No. 672,957. Patented Apr. 30, 1901.

# T. E. McCOLLUM.

## MOMENTUM CAR BRAKE.

(Application filed June 25, 1900.)

(No Model.)

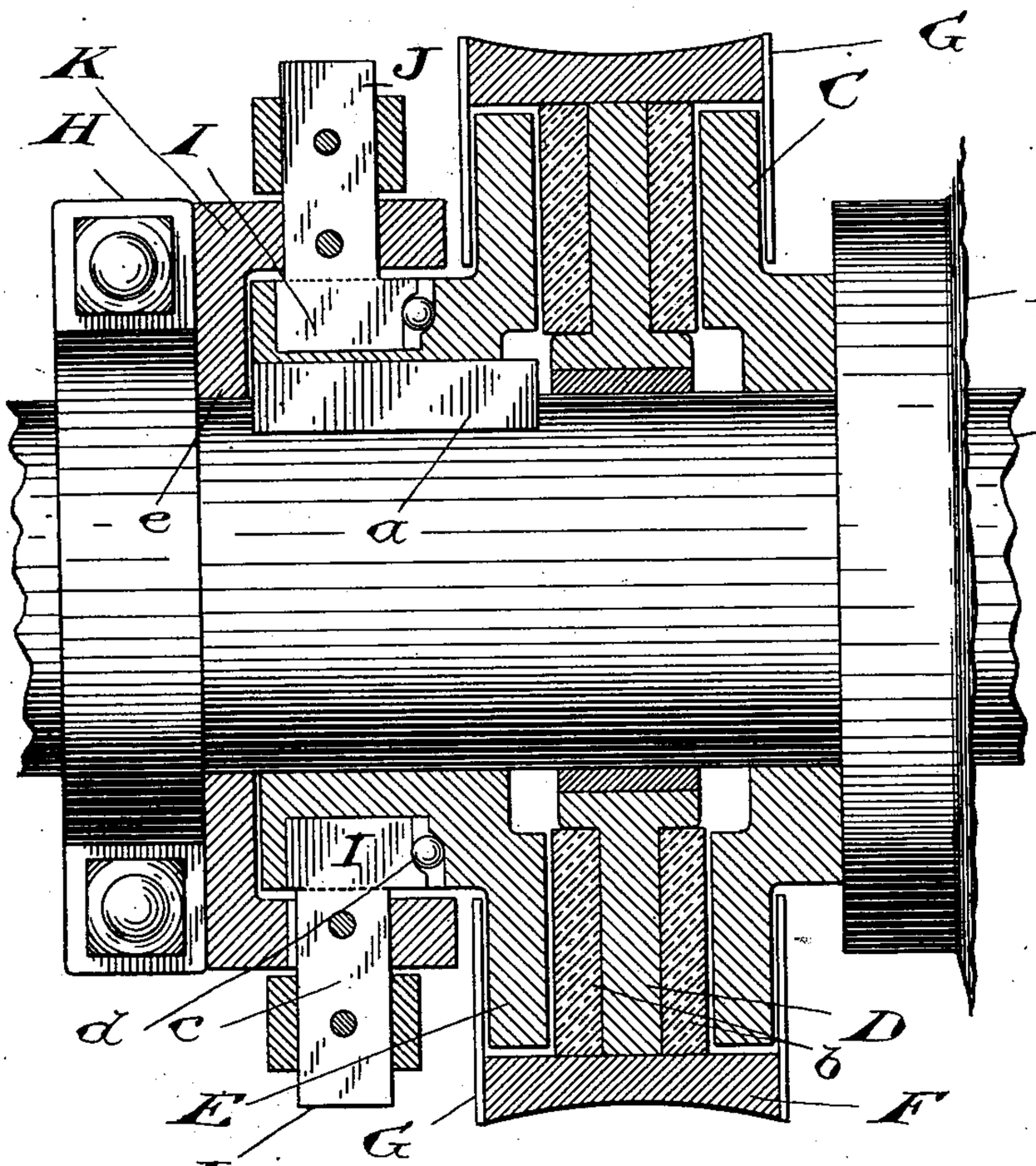


Fig. 1

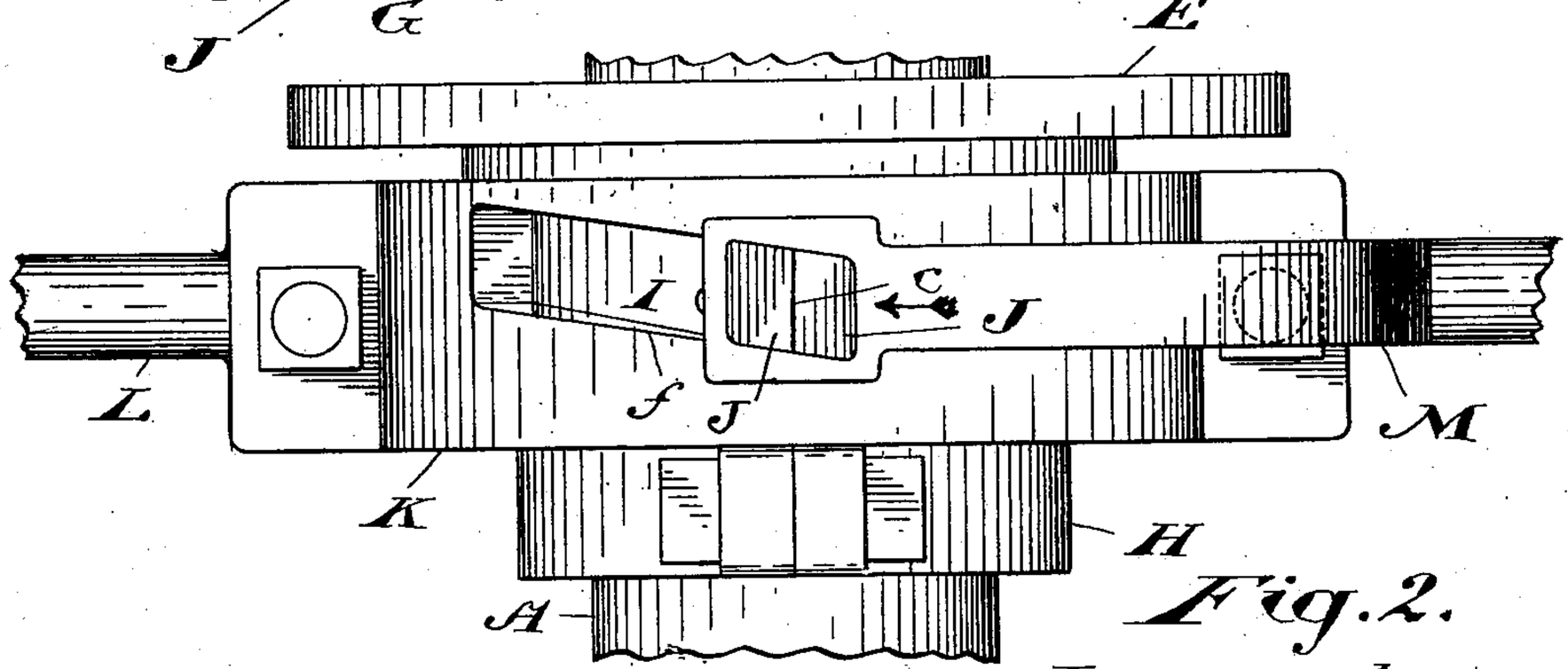


Fig. 2.

Witnesses

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atty's

# UNITED STATES PATENT OFFICE.

THOMAS E. McCOLLUM, OF TORONTO, CANADA, ASSIGNOR OF FORTY-SIX AND TWO-THIRDS ONE-HUNDREDTH PARTS TO REMIQIUS ELMSLEY, OF SAME PLACE.

## MOMENTUM CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 672,957, dated April 30, 1901.

Application filed June 25, 1900. Serial No. 21,531. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS E. MCCOLLUM, electrician, of the city of Toronto, in the county of York, Province of Ontario, Canada, have invented certain new and useful Improvements in Momentum Car-Brakes, of which the following is a specification.

My invention relates to that class of brakes in which the momentum of the car is depended upon to supply the necessary power to apply the brake-shoes to the wheels.

My object is to devise a brake of that type which will fit into the narrowest possible space upon the axle, which has its friction-surfaces always thoroughly lubricated and protected from the dust and weather, and which is put both in and out of action by positive means.

With this object in view my invention consists, essentially, in the details of construction hereinafter fully described and then definitely claimed.

Figure 1 is a sectional elevation of my improved brake with the friction-disks separated. Fig. 2 is a plan view of the operating mechanism.

In the drawings like letters of reference indicate corresponding parts in both figures.

A is the car-axle, and B a portion of the wheel. Secured to the axle so as to revolve therewith is the friction-disk C. Adjacent to this fixed friction-disk is the loose friction-disk D, free to revolve or slide upon the shaft. On the other side of this loose friction-disk is the sliding friction-disk E. The feather-key *a* gives this disk a driving connection with the shaft and at the same time permits it to be moved longitudinally thereon. The sides of the loose friction-disk D are provided with compressed fiber rings *b*. The faces of the disks C and E are suitably formed to engage these fiber rings. It will also be noted that these disks are recessed close to the shaft, so as to overlap the hub of the loose friction-disk D when the fiber rings have become worn.

F is a drum, either formed integral with the disk D or shrunk in position thereon. The chain leading to the main brake-lever will be wound around and suitably secured to this drum.

Secured to the sides of the drum F are two rings or flanges G, forming a casing to exclude dust from the friction-surfaces of the brake. It also serves to form an oil-bath for the purpose of keeping the frictional surfaces thoroughly lubricated. This is a most important matter, as unless these surfaces have the dust excluded from them and are thoroughly oiled the wear on the fiber will be unduly great.

By forming the friction-surface entirely within the drum I secure a great economy of space, as there is seldom more than nine inches of space on the axle of an electric car which may be used for the placing of the brake, and in many cases six inches only.

From the construction described it is evident that by sliding the friction-disk E toward the disks D and C the frictional surfaces will be tightly pressed together and the center disk, with its drum, caused to partake of the rotary motion of the disks C and E. Thus the chain leading to the main brake-lever may be wound upon the drum and the brakes applied. The mechanism for effecting this movement I will now describe.

H is a collar securely clamped on the axle.

I is a ring running in a suitable groove formed in the hub of the disk E. For the purpose of placing in position this ring may be split or formed in two parts, as indicated at *c*, (see Fig. 2) and suitably bolted or pinned together. As the side of the ring nearest to the friction-surfaces is most exposed to wear I prefer to provide it with ball-bearings *d*. Extending outwardly from this ring I are integral projections or pins J. As shown, the split *c* in the ring passes through or between these projections or pins, though of course the division might be made at another point.

K is a sleeve surrounding the ring I and abutting against the collar H. It is also preferably flanged, as shown at *e*, to bear upon the axle A. In this sleeve are cut two diagonal slots *f*, through which extend the pins J.

It is evident that by rocking the projections or pins J in the direction indicated by arrow

in Fig. 2 and by rotating the sleeve K in the opposite direction the ring I will be moved to force the friction-disks in contact with one another. By reversing the movement the disk E will be withdrawn and the friction-surfaces disengaged.

The bearing-surface, against which the sleeve K acts in withdrawing the disk, as indicated, is the end of the feather-key *a*, though of course other means might be provided for the purpose.

For the purpose of rocking the pins and sleeve as described I provide the latter with an arm L and the former with the forked arm M, the ends of the forks being suitably connected with the projections or pins J.

I do not show any means of operating these arms, as it may be done in a great variety of ways, the important features of my disk-moving mechanism lying in the fact that no portion of it is connected with the truck and that I secure a positive action for the withdrawal of the friction-disks as well as for forcing them into contact.

The above description will show that I have attained the threefold object of my invention—viz., to construct a brake occupying a space on the axle of very small width, of constructing a brake in which the friction-surfaces are thoroughly protected from dust and weather and constantly lubricated, and to construct a brake which is both put in and out of action by positive means.

What I claim as my invention is—

1. In a momentum-brake the combination of a friction-disk loose on the axle; a friction-disk fast on the axle at one side of the loose friction-disk; a friction-disk slidable on a feather-key at the other side of the said friction-disk; a drum secured to the periphery of the said loose disk and overlapping the two other disks to exclude dust and economize space; and positive means for moving the sliding friction-disk toward the two former, substantially as and for the purpose specified.

2. In a momentum-brake the combination of a friction-disk loose on the axle; a drum secured to the periphery of the said disk; a friction-disk fast on the axle at one side of the loose friction-disk; a friction-disk slidable on a feather-key at the other side of the said friction-disk; and means for positively moving the sliding friction-disk toward, and away from, the two former, substantially as and for the purpose specified.

3. In a momentum-brake the combination of a friction-disk loose on the axle; a friction-disk fast on the axle at one side of the loose friction-disk; a friction-disk slidable on a feather-key at the other side of the said friction-disk; a drum secured to the periphery of the loose friction-disk and overlapping the two others; a ring or flange secured to each side of the said drum and extending toward the axle outside the said friction-disks; and means for moving the sliding friction-disk toward the two former, substantially as and for the purpose specified.

4. In a momentum-brake the combination with the slidable friction-disk thereof, of a ring running in a groove in the hub thereof; a sleeve embracing the said ring and having diagonal slots cut therein; means connected with the axle for holding the said sleeve from endwise motion; pins on the said ring projecting through the said slots; and means for rotating the ring and sleeve, substantially as and for the purpose specified.

5. In a momentum-brake the combination with the slidable friction-disk thereof, of a ring running in a groove in the hub thereof; a sleeve embracing the said ring and having diagonal slots cut therein; means connected with the axle for holding the said sleeve from endwise motion away from the said friction-disk; pins on the said ring projecting through the said slots; and means for rotating the ring and sleeve, substantially as and for the purpose specified.

6. In a momentum-brake the combination of a friction-disk loose on the axle; a drum secured to the periphery of the said disk; a friction-disk fast on the axle at one side of the loose friction-disk; a friction-disk slidable on a feather-key at the other side of the said friction-disk; a ring running in a groove in the hub thereof; a sleeve embracing the said ring and having diagonal slots cut therein; means connected with the axle for holding the said sleeve from endwise motion; pins on the said ring projecting through the said slots; and means for rotating the ring and sleeve, substantially as and for the purpose specified.

7. In a momentum-brake the combination of a friction-disk loose on the axle; a drum secured to the periphery of the said disk; a friction-disk fast on the axle at one side of the loose friction-disk; a friction-disk slidable on a feather-key at the other side of the said friction-disk; a ring running in a groove in the hub thereof; a sleeve embracing the said ring and having diagonal slots cut therein; means connected with the axle for holding the said sleeve from endwise motion away from the said friction-disk; pins on the said ring projecting through the said slots; and means for rotating the ring and sleeve, substantially as and for the purpose specified.

Toronto, Canada, June 16, 1900.

THOMAS E. McCOLLUM.

In presence of—

J. EDW. MAYBEE,

JOHN G. RIDOUT.