

No. 683,332.

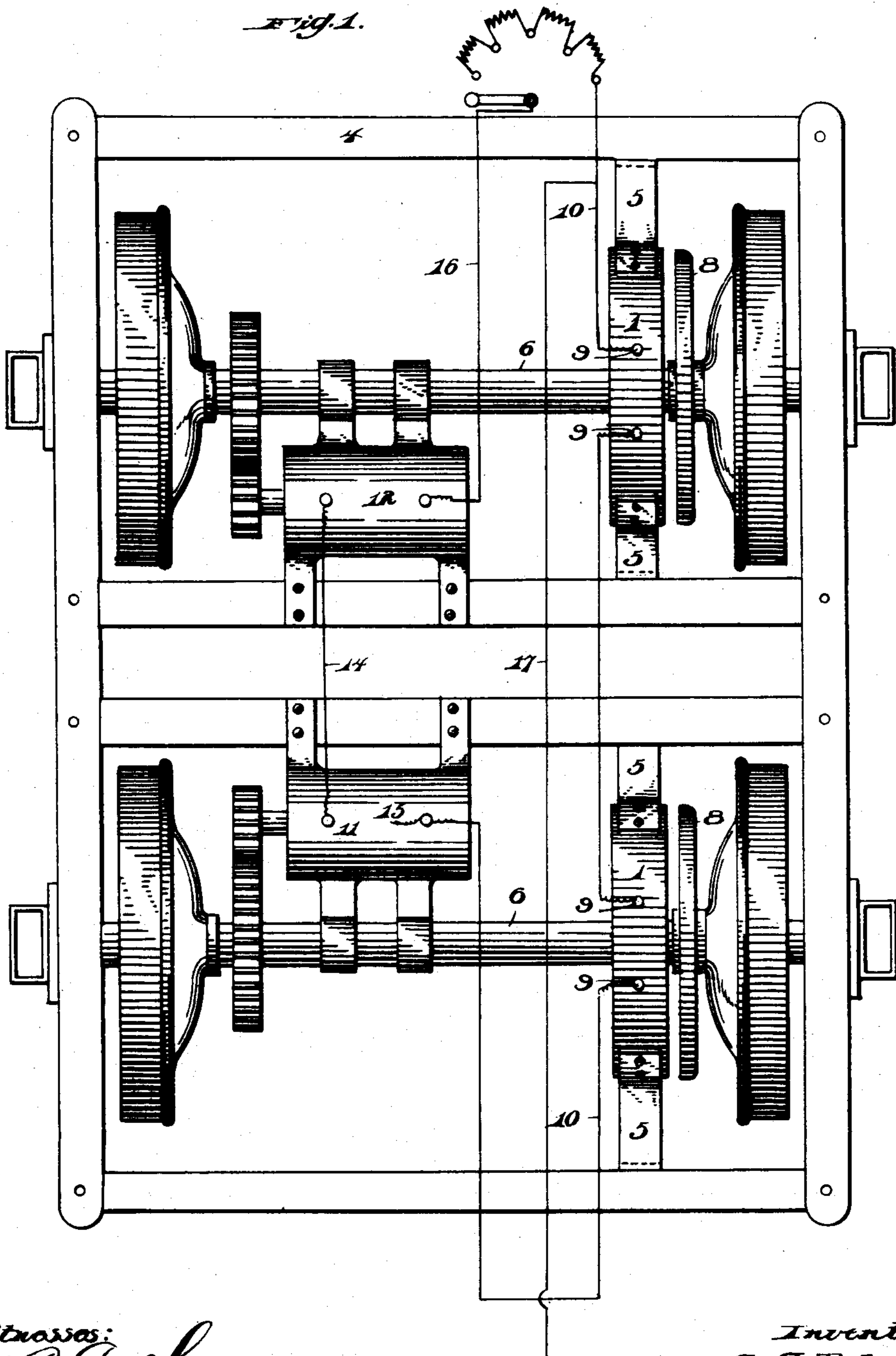
Patented Sept. 24, 1901.

A. A. ROBERTSON.
ELECTROMAGNETIC BRAKE.

(Application filed Apr. 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 2.

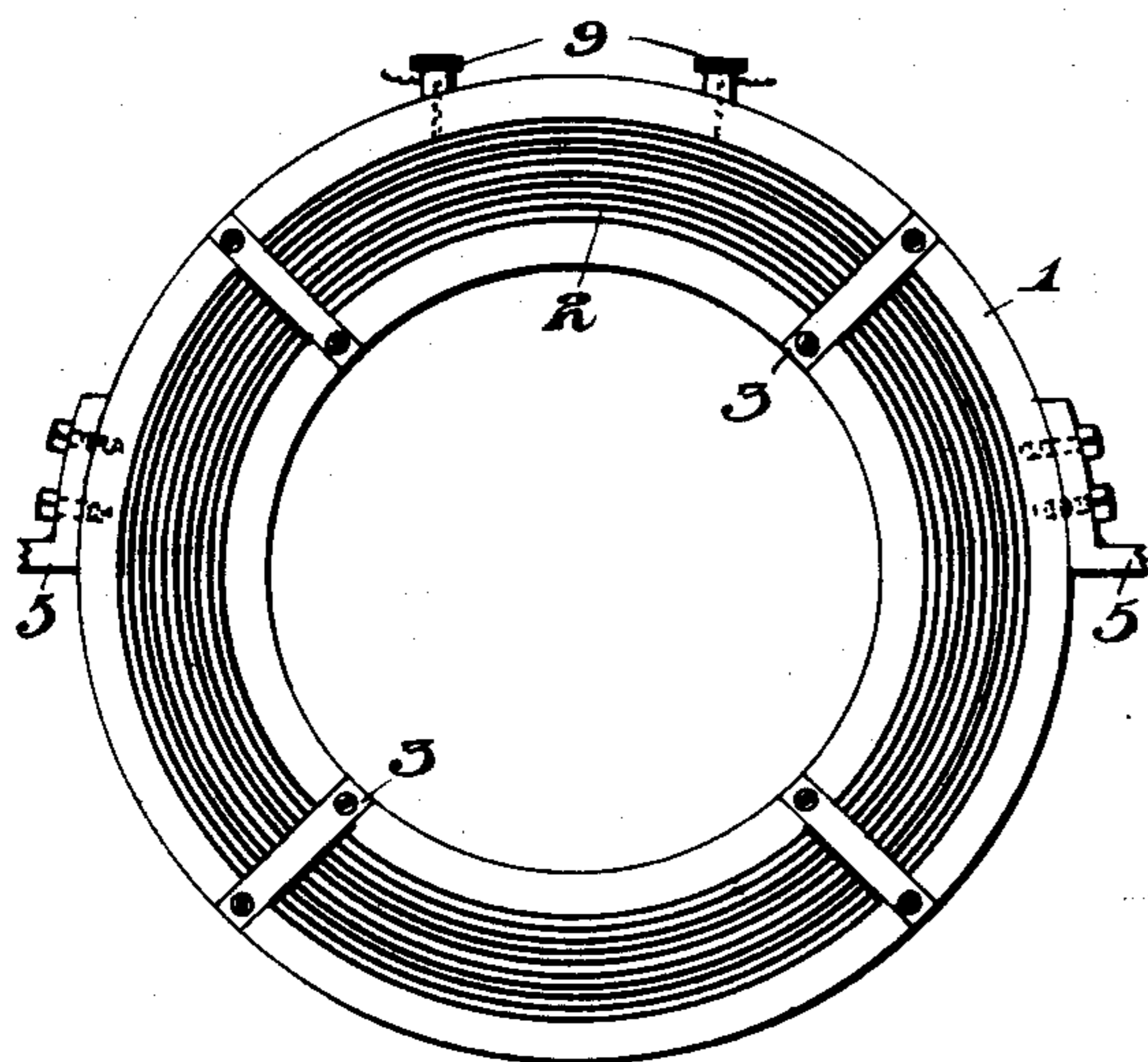


Fig. 3.

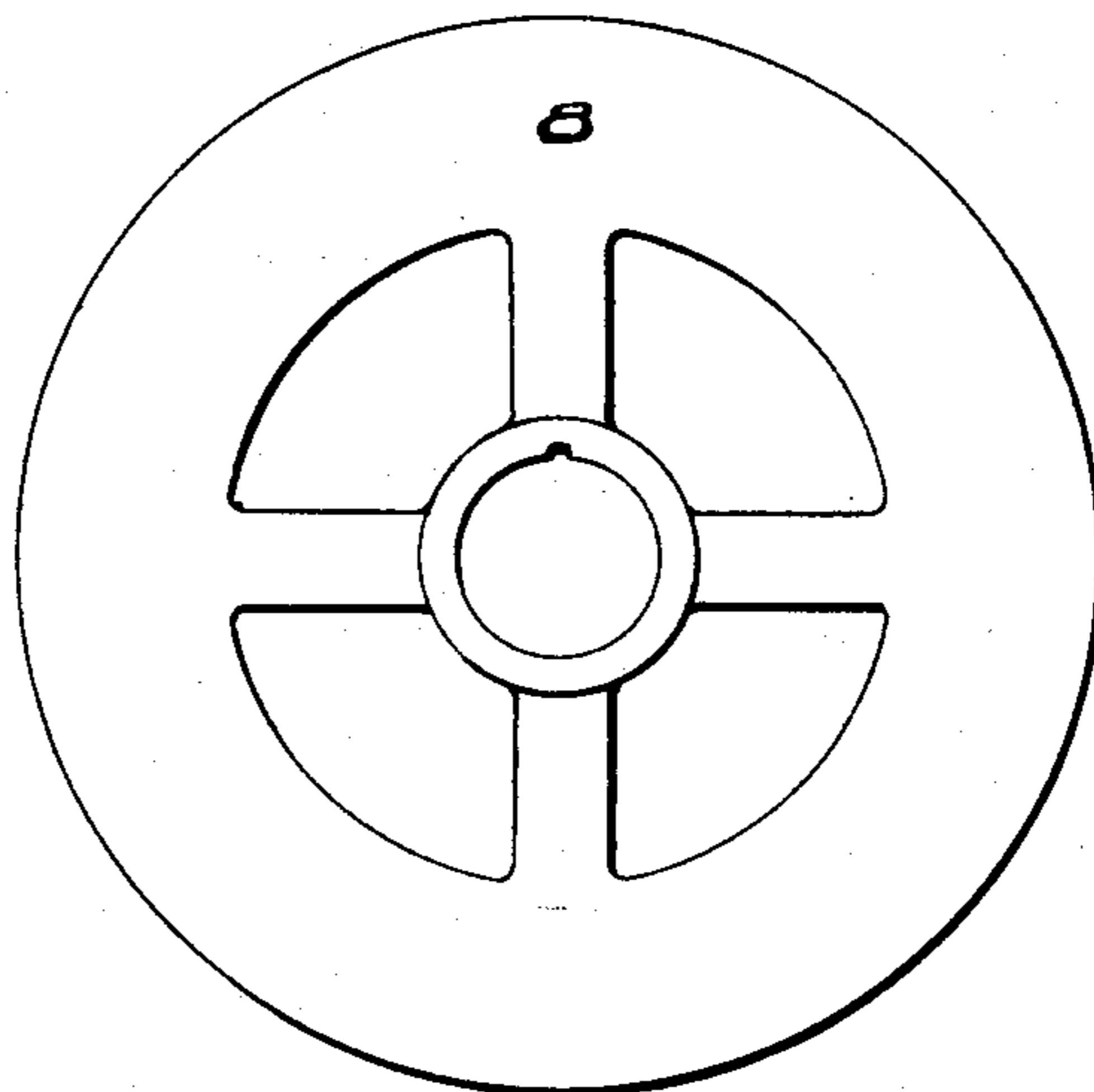


Fig. 4.

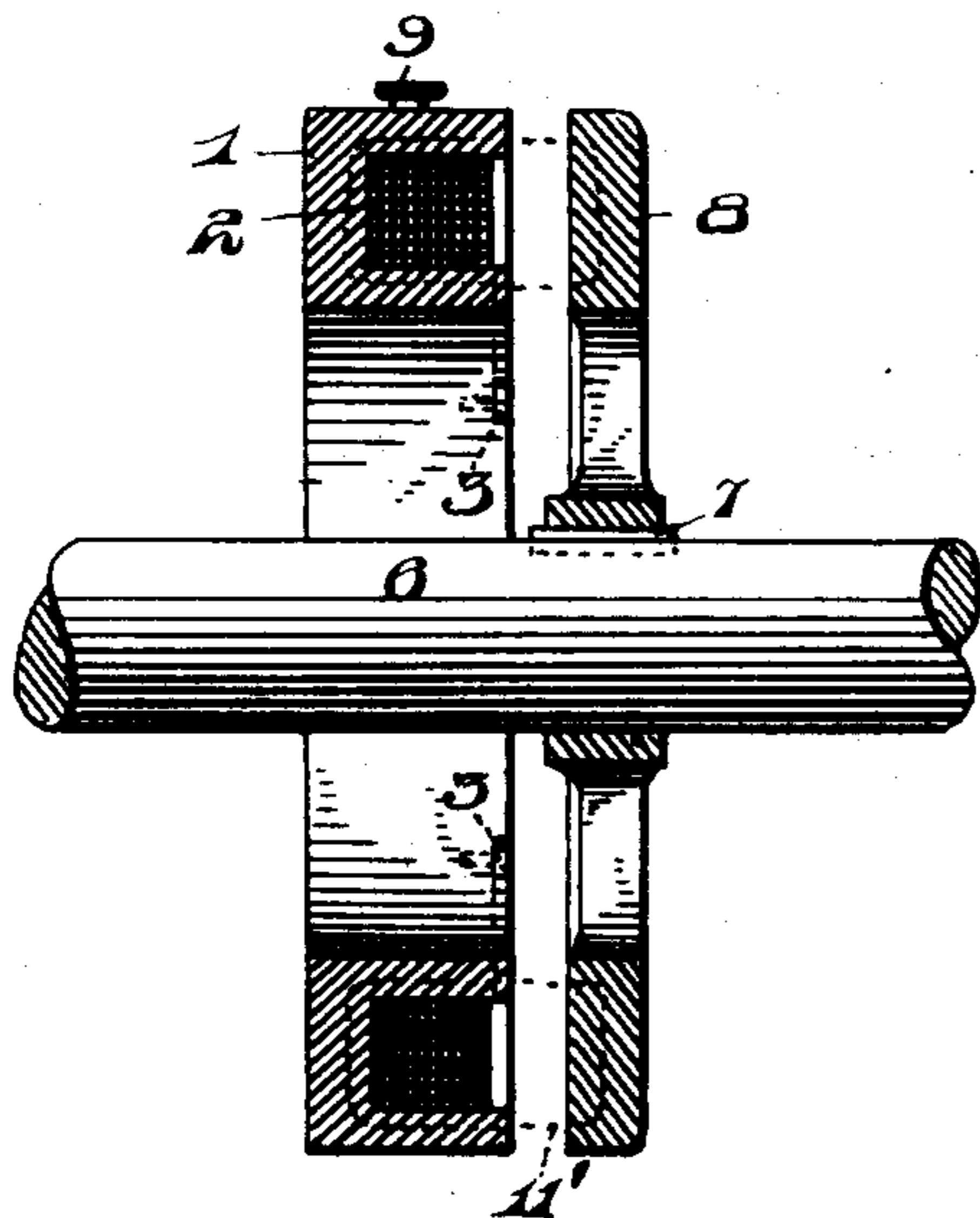
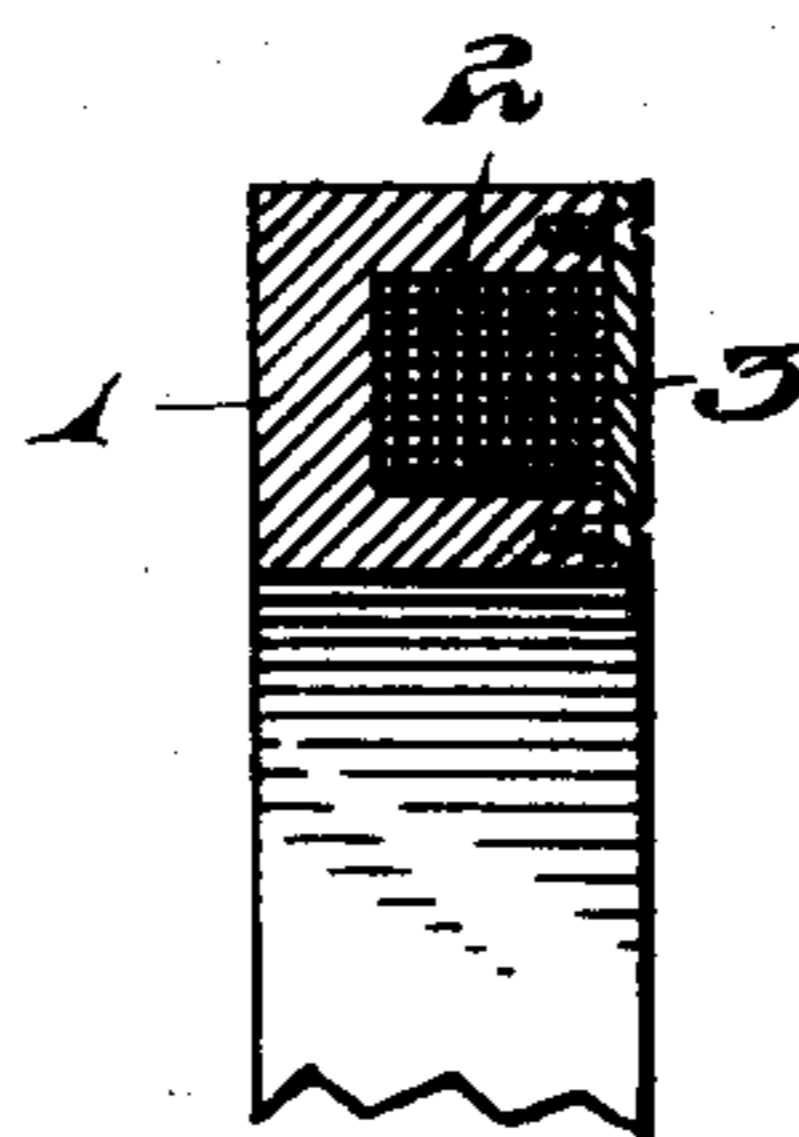


Fig. 5.



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UNITED STATES PATENT OFFICE.

ARNOLD A. ROBERTSON, OF TITUSVILLE, PENNSYLVANIA.

ELECTROMAGNETIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 683,332, dated September 24, 1901.

Application filed April 18, 1901. Serial No. 56,484. (No model.)

To all whom it may concern:

Be it known that I, ARNOLD A. ROBERTSON, a citizen of the United States of America, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Electromagnetic Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in electromagnetic brakes, and relates particularly to a brake adapted to be employed in connection with the other power-brake of the car.

Briefly described, the invention comprises an iron disk, which is keyed to the car-axle, so as to rotate in unison therewith, and a stationary circular electromagnet, which is supported from the truck or motor frame. This electromagnet may be wound to receive current from the trolley-wire or from the motor in the car running as generator.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a top plan view of a car-truck, showing my improved electromagnetic brake in position. Fig. 2 is a side elevation of the stationary electromagnet. Fig. 3 is a like view of the iron disk, which is keyed to the car-axle. Fig. 4 is a transverse vertical sectional view of the electromagnet and disk, showing a part of the car-axle. Fig. 5 is a transverse vertical sectional view of a part of the electromagnet, the section being taken through one of the straps which hold the coils of the magnet in position.

To put my invention into practice, I provide a field-magnet, which consists of an annular casting 1, having a circular groove to receive a winding 2, which is held within said groove by means of straps 3, fastened to the annular casting 1 across the face of the groove. This field-magnet is supported from the truck-frame 4 by means of brackets 5, which are attached to the truck-frame and to opposite sides of the casting 1. The annular castings 1 surround the axles 6, and keyed to each axle, as at 7, is an iron disk or annular ring

8, which is secured upon the axle adjacent to the coils 2 of the electromagnets. The annular castings 1 are each provided with a suitable binding-post 9, by means of which the circuit-wires 10, leading to the controller, to the motor, and to the feed-wire, are connected, these circuits being made in the usual manner, and hence not shown or described in detail in my application. The motors 11 12 are connected by wire 14, the motor 11 also having a ground connection 15. The motors are connected to the controller by circuit-wire 16 and to the feed-wire 17.

The operation of my improved electromagnetic brake is as follows: When current is passed through the coils 2, it magnetizes the iron disk 8, the magnetic force passing through the disk, as shown in dotted lines at 11'. When the disk is revolved through the force of the field-magnet, a strong and powerful eddy-current is produced in the ring or disk 8, owing to its very low resistance, which tends to force it in the opposite direction. The greater the amount of current that is allowed to pass through the coils 2 the greater will be the reaction upon the iron disk or ring 8.

It will of course be understood that this brake is adapted to be used in connection with the ordinary hand-brake and will assist in the rapid checking of the car when said checking is desired.

In practice the disk 8 is placed upon the axle in close proximity to the magnet, the space being even less than illustrated in the drawings, the greater power being obtained as the space is decreased.

Where a number of cars are connected together, the brakes are all connected in multiple series of two brakes upon each car. When the current is turned on and the eddy-current is produced, the brake will tend to bring the car or train to a stop almost without the aid of the hand-brakes. This form of brake is simple, cheap, and effective in construction, and it will be observed that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

In a device of the character described, an

annular ring surrounding the car-axle, brackets for securing said ring to the truck-frame, said ring having a circular groove formed in one face thereof, a field-magnet in said groove, 5 straps for securing said magnet in said groove, binding-posts on said rings, in combination with an annular iron disk keyed to the car-axle, said disk having a space between itself and the said ring, whereby an eddy-current

is established in the disk and magnet upon the energizing of said magnet, the eddy-current opposing the rotation of said disk.

In testimony whereof I affix my signature in the presence of two witnesses.

ARNOLD A. ROBERTSON.

Witnesses:

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