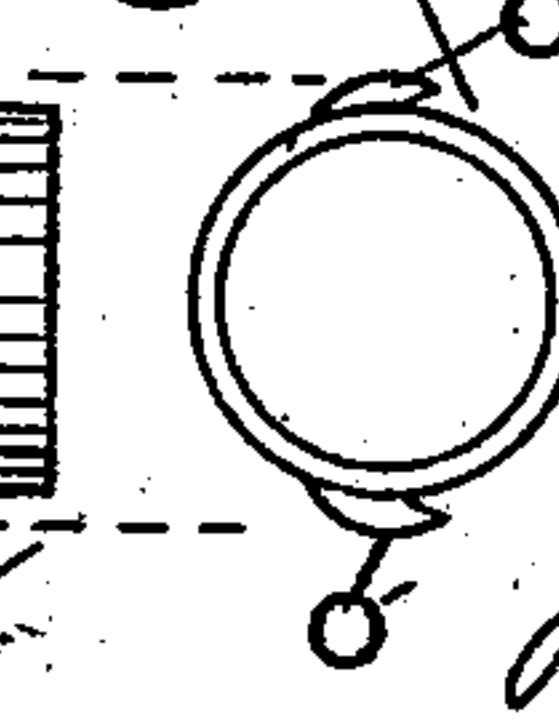
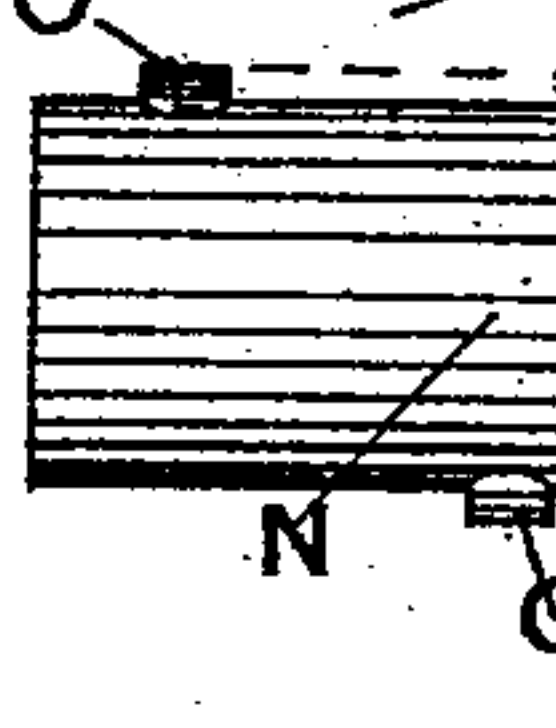
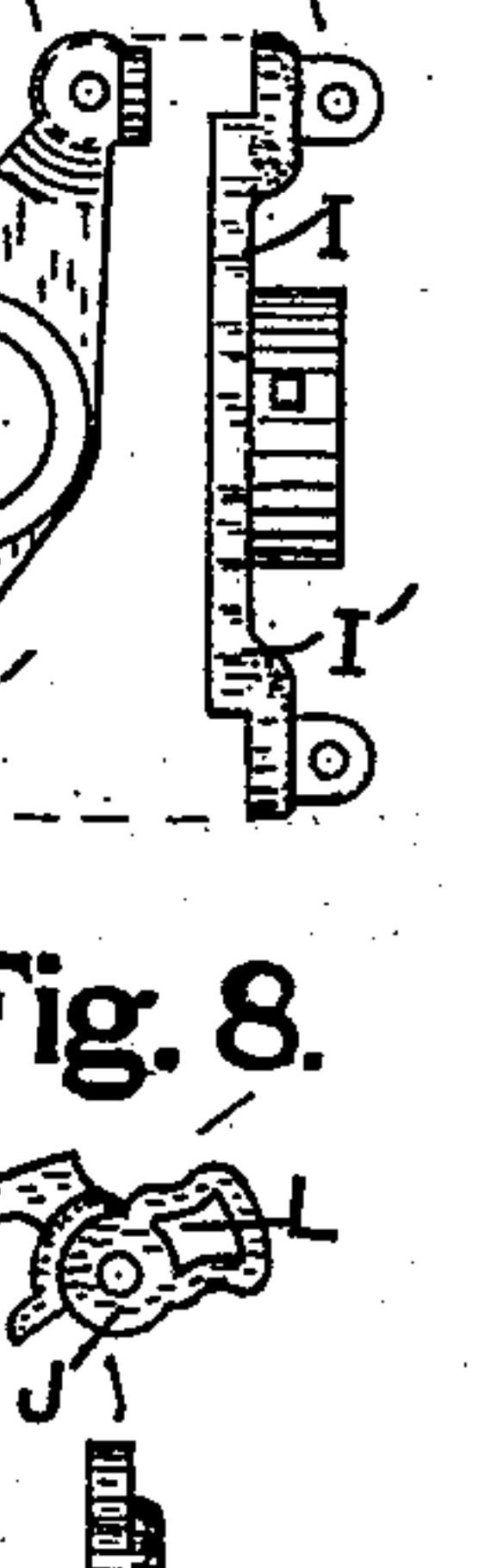
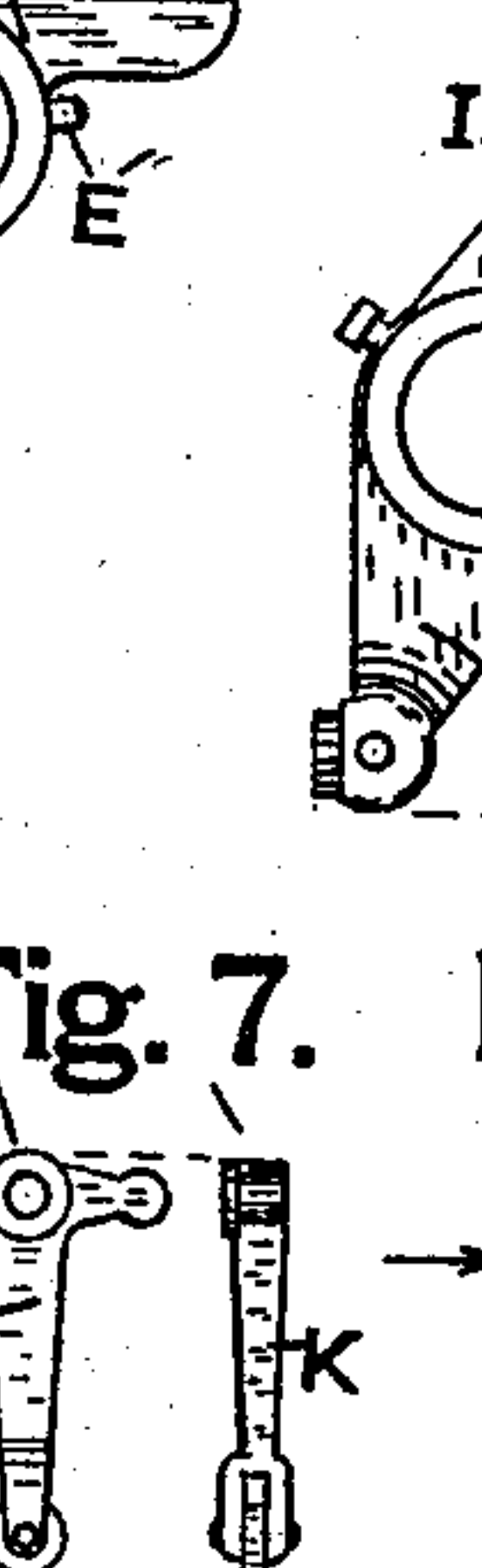
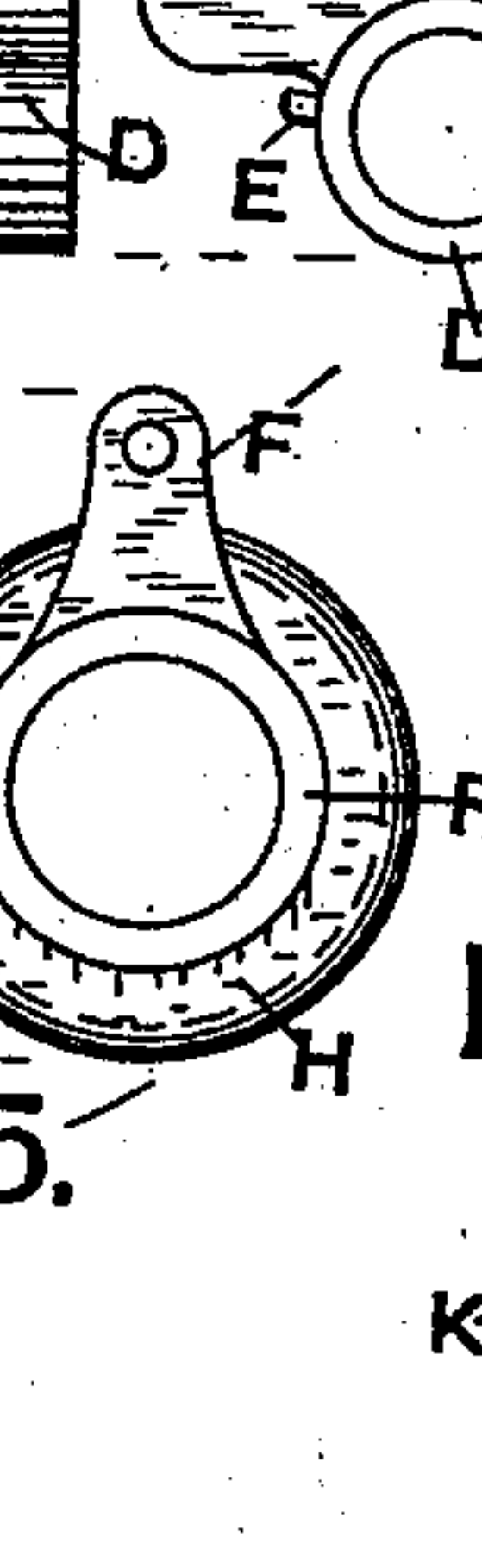
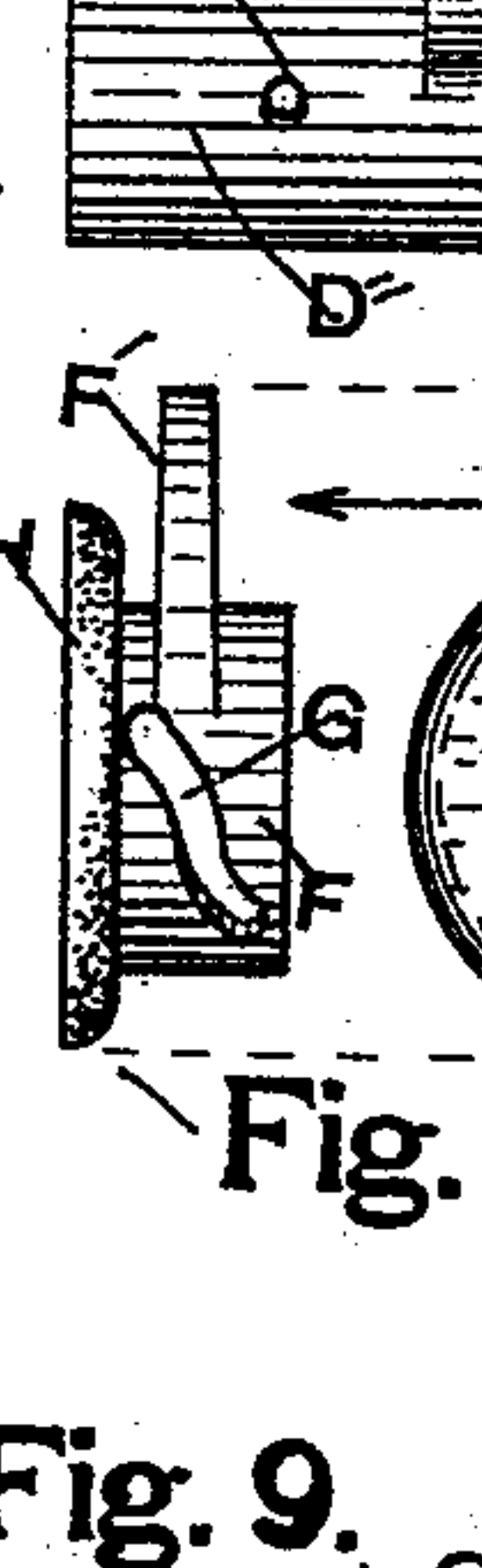
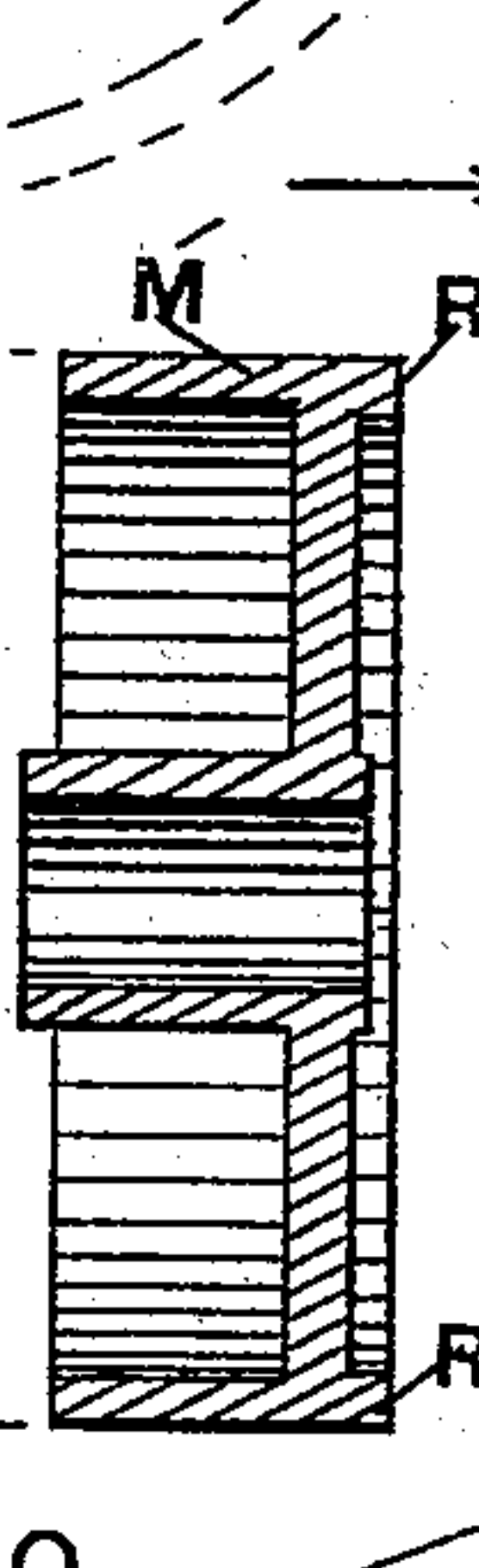
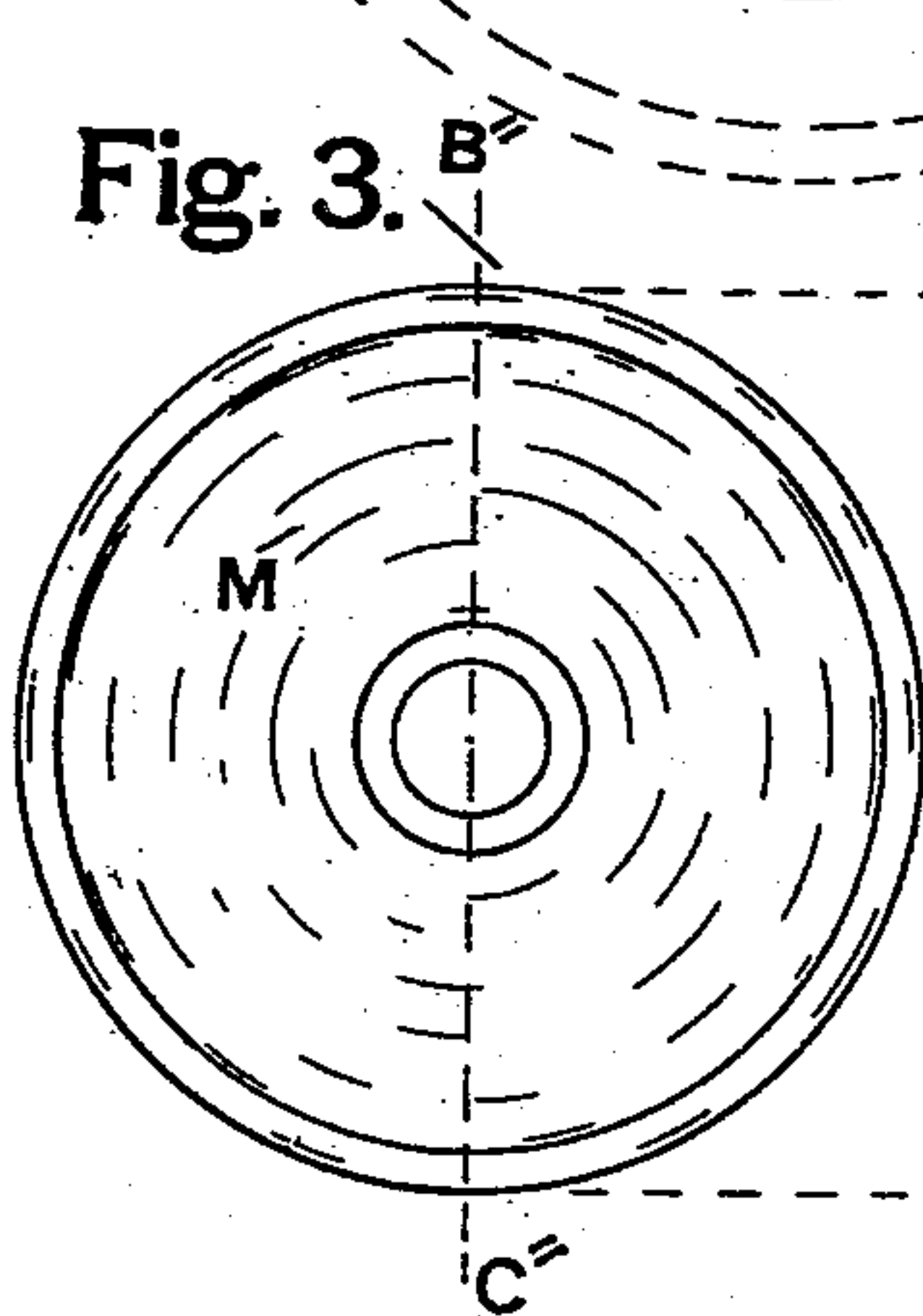
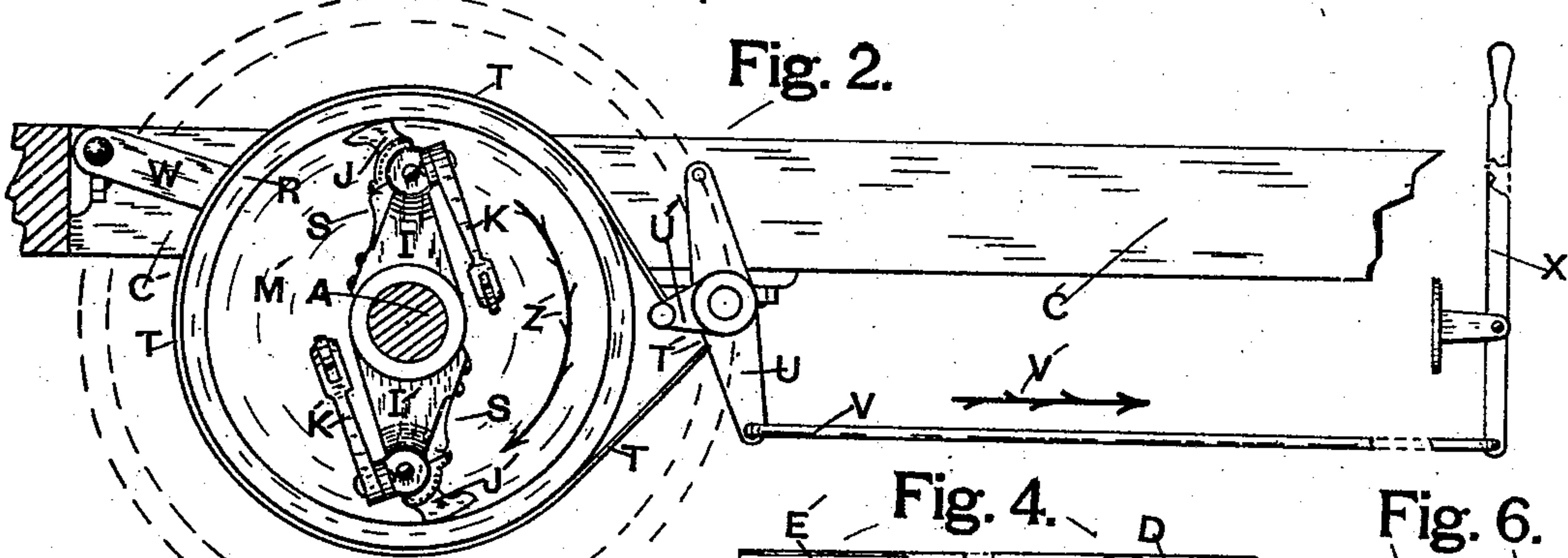
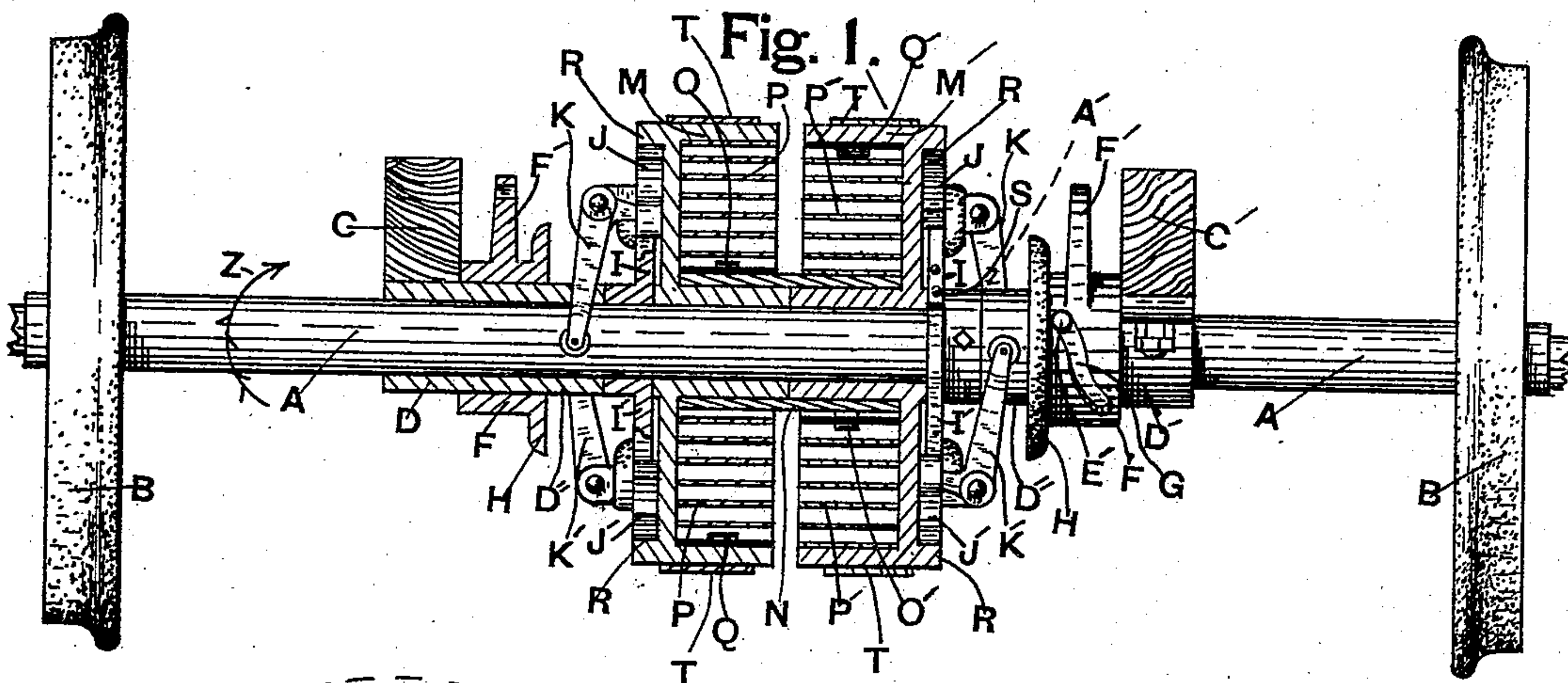


(No Model.)

W. A. BARKER.
CAR STARTER AND BRAKE.

No. 501,756.

Patented July 18, 1893.



WITNESSES:

H. S. Brown
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per his atty. Oscar Snell

UNITED STATES PATENT OFFICE.

WENDELL A. BARKER, OF CHICAGO, ILLINOIS.

CAR STARTER AND BRAKE.

SPECIFICATION forming part of Letters Patent No. 501,756, dated July 18, 1893.

Application filed November 28, 1892. Serial No. 453,302. (No model.)

To all whom it may concern:

Be it known that I, WENDELL A. BARKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Car Starter and Brake, of which the following is a specification.

My invention relates to car starters and brakes, and my object is to provide a new system of mechanism by which two or more springs are wound up by the momentum of the car through the action of the brake mechanism, and when the car is started the power from these wound up springs serves to again start the car, all of which is fully described hereinafter, and is illustrated by the accompanying drawings, in which—

Figure 1 is an elevation of a car axle and its wheels, together with a portion of the release mechanism, hereinafter fully explained. At the left hand side of Fig. 1 is shown a portion of the release mechanism in vertical section; also at the center of length of the axle are spring barrels, with spiral springs within them, shown in vertical section. Fig. 2 is a side elevation of one of the spring barrels, showing release mechanism, and the form of brake best adapted to this purpose, the view being a portion of Fig. 1 looking from right to left, all the mechanism being removed from the axle which is shown at the right of dotted line A". Fig. 3 shows, respectively, a side elevation, and a vertical section through line B" C", of one of the spring barrels. Fig. 4 shows, respectively, side and end elevations of one of the boxes through which the axle passes, and which are attached to the car starter and brake frame, and serve to hold the frame in position mounted upon the axles. Fig. 5 shows, respectively, side and end elevations of the rotary cam for operating, simultaneously, the levers of the release mechanism. Fig. 6 shows, respectively, side and edge views of arms to which are hinged friction dogs, and to which are pivoted levers by which these dogs are directly operated. Fig. 7 shows, respectively, side and edge elevations of one of the release levers. Fig. 8 shows, respectively, side and edge views of one of the friction dogs. Fig. 9 shows, respectively, side and end elevations of a sleeve to which the

central end of each spiral spring is attached, to connect the springs.

Similar letters indicate like parts throughout the several views.

The axle A and wheels B are of the form and size usually employed in the street railway service, for which this car starter and brake is particularly adapted.

It is intended to use a complete set of this apparatus on each of the axles of an ordinary street car, but to avoid complication in both the drawings and description I will confine myself to the mechanism for one axle, since the several parts mounted upon both axles are alike in construction and operation. At C and C' are the ends of the side timbers of a frame which is mounted above the axles on long journal boxes D and D', through which boxes pass the axles, the journal boxes being securely bolted to the under sides of the side pieces of the frame. It will be noticed in the two views of the journal box shown in Fig. 4 that, it has a long cylindrical projection D" at one end and that, projecting laterally are pins E and E'.

Fig. 5 shows a cam and lever F and F' which has a central boss, of a hollow cylindrical shape, and at the side is shown a helical slot G. There is a slot of this kind in both sides of the cam, and this device is mounted to vibrate upon the cylindrical portion D" of box D, the pin E of box D fitting within slot G, as is plainly shown in Fig. 1. When the top end of lever F' is vibrated back and forth, partially rotating the cam upon the cylindrical portion of box D, the pin E in slot G will cause the flange H to have both a rotary and a longitudinal motion relative to axle A. There is a cam device of this description on each side, as is shown in Fig. 1.

Fig. 6 shows, respectively, side and edge views of combination arms I and I' which have friction dogs J and J' hinged to their outer ends, as is shown in Fig. 2. The dogs J and J' are plainly shown in Fig. 8. Arms I, I' are really projections from a central boss through which passes the car axle, and to which the boss is firmly secured so that, the arms, a pair on each side of the apparatus, revolve in unison with the car axle.

It will be noticed in Fig. 2 that the dogs J

and J' are pivotally secured to the ends of arms I and I', to vibrate in the same plane as the arms revolve with axle A. Fig. 2 also shows two elbow levers K and K', which are provided each with a short and a long arm. Levers K and K' are pivoted to projecting lugs at the ends of arms I and I', to vibrate at a right angle to the direction of vibration of friction dogs J and J'. Friction dogs J and J' are operated by levers K and K' by the short arms of the levers being engaged in slots L, Fig. 8, of the dogs. The end of the long arm next the axle A of each of levers K and K' is provided with a small roller, which roller is contacted by the flange H of cam F, when it is desired to operate dogs J and J', as will be shown.

It has already been stated that the boss of arms I and I', at each side of the apparatus is firmly attached to the car axle A. Between these bosses are mounted directly, and movably, two spring barrels or drums, M, M', Figs. 1 and 3. Each of these barrels has a central boss which projects inwardly, and projects beyond the plane of the edge of the peripheral rim of the barrels so that, when they are mounted upon the axle the rims have a space between them, and out of contact, as shown in Fig. 1 where the ends of the bosses only are in contact. Fig. 9 shows, respectively, a side and end elevation of a cylindrical sleeve N, which is fitted over the outside of the inside bosses of barrels M, M', as shown in Fig. 1. Sleeve N is provided with two hooks O and O', set to pull in opposite directions, as shown in Fig. 9. To one of these hooks, O, is attached the inner or axle end of a spiral spring P, shown in section in Fig. 1, and the outer end of this spring is attached to a hook Q, at the inside of the rim of barrel M. Another spiral spring P' has its axle end attached to hook O' on sleeve N, and the outer end of this spring is attached to hook Q' at the inside of the rim of barrel M', the springs being coiled in opposite directions, and this arrangement being such that should either of the spring barrels be held stationary and the other one revolved, through the central connection of sleeve N both springs are wound up.

Each of the spring barrels is provided with a peripheral rim R, at the outside edge, within the internal diameter of which are fitted the arms I and I', and friction dogs J and J'; the friction dogs contacting the inside circumference of rim R, as shown in Fig. 2. The contact points of these dogs being to one side of a radial line from the center of the axle prolonged through the pivotal center of the dogs, permits arms I and I' to revolve in the direction of the arrow when drum M, Fig. 2, is held stationary by the brake, but should arms I and I' be stationary, by the stopping of the car, any motion of barrel M, in the direction of arrow, would at once be transmitted to arms I and I' because of the bite of

dogs J and J' caused by the angle they are set to a radial line from the center of the axle as above explained. The dogs J and J' are held in easy contact with rim R by means of springs S.

The brake mechanism is shown in Fig. 2, where is seen a strap T surrounding almost the entire circumference of the barrel M', one end of the strap being firmly attached at T' to the axle of a lever U, while the other end of the strap is attached to the end of a short arm U' of lever U so that, should the rod V be moved in the direction of the arrow, strap T will be tightened around the barrel, and loosened by a movement in the opposite direction. At W is shown a chock piece which serves to prevent spring barrel M Fig. 2, from revolving but in one direction. Each of the spring barrels M and M', Fig. 1 is provided with a chock piece, similar to W, Fig. 2, to prevent the barrels turning backward when the springs are wound up and the dogs J and J' released. These chock pieces are so disposed that one will hold spring barrel M from turning in one direction and the other chock piece will prevent spring barrel M' from turning in the opposite direction to barrel M Fig. 1.

There are two brake levers, one at each end of the car, so that the car can be run with either end ahead, but for brevity in description I will show but one brake lever since the brake lever at one end of the car is a duplicate of the one at the other end. The brake lever X, Fig. 2, is connected to the right hand end of rod V. There are also rods which connect the tops F' of cams F with levers which operate the cams from the platform at either end of a car, which parts are not shown since they are common expedients for such purposes. To apply the brake, motion is imparted to rod V in the direction of the arrow V', when strap T will closely clamp the peripheral surface of spring barrel M', which will stop or retard the motion of the barrel relative to the motion of axle A; and since the friction dogs J and J' of barrel M, left hand side Fig. 1, act to clutch arms I and I' to the peripheral rim R, of this barrel, when the arms are revolving in the direction of the arrow Z, Fig. 1, and Z', Fig. 2, and, also, since arms I and I', at the right hand side of spring barrel M', have friction dogs J and J' which are set oppositely to the dogs which clutch barrel M the dogs of spring barrel M' will slide around, as is evident by inspecting Fig. 2. Then the revolution with the axle of barrel M will wind up spiral spring P in barrel M and by means of the connecting sleeve N spiral spring P' in barrel M' will also be wound up, and should the springs be entirely wound up before the car is stopped the barrel M' would either slide around under the frictional contact of strap T, or, should the friction of this strap be sufficiently great, the axle A would be held from revolving and the

car wheels B be slid along the track; before which event, however, the pressure of strap T on the spring barrel should be released. After the springs in both barrels have been wound up, the friction dogs J and J', which clutch both barrels, will hold the barrels from turning in relation to each other, and both barrels in this condition will revolve in unison with the axle, the springs being ready to operate to start the car. After the car is stopped to start it again, in say the direction of arrow V', Fig. 2, the cam F (shown in section left hand side Fig. 1) is partially turned to cause its flange H to contact the free ends of levers K and K', which releases the friction dogs J and J' from spring barrel M thus disconnecting this drum from the axle, the drum being prevented from revolving by means of the chock piece W, so that, drum M is held stationary relative to the car, when the whole power of the springs will operate to turn the axle in the direction of arrow Z' Fig. 2, barrel M remaining stationary, relative to the car, until the springs are entirely unwound, when both spring barrels will revolve in unison with axle A, the car moving in direction with arrow V.

I claim as my invention—

1. In a car starter and brake, two spring barrels mounted to revolve upon the same shaft, a revoluble sleeve between said spring barrels substantially as described, said sleeve mounted to revolve around said shaft, a spiral spring within each barrel, each spring having the outer end thereof attached to the barrel in which it is coiled, the other ends of said

springs attached to said sleeve for the purpose substantially as shown and described.

2. A car starter and brake comprising two barrels mounted to revolve on a car axle, a spiral spring disposed and attached within and to each barrel, and each of said springs attached to a sleeve mounted to revolve around the car axle between said barrels as described, arms I and I' attached to said axle, friction dogs for engaging said barrels, said dogs pivotally mounted at the ends of said arms, said dogs vibrating in the same plane as the revolution of said barrels, said friction dogs operating to prevent said barrels from revolving in opposite directions, levers K and K' pivotally attached to said arms to vibrate at substantially a right angle to the movement of said dogs, said levers connected to operate said dogs in the manner substantially as described.

3. In the hereinbefore described car starter and brake the helical cams F and F' said cams mounted to vibrate around the car axle upon the inwardly projecting portion of the axle boxes, said cams operating to release friction dogs J and J' through the medium of levers K and K', in the manner substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, this 19th day of November, 1892, in the presence of witnesses.

WENDELL A. BARKER.

Witnesses:

A. ERNEST KNIGHT,
J. B. BARTLETT.