

A. S. CUBITT.
 CONTROLLER REGULATOR.
 APPLICATION FILED OCT. 16, 1909.

949,998.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

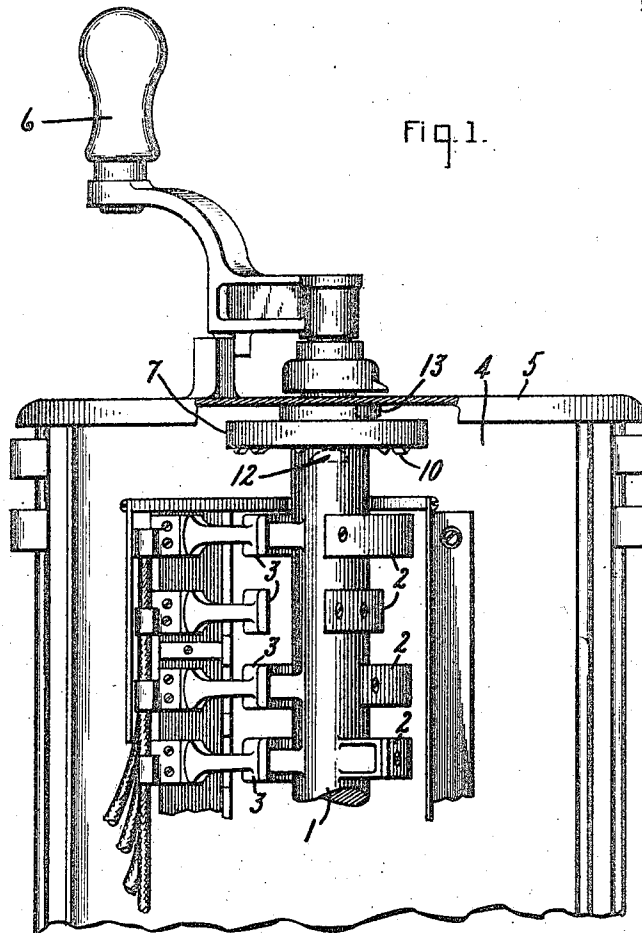


Fig. 1.

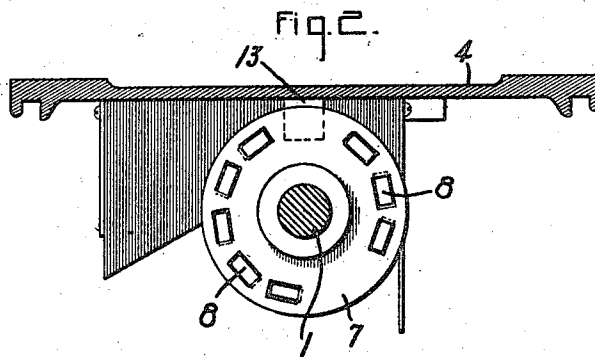


Fig. 2.

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 BY *Albert H. Davis*
 AT-

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2 SHEETS—SHEET 2.

Fig. 4.

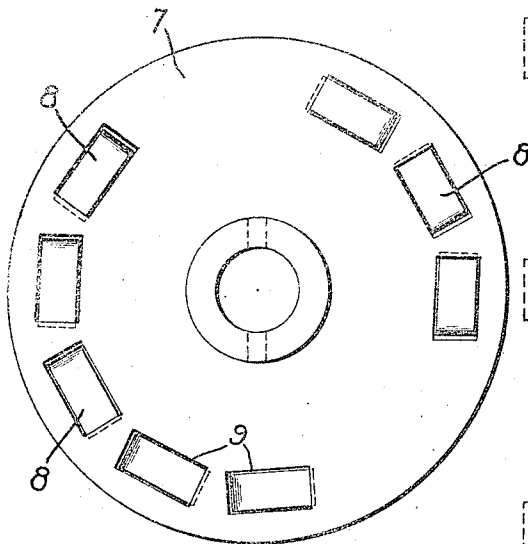


Fig. 5.

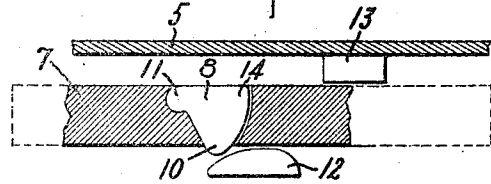


Fig. 6.

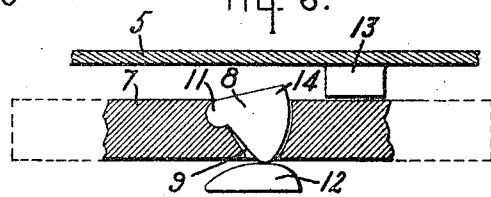


Fig. 7.

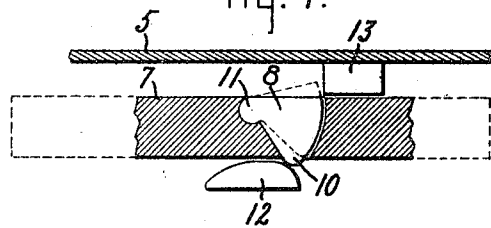
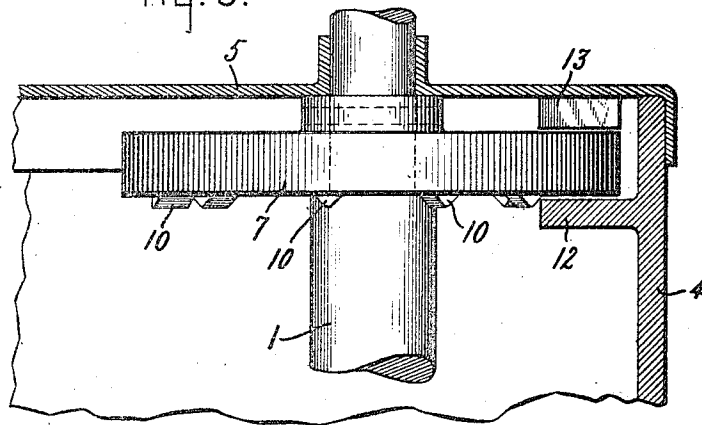


Fig. 3.



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UNITED STATES PATENT OFFICE.

ARCHIBALD S. CUBITT, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO GENERAL
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CONTROLLER-REGULATOR.

949,998.

Specification of Letters Patent.

Patented Feb. 22, 1910.

Application filed October 15, 1909. Serial No. 522,800.

To all whom it may concern:

Be it known that I, ARCHIBALD S. CUBITT, a citizen of the United States, residing at Pittsfield, county of Berkshire, State of Massachusetts, have invented certain new and useful Improvements in Controller-Regulators, of which the following is a specification.

This invention relates to rotary electric switches, rheostats or controllers, and its object is to prevent such devices from being operated too rapidly by an inexperienced or careless person.

The invention is especially applicable to the controllers of electric railway vehicles, where the car propelling motor starts under load. Unless some means be provided to regulate the rate of movement of the controller handle, the motorman is liable to turn on the current faster than the acceleration of the car requires, thereby wasting energy and endangering the motor windings.

My invention provides means for preventing this by regulating the speed with which the controller handle can be rotated in turning on the current.

To this end it consists in a combination with the controller handle and shaft of a plurality of pivoted dogs, heavy enough to possess considerable inertia, moving with the shaft and cooperating with a fixed cam and a fixed stop. When the shaft is rotated, the dogs are carried in succession over the cam, by which they are lifted into line with the stop. If the speed is not too great, the dog will fall after riding over the cam, and will pass freely under the stop, so that the rotation of the shaft will not be interrupted. But if the speed of the shaft exceeds a predetermined limit, the lifted dog will strike the stop before it has time to fall, and thereby the rotation of the shaft will be arrested until the dog can drop below the stop. In this way, any attempt on the part of the motorman to throw on his controller too rapidly will be effectually frustrated.

In the accompanying drawings, Figure 1 is a front elevation of the upper part of a car controller; with the casing removed and the top plate partly in section; Fig. 2 is a top plan view with the top plate removed; Fig. 3 is a side elevation showing the top plate and back of the casing in section; Fig. 4 is a plan view of the dog-carrying disk; Figs. 5, 6 and 7 are sectional views

showing the operation of a dog in passing the cam and stop.

The controller may be of any suitable construction. In the one selected for illustration, the upright shaft 1 carries segmental contacts 2 cooperating with stationary fingers 3 suitably mounted in a casing, of which the back-plate 4 and the top-plate 5 are shown. The shaft extends up through the top-plate and is provided with the usual handle 6.

Immediately under the top-plate a disk 7 is secured concentrically on the shaft. Mounted on said disk are several dogs 8 corresponding in number and location with the several speed positions of the controller handle. I prefer to make these dogs somewhat wedge-shaped, so that they will be supported in wedge-shaped slots 9 formed in the disk 7 at equal distances from the center of the shaft. The dogs have lower rounded ends or noses 10 which normally project below the under surface of the disk. The dogs can rise and fall in said slots, and in order to facilitate their movement and retain them in place, I prefer to hinge them to the disk. This may be readily effected by forming a cylindrical recess at the rear end of each slot, and providing the dog with a cylindrical lug 11 fitting and turning in said recess.

A lug 12 projects from the back plate of the casing just under the disk. Its upper surface is rounded to form a cam over which the dogs can slide and by which they will be lifted. A stop-lug 13 depends from the underside of the top-plate just above the disk, not in the vertical plane of the cam, but somewhat in the rear thereof, as shown in Fig. 1; that is, at a point which will be reached by the dogs after they have passed the cam.

The operation is as follows: The dogs lie in their slots with their tops flush with the surface of the disk, so that they can in this position pass freely under the stop 13. But just before reaching said stop the depending nose of each dog comes in contact with the rounded surface of the cam 12 which lifts the dog so that its front corner 14 lies in the plane of the stop 13 (Fig. 6). If the disk is moving slowly, the dog will have time, after passing over the cam, to drop into its normal position (Fig. 7), but if the speed of the disk is too great, inasmuch as

the inertia of the dog will prevent it from falling quickly, its corner 14 will strike the stop, as indicated by the dotted lines in Fig.

7. This arrests the movement of the controller handle, and the motor man must wait until the dog has time to drop, before he can continue the rotation of the controller shaft.

When the handle is turned backward to shut off the power, the dogs simply drag up over the cam without offering any obstacle to a quick rotation of the controller.

This device can be readily applied to existing controllers, and serves as an effectual check upon the motorman in case he attempts to operate his controller at a speed greater than is warranted by the acceleration of his car.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with a rotatable shaft, of a disk thereon, a plurality of movable dogs carried by said disk, a stationary cam over which said dogs must ride, and a stationary stop under which they can pass, but adapted to engage them if the speed of the shaft exceeds a predetermined limit.

2. The combination with a rotatable shaft, of a disk thereon provided with slots, movable dogs carried in said slots with their noses below said disk, a cam beneath said

disk, and a stop just above said disk in the rear of said cam.

3. The combination with a rotatable shaft, of a disk thereon provided with slots, dogs hinged at the rear ends of said slots and normally projecting below said disk, a cam under said disk in the path of said dogs, and a stop above said disk adapted to engage the front corner of a dog lifted by said cam in case the speed of the disk exceeds a predetermined limit.

4. The combination with a rotatable shaft, of a disk thereon having slots provided with cylindrical recesses at their rear ends, dogs having cylindrical lugs fitting said recesses and provided also with rounded noses depending below said disk, a rounded cam in the path of said noses, over which said dogs can ride, and a stop above said disk in the rear of said cam.

5. The combination with a rotatable shaft, of a carrier thereon, a plurality of dogs movable transversely to the plane of said carrier and returnable by gravity to their normal positions with their lower ends projecting below said carrier, a stationary cam by which said dogs can be lifted when their lower ends come in contact with it, and a stationary stop for engagement by said dogs in case they have not time to drop before reaching said stop.

In witness whereof, I have hereunto set my hand this 14th day of October, 1909.

ARCHIBALD S. CUBITT.

Witnesses:

HELEN ORFORD,
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