No. 648,273. Patented Apr. 24, 1900.

C. A. LINDSTROM.

BRAKE FOR ELECTRIC MOTORS.

(Application filed Nov. 16, 1899.)

(No Model.)

Fig. 1.

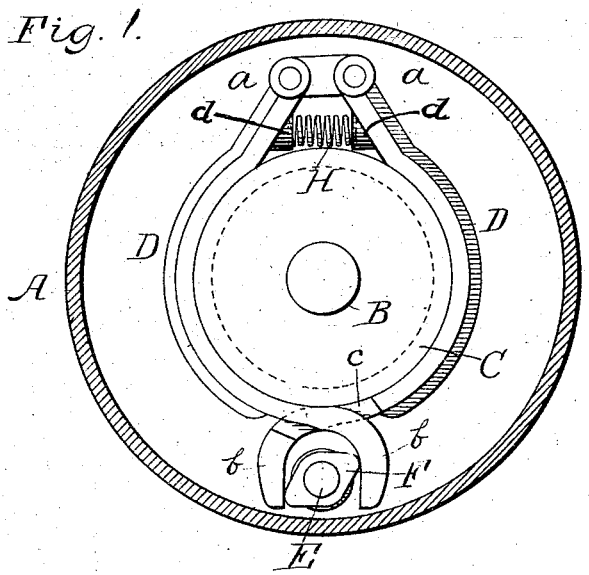


Fig. 2.

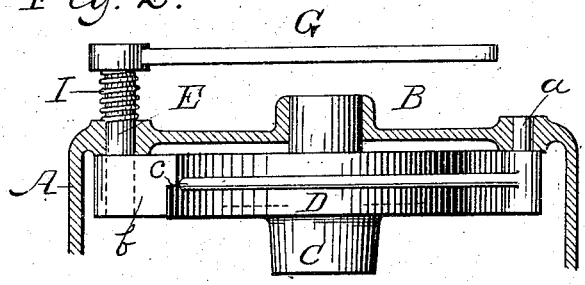
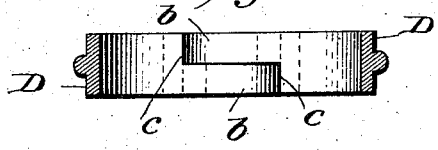


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTROM, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE HEWITT-LINDSTROM MOTOR COMPANY, OF SAME PLACE.

BRAKE FOR ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 648,273, dated April 24, 1900.

Application filed November 16, 1899. Serial No. 737,226. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTROM, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Brakes for Electric Motors, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple, cheap, and effective brake for inclosed electric motors, and particularly those used for electrically-propelled vehicles in which the brake-shoe arms and devices for actuating the same are so constructed that it is impossible for dust or dirt to get inside of the housing of the motor, and the corresponding and simultaneous action of said brake-shoe arms is assured. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of my invention, showing the surrounding hood or housing thereof in section. Fig. 2 is a horizontal longitudinal section of one end of an armature-shaft, the improved braking mechanism thereon, and the end or hood of the housing inclosing the same. Fig. 3 is a detail view showing the recessing of the arms.

Referring to the drawings, A represents the hood or end of the case or cover of an electric motor. The center of this hood is provided with a suitable bearing for the armature-shaft B, and just inside and so as to almost touch the hood this shaft is provided with a brake-pulley C of suitable diameter, substantially as shown.

D D represent two corresponding brake-shoe arms, the greater part of the length of which describe a semicircle the diameter of the inner circumference of which corresponds to that of the pulley C, to which they preferably correspond in width. The ends of these arms on one side of these pulleys extend outward from the semicircular part thereof at a suitable angle and are fulcrumed on studs or pins *a a*, projecting inward from the head of said hood at points located between the pulley and the cylindrical sides thereof. These studs or pins *a a* are preferably arranged so that one is above and the other the same distance below the horizontal plane striking through the center of the armature-shaft from the center of which they are equidistant.

The ends *b b* of the braking-arms opposite the pins *a* extend past each other and are each provided at their intersecting planes with recesses *c c* in their adjacent side edges, which are one-half the width of the remainder of the length of said arms and are of a length corresponding to the extent said arms lap past each other. These recesses *c c* are provided so as to avoid the necessity of increasing the width of the space occupied by the braking-arms where they lap past each other, but where economy of space is not an object these recesses may be dispensed with. Beyond the recesses *c c* ends *b b* curve outward and describe, preferably, corresponding arcs and then extend parallel to each other a short distance and terminate at points almost in touch with the inner circumference of the hood. While I do not consider it essential, I prefer to increase the width of ends *b b* beyond recesses *c c* back to that of the arm anywhere between said recesses and the fulcrumal points of arms D and to make the opposing surfaces of said parallel portions flat.

Midway between the parallel portions of ends *b b* of arms D and so as to be intersected by the transverse or horizontal plane striking through the center of the armature-shaft and midway between pins *a a* is a short spindle E, the axial center of which is parallel to shaft B and which is journaled in suitable bearing made in the head or end of hood A. On the end of this spindle, between the ends of the braking-arms, it is provided with an elliptical or a truncated diamond-shaped cam F, and on its outer end, which extends beyond its bearings, it is provided with an arm G. The normal position of the cam F is such that its major axis is inclined at an angle of about forty-five degrees to the perpendicular, and when arm G is moved so as to move the cam so that its major axis assumes a more nearly perpendicular position the ends of arms D D are thereby forced farther apart and the semicircular portion of said arms brought simultaneously and with equal pressure into braking contact with the periphery of the brake-pulley or wheel.

In order to normally keep arms D D out of braking contact with the brake pulley or wheel, I interpose between the said arms a strong expansion-spring H and retain said spring in position by seating its ends in the concavities or depressions made in the ends of bosses *d d*, made integrant with said arms near their fulcrums, substantially as shown.

The arm G for operating the cam will be forced back toward its normal position every time the actuating power is removed from said arm by spring H through the medium of braking-arms D D. Should this be insufficient, a coil torsioual spring I may be coiled around spindle E between its bearings and arm G and have one end secured to said spindle and the other to the hood in which it has its bearings. Thus when the spindle E is turned said spring I is constricted, and when said spindle is released this spring, in its effort to resume its normal position contributes to restore the spindle and the cam to its original position.

What I claim as new is—

1. In a brake for electric motors the combination of the casing, the shaft, the brake-pulley thereon within the casing, a pair of similar independent brake-shoe arms disposed on opposite sides of said pulley within the casing and having their free ends overlapped and then bent outwardly parallel with each other for a short distance, the other ends of said arms being attached to fixed pivots within the casing; with a cam interposed between and directly engaging both of the overlapped free ends of the arms, and adapted to simultaneously force said ends apart and thereby cause the brake-arms to clamp the pulley; a rock-shaft carrying said cam, journaled in and projecting through the end of the casing, means for rocking said shaft, and a spring interposed between said arms and adapted to force said arms apart when they are released by the cam, for the purpose and substantially as described.

2. In a brake for electric motors the combination of the casing, the armature-shaft, the brake-pulley thereon within the casing, a pair of similar independent brake-shoe arms disposed on opposite sides of said pulley within the casing and having their free ends overlapped and then bent outwardly parallel with each other for a short distance, said free ends being similarly recessed where they intersect each other, the other ends of said arms being attached to fixed pivots within the casing; with a rocking cam interposed between and directly engaging both of the overlapping free ends of the arms, and adapted to force said ends apart and thereby cause the brake-arms to clamp the pulley; a rock-shaft carrying said cam, journaled in and projecting through the end of the casing, means exterior to the casing for rocking said shaft; and a spring adapted to force said arms apart when they are released by the cam, for the purpose and substantially as described.

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