H. HUBBELL.

PULL SOCKET.

APPLICATION FILED JUNE 17, 1911.

1,053,175.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.

Fig. 1

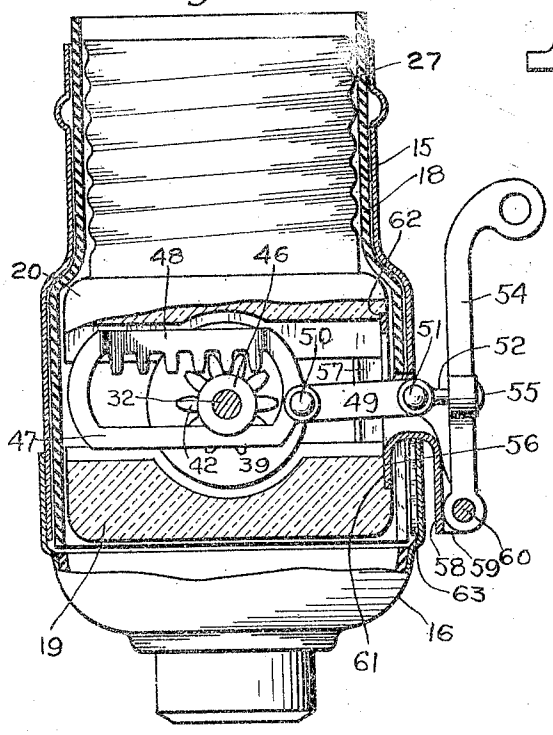


Fig. 2

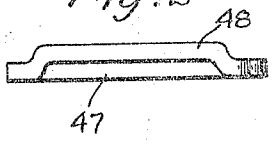


Fig. 3

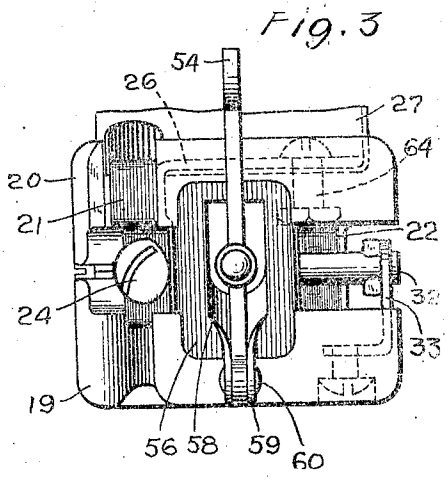


Fig. 4

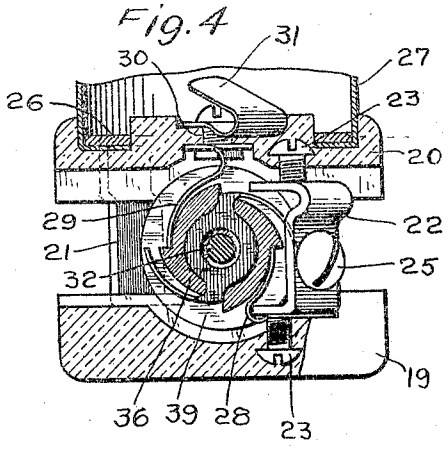
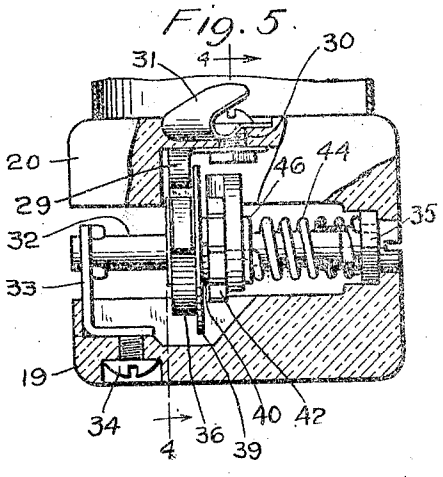


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6

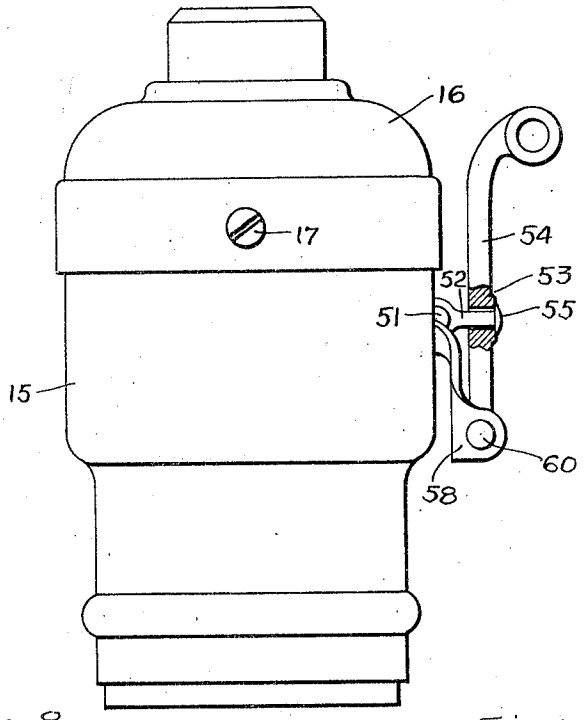


Fig. 7

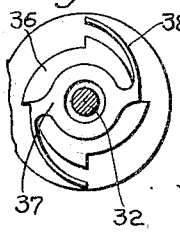


Fig. 8

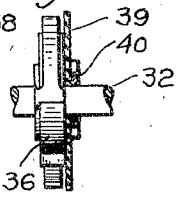


Fig. 9

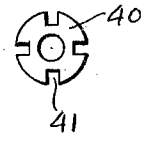


Fig. 10

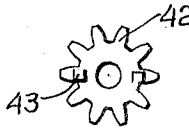


Fig. 11

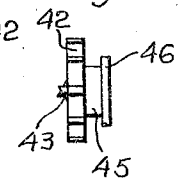


Fig. 12

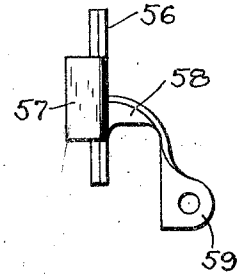
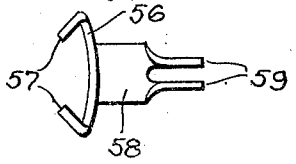


Fig. 13



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PULL-SOCKET.

1,053,175. Specification of Letters Patent. Patented Feb. 18, 1913.

Application filed June 17, 1911. Serial No. 633,851.

To all whom it may concern:

Be it known that I, HARVEY HUBBELL, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Pull-Sockets, of which the following is a specification.

This invention has for its object to improve generally the construction and mode of operation of pull sockets and especially to provide a pull socket which may be operated by a chain or cord attached to a lever not on the shaft of the switch and wholly insulated from the switch mechanism, said lever having the operating chain, when one is used, attached thereto outside the shell, thereby avoiding the use of a guide through which the chain must pass and the attachment of the chain to a moving part within the shell, so as to reduce the probability of breakage of said chain to a minimum and facilitating its renewal should such breakage occur.

More particularly the invention contemplates the use of an operating lever mounted on a fulcrum outside the shell and therefore removed as far as possible from the electric connections, but firmly and rigidly attached to the insulating blocks, said lever being connected with the switch mechanism by an insulating link which may pass through a relatively small opening in the shell, and said lever being further readily reversible on the socket in order to adapt the socket for use with either an upright or a depending lamp.

These and other objects of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of one form or embodiment thereof illustrated in the accompanying drawings. It will be understood however that the construction shown and described has been chosen for illustrative purposes merely, and that the invention may be embodied in other forms without departing from the spirit and scope thereof.

In said drawings: Figure 1 is a longitudinal section of the socket showing the same arranged to support a lamp in upright position. Fig. 2 is a detail edge view of the rack for operating the switch mechanism. Fig. 3 is a side view, looking from the right in Fig. 1, of the switch mechanism removed from the shell. Fig. 4 is a view, partly broken away, looking from the right in Fig. 3, certain parts being shown in section substantially on the line 4—4, Fig. 5. Fig. 5 is a central section at right angles to Fig. 1, the parts being viewed from the side opposite to that in Fig. 3. Fig. 6 is a side view of the complete socket showing the same arranged to support a depending lamp. Figs. 7 and 8 are face and edge views respectively of the circuit closing and breaking device. Fig. 9 is a face view of the notched disk carried by said circuit closing and breaking device. Figs. 10 and 11 are face and edge views respectively of the operating pinion. Figs. 12 and 13 are side and end views respectively of the supporting bracket for the operating lever.

15 denotes the body portion of the socket shell, 16 the cap which is secured to said body portion in any suitable manner, as by means of a screw 17, and 18 denotes the insulating lining of the shell.

19 and 20 denote respectively inner and outer insulating blocks the same being connected and spaced by binding posts 21 and 22, respectively, secured to said blocks, as by screws or bolts 23, and provided respectively with binding screws 24 and 25. Binding post 21 is provided with an integral yoke piece 26 connected with the screw shell 27 and insulating block 20 by means of bolts 64 (see Fig. 3). The binding post 22 has secured thereto, as by means of one of the screws 23, a spring contact piece 28. 29 denotes a similar spring contact piece connected by bolt 30 with the center contact 31 of the socket.

The circuit through contact pieces 28 and 29 is opened and closed by means of switch mechanism which will now be described.

32 denotes a shaft journaled at one end in a bracket 33, secured to insulating block 19 by a screw 34, and supported at the other end by an angular head 35 having a squared portion received in correspondingly formed recesses in insulating blocks 19 and 20. The circuit closing device comprises a double-break switch member consisting of a ratchet 36 formed of insulating material, such, for example, as fiber, and provided with a metal plate 37 having spring arms 38. The ratchet 36 is rigidly secured to the shaft 32, as by a drive fit, while the plate 37, which

is attached to said ratchet, is provided with a central aperture of greater diameter than the shaft 32, so that said plate is insulated from said shaft by said ratchet. Said ratchet 36 and plate 37 are located between the spring contact members 28 and 29, the arrangement being such that as said ratchet is rotated said contact members will be brought alternately into engagement with the periphery of the ratchet and with the spring arms 38, thereby alternately opening and closing the circuit. The edge of the ratchet 36 is formed with elongated teeth, there being four as shown, and the spring arms 38 (of which there are two in the construction shown) are arranged to overlie alternate teeth on the ratchet. As shown in Fig. 4, the spring plates 28 and 29 are engaged by opposite teeth on the ratchet 36, thereby preventing the rotation of said ratchet from left to right as the parts appear in said figure. Upon turning said ratchet through a quarter of a rotation from right to left the spring plates 28 and 29 will be engaged with the next adjacent pair of teeth on the ratchet and will also be brought into contact with the spring arms 38, thereby closing the circuit. Upon a further quarter rotation of the ratchet 36 the ends of the arms 38 will pass the ends of the spring plates 28 and 29 and will snap out of engagement therewith, thereby instantly breaking the circuit at two points, the parts then being again in the position shown in Fig. 4.

Adjacent the ratchet 36 the shaft 32 is provided with a disk 39 of insulating material, said disk serving to separate the circuit closing mechanism from the operating mechanism, which will now be described.

40 denotes a disk fast on the shaft 32, and provided with a suitable number of angular notches or recesses 41.

43 denotes a pinion loose on the shaft 32 adjacent the disk 40 and provided with projecting lugs 43, there being two of these lugs as shown, adapted to engage the notches 41 in pairs. The lugs 43 are provided with angular forward faces and inclined backs, the arrangement being such that when the pinion 42 is rotated in one direction the shaft 32 and parts carried thereby will be rotated therewith, but when said pinion is rotated in the opposite direction the ratchet 36 will be held by the spring plates 28 and 29 and the lugs 43 will move out of the notches 41 and move idly over the face of the disk 40, the pinion 42 moving longitudinally of the shaft to permit the disengagement of the lugs 43 from the notches 41.

44 denotes a spring connected at one end with the head 35 and at the other with the pinion 42, said spring operating to press said pinion 42 to[illegible]d the disk 40 to cause the engagement [illegible] the lugs 43 with the notches 41 and also acting to return said pinion to normal position when the same has been rotated.

The pinion 42 is provided with a hub 45 provided at its outer edge with a radially projecting flange or collar 46.

47 denotes a slide guided on the hub 45 between the flange 46 and the face of the pinion 42 and provided with an offset rack 48 engaging the teeth of said pinion.

49 denotes a link formed of suitable insulating material, such as fiber, said link being pivoted a[illegible]50 to said slide 47 and at 51 to a stud 52 swiveled in an opening 53 in an operating lever 54, said stud being provided with a head 55 at the outer side of said lever. The lever 54 is fulcrumed on a bracket comprising a base 56, provided with preferably integral wings or projections 57, and a struck up arm 58 having at its end ears 59 which carry a pin 60 constituting a fulcrum for operating lever 54. The ends of the base 56 are received in recesses 61 and 62 in the insulating blocks 19 and 20 respectively, the wings or projections 57 are received between said blocks, and the arm 58 passes out of the shell through the usual slot 63 in the shell member 15. When the shell members are in place the base of the bracket is securely held in place in the recesses 61 and 62 by said shell members and is further held rigid by engagement of the wings 57 with the insulating block.

The operation is as follows: A suitable chain (not shown) will usually be attached to the outer end of the lever 54 and will depend therefrom. When this chain is pulled the lever 54 is swung outwardly, carrying with it the slide 47 with its rack 48 and rotating the pinion 42. Rotation of the pinion 42 causes, through the engagement of the lugs 43 with the notches 41 in the disk 40, a partial rotation of the shaft 32, thereby turning the disk 36 to make or break the circuit through the spring plates 28 and 29. When the chain is released the spring 44 will turn the pinion 42 backwardly, thereby returning the slide 47 and lever 54 to their original position. At this time however the ratchet 36 is held against rotation by the spring plates 28 and 29, so that the pinion 42 turns idly over the disk 40 without rotating the same.

As shown in Fig. 1 the socket is arranged to support a lamp in the upright position. In Fig. 6 the socket is shown inverted or in a position to support a depending lamp. In either case however it is desirable that the lever 54 occupy such a position that it may be operated by a downward pull upon a chain attached to its end. In order to reverse the lever the shell members are separated and removed, and the lever bracket is moved outwardly to disengage its base 56 from the recesses 61 and 62 and to withdraw

the wings 57 from between the insulating blocks 19 and 20. The swivel connection between the link 49 and lever 54 thereupon permits the bracket to be turned into an inverted position, replaced, and secured in the new position by replacing the shell members.

The construction above described provides means whereby an operating lever for a pull socket switch mechanism may be fulcrumed outside the socket shell but upon a support connected with a rigid portion of the socket rather than with the shell. By locating the fulcrum of the lever outside the shell this lever is removed as far as possible from the electric connection and is readily accessible for purposes of repair. Moreover by so locating the lever it becomes unnecessary for the operating chain to pass within the socket shell, at which point breaks in such chain frequently occur making the services of an electrician necessary for purposes of repair, and also such location of the lever makes it unnecessary for the lever itself to pass through the socket shell, so that the only opening necessary in the shell will be a relatively small one sufficient for the passage of the arm 58 and link 49. Furthermore it will be seen that, since the lever is supported from the insulating blocks and connected with the switch mechanism by an insulating link, this lever is completely insulated from the electric connections within the shell. When it becomes necessary to reverse the operating lever this may be easily and quickly done and the supporting bracket therefor securely fastened in its new position without the use of any tools whatsoever other than such as may be required to separate and replace the socket members.

Having thus described my invention I claim:

1. A pull socket comprising switch mechanism, an operating lever, a reversible bracket therefor, and a swiveled connection intermediate said lever and the switch mechanism.

2. A pull socket comprising switch mechanism, an operating lever, a reversible bracket therefor and an insulating link connected to the switch mechanism and having a swiveled connection to the operating lever.

3. A pull socket comprising switch mechanism, an operating lever therefor, a detachable and reversible bracket for said lever, and a link connected to the switch mechanism and having a swiveled connection to the operating lever.

4. A pull socket comprising switch mechanism, an operating lever therefor, a detachable and reversible insulated bracket for said lever and a swiveled stud and insulating link connecting said lever and mechanism.

5. A pull socket comprising a socket shell, insulating blocks within said shell, switch mechanism carried by said insulating blocks, a bracket secured to said blocks and extending without the shell, and an operating lever for said mechanism fulcrumed in said bracket outside said shell.

6. A pull socket comprising a socket shell, insulating blocks within said shell, switch mechanism carried by said insulating blocks, a bracket detachably and reversibly secured to said blocks and extending without the shell, and an operating lever for said mechanism fulcrumed in said bracket outside said shell.

7. A pull socket comprising a socket shell, insulating blocks within said shell, switch mechanism carried by said insulating blocks, a bracket detachably and reversibly secured to said blocks and extending without the shell, an operating lever for said mechanism fulcrumed in said bracket outside said shell, and a link connected to the switch mechanism and having swiveled connection to the operating lever.

8. A pull socket comprising a switch member, a pinion for operating said switch member, a rack for operating said pinion, a lever for operating said rack, a reversible fulcrum for said lever, and an insulating link connecting said lever and rack.

9. A pull socket comprising a switch member, a pinion for operating said switch member, a rack for operating said pinion, an operating lever, a reversible fulcrum therefor and a swiveled connection between said lever and rack.

10. A pull socket comprising a socket shell, a switch member within said shell, a pinion for operating said switch member, a rack for operating said pinion, a lever for operating said rack, and a reversible fulcrum for said lever located outside said shell.

11. A pull socket comprising a socket shell, insulating blocks within said shell, a switch member carried by said insulating blocks, a pinion for operating said switch member, a rack for operating said pinion, a bracket secured to said blocks and extending without the shell, and a lever fulcrumed in said bracket outside said shell and operatively connected with said rack.

12. A pull socket comprising a pair of spaced insulating blocks provided with recesses, switch mechanism carried by said blocks, a bracket having a base received in said recesses and provided with projections extending between said blocks, a socket shell inclosing said blocks and maintaining said base in place in said recesses, and a lever pivoted to said bracket and operatively connected with said switch mechanism.

13. A pull socket comprising a pair of spaced insulating blocks provided with recesses, switch mechanism carried by said blocks, a bracket having a base received in

said recesses and provided with projections extending between said blocks, a socket shell inclosing said blocks and maintaining said base in place in said recesses, said bracket having an arm extending without said shell, and a lever pivoted to said arm outside said shell and operatively connected with said switch mechanism.

14. A pull socket comprising a pair of spaced insulating blocks provided with recesses, a switch member carried by said insulating blocks, a pinion for operating said switch member, a rack for operating said pinion, a bracket having a base received in said recesses and provided with projections extending between said blocks, a socket shell inclosing said blocks and maintaining said base in place in said recesses, a lever pivoted to said bracket, and a link connecting said lever and rack.

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

HARVEY HUBBELL.

Witnesses:

ARTHUR W. CALVER,

S. W. ATHERTON.