No. 755,203. PATENTED MAR. 22, 1904.

K. A. WILDE.

ELECTROMAGNETIC RAIL BRAKE.

APPLICATION FILED DEC. 1, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

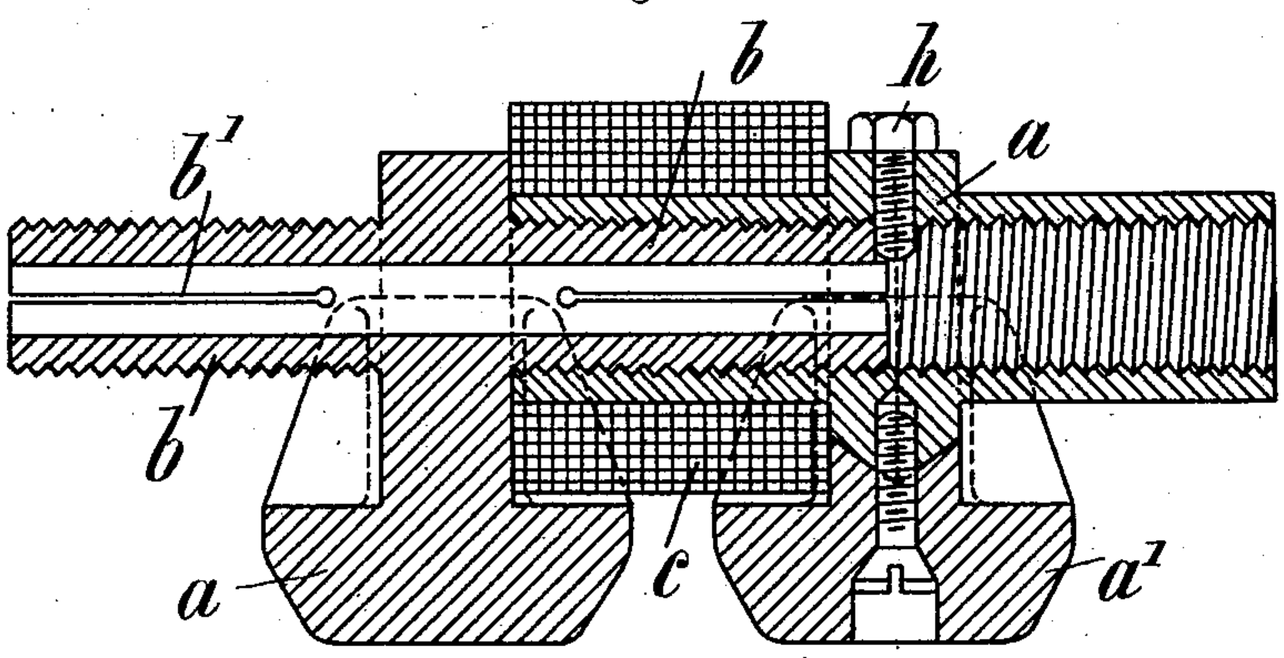


Fig. 2.

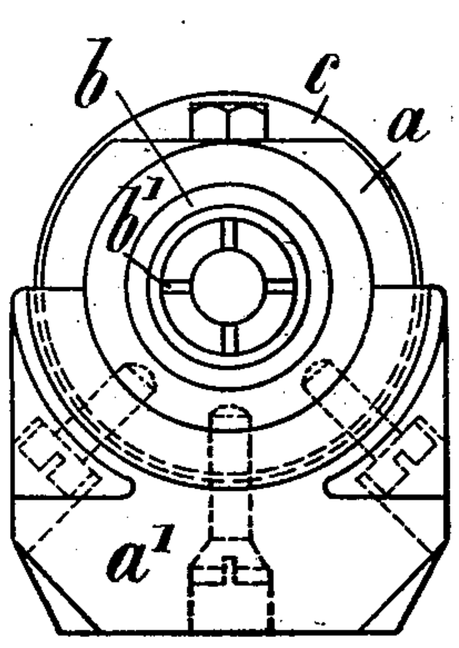


Fig. 3.

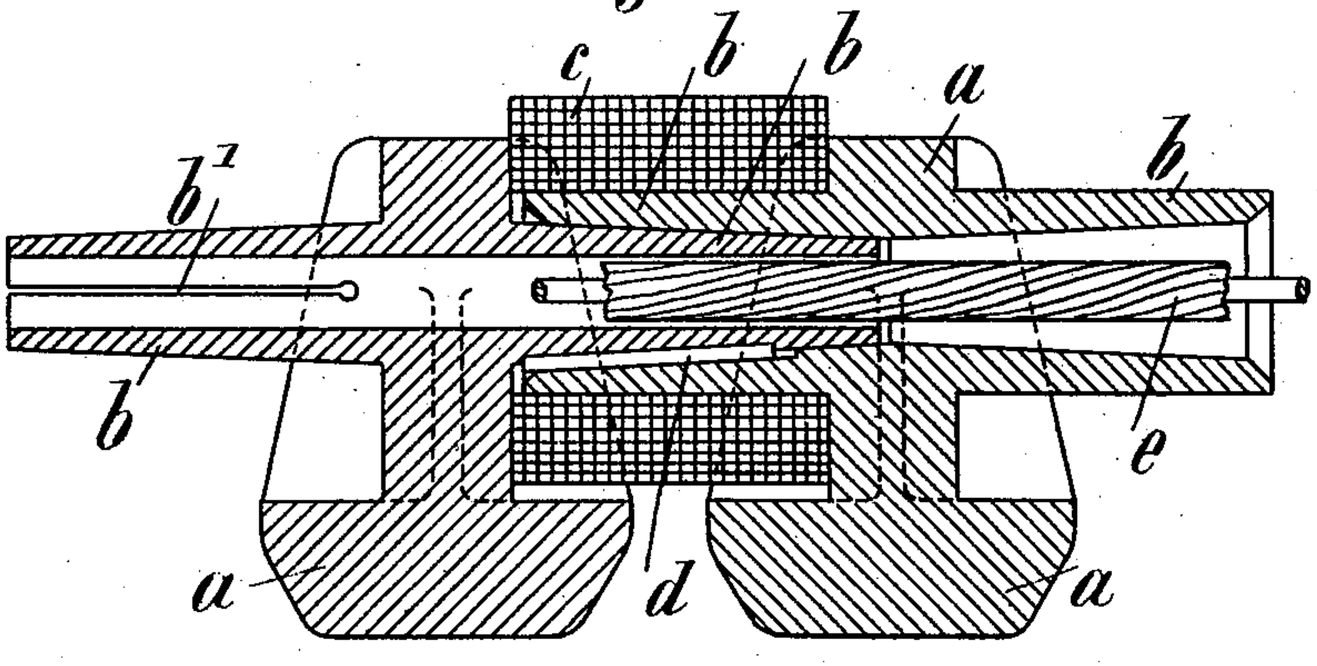
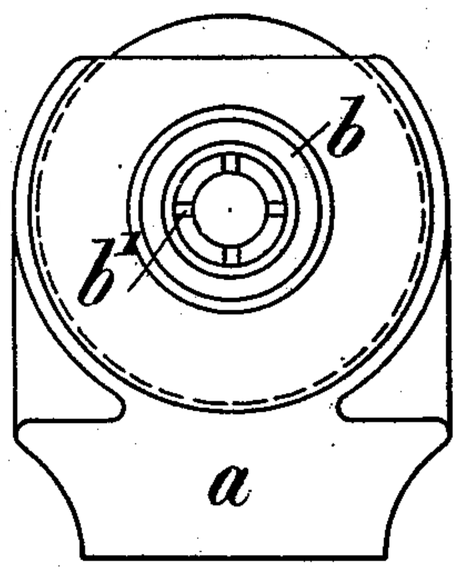


Fig. 4.



Witnesses.

Harry L. Ames.

M. E. Beall.

Inventor:

Karl Adolf Wilde.

By Henry Orth & Son

Atty's.

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ELECTROMAGNETIC RAIL BRAKE.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

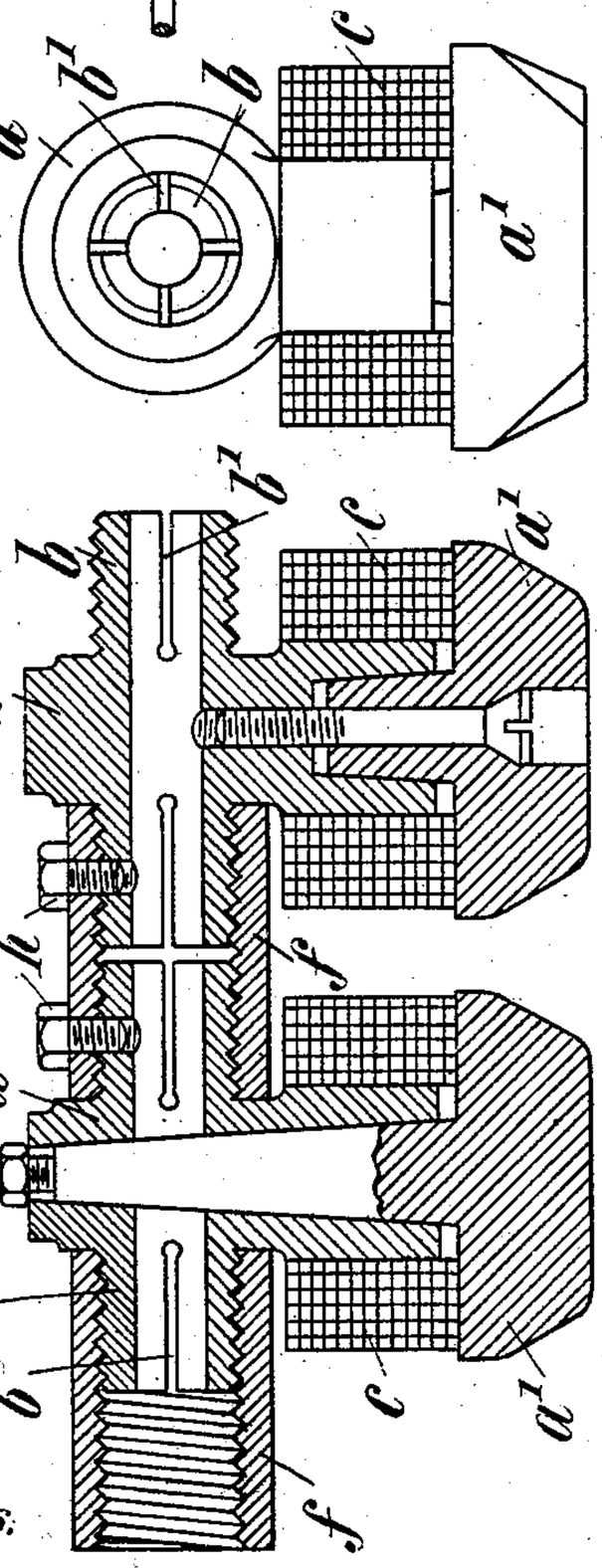
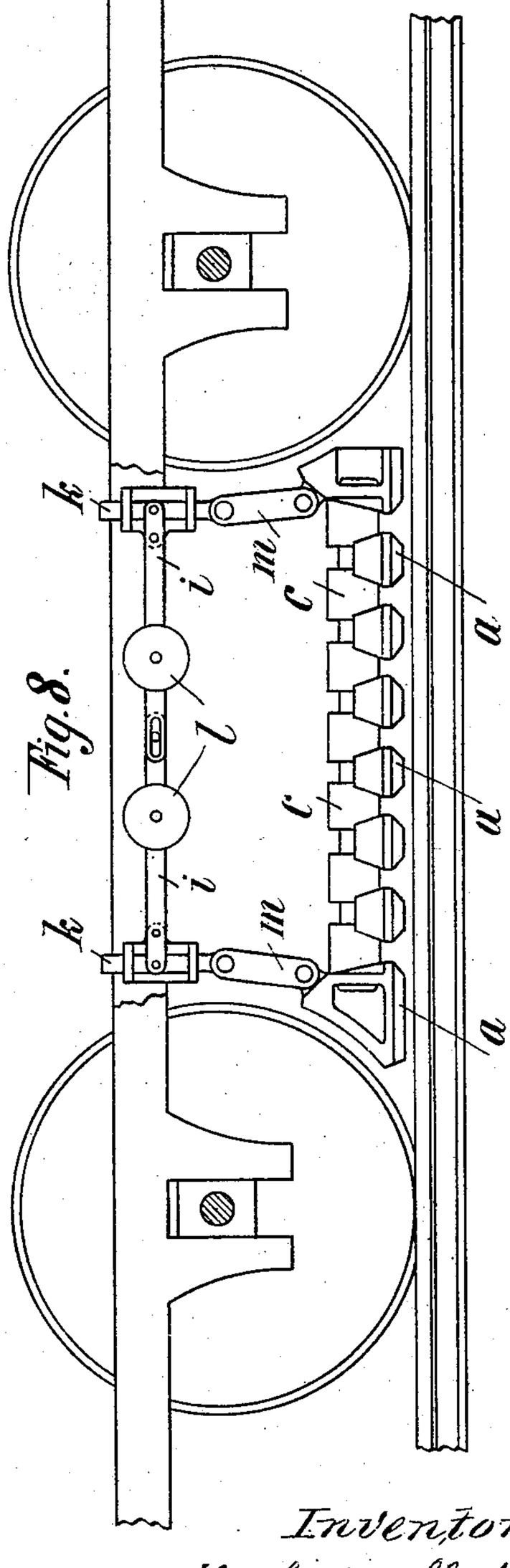


Fig. 6.

Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

KARL ADOLF WILDE, OF HAMBURG, GERMANY.

ELECTROMAGNETIC RAIL-BRAKE.

SPECIFICATION forming part of Letters Patent No. 755,203, dated March 22, 1904.

Application filed December 1, 1903. Serial No. 183,395. (No model.)

To all whom it may concern:

Be it known that I, KARL ADOLF WILDE, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Electromagnetic Rail-Brakes, of which the following is a specification.

The present invention relates to electromagnetic rail-brakes of that kind wherein the actual brake-body is interchangeably composed of a number of form-pieces serving as electromagnet-poles or brake-shoes and of a number of coils. With these known rail-brakes the connection of the various parts was effected by the aid of a connecting-spindle, upon which the form-pieces and the carriers carrying the coils were pushed and held fast upon the spindle in a suitable manner. With such a type of forming and connecting the several parts of the rail-brake there is obtained either too rigid a brake-body, which does not allow of any spring action in itself, and thus renders questionable a close application of the pole-shoes to uneven sections of rail, or else if the several parts be too loosely arranged upon the spindle too shaky or loose a brake is obtained, with which a bending of some of the parts or of the spindle is easily caused and the requisite contact-surfaces for the crossings of the lines of magnetic force are not assured in a reliable manner and the coils are also not protected against injury to a sufficient extent. Furthermore, the reversibility of the several parts in the case of known brakes of the kind described is not quite simple. On the contrary, if any parts are to be reversed work of a tiresome and tedious nature is necessitated.

The removal of the hereinbefore-mentioned drawbacks is the object of the present invention, which is attained in that the form-pieces serving as poles or brake-shoes are provided with lateral, preferably hollow, lugs, the form-pieces, with these lugs and with or without the aid of connecting-sleeves or connecting-pieces, being pushed into each other, screwed together, or joined in any other way and the coil-boxes being mounted on the connecting parts of every two form-pieces or upon these latter themselves. By means of such a formation, arrangement, and connection of the form-pieces and coils there is obtained a rail-brake that in itself has more or less spring action, wherein the brake-shoes can adapt themselves better to the rails, while more especially reliable surfaces are insured for the crossings of the lines of magnetic force. With such an arrangement the exchanging of parts that have become defective can of course be effected with greater rapidity and ease, as there is no bent connecting-spindle, &c., to be removed. If necessary, when the lateral lugs of the form-pieces are chosen hollow and they are themselves provided with holes a "filling" or safety-cable or the like of magnetic material can also be drawn through the parts inserted into or connected with each other in order to obtain the maximum magnetic efficiency and to prevent the collapse of the whole brake should any of the individual parts be broken.

In the accompanying sheets of drawings, Figure 1 is a longitudinal vertical section of an electromagnetic rail-brake constructed in accordance with and embodying my invention, the form-pieces being screwed together by means of interfitting threaded lugs. Fig. 2 is an end view of Fig. 1. Figs. 3 and 4 are corresponding views representing a modification, the form-pieces being connected by means of conical male and female lugs pushed into each other. Figs. 5 and 6 show a longitudinal sectional view and end view, respectively, of a further modification, the lateral lugs of the form-pieces, being connected by means of internally-threaded sockets. Fig. 7 illustrates a further modification in which the lugs of the form-pieces, as well as the screw-socket connecting two adjacent lugs, are provided with right and left handed threads; and Fig. 8 is a general view illustrating the attachment of my improved electromagnetic rail-brake to the frame of a car.

Similar letters of reference refer to similar parts throughout the several figures.

The form-pieces *a*, which serve as poles and are preferably provided with detachable or removable brake-shoes *a'*, are fitted with lateral hollow lugs *b*. The hollow lugs of one set of form-pieces are of a larger diameter and internally screw-threaded, whereas the hollow lugs of the other set of the form-pieces are of

a smaller diameter and externally screw-threaded. The two sets are connected with one another by screwing the smaller lugs into the larger lugs in the manner shown by Fig. 1 in order to form a continuous rail-brake. The coils *c* are placed on the female lugs having the greater diameter.

In the modification shown by Figs. 3 and 4 the lugs *b* are made in the form of hollow conical male and female plugs and inserted one into the other. The rotation of the form-pieces or of the interfitting lugs, respectively, may be prevented by any suitable means—for example, by feathers or keys *d*. The coils *c* are likewise mounted on the female lugs. This form of rail-brake is most adapted to be used as push-brake.

In order to give the male lugs *b*, which are screwed or inserted into the female lugs *b*, a certain amount of spring or yielding action in themselves, they are provided each with longitudinal slots *b'*.

A cable *e* or the like passed through the hollow lugs and through suitable openings or passages in the form-pieces may serve as a filling or safety means in order to reduce the magnetic resistance as well as to prevent the several parts from becoming shaky or in case any individual part should be broken to prevent the collapse of the whole brake.

In the example shown by Figs. 5 and 6 the connection of the form-pieces is performed by means of connecting-sleeves *f*, into which are screwed the slotted and threaded lugs *b* of the form-pieces, as shown in the drawings. In this case the coils *c* are best mounted on suitably-shaped parts of the shanks of the form-pieces.

In the modification shown by Fig. 7 the connecting screw-sleeve *f'* is right and left threaded, and the accordingly-threaded lugs *b* are alternately provided with a shoulder or tooth *g* and a recess *g'*, which when the sleeve *f'* is screwed home will come in engagement with each other and prevent the lugs and form-pieces, respectively, from being rotated or brought out of the alinement.

To secure the several parts in their proper positions, suitable set-screws *h* may be employed.

The attachment or suspension of the rail-brake to the car-frame is evident from Fig. 8, in which I have shown as example a lever suspension device, the levers *i*, carrying the brake suspension-rods *k*, being provided with suitable adjusting-weights *l*, counteracting the dead-weight of the rail-brake.

Instead of suspending the brake by links *m*, pivoted to the brake proper and the suspension-rods *k*, so as to allow the brake a certain amount of play in its longitudinal direction, I may dispense with the links *m* and connect the slidable suspension-rods *k* rigidly with the brake, so that the latter can only be moved up and down in a vertical direction.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

2. An electromagnetic rail-brake comprising a plurality of interchangeable pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

3. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular split extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

4. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and means to prevent angular displacement of the pole-pieces, substantially as set forth.

5. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon, means to prevent angular movement of the pole-pieces and means to prevent longitudinal displacement thereof, substantially as set forth.

6. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and an independent more or less rigid connection between the end pole-pieces, extending through the intermediate pole-pieces, substantially as set forth.

7. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and a cable extending through the series of pole-pieces, substantially as set forth.

8. An electromagnetic rail-brake, comprising a plurality of pole-pieces having interfitting tubular extensions, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

9. An electromagnetic rail-brake, comprising end pole-pieces and interchangeable intermediate pole-pieces, all of said pole-pieces having interfitting extensions, brake-shoes carried by the pole-pieces and coil-boxes mounted thereon, substantially as set forth.

10. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes

carried by said pole-pieces, coil-boxes mounted thereon, means to prevent angular movement of the pole-pieces and means to prevent endwise displacement thereof, substantially as set forth.

11. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes carried by said pole-pieces and coil-boxes mounted on the extensions between the pole-pieces, for the purpose set forth.

12. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes carried by said pole-pieces, coil-boxes mounted on the extensions between the pole-pieces and means to prevent angular movement and longitudinal displacement of said pole-pieces, substantially as set forth.

KARL ADOLF WILDE.

Witnesses:
MAX KAEMPFF,
OTTO W. HELLMRICH.