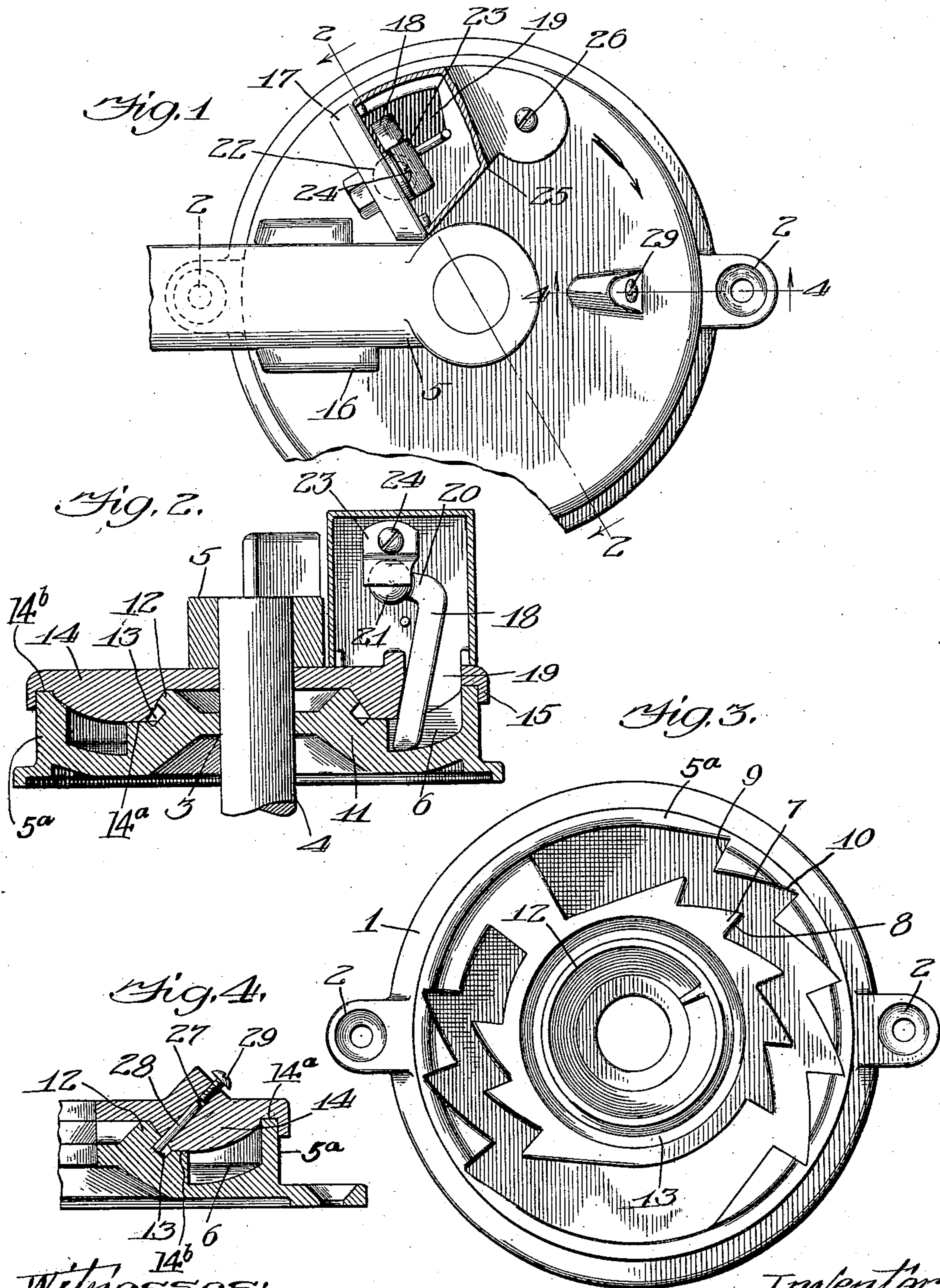


C. P. EBERSOLE.
 CONTROLLER REGULATOR.
 APPLICATION FILED JULY 8, 1905.

980,865.

Patented Jan. 3, 1911.



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AMERICAN AUTOMOTONEER COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A
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CONTROLLER-REGULATOR.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CYRUS P. EBERSOLE, a citizen of the United States, residing at Keokuk, in the county of Lee and State of Iowa, have invented new and useful Improvements in Controller-Regulators, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in controller regulators, such as are adapted for use in connection with street car controllers or in analogous relations to prevent the operator from moving the controller with such speed as to cut out the resistance in the motor circuit too rapidly.

My invention is especially designed to provide an improved regulator for periodically arresting the controller lever in its rotation, to prevent the too rapid movement of the controller.

A further object of my invention is to provide a device which shall be simple in construction and consist of few parts, whereby the same will not readily get out of order and may not be readily destroyed.

In the accompanying drawings illustrating one embodiment of my invention, Figure 1 is a plan view, a part of the hood being broken away to show a plan view of the retarding dog; Fig. 2 is a sectional view, taken on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the device with the hood removed; and Fig. 4 is a detailed sectional view showing means for preventing displacement of the hood.

In constructing my device, I provide a stationary plate or base 1, having lugs 2, whereby the same may be secured in position upon the casing of the controller, said base being provided with a central opening 3, through which the shaft 4 of the controller may pass and be connected to a removable handle 5. The upper surface of the plate 1 has formed therein a zigzag slot or way 6, preferably of the form shown in Fig. 3, in which the portions 7 form inclined cam surfaces, over which a suitable retarding dog or detent is adapted to slide, said cam por-

tions being connected by the substantially vertical portions 8. The outer edge of the zigzag slot forms stop or ratchet portions 9, connected by inclined portions 10, which limit the outward movement of the dog and confine it within the groove 6. As shown in Fig. 3, these cam and stop surfaces occur at intervals throughout portions of the slot 6, and at longer intervals throughout other portions of the slot, so that the proper movement of the controller may take place. Any arrangement, however, of these stops and inclined portions, may occur so that the desired operation of the controller may be secured.

An annular projection or hub 11 concentric with the flange 5^a, is formed upon the plate 1 and has obliquely extending side portions 12, in which is formed an annular slot 13, for a purpose which will more fully hereinafter appear, the zigzag way 6 in the present embodiment of the invention being formed between said hub and flange which provide bearings for a hood or head 14 now to be described.

The head or hood 14, which is loose on the controller shaft 4 is adapted to fit over the plate 1 and is provided with concentric bearings 14^a and 14^b which cooperate with the bearings provided by the hub and flange on the base 1. It is also provided with an annular downwardly extending flange 15, which fits over the flange 5^a, the head forming a cover for the plate and the slot formed therein. This head 14 is provided with a pair of upwardly extending lugs or projections 16, between which the handle 5 of the controller is adapted to fit, such lugs forming abutments against which the handle or a part thereof is adapted to react, whereby the head will be rotated with the controller. The head 14 is also provided with an upwardly extending projection 17, upon which is mounted the dog 18, an opening 19 being formed in the head to permit the dog to project through the same and into the slot 6. The dog 18 is angle-shaped, as shown in Fig. 2 of the drawing, having a laterally extending arm 20, which is provided with a ball 21, adapted to fit in a socket 22 formed

in the projection 17 and be held in position by a cover 23, having a portion adapted to fit over the ball and being held in position upon the projection 17 by the screw 24. By thus providing a ball and socket joint for the dog 18, the same is permitted to move or pendulate in transverse directions, its movement backwardly with respect to the forward movement of the hood being limited by engagement with the projection or extension 17. It will be noted that the cover 23 is held in position by means of the screw 24 and by this arrangement the cover may be caused to tightly or loosely engage the ball 21. It is frequently desired to control the time of movement of the dog or detent 18, whereby the detent will be caused to more slowly disengage from the stops 9 and thereby cause the handle 5 to be moved more slowly. In order to effect this control, by adjusting the screw 24, the engagement of the cap or cover 23 with the ball 21 may be adjusted and the friction thereof may be caused to retard the movement of the dog. In this manner a time feature is introduced in the regulator whereby the rapidity of movement of the handle may be controlled. The projection 17 forms one wall of a housing or casing 25 located over the opening 19 and designed to support the dog therein and inclose its mounting, the other part of the housing in the present embodiment of the invention being secured in position upon the head 14 by the screw 26. It is obvious, however, that the housing in its entirety may be integral with the head. The housing prevents tampering with the dog by the operator or others.

In order that the head 14 may not be raised and thereby raise the end of the dog 18 out of the slot 6, to permit the movement of the controller handle unimpeded by the controller regulator, the head 14 is provided with an opening 27 extending obliquely through the same, into which is fitted a pin 28, the lower end of which is adapted to fit within the annular slot 13 in the hub 11 of the plate 1. A screw 29 fitted within the opening 27 prevents the removal of the pin 28. The length of the opening 27 after being closed by the screw 29 is greater than the length of the pin 28. Owing to the position and direction of the opening 27, the weight of the pin will maintain the lower end thereof in the annular slot 13 as long as the controller regulator is retained horizontally or in its normal operative position. However, if the position of the controller regulator is changed so that the opening will be up-side-down, then the pin will drop into the opening and out of the annular slot 13, permitting the head to be separated from the base or stationary plate. It will thus be seen that the pin operating in the annular slot constitutes a gravity controlling means

which effectually prevents the separation of the head from the base while permitting the head to be rotated relatively to the base. It is obvious that other means may be employed for accomplishing the same result and I, therefore, do not limit myself to the particular means shown and described herein.

The handle or controller-lever 5 is, as is common with motor controllers, removable; and the lugs 16 are of such height that the handle cannot be engaged with the controller shaft without engaging, when turned, one or the other of the lugs 16, and thereby turning the head or hood. In other words, it is impossible with the arrangement described for the operator to operatively engage the handle with the shaft without bringing the head into play. At the same time the handle when in position is readily removable.

In operation, as the handle is turned in the direction of the arrow, the dog 18, held by gravity against the inclined face 7, is thrust outwardly thereby and into engagement with the stop 9, checking the movement of the handle, the dog then reacting against the stop provided by the projection 17. The movement thus being checked and the pressure of the handle being slightly relaxed, the dog swings inward by gravity against the next cam surface, whereby it will be in position to be moved outwardly against the next stop. Due to the fact that the pivotal axis of the dog is not in a vertical line with the end thereof, the tendency of the dog will always be to drop against the cam surfaces. When it is desired to reverse the movement of the handle, the same can be thrown back to its initial position without check or retardation, as the dog, being mounted in a ball and socket joint, is free to swing rearwardly and will ride over the stops and cams without interfering with the movement of the head.

It will be understood that in the claims where I have used the expression "detent" I contemplate any construction which is used to check or prevent motion.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A controller having alternating inclined ways and stops, a hood thereon, and a dog having jointed connection with said hood permitting it to pendulate in transverse directions.

2. In a controller, a stationary zigzag way, a hood having a housing revolving over said way, and a one-piece dog pivotally mounted in the housing and co-acting with the way.

3. In a controller, a stationary zigzag way, a hood rotatably mounted over the way and having a housing, and a dog having a ball and socket connection in the housing and co-operating with said way.

4. In a controller regulator, a rotatable hood having a housing, a dog loosely mounted in the housing, and a zigzag way with which the dog coöperates to compel intermittent rotary motion of the hood in one direction while permitting continuous movement of the hood in the opposite direction.

5. In a controller regulator, a stationary base adapted to be mounted on the top of a controller casing and having a series of alternating cams and stops, a hood adapted to be moved with the controller shaft and having an opening, a housing on the hood over the opening, and a depending dog loosely mounted in the housing and projecting through the opening so as to coöperate with the cams and stops.

6. In a controller regulator, the combination with a rotatable member having a housing, an angle shaped one-piece dog pivoted in the housing to move in two directions, and a series of cams and stops with which the dog coöperates to provide for intermittent movement of the rotary member in one direction without interfering with the continuous movement thereof in the opposite direction.

7. In a controller regulator, the combination with a series of stationary cams and stops, a hood adapted to be rotated with the controller shaft and having an opening, a housing on the hood over the opening, a one-piece angle-shaped dog loosely mounted at one end in the housing and having its other end depending through the opening into operative relation with the cams and stops, said dog, cams and stops coöperating to compel intermittent forward movement of the rotatable member while permitting uninterrupted reverse movement thereof.

8. A controller regulator, the combination with a series of cams and stops, a hood having an opening with a housing over the opening, a dog mounted in the housing and depending through the opening so as to co-act with the cams and stops, and a stop on the hood to prevent backward movement of the dog during forward movement of the hood.

9. In a controller regulator, the combination with a zigzag way, a rotatable hood having an opening and a housing over the opening, and a dog having a ball and socket mounting in the housing and depending through the opening to co-act with the way, one of the walls of the housing being engaged by and preventing backward movement of the dog during forward movement of the hood.

10. In a controller regulator, in combination, a stationary and a rotatable member having means for compelling intermittent movement of the rotatable member in one direction, and means for preventing separation of the said members while in

their normal operative position and for permitting a separation of said members when they are changed to another position.

11. In a controller regulator, in combination, a stationary and a rotatable member having coöperating means for compelling intermittent movement of the rotatable member in a forward direction while permitting uninterrupted movement thereof in the reverse direction, and means for securing said members together when in horizontal position, said means being adapted to permit a separation of said members when said members are changed to another position.

12. In a controller regulator, in combination, a stationary base and a rotatable hood adapted to be mounted in horizontal position, a zigzag way on the base, a dog on the hood coöperating with the way to compel an intermittent movement of the rotatable member in one direction while permitting continuous movement of the same in the opposite direction, and gravity-controlled means to prevent separation of the parts while in their horizontal position.

13. In a controller regulator, the combination with a plate having a series of stops and a series of cams formed upon the face thereof, of a rotatable member, a dog carried by said member and having a lateral extension said extension having a ball and socket mounting whereby the dog when moved in one direction will have a movement to permit the same to be moved into engagement with the stops by the cams and when moved in the opposite direction will ride over said stops.

14. In a controller regulator, the combination with a plate having a series of cams and a series of stops, of a rotatable member, a dog mounted thereon adapted to engage said cams and stops, and a pin carried by said member adapted to engage an annular channel formed in the plate whereby a vertical movement of said rotatable member is prevented without preventing rotation of the same.

15. A controller regulator comprising three operative pieces only, said pieces consisting of a stationary member, a relatively movable member operated by an attendant, and a one piece detent, one of said members having a series of cams and stops, said detent being associated with the other member and coöperating with said cams and stops to automatically cause an intermittent movement of said member in one direction and permit a continuous movement of said member in a reverse direction.

16. A controller regulator comprising three operative pieces only, said pieces consisting of a stationary plate, a relatively movable plate operated by an attendant, and a one piece detent, one of said plates having

a series of cams and stops, said detent being associated with the other plate and cooperating with said cams and stops to automatically cause an intermittent movement of
5 said plate in one direction while permitting a continuous movement of said plate in a reverse direction.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

CYRUS P. EBERSOLE.

Witnesses:

J. V. E. Titus,

G. W. Cox.