

No. 864,422.

PATENTED AUG. 27, 1907.

C. HARKNESS.
TROLLEY GUARD.
APPLICATION FILED MAR. 8, 1906.

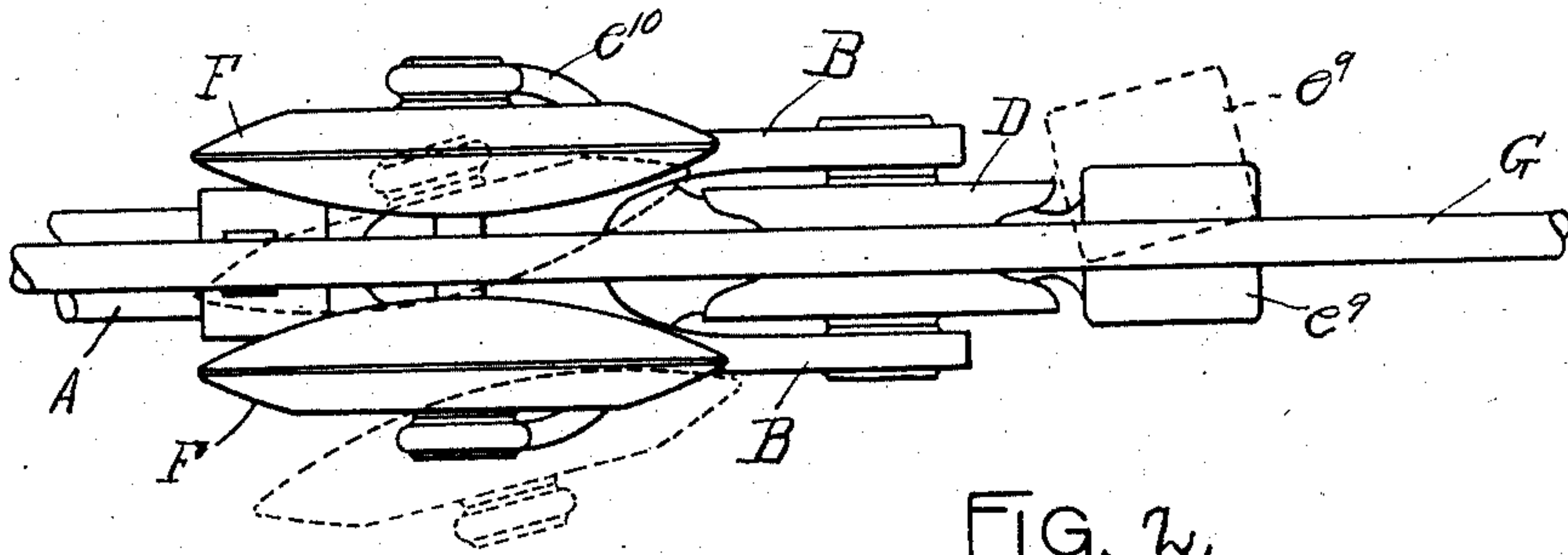


FIG. 2.

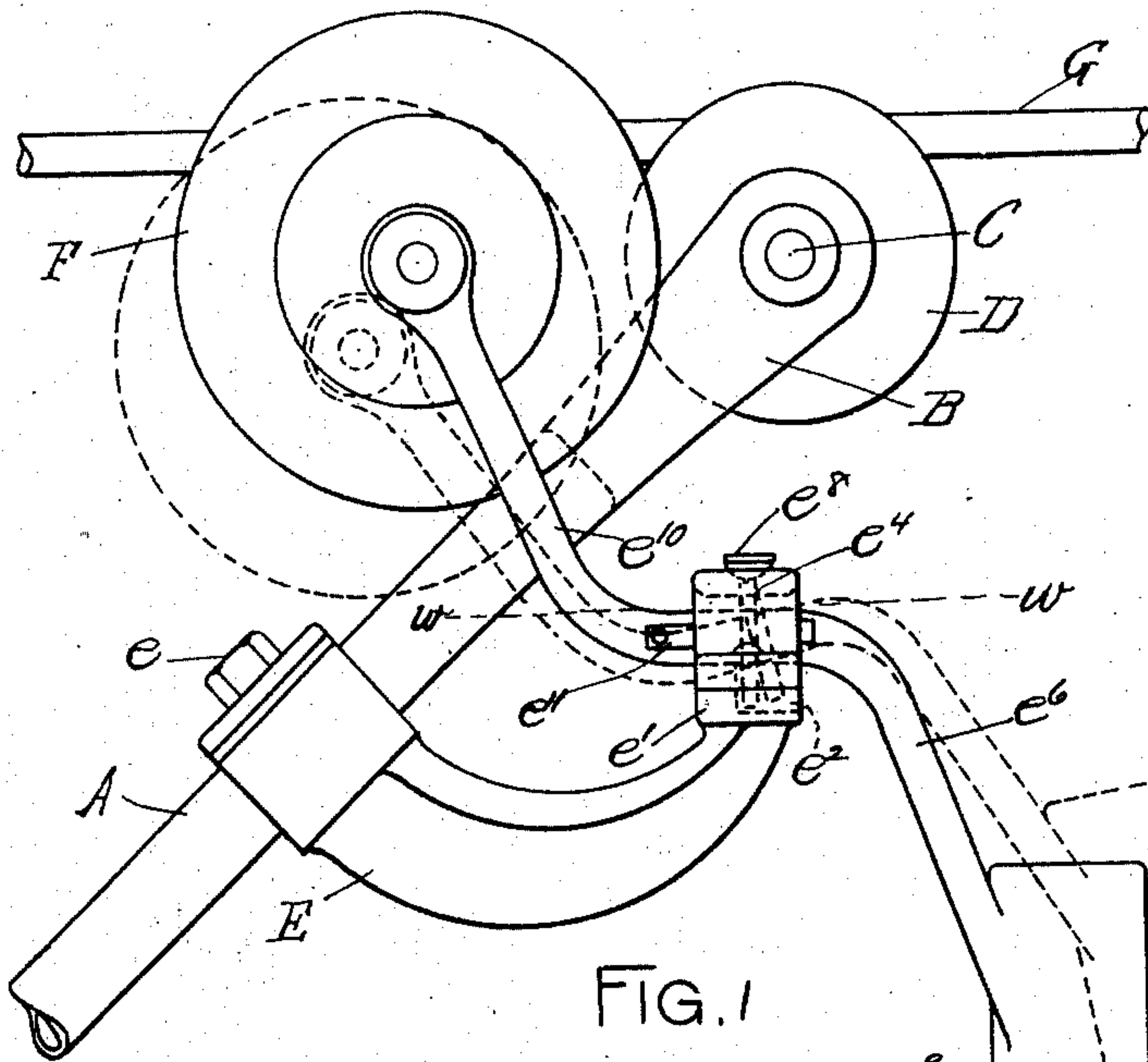


FIG. 1.

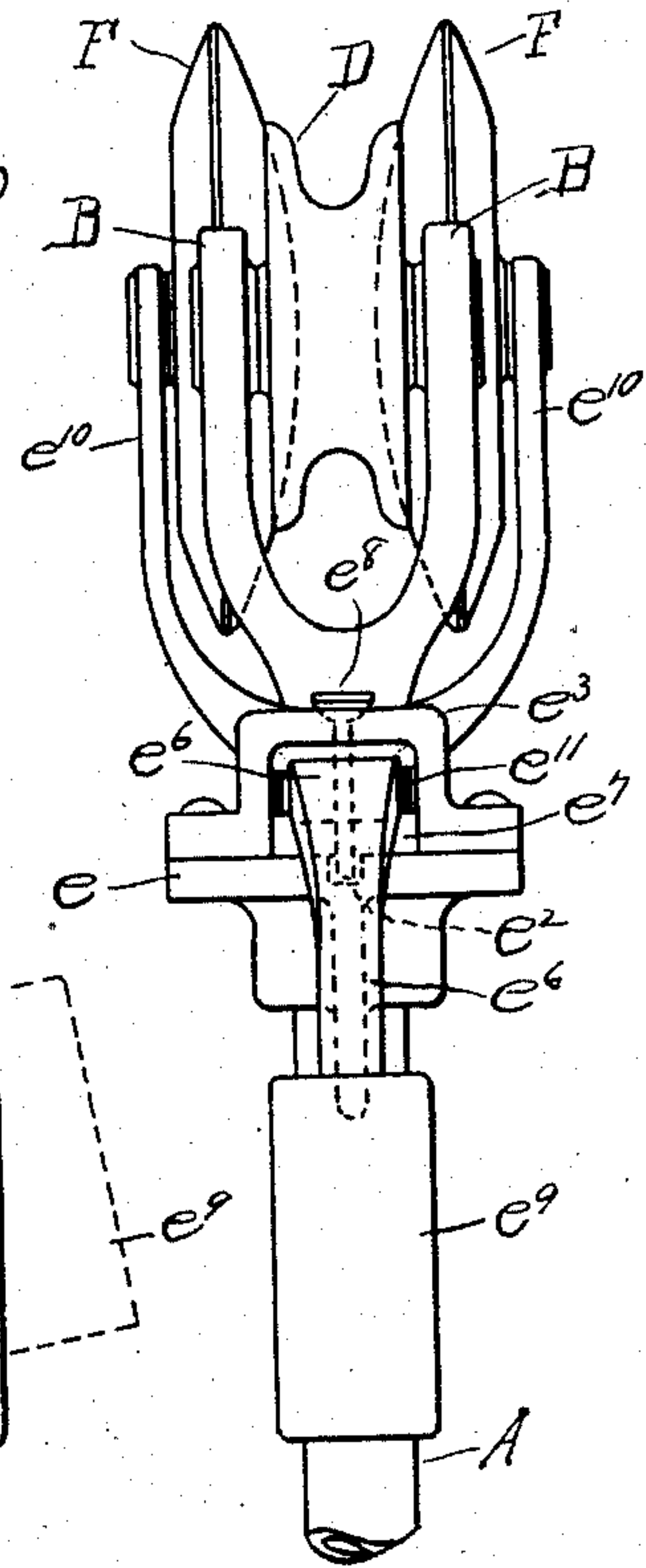


FIG. 3.

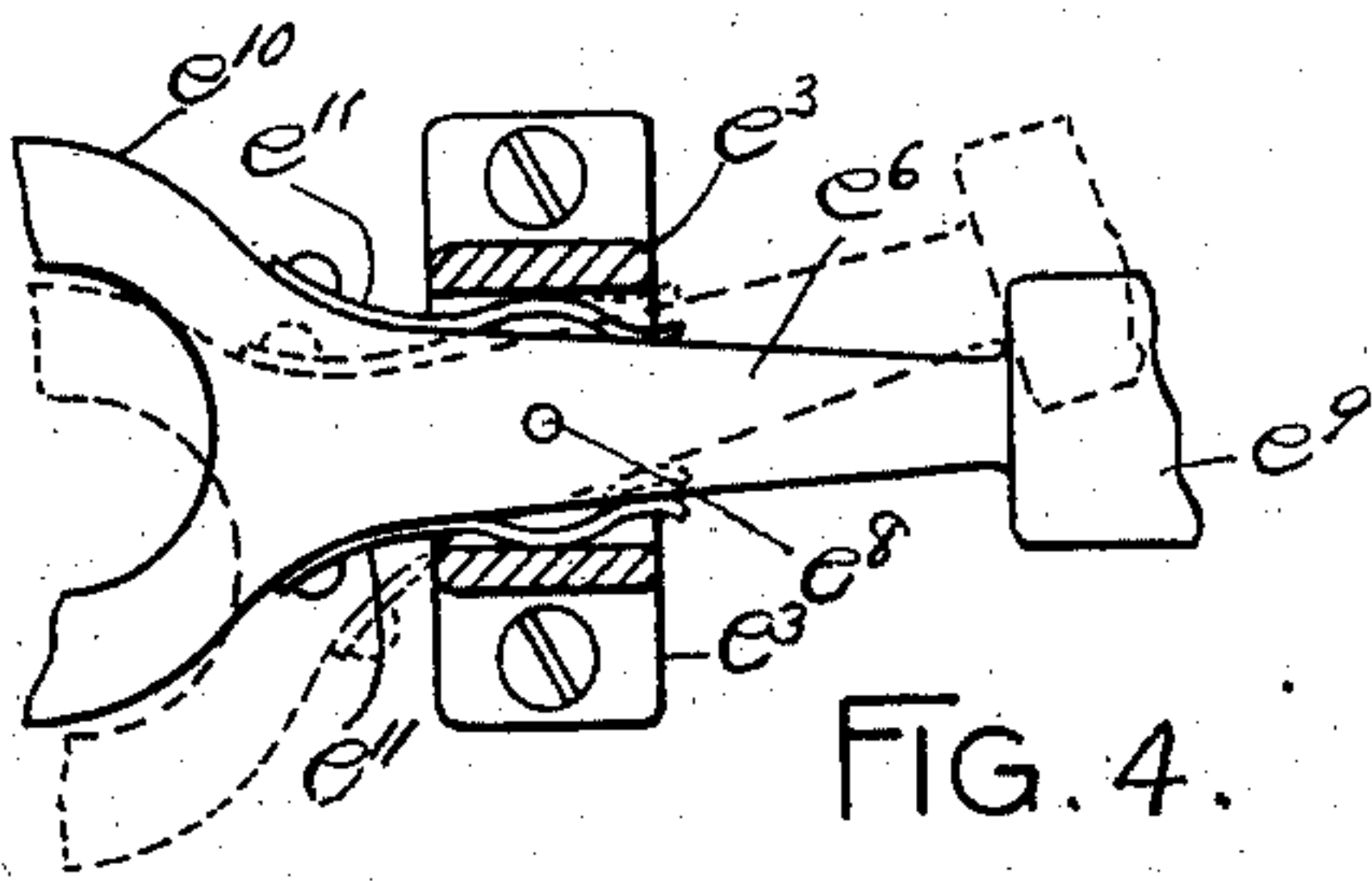


FIG. 4.

Witnesses:
Fred W. Cozzano
Vernon O. Taylor

Inventor
Charles Harkness
By Horatio E. Bellows
Attorney

UNITED STATES PATENT OFFICE.

CHARLES HARKNESS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE HARKNESS TROLLEY SYSTEM COMPANY, A CORPORATION OF RHODE ISLAND.

TROLLEY-GUARD.

No. 864,422.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Original application filed February 16, 1905, Serial No. 245,854. Divided and this application filed March 8, 1906, Serial No. 304,873.

To all whom it may concern:

Be it known that I, CHARLES HARKNESS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Trolley-Guards, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to guards for trolley wheels and has for its essential object the effective retention of the trolley wheel upon the feed wire while traversing curves, switches, or under all ordinary or extraordinary conditions.

This invention is a division of pending application numbered serially 245,854 and filed Feb. 16, 1905, and consists in mounting adjacent the trolley wheel a pair of yielding rotary disks in the manner hereinafter set forth.

In the drawings accompanying this specification wherein like reference characters indicate like parts throughout the views, Figures 1, 2 and 3 are side, plan and rear elevations respectively of my novel trolley guard. Fig. 4, a section on line *w, w*, of Fig. 1.

The invention is employed in conjunction with the trolley pole, A, fork B and trolley wheel D, mounted on the spindle C. A bracket arm, E, is fixed to the pole, A, or base of the fork, B, by a clamping screw. The outer extremity of the arm is enlarged, *e'*, and provided with a central longitudinal slot, *e²*. To the enlarged portion is fixed an arched plate, *e³*, provided with tapering central passage, *e⁴*. A lever or guard, plate, *e⁶*, traverses the passage, *e⁴*, formed by the arched plate, and is pivotally secured by a pin, *e⁸*, which traverses the passages, *e⁴* and the lever, and terminates in the slot, *e²*, of the block, *e'*. The lever is provided at its lower extremity with a weight, *e⁹*, and at its forward extremity with upwardly inclined arms or a fork, *e¹⁰*. Pivoted to the inner faces of the arm extremities, *e¹⁰*, are the heads or disks, F, having convex inner faces. Leaf springs, *e¹¹* are fixed on each side of the guard plate, *e⁶* and bear against the inner sides of the arched plate, *e³*.

The operation of the device in conjunction with a feed wire, G, is as follows: The wheel, D, engages the feed wire, G, and the heads or disks, F, which are of larger diameter than the trolley wheel, extend both above and below the horizontal plane and in front of the latter, and sufficiently above the plane of the wire, G, as to contact with any switch which occurs upon the

line before the wheel, D, reaches the frame. The convex inner faces of the interspaced heads, F, also accommodate them to approaching curves. When in their advance the heads, F, contact with a switch, they are depressed to the position indicated by broken lines in Fig. 1, the heads rolling with their peripheries in contact with the under face of the switch. The limited tilting or rocking action admitted by the arched plate, *e³*, results, when the heads reach their lowest position in depressing pole, A, and temporarily disengaging the trolley wheel, D, from the feed wire, but after the heads have passed the switch the weight, *e⁹* permits the parts to resume their normal elevated positions. In passing curves the heads assume the diagonal position relatively to the trolley wheel shown in broken lines in Figs. 2 and 4. The pressure of the springs, *e¹¹* upon the sides of the lever, *e⁶* forces the heads into their normal vertical planes parallel with the plane of the wheel, as soon as the curvature of the line, G, discontinues.

While in this application the guard wheels or heads have been shown in a position in advance of the trolley wheel, it should be understood that applicant does not intend to limit himself to heads so positioned, since valuable and improved results are obtained by locating the heads in the rear of the trolley wheel with their upper portions in a higher plane than the top of the trolley wheel.

What I claim is,

1. The combination with a trolley-wheel and the fork in which said wheel is mounted, of a bracket arm fixed to said fork, a lever provided at one end with a weight and at the other end with upwardly inclined diverging arms pivotally mounted upon the bracket arm and movable vertically and transversely thereon, and heads upon the extremities of the diverging arms.

2. The combination with a trolley-wheel and the fork in which said wheel is mounted, of a bracket arm fixed to said fork, a lever provided at one end with a weight, and at the other end with upwardly inclined diverging arms pivotally mounted upon the bracket arm and movable vertically and transversely thereon, and rotary heads having convex inner faces mounted upon the diverging arms.

3. The combination with a trolley-wheel and the fork in which said wheel is mounted, of a bracket arm having a longitudinal slot, an arched plate fixed to the bracket arm provided with a tapering passage, a lever provided with upwardly inclined arms resting upon the bracket arm beneath the plate, heads upon the upper ends of the arms, a pivot pin traversing the passage in the plate and the lever and resting in the slot of the bracket arm.

4. The combination with a trolley-wheel and fork in which said wheel is mounted, of a bracket arm fixed to

the fork, a lever provided with diverging arms and adapted to swing in a horizontal plane pivoted to the bracket arm, heads upon the arms, and spring means for limiting the lateral swing of the heads.

- 5 5. The combination with the trolley-wheel and the fork in which said wheel is mounted, of a bracket arm fixed to the fork, an arched plate on the bracket arm, a lever provided with diverging arms and adapted to swing in a horizontal plane resting upon the bracket arm and be-

neath the plate, heads upon the arms, and springs inter- 10 mediate the lever and the inner sides of the plate for limiting the lateral swing of the heads.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES HARKNESS.

Witnesses:

HORATIO E. BELLOWS,
FRED IRVIN COZZENS.