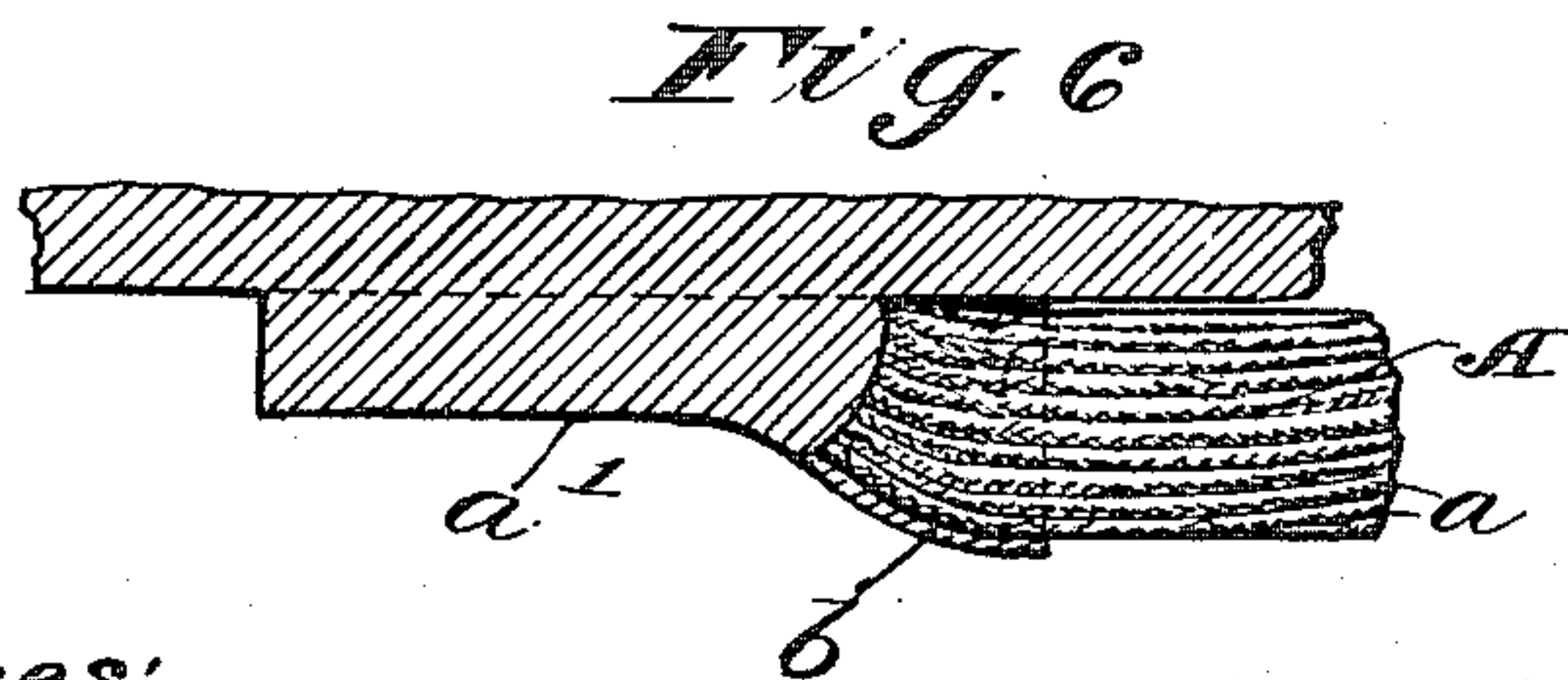
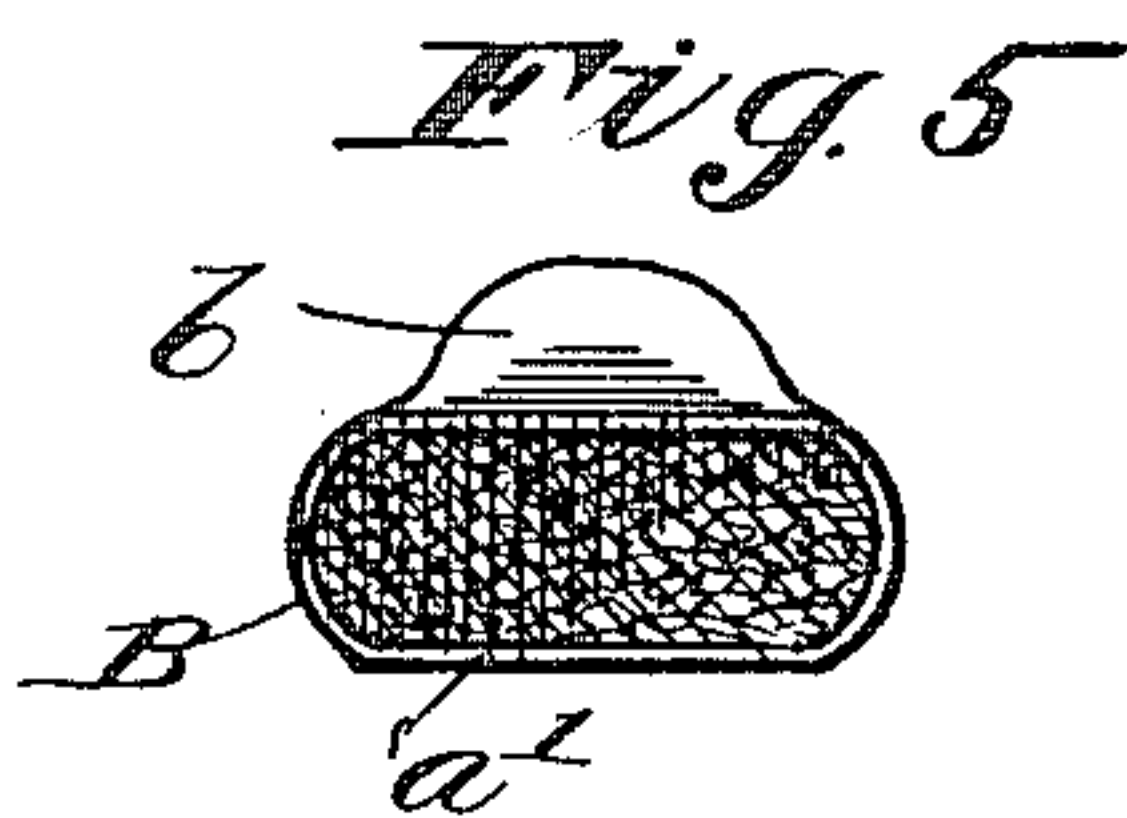
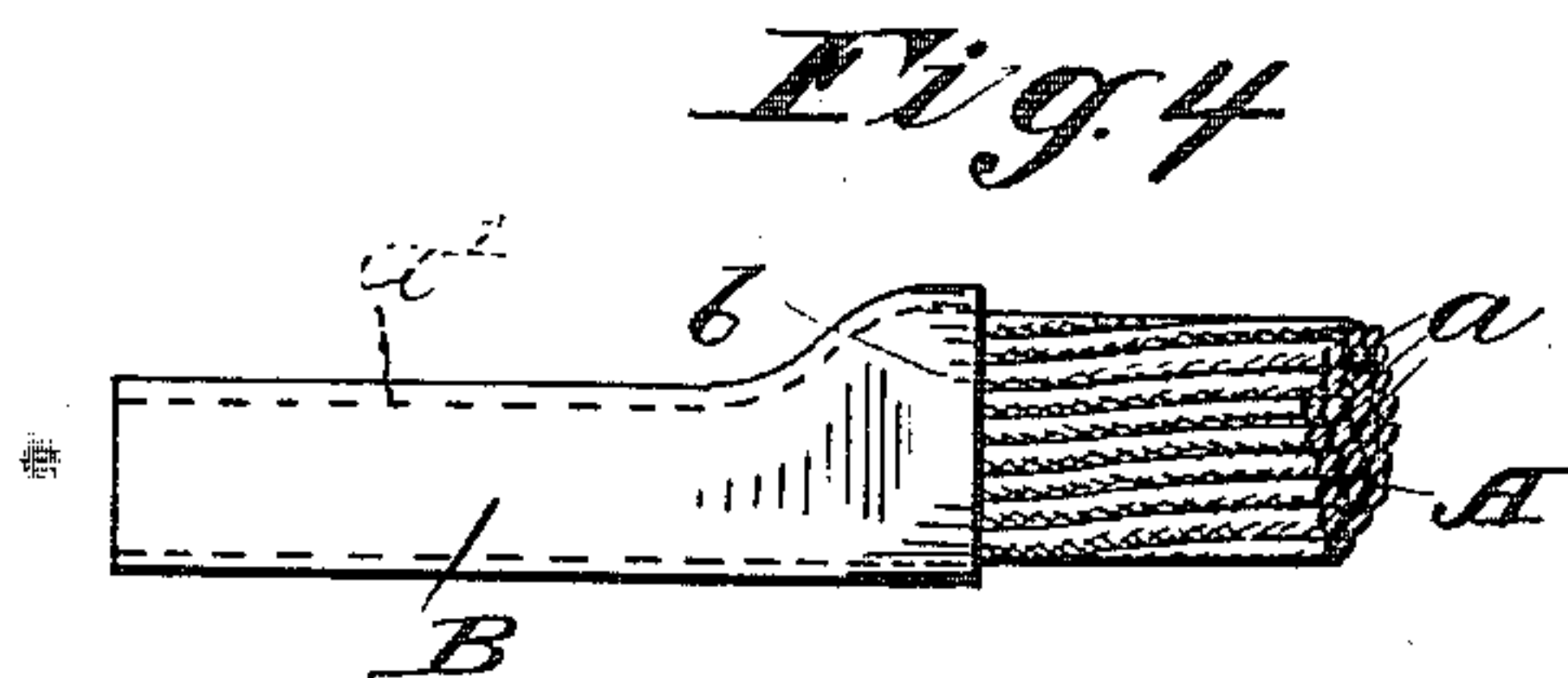
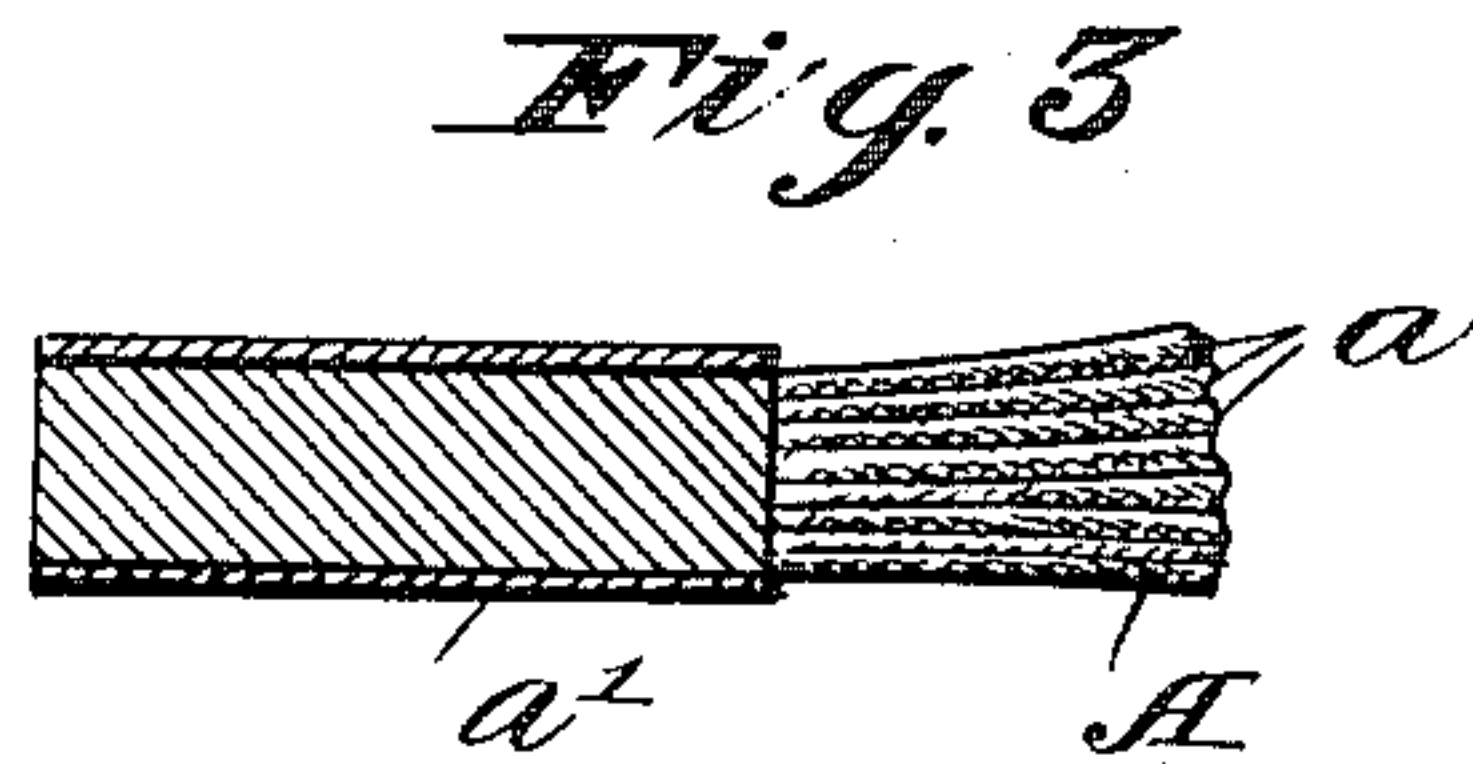
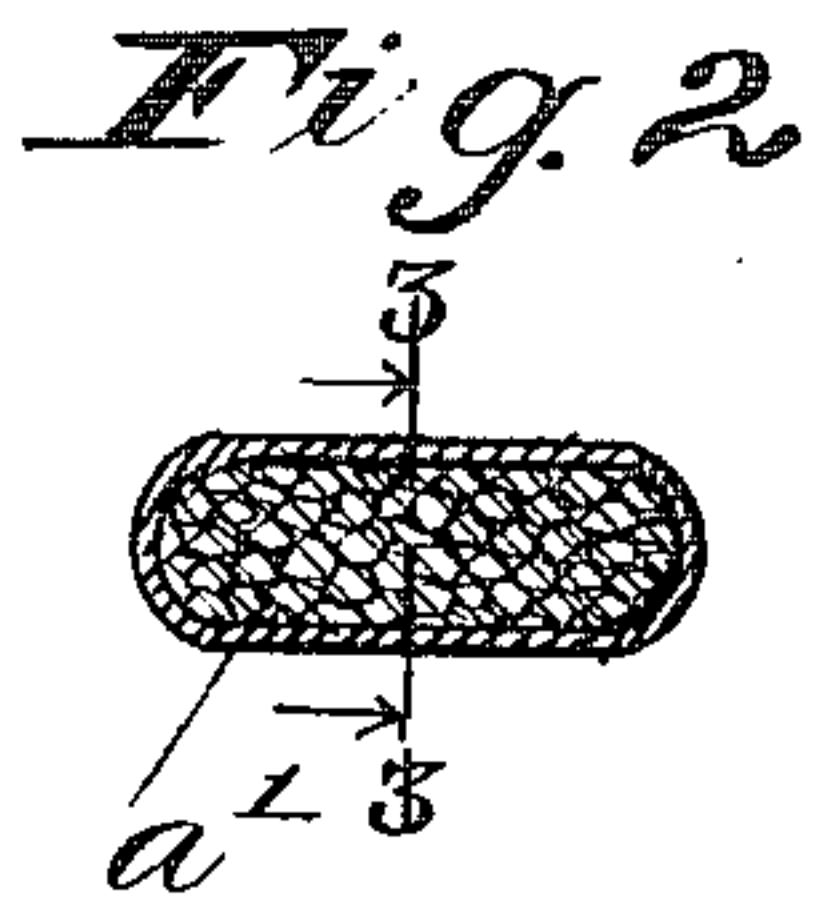
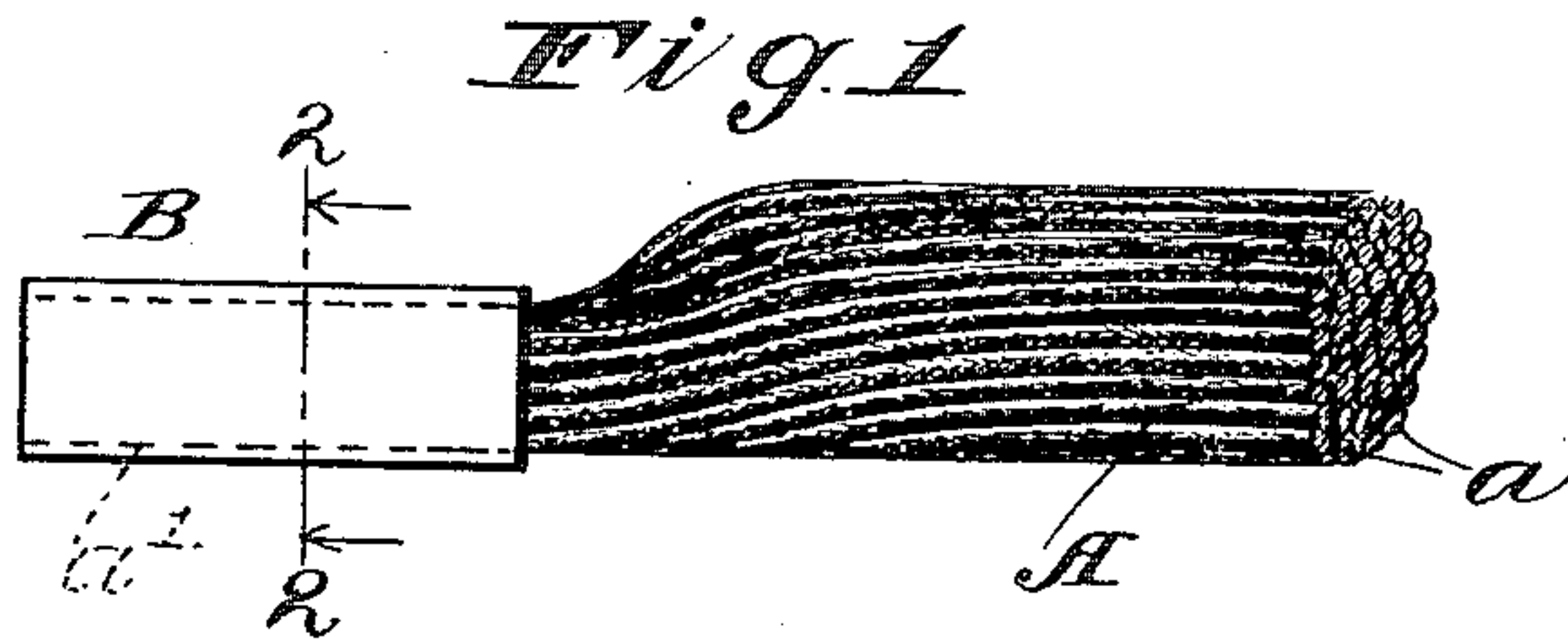


W. B. CLEVELAND.
RAIL BOND.
APPLICATION FILED JUNE 23, 1909.

994,818.

Patented June 13, 1911.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM B. CLEVELAND, OF CLEVELAND, OHIO, ASSIGNOR TO THE ELECTRIC RAILWAY IMPROVEMENT COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

RAIL-BOND.

994,818.

Specification of Letters Patent. Patented June 13, 1911.

Application filed June 23, 1909. Serial No. 503,794.

To all whom it may concern:

Be it known that I, WILLIAM B. CLEVELAND, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Rail-Bonds, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention, relating as indicated to rail bonds, has regard more particularly to rail bonds that, while of non-laminate construction, are nevertheless made up of a plurality of strands, as for instance, the cable type of bond, wherein the flexible body portion is constructed of wire rope or cable. While other forms of bond are preferably used to directly connect contiguous rail ends, this cable type is still useful in connecting points separated by greater distances, as frequently becomes necessary about intersections, switches and the like.

The object of the present invention is the provision of a bond of the type above referred to, wherein the terminals will be so constructed as to adapt the same for application by suitable welding process, and particularly by an electrical welding process.

To the accomplishment of this and related objects, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a side elevational view of one terminal of a bond of the cable type illustrating my present improved construction; Figs. 2 and 3 are respectively a transverse and a longitudinal section taken through said terminal; Fig. 4 is a view similar to Fig. 1, but showing a slightly modified form of construction; Fig. 5 is an end elevation of the same; and Fig. 6 is a longitudinal cross-section of such modified form of construction as applied to a rail.

As has been indicated the flexible body portion A of the bond, of which a section only appears in the several figures of the

drawing, is constructed of wire rope or cable, the material generally used for the component strands *a* being copper. Inasmuch as in the present approved practice of electrically welding bonds to rails, such welding is effected by pressing an electrode of carbon, or like high resistance material, against the terminal of the bond, so as to hold the same in place against the face of a rail to which it is to be joined, and then raising said electrode to a high degree of temperature by passing an electric current therethrough, it will be obvious that if simply the ends of the cable section constituting the body of the bond were thus sought to be welded, considerable difficulty would be encountered. Such difficulty would not only apply to the actual welding of the bond terminal to the rail, but also to the retention of the strands in the necessary intimate connection with said rail, to insure the securing of a proper conductive capacity in the bond. To overcome this difficulty, I accordingly fit over the ends *a'* of said body portion of the bond, sleeves B preferably made of brass, so as to serve as a braze for the terminal, when the latter is applied to the rail in its complete state, although copper may be used if desired. To thus complete the formation of such terminal, after slipping such a sleeve over the same, I subject sleeve and terminal together to a very considerable pressure, sufficient in fact to compact the portions of the several strands contained within the sleeve into what is in effect a solid body, (see Fig. 2), although such strands maintain throughout their individual character, the pressure in question being applied in the cold, that is without heating. A terminal is thus formed that is fully the equivalent of a flattened rod end or of the compact structure that is provided where the component strands of the bond are themselves flattened, as in the laminate type of bond. Accordingly when it is attempted to weld such a terminal to the rail, none of the difficulties referred to above are encountered. Especially where the braze that is desirably employed in connection with welding operation is presented as a part of the structure of the terminal, such welding is much simplified and expedited.

In Figs. 4 and 5 a slightly modified form of construction is illustrated, as has been stated, the modification consisting simply

in the prolongation of the sleeve B beyond the point to which the effects of the flattening operation extend; in other words, such extended portion *b* of the sleeve surrounds the incorporated bond body normally, while the other portion is flattened in the same manner as before, along with the strands inclosed thereby. The welding operation in this case is carried out just as before, so that ultimately this last-named portion of the sleeve, together with the inclosed strands are welded to the rail. The unflattened portion, of the sleeve, however, that surrounds the conductor normally, remains substantially unchanged, so that the point of bending in the case of an attached bond, is transferred to the end of this tubular inclosing portion, instead of occurring at the point where the conductor or bond body is flattened out to form the terminal proper. The point of actual attachment of the strands to the rail is consequently relieved of any strain whatever and the life of the bond by this means measurably prolonged.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. As an article of manufacture, a rail-bond comprising a flexible body portion made up of a plurality of strands, and composite terminals consisting of sleeves fitted over the ends of said body portion and cold-pressed so as to compact the ends of said

strands together and present in effect a solid body, substantially as described.

2. As an article of manufacture, a rail-bond comprising a flexible body portion made up of a section of a cable of copper wire, and composite terminals consisting of sleeves of braze fitted over the ends of said cable section and cold-pressed so as to compact the ends of the component strands together, and form thereof in effect a solid body, substantially as described.

3. As an article of manufacture, a rail-bond comprising a flexible body portion made up of a plurality of strands, and composite terminals consisting of sleeves fitted over the ends of said body portion and cold-pressed so as to compact the ends of said strands together and present in effect a solid body, said sleeves surrounding in normal fashion the portions of said flexible body adjacent to said terminals, substantially as described.

4. As an article of manufacture, a rail-bond comprising a flexible body portion made up of a section of a cable of copper wire, and composite terminals consisting of sleeves of braze fitted over the ends of said cable section and cold-pressed so as to compact the ends of the component strands together and form thereof in effect a solid body, said sleeves surrounding in normal fashion the portions of said cable section adjacent to said terminals, substantially as described.

Signed by me, this 21st day of June, 1909.

WILLIAM B. CLEVELAND.

Attested by—

D. G. DAVIES,

JNO. F. OBERLIN.