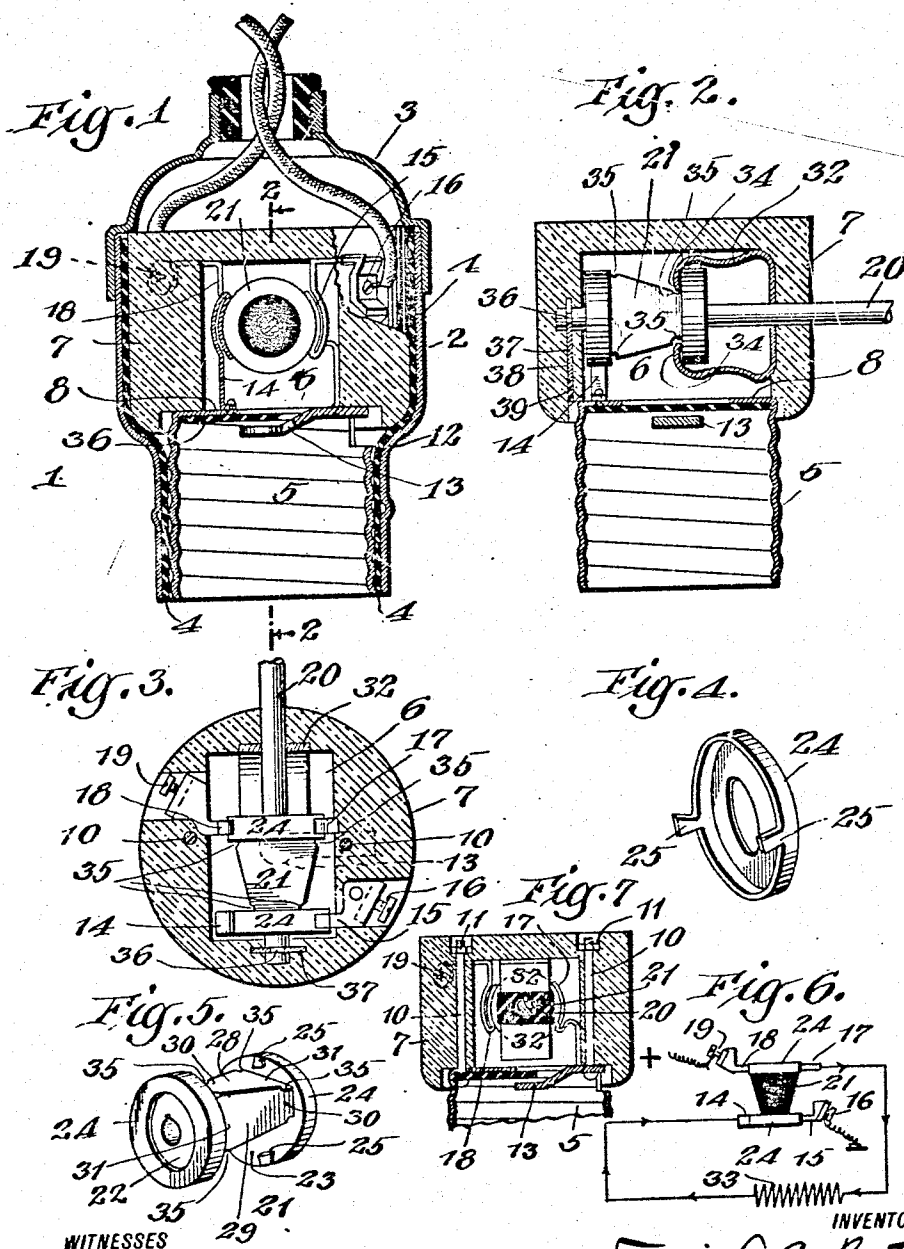


T. A. C. BOTH.
MECHANICAL MOVEMENT.
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MECHANICAL MOVEMENT.

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To all whom it may concern:

Be it known that I, TONJES AUGUST CARL BOTH, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification, taken in connection with the accompanying drawing, which forms a part of the same.

This invention relates to mechanical movements adapted for universal application, and is a division of my co-pending application Serial No. 570,138. I have shown my mechanical movement located in an electric light socket and adapted to make and break the current therein, though it is to be distinctly understood that my invention is not to be limited to this or any other particular use.

My invention further relates to an electric light key socket in which my improved mechanical movement is used, all of which will be hereinafter described in the specification and pointed out in the claims.

In the accompanying drawing showing illustrative embodiments of my invention and in which the same reference numerals refer to similar parts in the several figures, Figure 1 is a vertical section through my double pole electric light socket; Fig. 2 is a vertical section substantially on the line 2—2 of Fig. 1; Fig. 3 is a horizontal section on the line 3—3 of Fig. 1; Fig. 4 is a detail perspective view of one form of conducting or bridge plate; Fig. 5 is a detail perspective view of one form of driven member; Fig. 6 is a diagrammatic view showing the passage of the current in my double pole socket; and Fig. 7 is a detail vertical section on a reduced scale.

In the illustrative embodiments of the invention shown in the drawing, 1 is an electric light socket having the usual or any approved outer shell 2, a cap 3 and with any form of insulation 4 between the shell and the screw shell contact 5, Fig. 1. The insulation which is usually used to line the cap 3 may be employed, if desired, but preferably is omitted. The shell, cap and insulation form no part of my invention and therefore will be disregarded in the further description of the invention.

To house and thoroughly protect my mechanical movement, when it is used as the

operating switch mechanism in an electric light socket, I mount it in the interior 6 of a hollow insulating receptacle 7 usually formed of porcelain or some other suitable material. This receptacle 7 is closed on all sides except the bottom which is closed by the head 8 of the screw shell contact 5. This screw shell contact is held to the closed insulating receptacle 7 in any suitable manner such as by means of the screws 10, 10, Figs. 3 and 7, coöperating with nuts 11, 11, Fig. 7. The upper portion of the screw shell is cut away at 12 for the reception of the center contact 13, Fig. 1.

The screw shell contact 5 is provided with an upwardly extending screw shell contact 14 arranged opposite and separate from a spring contact 15 connected to the binding post contact 16. Within the interior 6 of the closed insulating receptacle 7 I also provide a spring contact 17 connected with the center contact 13 and arrange it opposite to, and separated from, another spring contact 18 which is connected to the binding post 19. The center contact 13 is insulated from the head 8 of the screw shell contact 5 in any suitable manner such as by a piece of mica 36.

On the driving member 20 I spline a porcelain or other insulating driven member 21 having at one end a rim 22 and at the other a rim 23, and upon each rim I mount a conducting or bridge plate 24, 24, such for example as shown in Figs. 4 and 5. These plates 24 may be secured to the porcelain or other insulating driven member 21 in any suitable manner. Preferably, I secure them by providing them with ears 25, 25, which can be bent around the rims 22 and 23. The driven member 21 between the conducting or bridge plates 24, 24, is provided with oppositely inclined surfaces 28 and 29 forming opposed hills 30 and valleys 31. Upon these hills and valleys any suitable resilient member is adapted to operate, such as the spring 32 shown in Fig. 2. This driven member 21 is also preferably provided with locking means to hold both ends 34, 34 of the spring 32 until such time as the maximum energy has been stored up in the spring by partly rotating the driven member with its hills between the ends 34, 34 of the spring. A cheap and economical means to hold both ends of the spring is to provide each hill with a pair of locking notches 35, 35 which

will cooperate with the ends 34, 34 of the spring 32 and hold them from sliding down the incline surfaces of the driven member until the driven member has fully completed its partial rotation. The spring will then act with its maximum effect and insure a quick and positive snap of the driven member to and from the fixed contacts. It will therefore be seen that in this form of my invention the electric light socket is a double pole one, there being four contacts, two for each wire. When the driven member 21 is in the position shown in Fig. 3 wherein the forward conducting or bridge plate 24 is brought into contact with its respective spring contacts 14, 15, and the rear conducting or bridge plate 24 is brought into contact with its spring contacts 17, 18, the current will pass as shown diagrammatically in Fig. 6 coming in at the binding post 19 passing through its spring contact 18, rear bridge plate 24 on the driven member 21, spring contact 17, thence through the center contact 13, through the lamp or other consuming device 33 back to the shell contact 5, spring contact 14, forward bridge plate 24, spring contact 15 out through the binding post 16.

A partial rotation of the driving member 20 in either direction sufficient to cause the spring 32 to cooperate with the opposed hills and valleys, as previously described, will cause the porcelain or insulated driven member 21 to snap back and quickly break all four contacts. A further partial rotation of the driving member 20 and the driven member 21 will cause the latter to reverse its movement and quickly snap the respective conducting or bridge plates 24, 24 between their respective spring contacts and thereby quickly make the electrical connection. This double pole socket permits currents of high voltage to be safely used. By using my mechanical movement as a switch mechanism for such a double pole socket, all four contacts are not only quickly broken, but are also quickly made; both the making and breaking being almost instantaneous and thereby eliminating all arcing on the making as well as the breaking of the current.

It will be noted that my invention is particularly adapted for a double pole key socket which can be turned off or on in either direction of rotation of the driving member, or key, insuring both a quick make and a quick break regardless of the direction of rotation of the key.

The driving member is provided with any suitable locking means to hold it within the closed insulating receptacle 7. Preferably I provide it near one end with a circumferential groove 36 to cooperate with a locking plate 37 which is mounted in an opening 38 in the closed insulating receptacle 7. After the locking plate 37 is mounted to co-

operate with the groove 38 it might be held in this groove by any suitable means such as by the insulation 39.

Having thus described this invention in connection with the illustrative embodiments thereof, to the details of which I do not desire to be limited, what is claimed as new and what it is desired to secure by Letters Patent is set forth in the appended claims:

1. In a mechanical movement the combination of a driving member, a driven member mounted on the driving member and adapted to have a limited longitudinal movement in relation thereto and provided at its opposite ends with operating surfaces to cooperate with fixed members, oppositely disposed inclined surfaces forming hills and valleys on the driven member and located between the operating surfaces carried by said member, one or more yielding members to cooperate with the hills and valleys, and a plurality of fixed members to cooperate with the operating surfaces carried by the driven member.

2. In a mechanical movement the combination of a driving member, a driven member mounted on the driving member and adapted to have a limited longitudinal movement in relation thereto and provided at its opposite ends with plates to cooperate with a plurality of fixed plates, oppositely disposed inclined surfaces forming hills and valleys on the driven member and located between the plates carried by said member, one or more yielding members to cooperate with the hills and valleys, and a plurality of fixed members to cooperate with those carried by the driven member.

3. An article of manufacture for an electric light socket comprising a driving member, an insulating driven member mounted on the driving member and provided with oppositely inclined surfaces forming hills and valleys and two metallic contact members carried by the driven member, one at each end of the driven member.

4. An article of manufacture for an electric light socket comprising a driving member, an insulating driven member mounted on the driving member and provided with oppositely inclined surfaces forming hills and valleys, and two metallic contact members carried by the driven member one on each side of the hills and valleys.

5. In an electric light double pole key socket the combination of four contacts, two for each terminal, a key, and means operated by either direction of rotation of the key to make a quick make and quick break of the current and prevent arcing.

6. In an electric light double pole key socket the combination of four contacts, two for each terminal, a key, a driven member mounted on the key and provided with means to make contact with the two sets of

contacts, one or more fixed springs to co-operate with the driven member, and means carried by the driven member to cause the springs to operate it on the rotation of the key in either direction to make a quick make or a quick break of the current and prevent arcing.

7. In an electric light double pole key socket the combination of four contacts, two for each terminal, a key, a driven member mounted on the key and provided with oppositely inclined surfaces, plates carried one on each end of the driven member, one or more fixed springs to coöperate with the oppositely inclined surfaces of the driven member to cause it to move the plates into or out of contact with the different sets of contacts on the rotation of the key in either direction to make a quick make and a quick break of the current.

8. In a double pole electric light key socket the combination of four contacts, two for each terminal and a movable member adapted to directly make both a quick make and a quick break to prevent arcing, and rotatable means to actuate said movable member upon either direction of rotation.

9. In a double pole electric light key socket the combination of four contacts, two for each terminal and a laterally movable member adapted to directly make both a quick make and also a quick break to prevent arcing, and rotatable means to move said laterally movable member upon either direction of rotation.

10. In a double pole electric light key socket the combination of four contacts, two for each terminal, and an insulating movable member provided with two contact rings adapted to directly make a quick make and also a quick break to prevent arcing, and rotary means to actuate the insulating movable member upon either direction of rotation.

11. In a double pole electric light key socket the combination of four contacts, two for each terminal, a rotary key coöperating with a movable member, a movable member adapted to directly make a quick make and also a quick break to prevent arcing, said member being provided with oppositely inclined surfaces forming opposed hills and valleys, and yielding means to coöperate with said hills and valleys.

12. In a double pole electric light socket the combination of four contacts, two for each terminal, an insulating movable member provided with two contact rings adapted to directly make a quick make and also a quick break to prevent arcing, said member being provided with oppositely inclined surfaces forming opposed hills and valleys, and yielding means to coöperate with said hills and valleys.

13. In a double pole electric light socket

the combination of four contacts, two for each terminal, and an insulating driven member provided with two contact members to directly engage with the four contacts, said driven member being provided with opposed hills and valleys, and one or more yielding plates coöperating with the hills and valleys, and means to give the driven member an intermittent rotary movement.

14. In a double pole electric light socket the combination of four contacts, two for each terminal, and laterally movable means to make a direct and quick make and break of the current, and rotary means to operate the laterally movable means.

15. In a double pole electric light key socket the combination of four contacts, two for each terminal, a rotary driving member, a single operating member mounted on said driving member, current carrying elements on the operating member to directly make and break the current between said four contacts, hills and valleys on said operating member, means to operate said member laterally on the driving member upon rotation of the driving member in either direction, and yielding means to coöperate with the hills and valleys.

16. In a double pole electric light socket the combination of four contacts, two for each terminal, and a laterally movable operating member carrying two contact plates, each adapted to directly contact with its respective fixed contacts, and means including hills and valleys and yielding devices coöperating with the hills and valleys for operating the laterally movable member.

17. In an electric light socket the combination of fixed contacts, moving contacts mounted on the driven member, a driving member, a driven member mounted on the driving member and adapted to have a limited longitudinal movement in relation thereto, said moving contacts carried by the driven member being adapted to directly make or break the connection with the fixed contacts upon the rotation of the driving member in either direction, and means to move the driven member longitudinally upon the driving member to directly make a quick make as well as a quick break of the circuit on the rotation of the driving member in either direction.

18. In an electric light socket the combination of fixed contacts, moving contacts mounted on the driven member, a driving member, a driven member mounted on the driving member and adapted to have a limited longitudinal movement in relation thereto, said moving contacts carried by the driven member being adapted to directly make or break the connection with the fixed contacts upon the rotation of the driving member in either direction, and means in-

cluding hills and valleys on the driven member and a resilient member cooperating with said hills and valleys to move the driven member longitudinally upon the driving member to directly make a quick make as well as a quick break of the circuit on the rotation of the driving member in either direction.

19. In a double-pole electric light key socket the combination of four contacts, two for each terminal, a movable member, con-

ducting elements on the movable member, adapted to contact with the four contacts and directly make both a quick make and a quick break to prevent arcing, and rotatable means to actuate said movable member upon either direction of rotation. 15

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