

C. KOCH.
MAGNETIC BRAKE.
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Fig. 1.

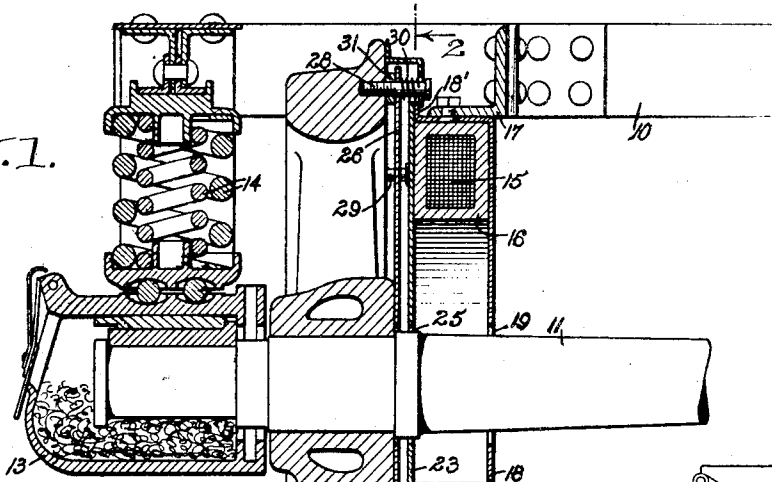


Fig. 3.

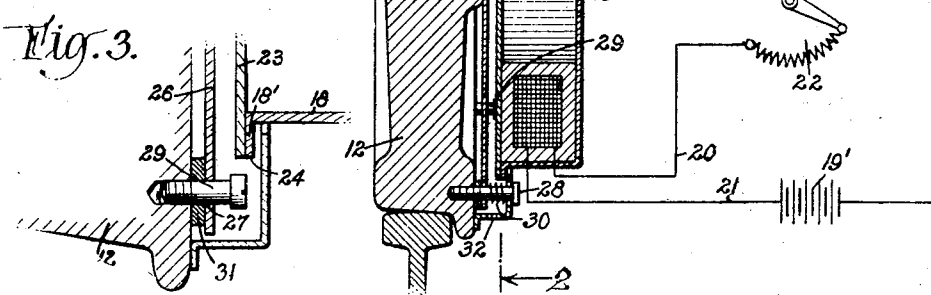


Fig. 2.

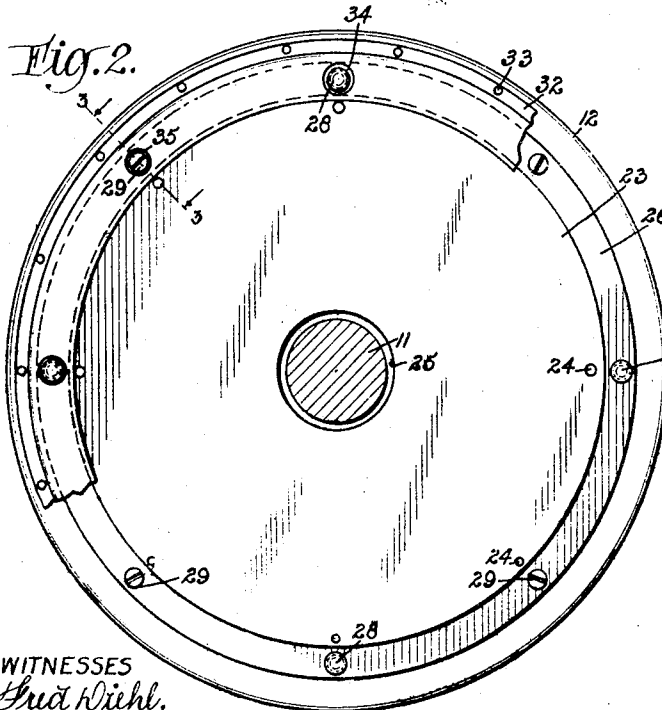
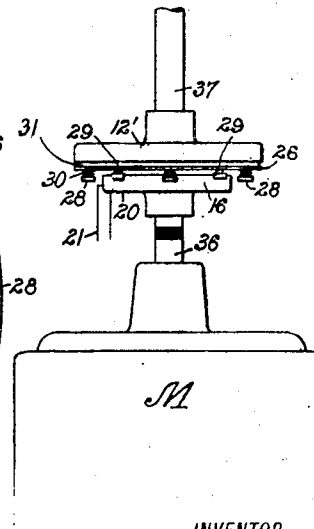


Fig. 4.



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MAGNETIC BRAKE.

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To all whom it may concern:

Be it known that I, CHARLES KOCH, a citizen of the United States, and resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Magnetic Brake, of which the following is a full, clear, and exact description.

This invention relates to magnetic brakes or the like and has particular reference to such devices employed on or in connection with railway car wheels, although I do not wish to be limited unnecessarily to the application of the device to any particular art or type of machine.

Among the objects of the invention is to provide a magnetic brake comprising a core or magnetic field with variable means for energizing the same, a metallic plate or disk associated with the core and adapted to become energized coincidentally with the energizing of the field, and an auxiliary plate or disk arranged parallel to the first mentioned plate or disk and movable toward or from the same, means being provided to limit the movement of the movable plate and the plates being relatively stationary and rotatable.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a vertical sectional view showing one embodiment of the invention, namely its application to a railway truck as a wheel brake.

Fig. 2 is a vertical section at right angles to Fig. 1, substantially on the line 2—2 thereof.

Fig. 3 is a transverse sectional detail on the line 3—3 of Fig. 2; and

Fig. 4 is a side elevation of a modification described below.

Referring now more particularly to the drawings I show portions of a conventional railway truck comprising a frame 10, axle 11, wheel 12, journal box 13 and springs 14.

15 indicates an electromagnet of any suitable form or construction, but indicated as

comprising an annular winding carried in a shell 16 and suspended or secured in any suitable manner from or upon the truck frame 10, as for example, through a longitudinal bar 17 extending above and across the axle. The shell and winding 15 are arranged around the axle and close to the inner face of the wheel. The connections for the shell 16 serve to hold the same in rigid position with respect to the frame. The supporting means for the electromagnet includes a stationary plate 18 having a hole 19 in its center to accommodate the axle and the maximum amount of relative movement between the frame and the axle.

19' indicates a battery or other suitable source of electrical energy from which the core 15 is adapted to be energized through circuit wires 20 and 21, and the force of the electrical energy through said circuit may be varied or regulated in any suitable manner by means of a rheostat 22. The stationary magnetic device includes also a metallic plate shown as a disk 23 fixed by means of screws, rivets or the like 24 to the periphery of the shell 16 or flange 18' of the inner shell. This plate 23 also has a central hole 25 for the axle. The flange 18' projects outwardly and the periphery of the plate 23 corresponds to the diameter thereof. When the core 15 is energized the plate 23 is likewise energized.

26 indicates a relatively movable plate or disk arranged parallel to the plate 23 but of sufficiently greater diameter to project beyond the same, as shown best in Fig. 2. This plate 26 is connected to and carried by the wheel and hence is concentric with the other brake parts described. The periphery of the plate 26 is provided with a series of holes 27 arranged in the same circumference or at equal distances from the center. Through these holes pass two different types of pins indicated at 28 and 29 in alternation. The pins 28 are surrounded by coil springs 30 which act between the heads of the pins and the inner face of the plate 26 serving to hold the plate forced outwardly or remote from the plate 23 and against a cushion 31. These pins also serve to cause the plate 26 to rotate or remain stationary with the wheel 12. The pins 29 are shorter than the others and are adjustably tapped into the inner face of the wheel, the primary function of these pins is to limit the movement of the plate 26 toward the plate 23.

These pins 29 serve in connection with the other pins to hold the plate 26 for rotation with the wheel. Obviously for the purpose of maximum holding effect as in the case of a railway brake, Figs. 1 and 3, it is necessary for the plates 23 and 26 to come into actual frictional contact and the screws 29 are accordingly adapted to be adjusted so as to provide sufficient length or space between the heads thereof and the wheel to allow the movable plate 26 to engage the magnetic plate 23.

32 indicates a guard secured to the wheel flange by fasteners 33 of any suitable nature for the purpose of excluding dust, dirt or the like from the space between the wheel and the electromagnet. This guard includes an inwardly projecting flange loosely overlapping the peripheries of the plates 23 and 26 and flange 18'. This guard obviously is carried rigidly by the wheel, and the inwardly projecting flange thereof is provided with holes 34 and 35 registering with the pins 28 and 29 respectively.

With respect to the application of the device as a railway brake, the rheostat or the controlling means being located at any desired place, when the controlling means is manipulated to energize the core 15, the plate 23 becoming energized will attract the rotating plate 26 and thereby stop or tend to stop the rotation thereof and since the plate 26 is pinned to the wheel the stopping of the plate 26 will check or stop the wheel serving to stop or control the movement of the car. This device may, of course, be applied to any number of wheels and to any other type of vehicles.

In Fig. 4 I show the same general character of device adapted as a clutch for connecting a shaft 36 of a motor M to another shaft 37 in alignment with the motor shaft. The latter shaft may be intended for operating a fan or any other desired piece of machinery. In this form of the invention 16' indicates the magnetic shell or field toward

which the plate 26 is adapted to be drawn, but limited in such movement by pins 29 as already described. Other pins 28 surrounded by springs 30 serve to force the plate 26 away from the magnetic field. All of the pins as aforesaid serve to hold the plate 26 for rotation with hub or wheel member 12' connected to the driven shaft 37. The cushion or washer 31 may be of any suitable non-magnetic material having for its purpose to hold the disk so spaced from the wall 12 as to prevent the magnetism from acting directly upon the wheel.

I claim:

1. In a device of the character set forth, the combination of an electromagnet, a plate fixed thereto and energizable therefrom, a second plate adapted for relative rotation with respect to the first plate and movable toward and from the first plate, a rotary member, means to connect the latter plate for rotation with the rotary member to permit the movement thereof toward and from the magnetic plate, the movable plate having a series of holes formed through its periphery, a plurality of pins projecting through said holes, and a plurality of springs surrounding certain of said pins tending to hold the plates apart.

2. In a device of the character set forth, the combination of two concentric flat and relatively stationary rotatable members, means to electrically energize one of said members, a wheel concentric with the other of said members, the latter mentioned member being larger in diameter than the electric member and being provided in its projecting periphery with a series of holes arranged in its circumference concentric with the members and wheel, and a series of pins projecting through said holes and serving to cause the larger member to rotate with the wheel to permit the required free movement of the same toward and from the electric member, substantially as set forth.

CHARLES KOCH.