a continuous flat strip of material around itself to form superposed laminations located within the same vertical plane, then forming a stranded body portion, then inserting the strands of the body portion between the laminations of the terminal member in such a manner that the laminations of the terminal will be disposed transversely of the strands of and extend beyond each side of the body portion, and then compressing said terminal member and the extremity of the body portion into a solid homogeneous mass.

7. The process of making rail bonds which consists in forming a stranded body portion by winding a continuous flat strip of material upon itself, then forming a stranded terminal member by winding a continuous flat strip of material upon itself, then inserting the extremity of the strands of the body portion between the strands of the terminal member and then compressing said extremity and terminal into a solid homogeneous mass.

8. The process of making rail bonds, which consists in forming a stranded body portion by winding a continuous strip of material upon itself then forming a stranded terminal member by winding a continuous strip of material upon itself, then inserting the extremity of the strands of the body portion on one edge between the strands of the terminal member and then compressing said extremity edgewise and the terminal 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 10th day of November A. D. 1906.

WALTER HOWARD WILLIAMS.

Witnesses:

H. S. BLOCK,  
F. W. MILLER.