

(No Model.)

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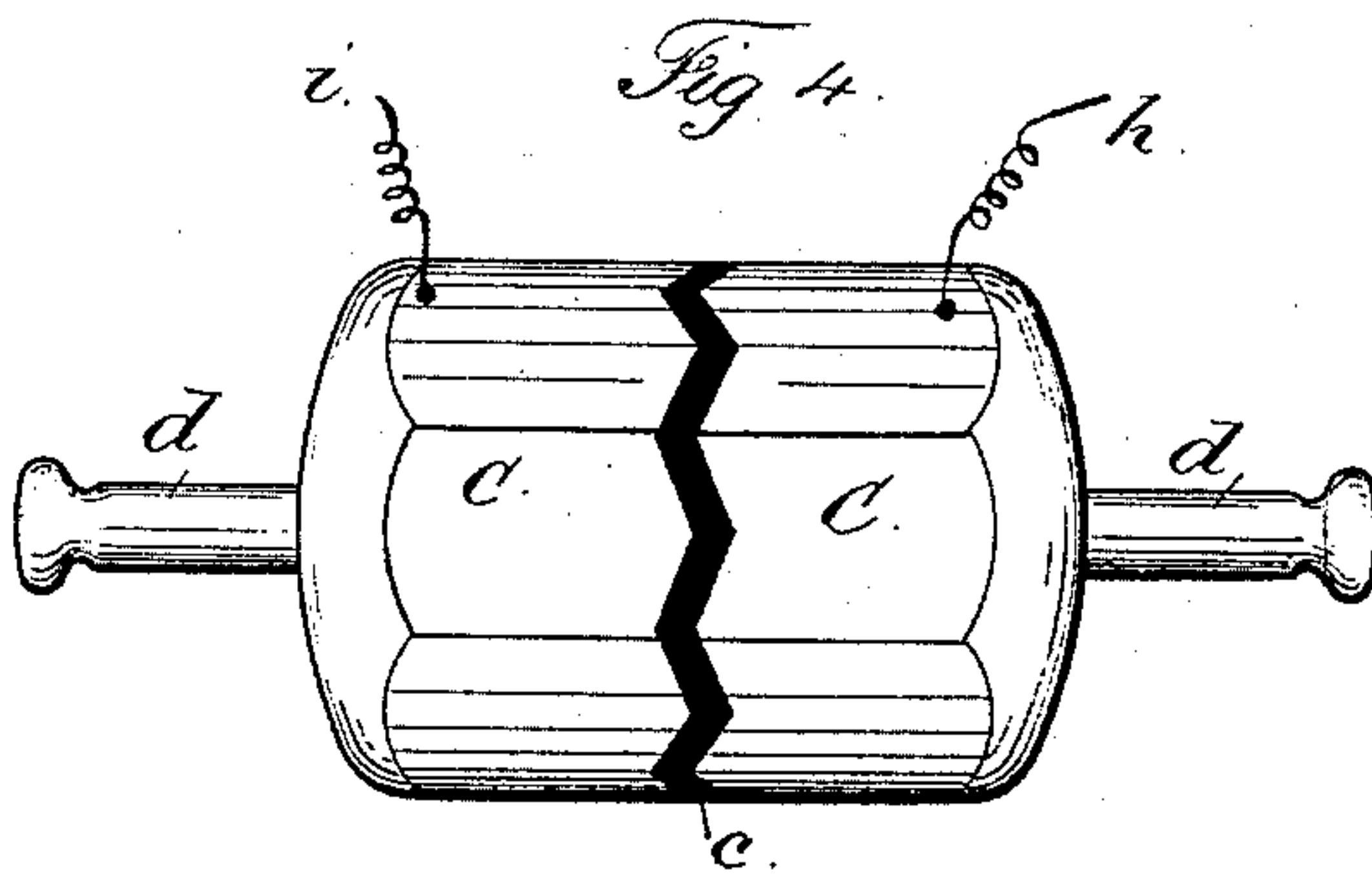
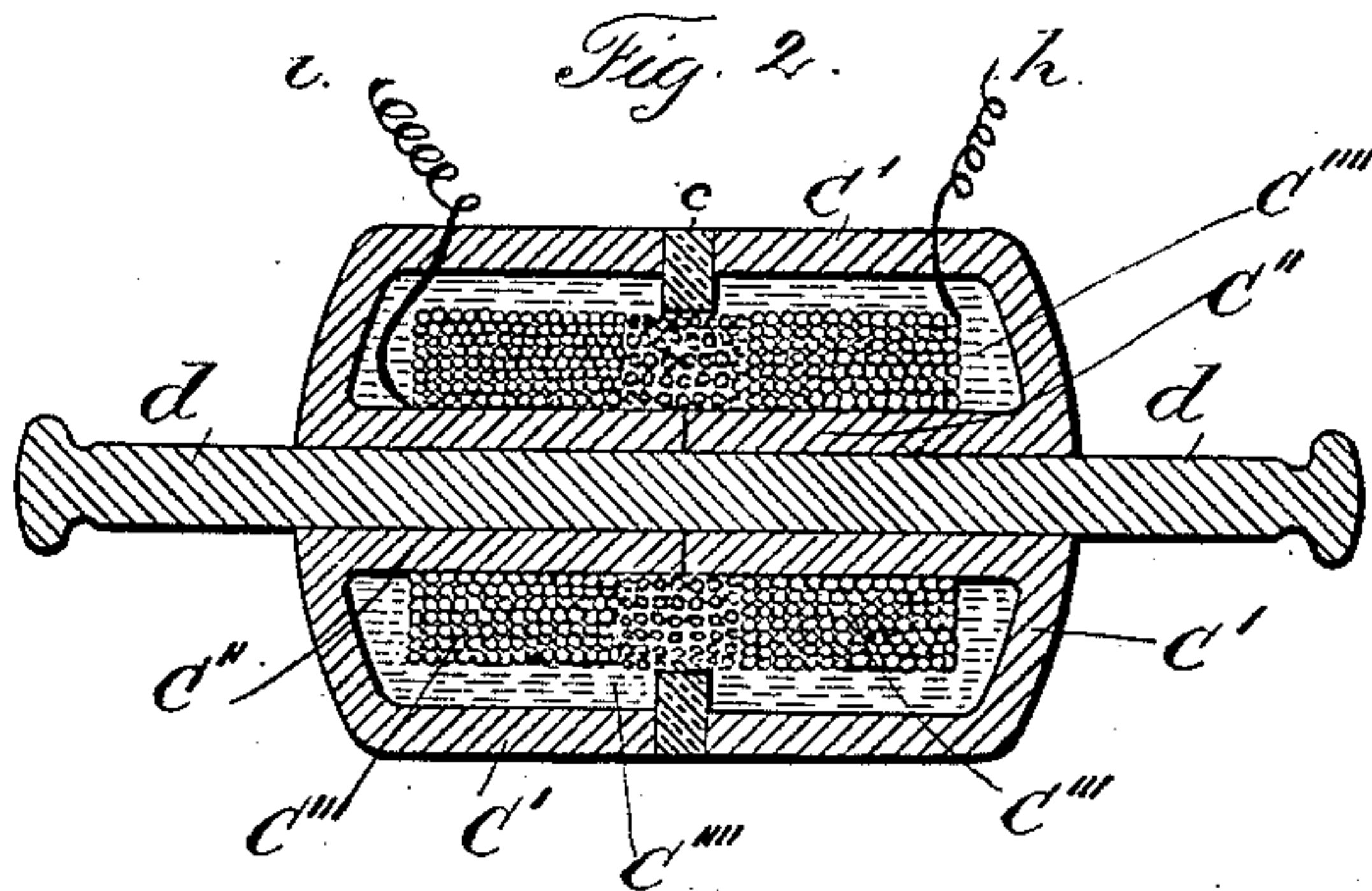
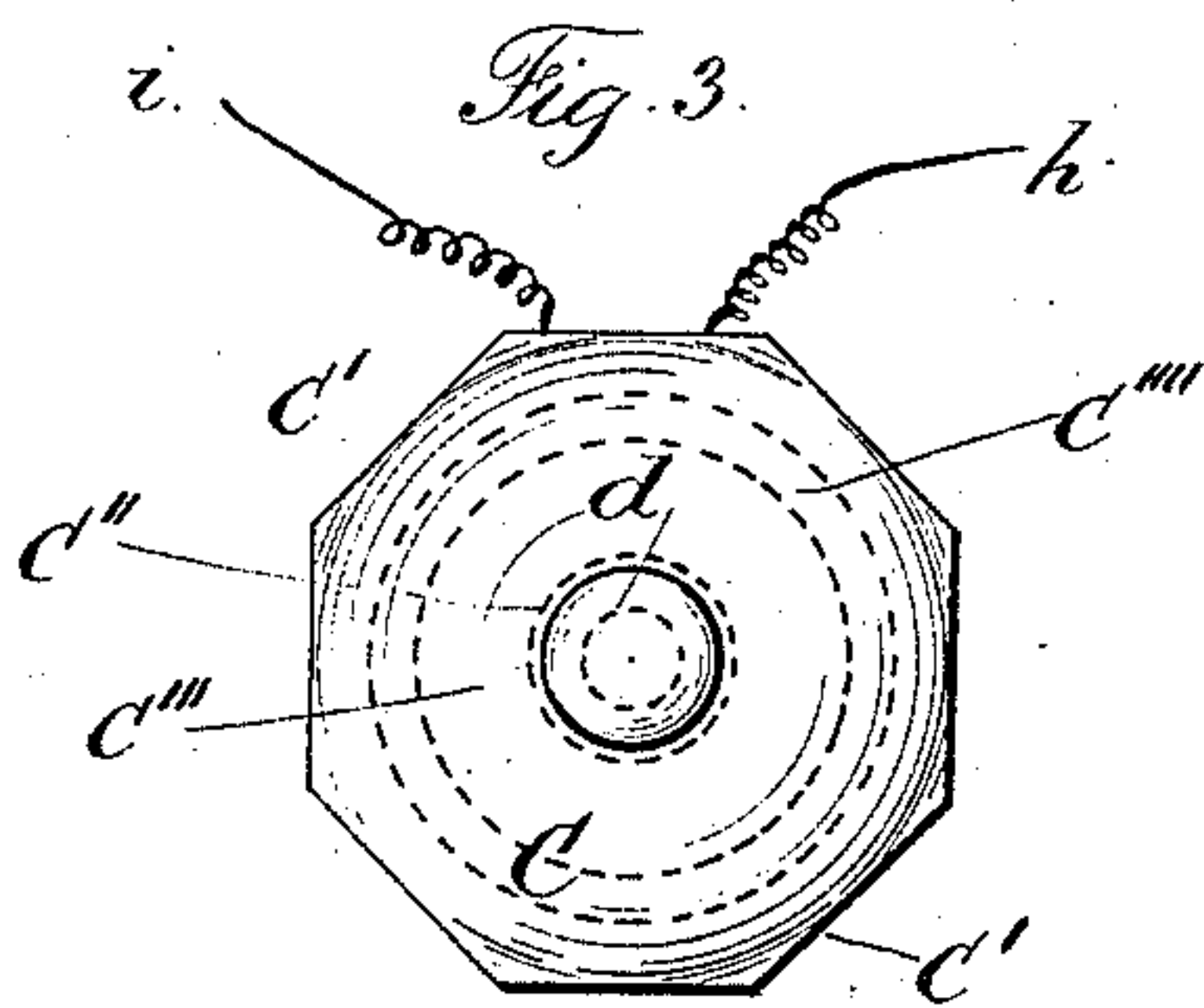
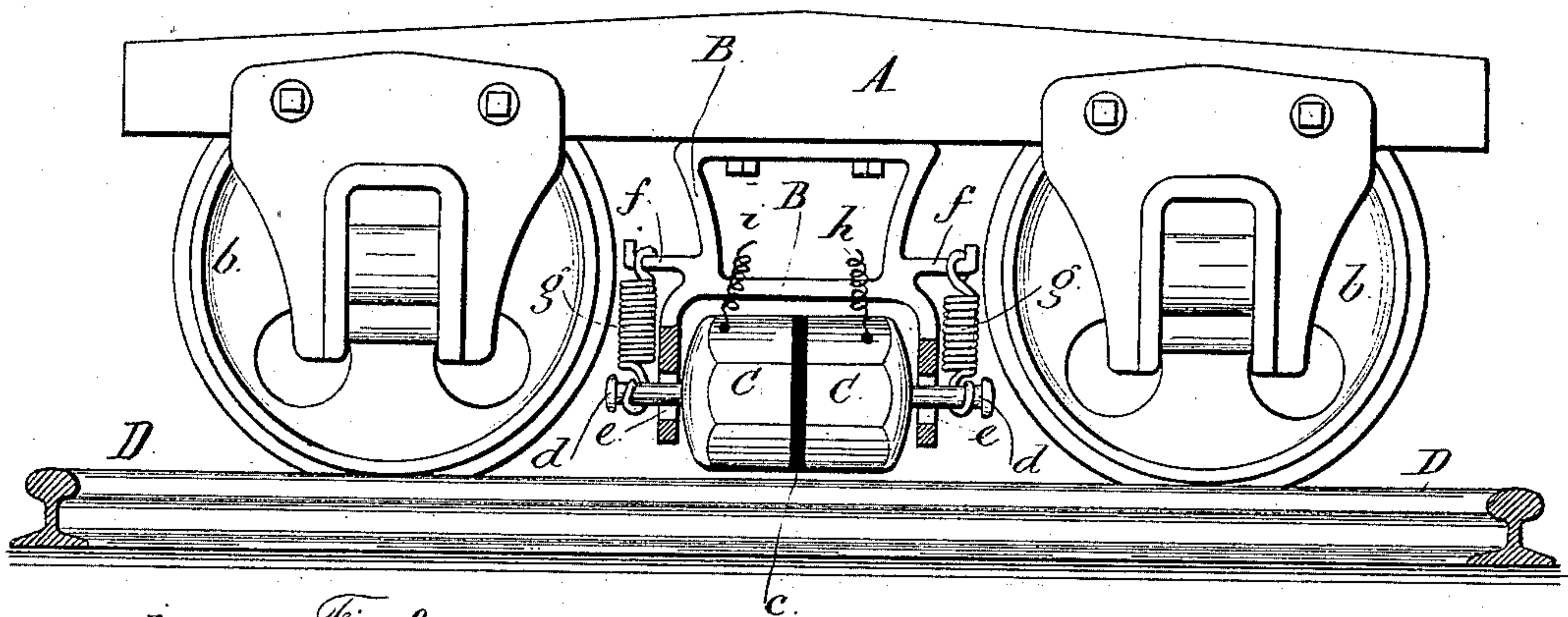
R. KAMPFE.

ELECTRO MAGNETIC CAR BRAKE.

No. 290,689.

Patented Dec. 25, 1883.

Fig. 1.



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John Francis Meyer,
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

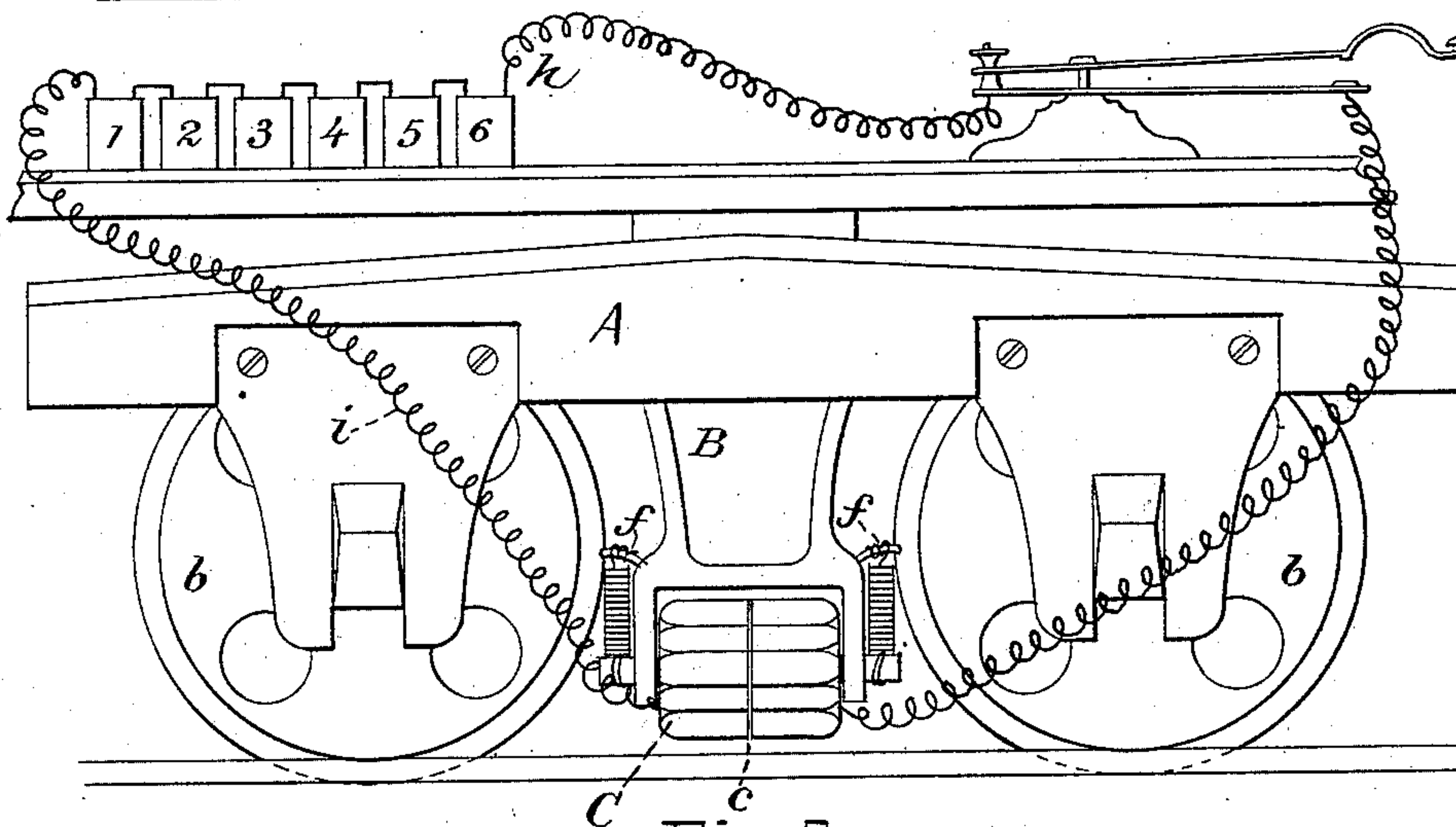
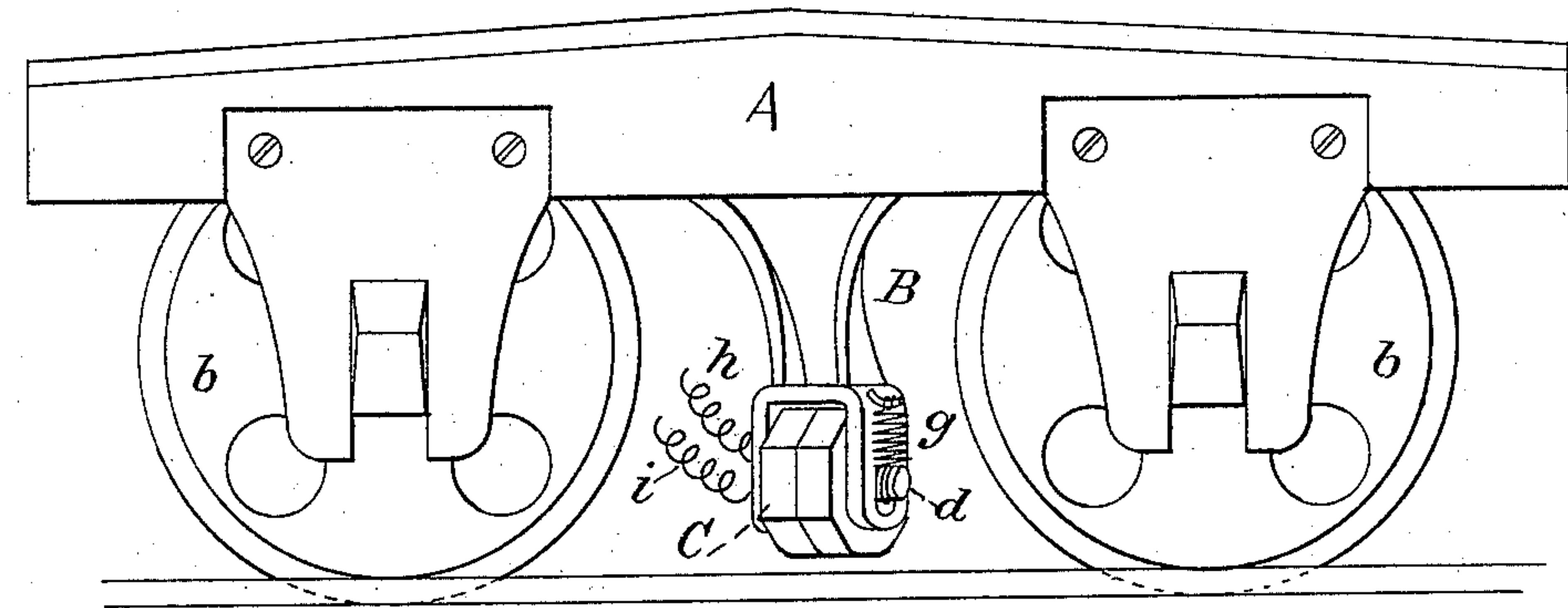


Fig. 6.

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UNITED STATES PATENT OFFICE.

RICHARD KAMPFE, OF BROOKLYN, NEW YORK.

ELECTRO-MAGNETIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 290,689, dated December 25, 1883.

Application filed September 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, RICHARD KAMPFE, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Electro-Magnetic Car-Brakes, of which the following is a specification.

This invention relates to electro-magnetic car-brakes, and more especially those in which the brake operates against the rails, and not against the wheels.

One of the objects of my invention is to provide a magnetic car-brake in which the magnet shall be protected against injury from without, by concussion or otherwise. To do this I provide a magnet of such a form that it shall present a solid exterior surface consisting of a heavy metallic casing.

A further object of my invention is to provide an electro-magnetic brake of such a form as to be capable of containing within itself a cooling-liquid, whose office is to circulate about the coil and counteract any heat arising from the friction due to the application of the brake.

A further object of my invention is to provide a substitute for the shoes as braking-surfaces, and I do this by providing an electro-magnet with a heavy metallic casing adapted to be used as a braking-surface.

In electro-magnetic car-brakes heretofore the magnets have been liable to destruction or impairment by concussion, accumulation of dirt, grease, &c., and heating resulting from the friction of the shoes upon the rails. These objections are sought to be overcome by my invention.

My invention is more clearly shown in the annexed drawings, in the several figures of which like letters indicate like parts, and in which—

Figure 1 is a view of one side of a wheel-truck, showing my brake in position, the other side of the truck, which is not shown, being correspondingly provided with my brake. A is the frame-work, carrying the wheels *b* and their axles. B is a support depending from A and carrying the axle *d*, which plays in the slot *e*, and upon which is secured the pair of electro-magnets C C. By the transverse connecting-wire *h*, the magnets on opposite sides of the truck are placed in a common circuit, and by the wire *i* the circuit is closed. The

spring *g*, the respective ends of which are secured to the pin *f* and the axle *d*, serves to draw the magnets, when not excited, up in the slot *e* and keep them from contact with the rail D. *c* is a disk, of brass or other non-conductor, whose office is to keep the several magnets of each pair from coming into contact with each other, except where their respective middle arms, C'', and coils C''' join each other through suitable openings in the respective disks, as shown in Fig. 2.

Fig. 2 is a sectional view of the magnets C, and Fig. 3 is an end view of one of the same, showing the outer arm or casing, C', the middle arm, C'', encircled by the coil C''', and the disk *c*. Sufficient space is left between the coil C''' and arm C', for the introduction of other cooling-liquid, C''''.

Fig. 4 shows the line of demarkation and the disk *c* between the two magnets of a pair in zigzag form, the object of which is hereinafter stated.

Fig. 5 shows my improved brake placed transversely with reference to the line of the rail.

Fig. 6 shows my brake connected with a battery consisting of cells respectively numbered 1 2 3 4 5 6, resting upon the floor of the car.

I do not confine myself to the locating of my battery or dynamo-machine or other source of electric energy upon any particular portion of the train; but the most desirable position would evidently be in or about the engine, within easy reach of the engineer.

The object of the cooling-liquid above mentioned is to counteract the heat arising from the friction of the arm C' upon the rail.

To operate my improved brake, connect the wire *i* with a dynamo-machine, an electric battery, or an accumulator, and the magnets, becoming excited, will be attracted to the rails, and by their friction serve to retard or wholly arrest the motion of the car, the extent of the retardation or rapidity of the complete stoppage depending on the current.

As will be seen, the magnets are essentially horseshoe-magnets, the outer arm being continuous, so as to constitute a solid casing. The exterior surface of the magnets may be cylindrical, or have a number of plane faces, as shown in Fig. 1, so that by turning the magnets upon their axis new points of contact or

a new face, as the case may be, will be presented to the rail. The advantage of this arrangement is that the expense, delay, and danger resulting from the breaking of the shoes heretofore in use are avoided and a new friction or braking surface may be presented to the rail without expense or delay.

To increase the number of points of contact between the respective magnets of each pair and the rails, and consequently the strength of the attraction and resultant friction, the magnets may be made to fit into each other by a zigzag or other irregular joint, as shown in Fig. 4.

If the irregular joint is used, the magnets will be placed so that the joint falls in the line of the rail; otherwise the magnets may be placed in any direction with reference to the line of the rails, and the direction of the joint with reference to the line of the rail depends upon the adjustment of the frame supporting the magnet.

Having fully described my invention, what I claim is—

1. The improved magnetic car-brake, consisting of the arms C' and C'' , the coil C''' , and disk c , having a suitable support, combined with any usual source of electric force, substantially as and for the purpose set forth.

2. The improved electro-magnetic car-brake, consisting of a pair of electro-magnets having a suitable support and combined with any usual source of electricity, the said magnets fitting into each other by an irregular joint, whereby the number of wearing-points is increased, substantially as set forth.

RICHARD KAMPFE.

Witnesses:

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