

F. VOLK.
CONTROLLER.
APPLICATION FILED FEB. 4, 1905.

Fig. 1.

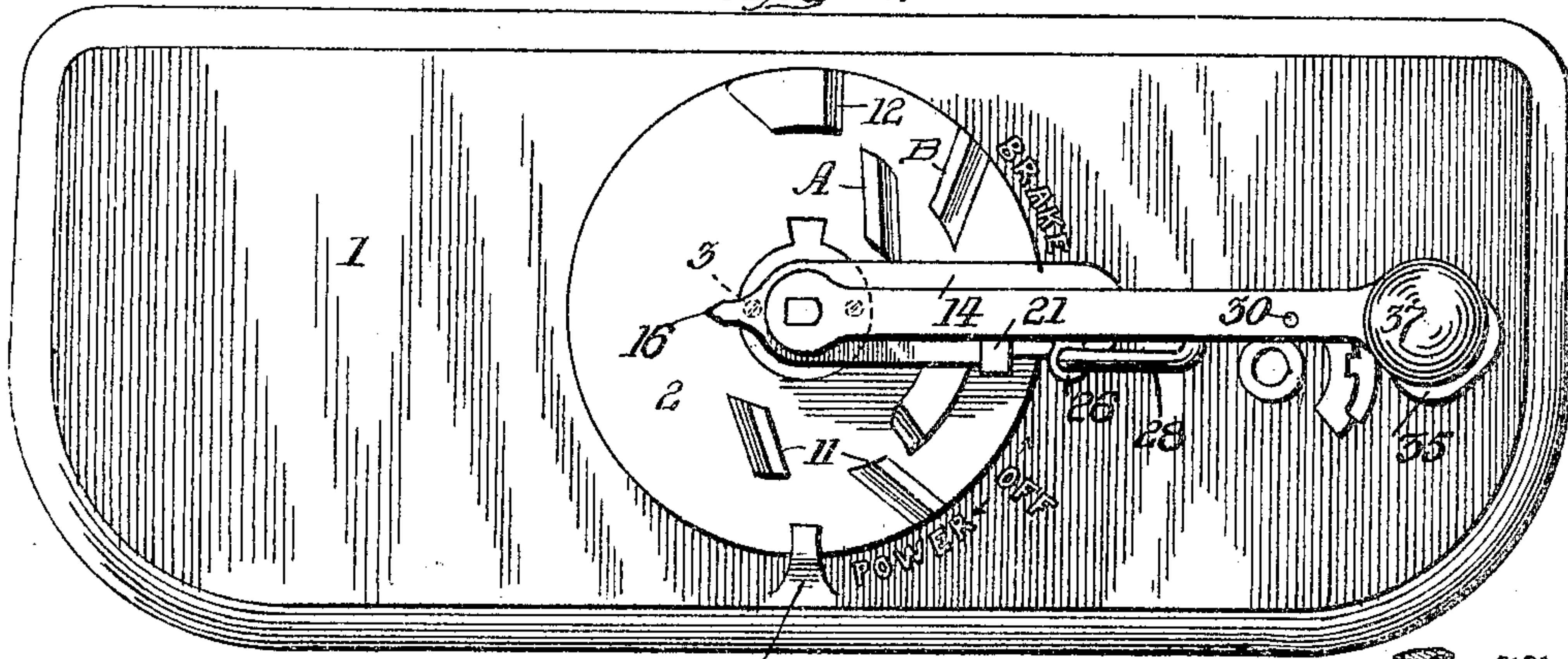


Fig. 2.

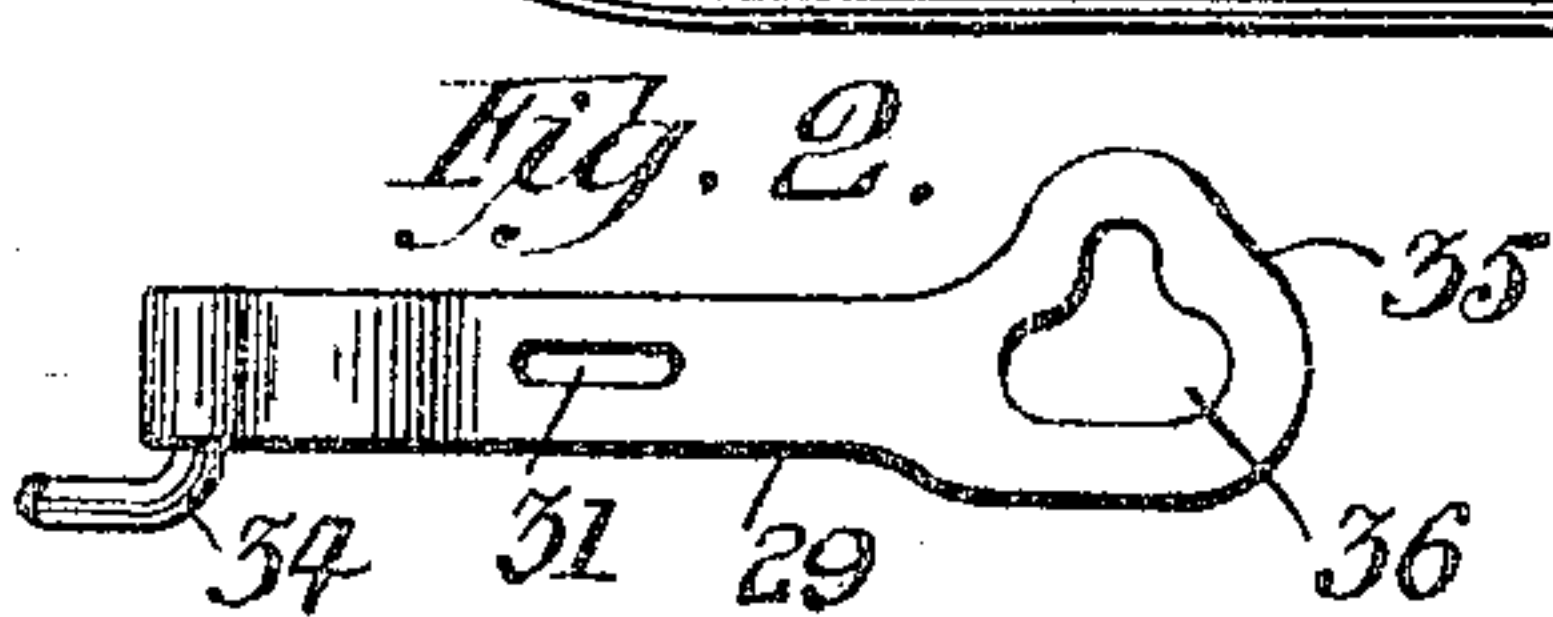


Fig. 3.

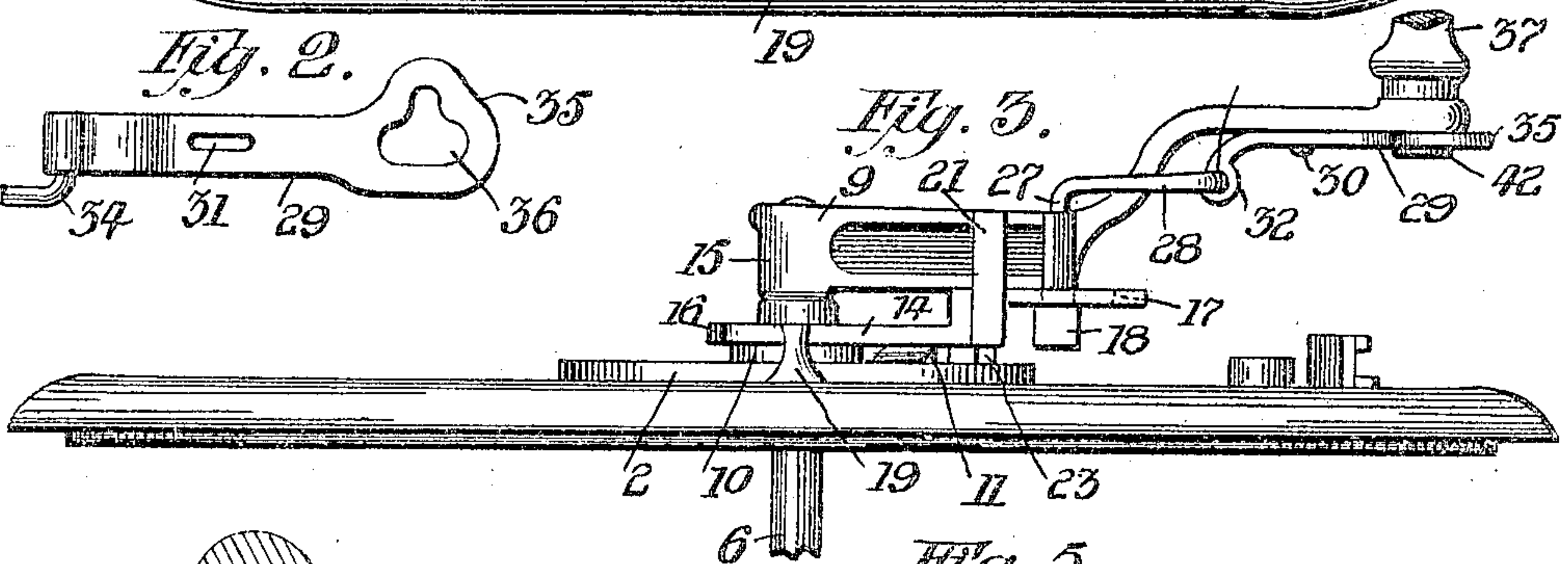


Fig. 5.

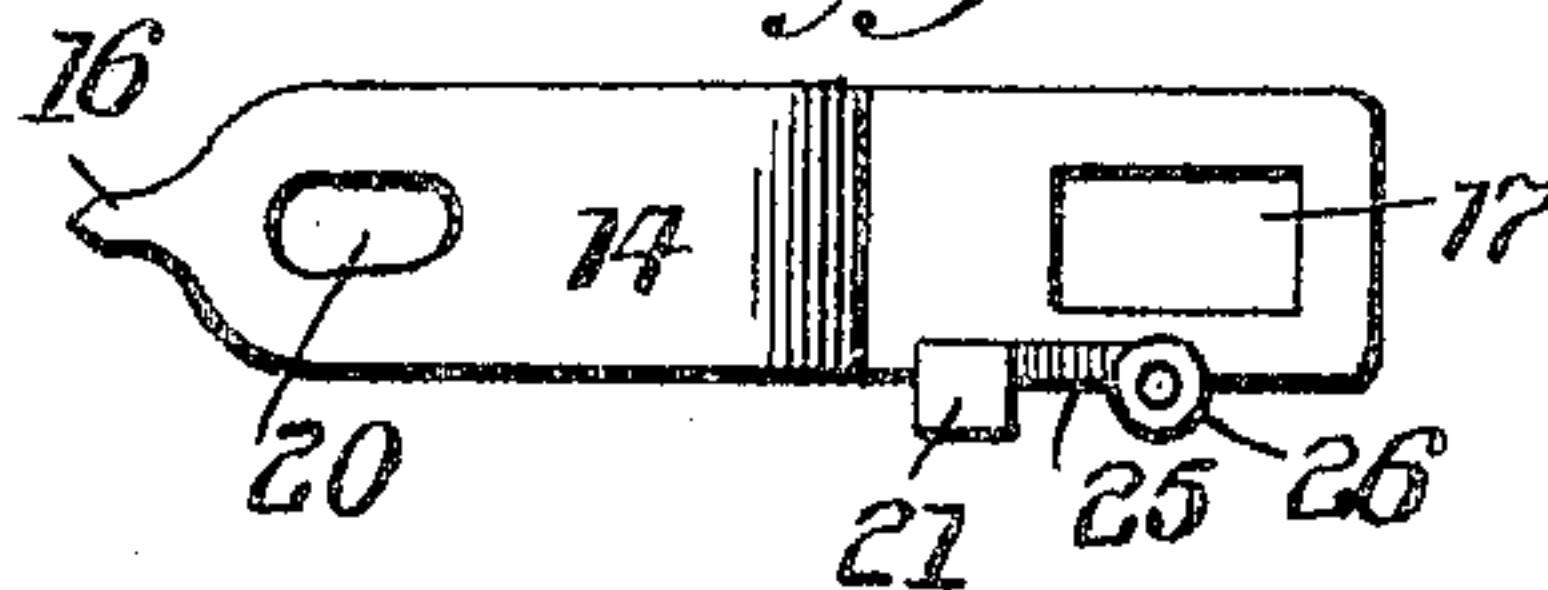


Fig. 6.

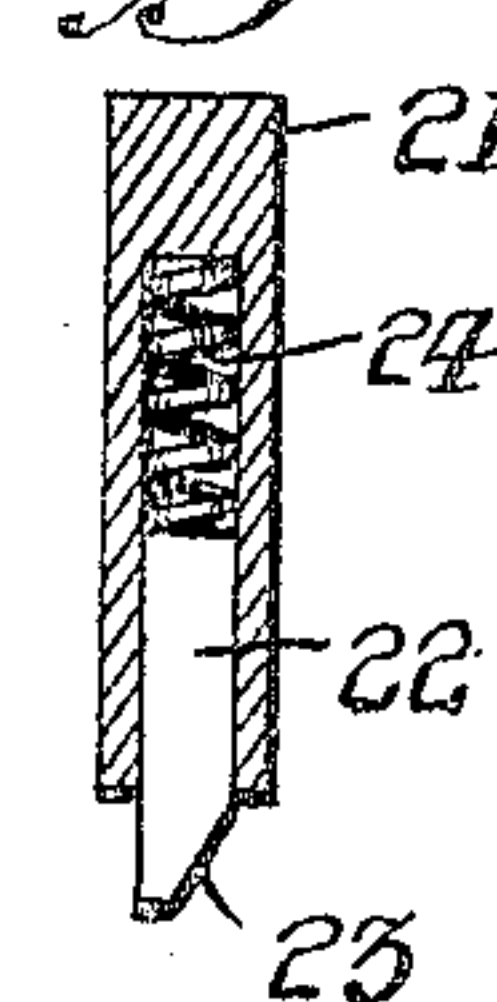


Fig. 4.

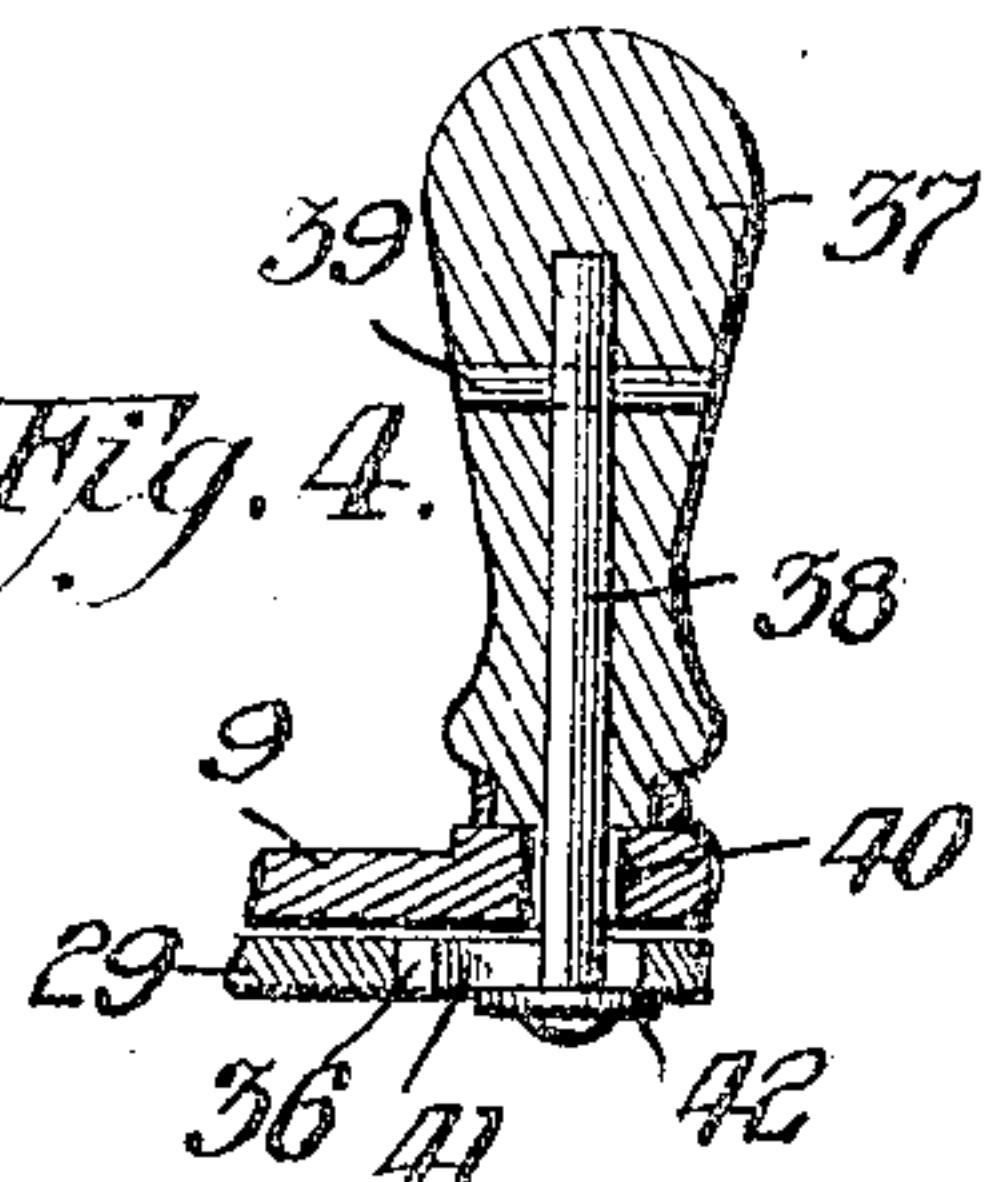


Fig. 7.



Fig. 8.



Witnesses:
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UNITED STATES PATENT OFFICE.

FERDINAND VOLK, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-THIRD TO JOHN A. ROGAN AND ONE-THIRD TO JOHN MURPHY, BOTH OF PITTSBURG, PENNSYLVANIA.

CONTROLLER.

No. 807,520.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed February 4, 1905. Serial No. 244,181.

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 Controllers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention consists in novel means adapted to prevent the overrapid movement of controllers for electrical apparatus and the consequent overrapid admission of the current to the translating device, while at the same time permitting the operator to readily and easily move the controller at the proper and most efficient rate of speed. It may also be so arranged as not to impede the shutting off of the current at any instant.

I will illustrate and describe the invention as applied to the present type of controller for street-railway cars, wherein it is especially desirable that while the rate of movement of the controller to admit the current to the motor shall be automatically regulated and controlled, nevertheless the controller may be moved at the proper rate without undue exertion upon the part of the operator and its reverse movement at any time to shut off the current shall not be materially impeded.

In the accompanying drawings, wherein the same characters of reference designate the same parts in the several views, Figure 1 is a top plan view of a controller illustrating my invention applied thereto. Fig. 2 is a plan view of a lever employed in connection with my invention. Fig. 3 is a side elevation view of a top plate of the controller having my invention applied thereto. Fig. 4 is a vertical sectional view of the handle of a controller as constructed in accordance with my invention. Fig. 5 is a top plan view of a plate used in connection with my invention. Fig. 6 is a vertical sectional view of a spring-pressed tooth carried by the plate illustrated in Fig. 5. Fig. 7 is a sectional view of a disk carried by the top plate of a controller, and Fig. 8 is a sectional view of a portion of the top plate of the controller constructed in accordance with my invention.

To put my invention into practice, I have provided means which can be readily attached to the ordinary and well-known type of con-

troller commonly used, and in the accompanying drawings I have illustrated a top plate 1 of a controller, and upon this top plate I secure a disk 2, by means of screws 3 3, which pass through apertures 4 4, formed diametrically opposite each other in said disk. The disk is provided with a central opening 5, through which a drum-shaft 6 of a controller passes in order that a lever 9 may be mounted thereon to operate said controller. Centrally of said disk and surrounding the opening 5 is an annular raised portion 10, and carried by the upper face of said disk are a plurality of lugs or stops 11, which are circuitously arranged in staggered relation, as clearly illustrated in Fig. 1 of the drawings, so as to form or define a sinuous track or pathway for the movable detent to be hereinafter described. The rear faces of the lugs or stops 11 are beveled, as indicated at 12. In lieu of the disk 2 I may form the top plate 1 of the controller with integral lugs or stops 11 and with an annular raised portion 10, thereby dispensing with the disk and reducing the cost of manufacturing my improved attachment.

The operating-lever 9 of the controller is provided with a substantially L-shaped plate 14, which is mounted between the boss 15 of said operating-lever and the annular raised portion 10 of the disk 2, the raised portion 10 forming a bearing for the plate to steady the same when moved. The one end of the plate 14 is provided with a pointer 16, while the other end thereof is slotted, as indicated at 17, to permit the stop-lug 18 of the operating-lever to protrude therethrough in order that it may engage the stop 19, carried by the controller. The plate 14 is provided with a slot 20, whereby it can be mounted upon the controller-drum shaft 6, which protrudes upwardly through the top plate 1 of the controller to receive the operating-lever. Mounted adjacent to the slot 17 of the plate 14 is a casing 21, in which is mounted a tooth or detent 22, having a beveled end 23. A spring 24 is mounted in said casing to normally hold said detent in a lowered position and at all times in engagement with the disk 2 and the lugs or stops 11 thereof. Connected to the casing 21 by a strengthening-rib 25 is a sleeve 26, in which is adapted to engage the end 27 of a rod 28.

Upon the under face of the outer end of

the operating-lever is slidably mounted a lever 29, this lever being held in engagement with the operating-lever by a screw 30, carried thereby, that protrudes through a slot 31, formed in the lever 29. The one end of the lever 29 is bent downwardly, as indicated at 32, and is provided with a horizontally-disposed aperture 33, in which the end 34 of the rod 28 is adapted to engage. The opposite end of the lever 29 is enlarged, as indicated at 35, and is provided with a substantially heart-shaped cam-opening 36. The handle 37 of the operating-lever is provided with a rod 38, which is secured therein by a rivet 39, and the rod 38 extends through an opening 40, formed in the outer end of the operating-lever 9. The lower end of the rod 38 is provided with a lug 41, which is held in the opening 36 of the lever 29 by a plate or washer 42, carried by the lower end of the rod 38. The handle 37 is generally constructed of wood or some insulating material, and in this instance is rotatably mounted upon the operating-lever 9.

To demonstrate the manner of manipulating a controller having my invention applied thereto, we will assume that the car carrying the controller is at a standstill and that the power is cut off. Upon the motorman moving the operating-lever 9 to start the car the detent 22 engages the stop designated by the reference character A, and this movement of the operating-lever is adapted to correspond to the first notch of the ordinary type of controller used at the present time. For the motorman to increase the speed of his car it is necessary that the detent 22 be moved outward radially in order that it may pass the stop A. To accomplish this, I have provided the plate 14, the lever 29, and the rotatable handle 37. When the detent 22 strikes the first stop A, the motorman slightly turns the handle 37, which, through the medium of the lug 41, operating in the substantially heart-shaped cam-opening 36, moves the lever 29 longitudinally of said operating-lever and through the medium of the rod 28 moves the plate 14, whereby the detent 22 is moved outwardly and radially with respect to the center of said disk. This movement of the handle 37 disengages the detent 22 from the stop A and the operating-lever can be moved forwardly until the detent 22 engages the stop B. This last movement increases the speed of the car, and should the motorman desire to further increase the current admitted to the motors carried by the car it is necessary that the handle be reversely rotated in order to

disengage the detent 22 from the stop B, whereby the operating-lever 9 can be moved forward. By the motorman rotating the handle 37 the detent 22 can be moved in and out among the lugs or stops 11 until the stop-lug 18 of the operating-lever 9 has engaged the controller-stop 19.

The sinuous and circuitous path which the detent 22 travels prevents the motorman from increasing the speed or rapidity of the car suddenly, thereby preventing the motor from being burned out and reduces the maximum current which is required to start the car.

By providing the lugs or stops 11 with beveled faces 12 and chamfering the detent 22, as indicated at 23, I have provided means whereby the operating-lever 9 can be easily and quickly reversed at any time.

It will be noted that various changes may be made in the details of construction without departing from the general spirit and scope of the invention.

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

1. In a controller, the combination with an operating-lever, a handle rotatably mounted thereon, and a detent carried by said lever and shiftable thereon, of a stop arranged in the path of movement of the lever and adapted to engage the detent, and means operated by the rotation of the handle for shifting the detent and causing it to disengage the stop, substantially as described.

2. In a controller, the combination with an operating-lever, a handle rotatably mounted thereon, and a detent carried by said lever and shiftable thereon, of a series of stops arranged in the path of movement of the lever to alternately engage the detent in its alternate positions, and means operated by rotation of the handle for shifting the detent in opposite directions and causing it to disengage the successive stops, substantially as described.

3. In a controller, the combination with an operating-lever and a handle rotatably mounted thereon, of means for stopping the movement of the lever at predetermined intervals in its traverse, and means operated by the rotation of the handle for releasing the lever and permitting its movement to be continued, substantially as described.

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

FERDINAND VOLK.

Witnesses:

F. J. VENNING,
JOHN A. ROGAN.