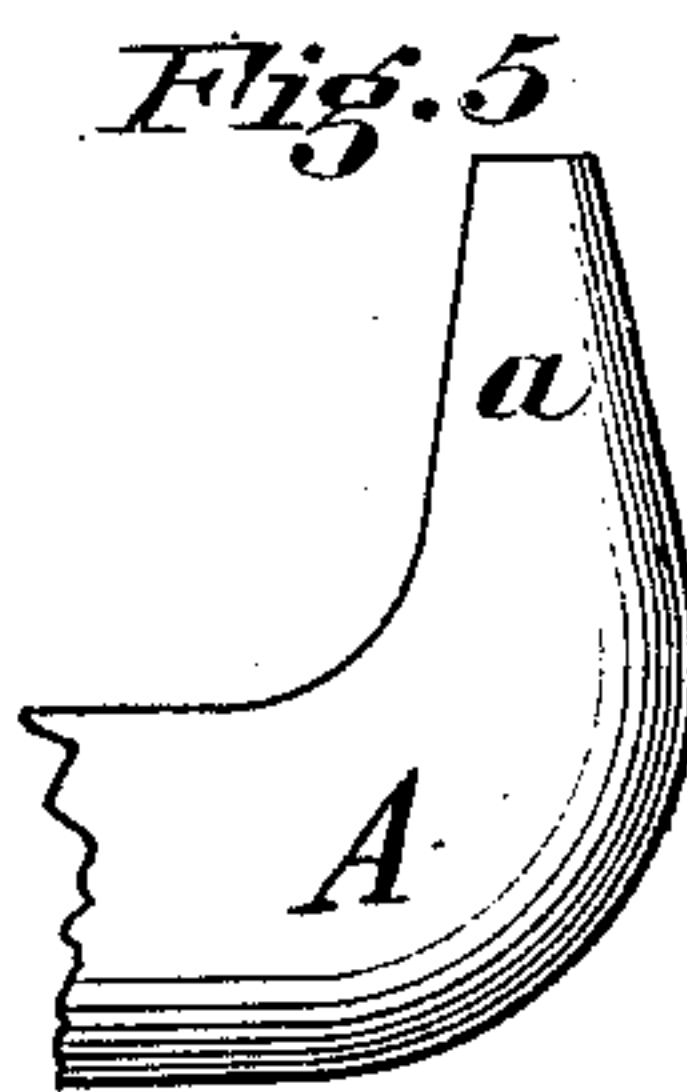
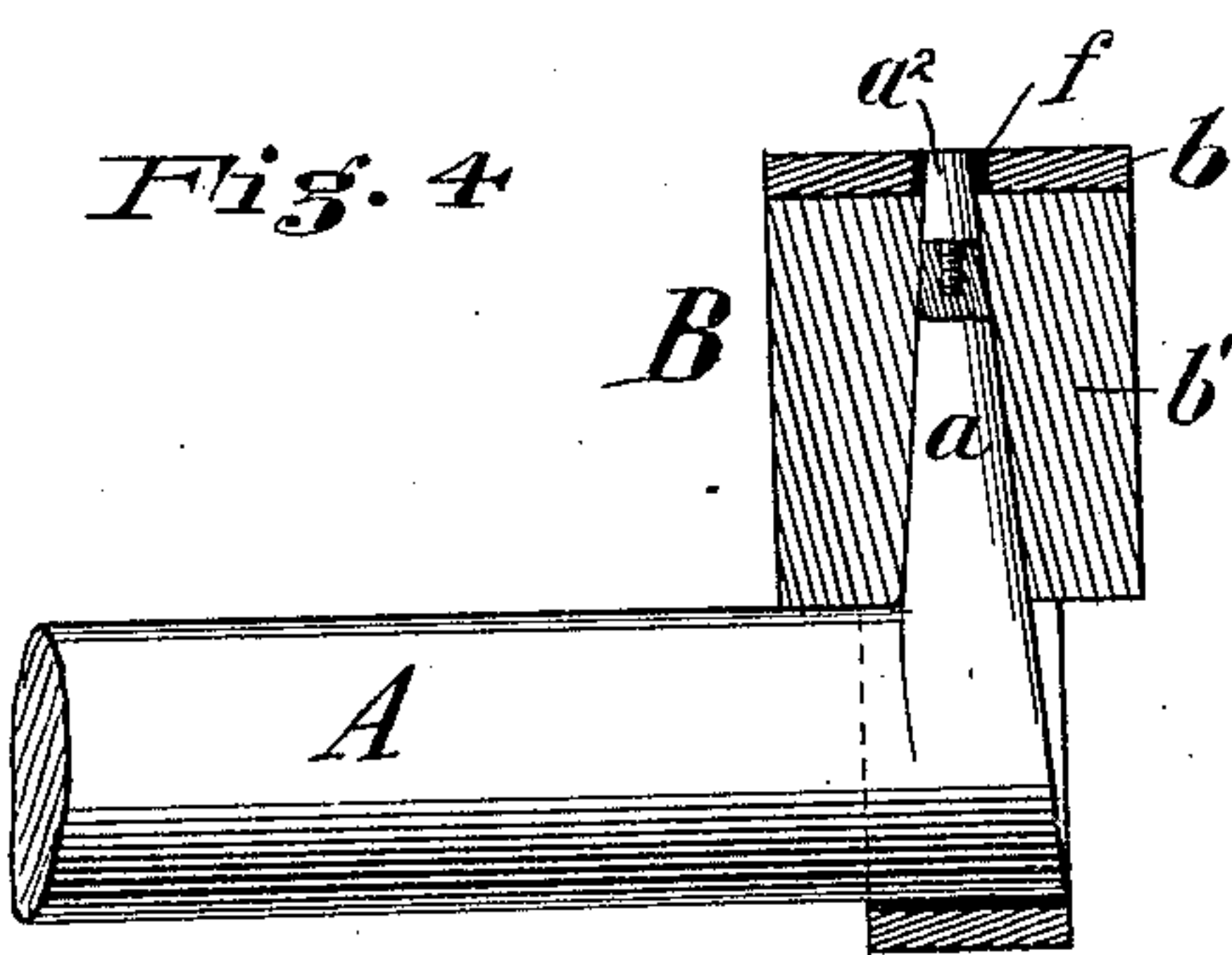
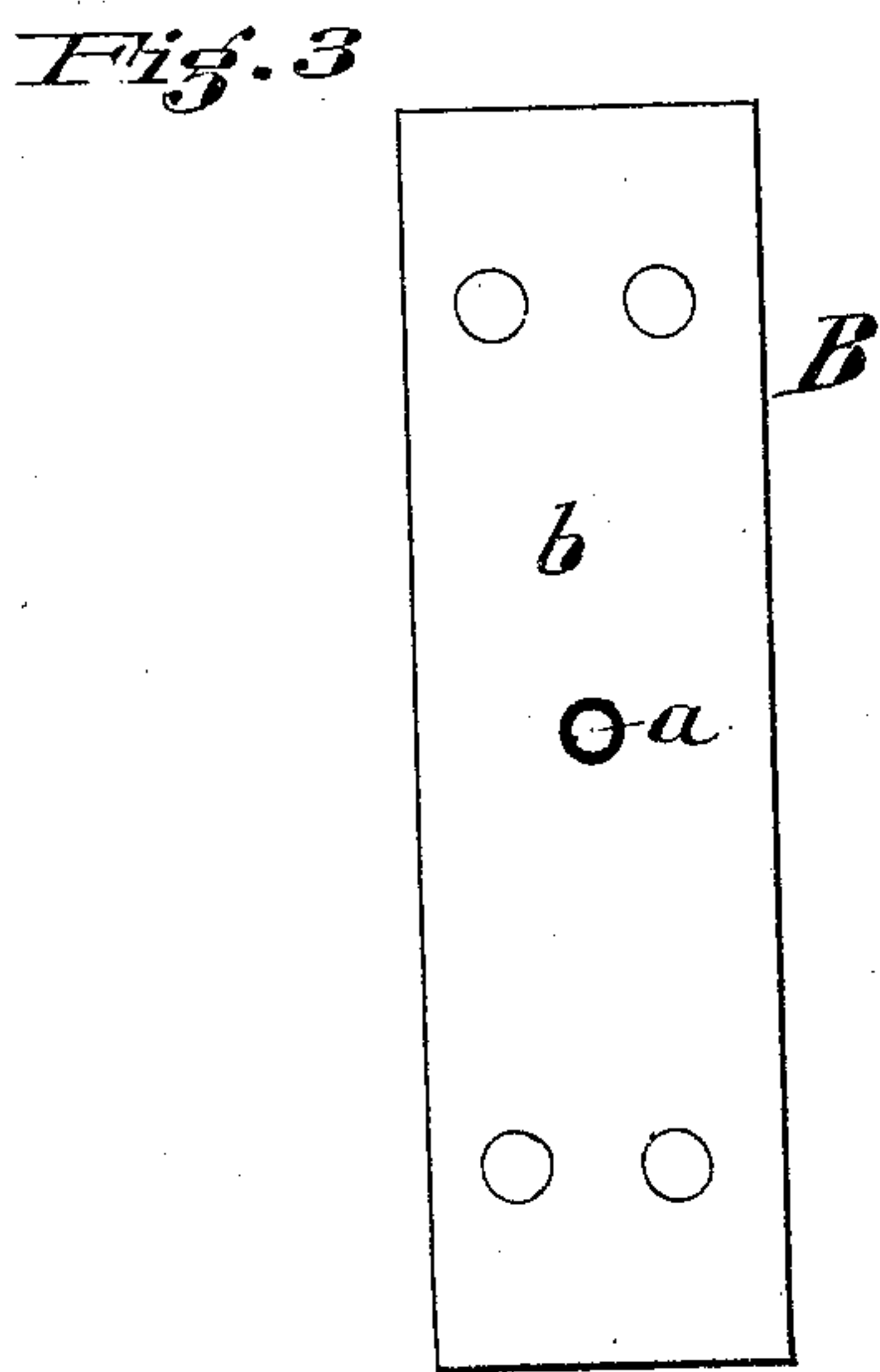
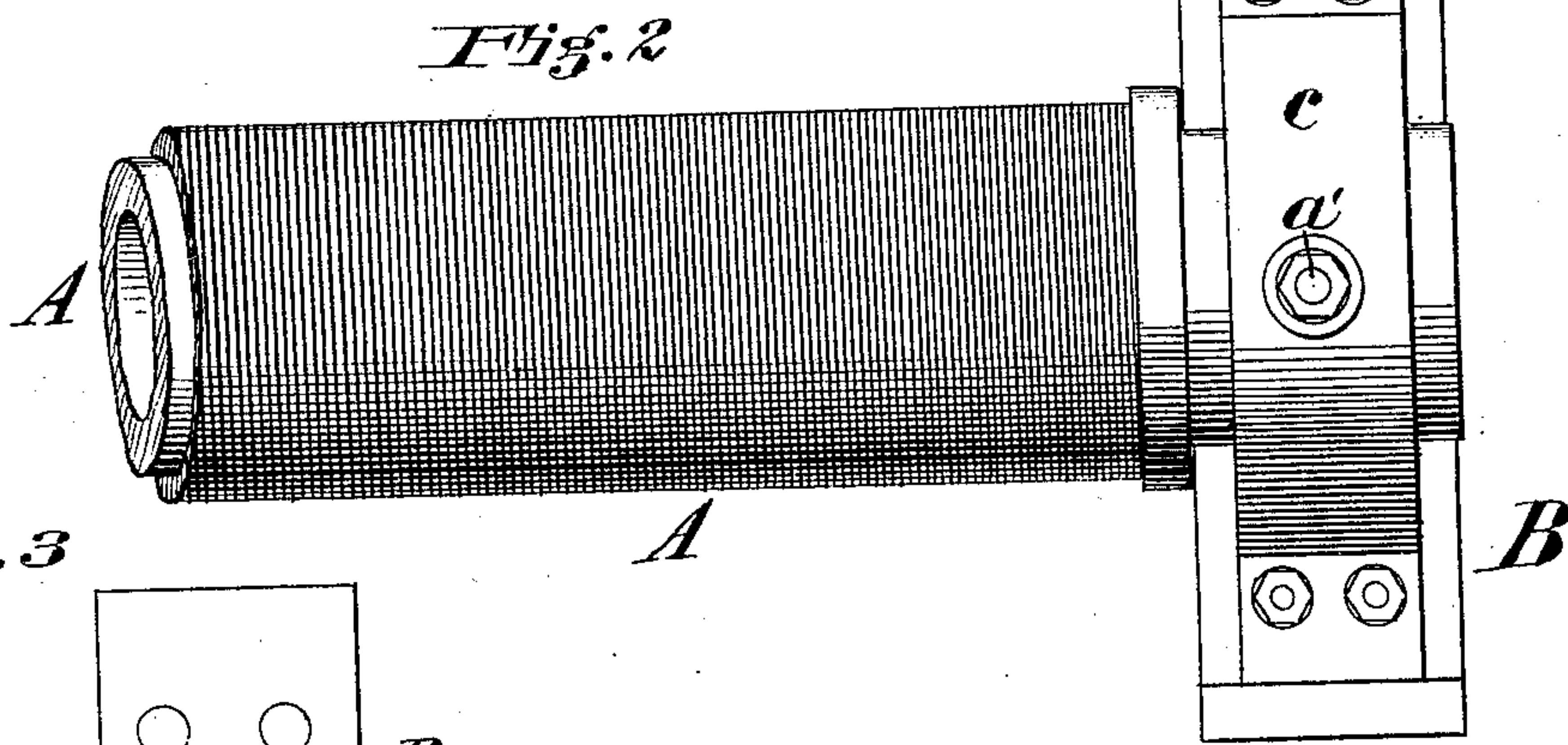
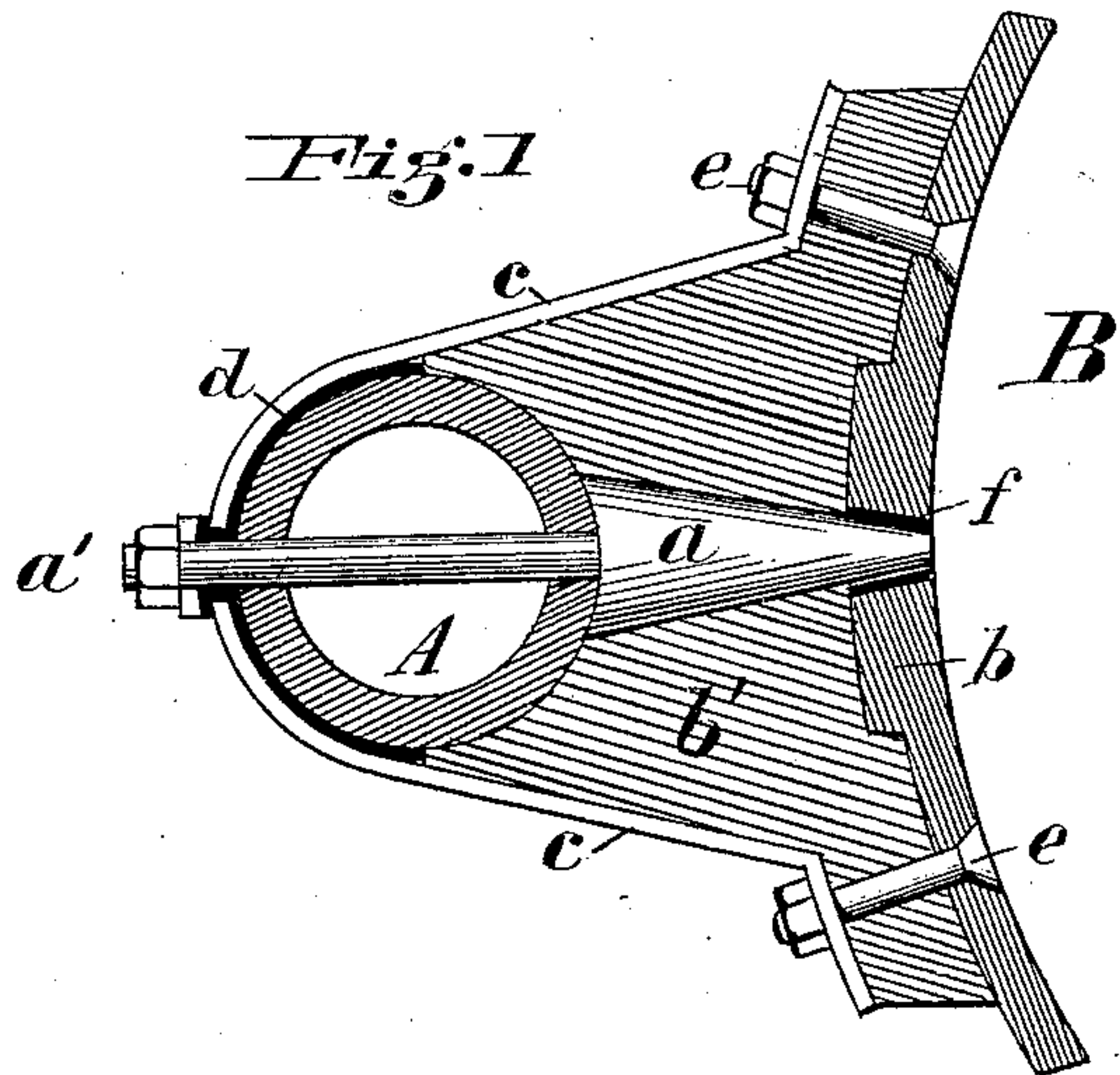


(No Model.)

L. W. GOSS & H. WALTER.  
ELECTRO MAGNETIC BRAKE.

No. 252,293.

Patented Jan. 10, 1882.



Attest  
C. P. Doolittle  
C. F. Huser

Inventors  
Leonard W. Goss and  
Hugo Walter  
by Kell Hovea  
Attorney.



# UNITED STATES PATENT OFFICE.

LEONARD W. GOSS AND HUGO WALTER, OF CINCINNATI, OHIO, ASSIGNORS,  
BY MESNE ASSIGNMENT, TO THE WALDUMUR ELECTRO-MAGNETIC  
BRAKE COMPANY, OF OHIO.

## ELECTRO-MAGNETIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 252,293, dated January 10, 1882.

Application filed March 28, 1881. Renewed December 8, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, LEONARD W. GOSS and HUGO WALTER, citizens of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Electro-Magnetic Brakes, of which the following is a specification.

Our invention relates to electro-magnetic brakes for railway-cars and other machinery, and is in the nature of an improvement upon that for which Letters Patent were granted to Hugo Walter, A. L. Duwelius, and F. R. Merrell, numbered 237,071, and dated January 25, 1881. Said Letters Patent describe an electro-magnetic brake in which the electro-magnetic force is applied to the friction-surface of ordinary brake-shoes, the bar connecting two opposite brake-shoes being used as the core for the polarizing-helix and the brake-shoes as the poles of the magnet. The present invention is designed to obtain a more efficient application and utilization of the electro-magnetic force developed in the elongated core; and it consists in a construction of the brake in which the poles of the magnet are continued into and through brake-shoes, but insulated therefrom, so as to concentrate the electro-magnetic force in poles of limited sectional area as compared with the friction-surface of the brake-shoe; and, also, in an improved construction of the brake-bar independently considered as the electro-magnet in the adoption of the same to the special uses indicated.

Our invention as applied to a railway-brake is embodied in the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section of a brake-bar used as a polarizing core and the brake-shoe attached. Fig. 2 is a rear elevation of the same. Fig. 3 is a face view of the brake-shoe, showing the pole of the magnet. Fig. 4 is a plan view of a core, showing an alternative form of construction; and Fig. 5 is a plan view of a core, showing an alternative form of construction.

Similar letters of reference indicate similar parts in both specification and drawings.

In the drawings, A designates the brake-bar

used as the core for the polarizing-helix, and B the brake proper.

The brake-bar A may be formed hollow in order to obtain a large polarizing-surface without undue weight and cost, and formed of cast or wrought iron, as preferred, either material being found to answer the purpose. Upon its surface is wound the coil of insulated wire forming the polarizing-helix, the ends of which are suitably connected with the electrical generator and provided with means for regulating the transmitted currents of electricity.

At the ends of the bar A the brakes proper, B, are secured, being preferably composed of a cast or wrought iron brake-shoe, *b*, in substantially the usual form, and a backing of wood or other non-magnetic material, *b'*. (The latter may be a cast-iron frame magnetically insulated from the shoe and from the bar.) In the construction shown the shoe *b*, backing *b'*, and bar A are held together by iron straps *c*, passing around the bar, but insulated therefrom by an interposed bushing, *d*, of non-magnetic material and secured by bolts *e e*, passing through the shoe, backing, and strap near the ends.

Secured to the polarizing-core and passing through the brake, having its end flush with the frictional surface of the shoe is a pole-piece, *a*, preferably conical in form, and forming a close magnetic contact with the core A over a more or less considerable surface.

The pole-piece *a* is insulated from the shoe by a bushing, *f*, of non-magnetic material—such, for example, as vulcanized rubber or brass.

For magnetic purposes the constructions shown in Figs. 4 and 5 are to be preferred, in which the pole-piece is formed as an integral portion of the bar A by forging or casting, the bar being tapered to the point of the pole-piece. A more convenient construction, however, mechanically considered, is to form the pole-piece, as shown in Fig. 1, of a separate piece, with a rear projecting haft, *a'*, arranged to pass through the bar A and be secured thereto by a nut.

As a means of accommodating the rear of the pole-piece, the point *a'* may be made re-

movable, as shown in Fig. 4, being formed with a shoulder and a haft threaded and fitted to engage threads in a hole drilled into the axis of the pole.

5 In the operation of our invention we find that the concentration of the magnetic force in the pole of limited sectional area produces a stronger attraction between the wheel and brake-shoe, and this effect appears to be aided  
10 by induced magnetism developed in the brake-shoe proper by secondary induction through the medium of the wheel.

Having described our invention, we claim and desire to secure by Letters Patent—

15 1. In an electro-magnetic brake, the pole-piece *a*, in combination with a friction-shoe insulated therefrom, as set forth.

2. In an electro-magnetic brake, the core *A*, pole-piece *a*, shoe *b*, and backing *b'*, in combination substantially as and for the purpose 20 specified.

3. In a double electro-magnetic brake for railway-cars, a hollow brake bar, *A*, constituting the core of an electro-magnet, connecting the brake-shoes, substantially as set forth. 25

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

LEONARD W. GOSS.  
HUGO WALTER.

Witnesses:

C. P. DOOLITTLE,  
L. M. HOSEA.