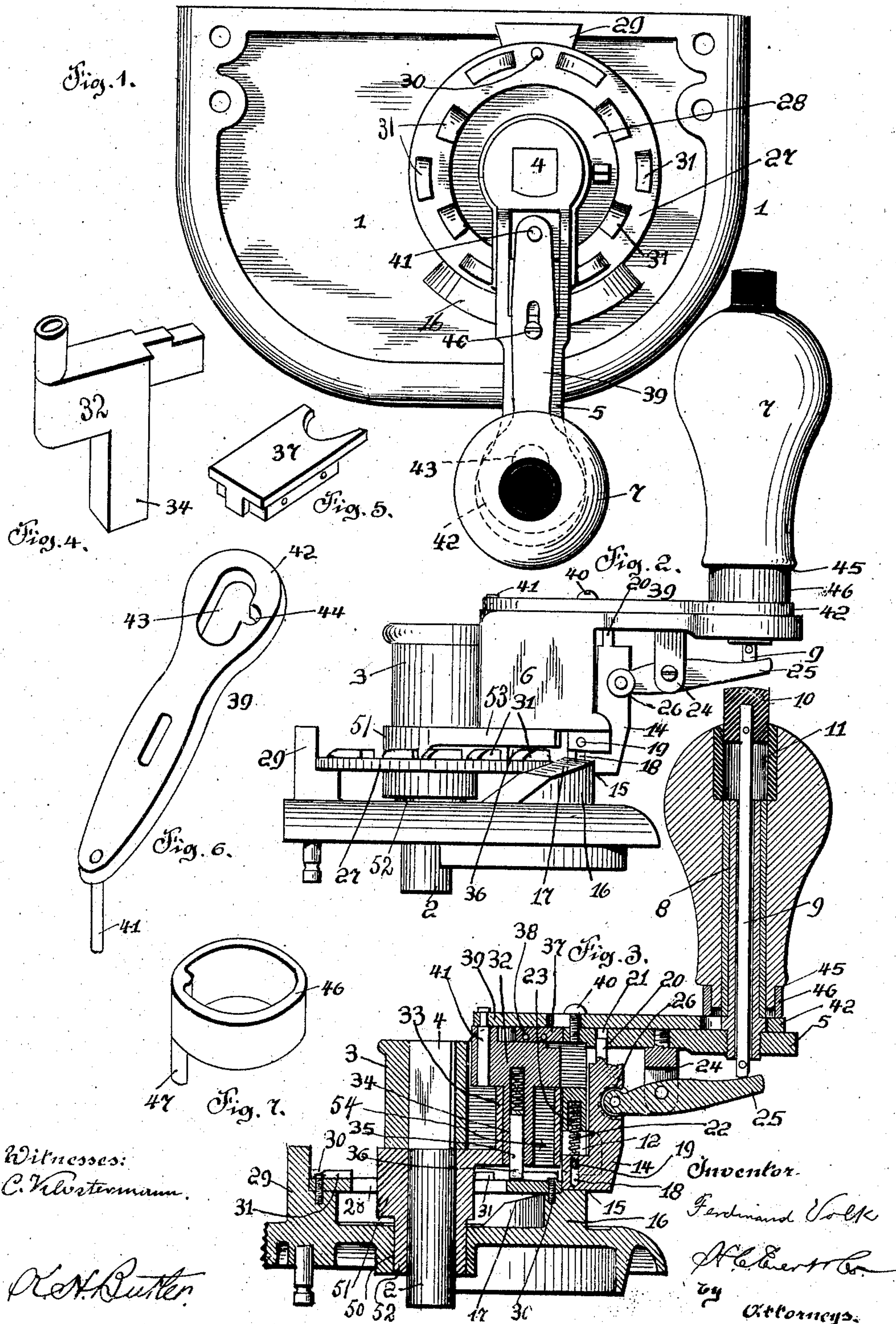


No. 846,533.

PATENTED MAR. 12, 1907.

F. VOLK.  
ELECTRIC CONTROLLER.  
APPLICATION FILED SEPT. 29, 1906.





# UNITED STATES PATENT OFFICE.

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## ELECTRIC CONTROLLER.

No. 846,533.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed September 29, 1906. Serial No. 336,751.

*To all whom it may concern:*

Be it known that I, FERDINAND VOLK, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Controllers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to electric controllers, and more particularly to an attachment designed for the controllers of shifting cars, mine and yard locomotives, and such vehicles upon which reversible or "two-way" controllers are used.

The invention has for its primary object the provision of positive and reliable means for preventing a rapid actuation or movement of a controller, thereby eliminating the expense and trouble heretofore experienced by the "burning out" of controllers.

Another object of this invention is to insure an easy operation of a car or locomotive and free the same and its occupants from danger of injury by suddenly starting or stopping.

The present invention is an improvement upon a patent, No. 811,340, granted me January 30, 1906, wherein novel means is disclosed, in combination with a retarding device for controllers, for protecting the upper ends of controller-shafts.

The detailed construction entering into the present invention will be hereinafter described, illustrated, and then specifically pointed out in the appended claims.

Referring to the drawing, forming part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a plan of a controller equipped with my improved attachment. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view of the same. Fig. 4 is a detail perspective view of the movable tooth-carrying member. Fig. 5 is a similar view of the lid or cover portion of the casing of the improved device. Fig. 6 is a perspective view of the shifting arm employed in the improved device. Fig. 7 is a similar view of a band carried by the handle of the controller-lever.

In the accompanying drawing, I have illustrated the cover-plate 1 and operating-

shaft 2 of a conventional form of controller, particularly that type designed for operating a vehicle in two directions. In this type of controller the normal or inoperative position of the controller-lever is shown in Fig. 1, and by swinging the controller-lever in one direction a vehicle equipped with the same moves forward, and when swung in the opposite direction the vehicle moves rearward. The controller-lever commonly used embraces a collar 3, adapted to fit over the rectangular end 4 of the operating-shaft 2 of the controller. Connecting with the collar 3 is the lever proper, 5, carrying a casing 6 and a handle 7. The handle 7 is revolvably mounted upon a tubular spindle 8, rigidly connected to the lever 5, and in the spindle 8 is loosely mounted a pin 9, carrying upon its upper end an insulated thumb-block 10, which recedes into an insulated recess 11, formed in the upper end of the handle 7, when the pin 9 is depressed.

The outer edge of the casing 6 is slotted, as at 12, to accommodate a latch 14, adapted to engage in a notch 15, formed in an arc-shaped rib 16, carried by the cover-plate 1 of the controller. The rib 16 is beveled, as at 17, whereby the latter can ride over the rib and engage in the notch 15 to hold the controller-lever in a fixed position. The latch 14 is slotted, as at 18, and passing through ears depending from the casing 6 and also through said slot is a pin 19, that serves to guide and maintain the latch in position. A stud 20, carried by the top of the latch, enters an opening 21, formed in the lever 5, and serves to maintain the latch in a vertical position.

A spring 22, seated in a recess 23 in the casing 6, serves to retain the latch upon the rib 16 or in the notch 15, and to elevate said latch I provide the lever 5 with a depending lug 24, and in said lug I fulcrum a lever 25, which is pivotally connected to the latch 14, as at 26, and bears against the lower end of the pin 9.

By pressing downwardly upon the insulated thumb-block 10 the latch 14 is elevated by the coaction of the rod 9 of the lever 25 and released from the recess 15, at which time the controller-lever can be swung in either direction.

My invention particularly resides in a controller-lever attachment which prevents the



motorman or operator of a vehicle from rapidly actuating the controller-lever, means being provided to intercept the movement of the lever unless it is properly manipulated by a motorman or operator of the car. The mechanism employed to accomplish this result consists of a circular plate 27, having a central opening 28 to fit around the operating-shaft 2 of the controller. The plate 27 is secured to the rib 16 and a diametrically-opposed stop-lug 29 by screws 30. The plate 27 is formed with a plurality of staggered circumferentially-arranged beveled lugs 31, forming a sinuous path upon the plate.

The casing 6 of the controller-lever houses a tooth-carrying member 32, which slides upon a guideway 33, formed in the casing. The member 32 is provided with a depending stem 34, in which a spring-pressed tooth 35 is mounted, said tooth having its lower end beveled upon both sides, as at 36. The member 32 is retained within the casing by a detachable lid or cover 37, retained upon the casing by pins 38.

The cover-plate 1 is provided with a socket 50, concentric with the controller-shaft 2, and rotatively disposed around the shaft 2 between the hub 3 of the lever 39 and the cover-plate 1 is a hub 51, having a reduced sleeve or projection 52 fitting into the socket 50. The hub 51 is provided with a laterally-extending member 53, formed with a guideway 54, disposed radially of the hubs and controller-shaft, and extending above the hub 51 the member 32 is provided with a depending portion 34, which engages the guideway 54 and is slidable therein laterally of the controller-shaft, the depending portion 34 having an internal socket in which the spring-actuated tooth 35 operates, as shown in Fig. 3.

Slidably mounted upon the lever 5 is a shifting arm 39, said arm being retained therein by a screw 40. One end of the arm is provided with a depending pin 41, adapted to engage in the member 32 and horizontally reciprocate said member when the arm 39 is shifted. The opposite end of the arm 39 is enlarged, as at 42, slotted, as at 43, and provided with a pin-receiving notch 44.

The lower end of the handle 7 is contracted, as at 45, and shrunk upon said handle is a band 46, having a depending crank-pin 47, adapted to engage the notch 44.

Operation: When it is desired to move the operating-lever of the controller, it is necessary that the insulated thumb-block 10 be depressed to elevate the latch 14 and then to partially rotate the handle 7 to reciprocate the member 32 in order that the controller-lever may be swung without interfering with the lugs 31 of the plate 27. As the handle 7 is partially rotated in one direction, then in the other, the tooth 35 of the member 32 is moved in and out to avoid the lugs 31, and as

the rotation of the handle 7 cannot be rapidly performed it will be impossible to swing the controller-lever in one uninterrupted movement. The lugs 31 of the plate 27 are adapted to retard the movement of the controller-lever unless the handle 7 is rotated; but the beveled sides 36 of the tooth 35 permits of said tooth riding over the beveled lugs 31 when it is desired to return the controller-lever to its normal position, as illustrated in Fig. 1 of the drawing.

As heretofore stated, my invention resides entirely in the application of my attachment to this type of controller, the main features of the attachment consisting of the elevated plate having a sinuous path described thereon, the reciprocating tooth-carrying member, and means for actuating the same through the medium of the handle of the controller-lever.

What I claim, and desire to secure by Letters Patent, is—

1. In an attachment for electric controllers of motors, the combination with the operating-shaft of a controller, the cover-plate thereof, a controller-lever, and means for locking the same in a fixed position, of a plate secured to said cover-plate, circumferentially-arranged staggered beveled lugs carried by said plate, a casing carried by said lever, a reciprocating member mounted in said casing, a beveled spring-pressed tooth carried by said member, an actuating-arm slidably mounted upon said lever and connecting with said member, a revoluble handle carried by said lever and adapted to actuate said arm to reciprocate said member, substantially as described.

2. In an attachment for electric controllers of motors, the combination with the operating-shaft of a controller, the cover-plate thereof, a controller-lever, and means for locking the same in a fixed position, of a plate secured to said cover-plate, lugs carried by said plate, and forming a sinuous path, a reciprocating member carried by said lever, a spring-pressed beveled tooth mounted in said member and adapted to engage said plate and said lugs, a revoluble handle carried by said lever, an arm slidably mounted upon said lever and connecting with said handle and said member, and means actuated by a partial rotation of said handle to reciprocate said member, substantially as described.

3. In an attachment for electric controllers of motors, and the operating-lever thereof, of a plate carried by said controller, beveled lugs carried by said plate and forming a sinuous path, a hub rotative upon said shaft and provided with a laterally-extending guideway a reciprocating member carried by said lever and movable in said guideway, a yielding tooth carried by said reciprocating member and adapted to engage said lugs on said plate, a handle carried by said lever, and



means actuated by said handle to reciprocate said member, substantially as described.

4. The combination with a controller and the operating-lever thereof, of a plate secured to said controller and having a sinuous path formed thereon, a hub carried by said controller-shaft and provided with a laterally-extending guideway a reciprocating tooth-carrying member supported by said lever and adapted to travel in said guideway, a revolvable handle carried by said lever, and means actuated by said handle to reciprocate said member, substantially as described.

5. In an attachment for electrical controllers, the combination with the operating-shaft, a cover-plate having a socket and with circumferentially - arranged staggered lugs associated therewith and beveled at one side, a controller-lever having a handle at its free end, a rod extending through said handle, a bolt associated with said lever and adapted to movably engage the socket in said lever-plate, a connecting means between said rod and bolt, a reciprocating member associated with said lever, a spring-pressed tooth associated with said lever and adapted for alternate and yieldable connection with said sets of lugs, and means whereby the partial rota-

tion of said handle will dispose said tooth in operative position relative to said sets of lugs.

6. In an attachment for electrical controllers, the combination with a cover member having a socket, an annular plate concentric to said socket and provided with staggered beveled lugs, a controller-shaft extending through said socket, a hub rotative upon said shaft and having a seat bearing in said socket, and with a lateral arm having a guideway radially of the hub, an operative lever coupled to rotate with said shaft and provided with a casing inclosing the guideway, a reciprocating member movable in said guideway, a spring-pressed tooth carried by said reciprocating member and adapted to alternately engage said lugs, means connected to said operative cover for locking the same to said plate, and means operative by said lever for actuating said reciprocating member and disposing said tooth for engagement alternately with the sets of lugs.

In testimony whereof I affix my signature in the presence of two witnesses.

FERDINAND VOLK.

Witnesses:

MAX H. SROLOVITZ,  
K H BUTLER.