A. A. TIRRILL.

LIGHT REGULATOR.

APPLICATION FILED MAY 14, 1919.

1,376,841. Patented May 3, 1921.

FIG.1.

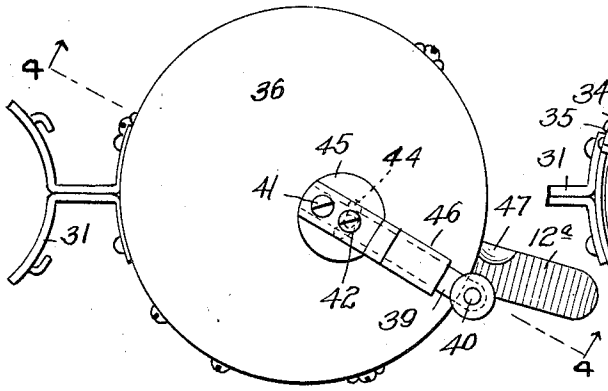


FIG.3.

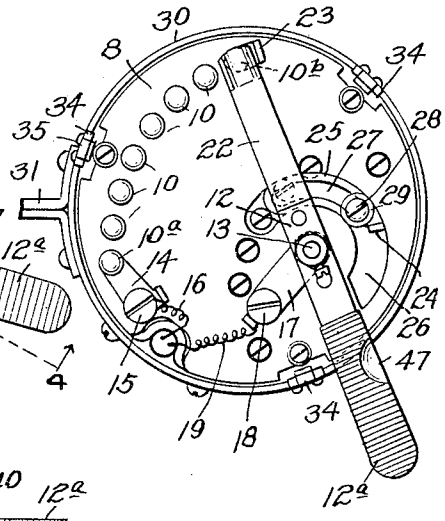


FIG.2.

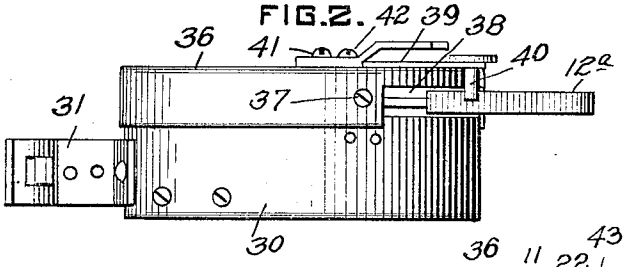


FIG.4.

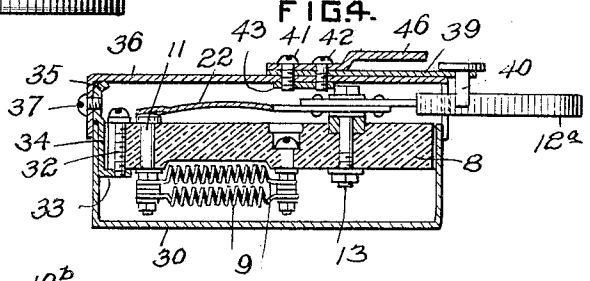


FIG.5.

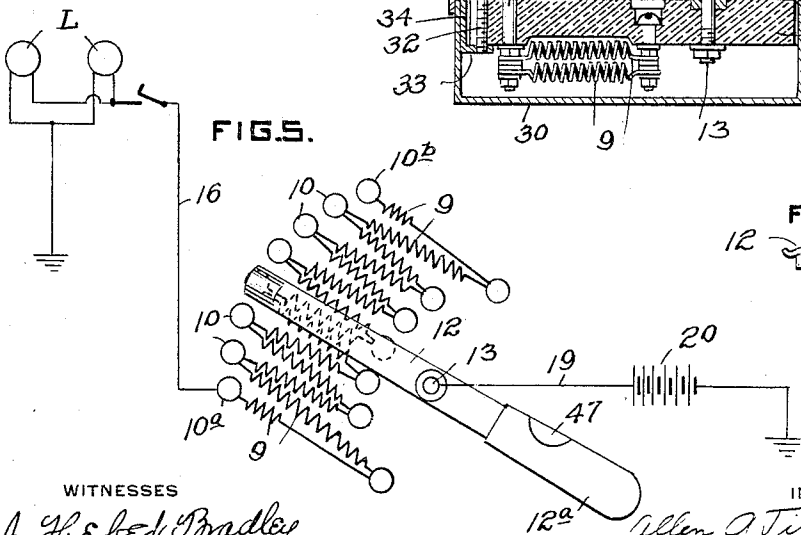
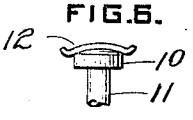


FIG.6.



WITNESSES

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LIGHT-REGULATOR.

1,376,841. Specification of Letters Patent. Patented May 3, 1921.

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To all whom it may concern:

Be it known that I, ALLEN A. TIRRILL, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have made a new and useful Invention in Light-Regulators, of which the following is a specification.

This invention relates to regulators or controllers for electric lights and more particularly to regulators for controlling the brilliancy of the light and the main objects of the invention are to provide simple easily operated regulators by means of which the brilliancy of the head lights of the vehicle may be varied in a multiple number of steps between minimum and maximum values and the steps determined without looking at the regulator or without noting the brilliancy of the head lights.

Another object is to provide in such a regulator or controller an adjustable stop by means of which the controller switch or blade upon swinging from full brilliancy position to dim position will be stopped at a predetermined point corresponding to dimmed running position.

These, as well as other objects which will readily appear to those skilled in this art, I attain in the device described in the specification and illustrated in the drawings accompanying and forming a part of this application and throughout the several views of which like characters denote like elements.

In the drawings Figure 1 is a top plan view of a device embodying this invention, Fig. 2 is a view in side elevation of the same, Fig. 3 is a top plan view of the device with the cover removed, Fig. 4 is a sectional elevation taken on line 4—4 of Fig. 1 looking in the direction of the arrows, Fig. 5 is a diagram of the electric lighting system including the graduated resistance and the switch or controller lever and Fig. 6 is an enlarged detail view looking at the contact end of the controller lever and illustrates the same as it appears in connection with one of the contact members or buttons.

The device preferably consists of a circular base 8 of insulating material such as porcelain on the under side of which a number of resistance coils 9 are mounted. These coils are connected up in series as will be readily understood by those skilled in the art to provide a variable or graduated resistance. A series of contact members or buttons 10 arranged on the arc of a circle are carried by pins 11 which extend through the porcelain base and connect up with the resistance coils in a well known manner, and a switch blade 12 having an insulating handle 12^a is pivotally mounted on a pin 13 secured in the porcelain base and is adapted to make contact with said buttons 10.

Pin 13 is concentrically arranged with relation to the contact buttons and the switch blade in making its full swing contacts with the different buttons 10 in succession. In swinging from button 10^a to 10^b the resistance coils are adapted to be gradually placed in circuit and in swinging in the reverse direction they are adapted to be gradually cut out of circuit.

A metal bridge 14 connects contact button 10^a with a binding screw 15, and this in turn is adapted to be connected to one side of the head lights L by means of a wire 16. A metal bridge 17 carried by the base member connects switch blade 12 to a contact screw 18 which, by means of a wire 19, connects with the other side of the headlights through a source of current supply 20. In case the device is used for the control of the head lights of an automobile or the like one side of the lights and one side of the circuit supply may be grounded as shown in Fig. 5.

The outer or free end of switch blade 12 is dished or cupped as shown in Fig. 6; the curve of the under portion being preferably formed upon a smaller radius than the curve of the upper face of the contact members or buttons 10. Portion 22 of the switch blade is formed of spring metal and is adjusted so that considerable force is necessary to move the blade from one contact button to the next.

A fixed stop 23 is provided so as to prevent the switch blade from moving beyond contact button 10^b in one direction and an adjustable stop 24 is provided for limiting the movement of the switch blade in the other direction. Stop 24 is carried at one end of a curved member 25 which is let into a curved channel 26 formed in the upper face of the base member, and member 25 is provided with a concentric slot 27 through which an adjustment screw 28 passes. A metal cup 29 surrounds screw

28 and may be used for the purpose of sealing the screw against manipulation in order to prevent unauthorized adjustment of stop 24; this may be done by running a seal wire through holes in the cup above the screw and then sealing the ends of the wire or by pouring a sealing material such as solder or wax into the cup above the screw.

Base member 8 is located within a suitable housing made up of a lower or main cupped metal member 30 adapted by means of a suitable bracket, a portion 31 of which is shown, to be secured to the steering column of the automobile or the like upon which the controller or regulator is to be used.

The base member is secured within the lower portion of the housing 30 by means of screws 32 which pass through suitable slots formed in the periphery of the base member and which are threaded into inwardly projecting feet 33 of bracket members 34 secured to the inner side of the housing member 30. These bracket members extend above the side of the housing member and form supports 35 for a cover 36 for the housing. Screws 37 which pass through the housing are threaded into these supports.

Cover 36 is provided with a slot or opening 38 through which handle 12^a of the switch blade projects. A plate 39 formed of spring material at its outer end carries a stop pin 40 which projects into the path of movement of handle 12^a. Spring plate 39 is adjustably secured to the cover 36 by means of two screws 41 and 42. These screws pass through openings formed in the cover and are threaded into a plate 43 which lies against the inner side of said cover. The opening through which screw 42 passes is formed in the nature of a curved slot 44 which permits the spring plate to be swung about screw 41 as its pivot.

The plate above stop pin 40 is provided with an enlarged disk shaped member 45 by means of which the stop pin may be lifted against the stress of the spring plate and out of the path of movement of handle 12^a. A guard 46 is provided to limit the upward movement of the spring plate and this guard is secured in place by means of the screws 41 and 42 and therefore moves with the spring plate as it is moved to the different adjusted positions.

The head lights L may either be arranged in parallel, as shown in Fig. 5, or in series as is now customary in some lighting arrangements.

With the controller connected in the circuit, the brilliancy of the lights may be regulated or controlled from full dimmed adjustment (for standing) which occurs when the switch blade 12 is in contact with contact button 10^b to full brilliancy adjustment when needed, which occurs when contact blade 12 is in contact with contact button 10^a; in this latter position all of the resistance is cut out of circuit while in the former position it is all in circuit.

In some localities it may be desirable to adjust stop 24 so that the normal full brilliancy adjustment of the controller may not be reached and if it is desired to seal stop 24 in this position it may be done by the means provided. When traveling over unlighted country roads it is desirable to dim the head lights when passing a vehicle traveling in the opposite direction, this is also desirable when traveling along streets in cities which are only partially lighted, and, in order to reach the proper dimmed adjustment quickly, stop 40 will be so positioned that handle 12^a when swinging in a clockwise direction will be stopped at the desired dimmed adjustment.

While driving, and without observing the amount of light projected by the head lights, the brilliancy of the head lights may be adjusted to any degree desired (within the capacity of the head lights) and the adjustment ascertained by means of the particular co-relation between the curved contact buttons and the curved end of the switch blades. This co-relation provides a means for easily counting the contact buttons as the blade moves from one to the next across the series. This is particularly desirable when traveling along most of the modern roads which are black and therefore give no indication of the brilliancy of the lights to the occupants of the vehicle carrying them.

When it is desired to move handle 12^a to standing position stop pin 40 may be lifted out of its path of movement and the handle swung so that switch blade 12 contacts with contact button 10^b thus throwing the entire resistance into circuit with the head lights. When now it is desired to turn on the lights by cutting out the resistance the handle 12 may be freely swung in the opposite direction or with the switch blade moving toward contact button 10^a as the handle is provided with a cam face 47 arranged so as to lift the stop pin 40 out of the handle's path of movement.

If desired this cam face on the handle may be omitted; when it is, it will be necessary to lift the stop pin to allow movement of the handle in either direction past it and in some localities this construction may be found desirable as it will afford means for preventing mischievous boys from turning on the full brilliancy of the lights while the vehicle is standing.

Having thus described my invention what I claim is—

1. In a controller for electric lights, a graduated resistance, a movable member for varying said resistance, and spring restrained means pivoted to swing in the path

of movement of said member for limiting the movement of the same in one direction while allowing free movement of said member past the same in the opposite direction.

2. In a controller for automobile electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, and a pivotal stop spring held in the path of movement of said member and adjustable about its pivot along said path.

3. In a controller for electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, and a spring restrained element movable to different positions and arranged to limit the movement of said member past the same toward maximum resistance while allowing free movement of said member toward minimum resistance.

4. In a controller for automobile electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, and a pivoted stop adjustable along and in the path of movement of said member constructed to be operated to permit said member to be moved beyond the same.

5. In a controller for automobile electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, and a stop adjustable along the path of movement of said member for limiting the movement of said member toward maximum resistance while allowing free movemnt of said member past the same toward minimum resistance.

6. In a controller for automobile electric lights, a graduated resistance, a pivotally mounted member for varying the resistance between maximum and minimum values, and an adjustable stop in the path of movement of said member; said member being provided with a cam face for lifting said stop from its path when being moved from maximum resistance toward minimum resistance.

7. In a controller for automobile electric lights, a graduated resistance, a pivotally mounted member for varying the resistance between maximum and minimum values, and a stop adjustable along the path of movement of said member constructed so as to be retained at various points in said path to stop movement of said member at a determined point toward maximum resistance and until said stop is manually moved from said path while permitting free movement of said member past the same in the other direction.

8. In a controller for electric lights, a housing, a graduated resistance within said housing, a pivotally mounted member extending from said housing for varying the resistance between maximum and minimum values, and a manually adjustable stop secured to said housing and projecting into the path of movement of said member.

9. In a controller for electric lights, an inclosing housing, a graduated resistance within said housing, a pivotally mounted member extending through said housing and beyond the same and arranged to vary the resistance between maximum and minimum values, and a spring stop secured to said housing and lying in the path of movement of said member.

10. A controller for automobile electric lights comprising a box, variable resistance switch mechanism in the box and provided with a movable operating handle exposed and accessible at the exterior of the box, and a stop mounted on said box and adjustable to different positions along the path of movement of said handle for limiting the movement of the handle in one direction.

11. A controller for automobile electric lights comprisiong a box, variable resistance switch mechanism in the box and provided with a movable operating handle exposed and accessible at the exterior of the box, and a stop adjustable to different positions along the path of movement of said handle for limiting the movement of the handle in one direction; said stop being capable of being temporarily and manually moved from operative position.

12. A controller for automobile electric lights comprising a box and variable resistance switch mechanism in the box and provided with a movable operating handle exposed and accessible at the exterior of the box, said box being provided with a stop adjustable along the path of movement of said handle for limiting the movement of the handle in one direction, said stop being spring held in operative position, and capable of being held manually from operative position to permit movement of the handle to a position behind the stop, said stop formed to spring back to operative position when released.

13. A controller for electric lights comprising a box having an elongated slot, variable resistance switch mechanism in the box provided with a swingable switch blade and a series of contact buttons to be successively engaged thereby, said blade provided with a switch handle projecting through and movable in said slot and operative from the exterior of the box, and means for locating and defining the position of the handle at which the lights are dimmed to a certain predetermined degree, said means being adjustable with respect to the path of movement of the handle.

14. A controller for electric lights comprising a box, variable resistance switch

mechanism within the box and provided with a movable operating handle accessible at the exterior thereof, means defining the extreme limits of movement of the handle between full brilliancy and extreme dimmed positions, and stop means capable of being adjusted manually along the path of movement of said handle to define a certain intermediate position of the handle at which the lights will be dimmed to a certain predetermined degree and to permit free movement of the handle between full brilliancy position and said stop means.

15. A controller for electric lights comprising a box, variable resistance switch mechanism within the box and provided with a movable operating handle at the exterior of the box and having a range of movement from a full brilliancy position to an extreme dimmed position, and an intermediate stop for said handle, said stop being adjustable along the path of movement of said handle and provided with manually operable means for setting the same at the desired adjustment to locate the position of the handle when the lights are dimmed to a certain intermediate degree.

16. A controller for electric lights comprising a box, variable resistance switch mechanism within the box and provided with a movable operating handle at the exterior of the box, a stop defining the full brilliancy position of the handle, a stop defining extreme dimmed position of the handle, said mechanism providing various intermediate switch contact positions between said stops, and an intermediate stop for said handle provided with a spring support yieldingly maintaining said intermediate stop in the path of the handle, said support capable of being pressed back to remove said stop from the path of the handle and arranged to spring the stop back to operative position on being released, said support being adjustable and provided with means for setting its stop in the desired position in the path of the handle, said handle formed to automatically displace said stop against the tension of its spring support when the handle is being moved in one direction.

17. In a controller for automobile electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, a stop adjustable along the path of movement of said member for limiting the movement of the same in one direction and a second stop adjustable along the path of movement of said member constructed to be operated to permit said member to be moved beyond the same in both directions.

18. In a controller for automobile electric lights, a graduated resistance, a movable member for varying the resistance between maximum and minimum values, a stop adjustable along the path of movement of said member for limiting the movement of the same toward maximum value and a second stop adjustable along the path of movement of said member constructed to be manually operated to permit said member to be moved beyond the same.

19. In a controller for automobile electric lights, a graduated resistance, a pivotally mounted blade for varying the resistance between maximum and minimum values, a stop adjustable along the path of movement of said blade for limiting the movement of the same toward maximum value and a second stop adjustable along the path of movement of said blade constructed to be operated to permit the same to be moved beyond said stop in both directions.

20. In a controller for automobile electric lights, a graduated resistance, contact members connected to said resistance, arranged on the arc of a circle and provided with rounded contact heads, and a pivotally mounted member provided with a dished contact surface for engaging said rounded heads.

In testimony whereof, I have hereunto subscribed my name this 9th day of May, 1919.

ALLEN A. TIRRILL.