

H. T. PAISTE.
PULL SOCKET FOR INCANDESCENT LAMPS.
APPLICATION FILED MAR. 18, 1908.

946,395.

Patented Jan. 11, 1910.

Fig. 1.

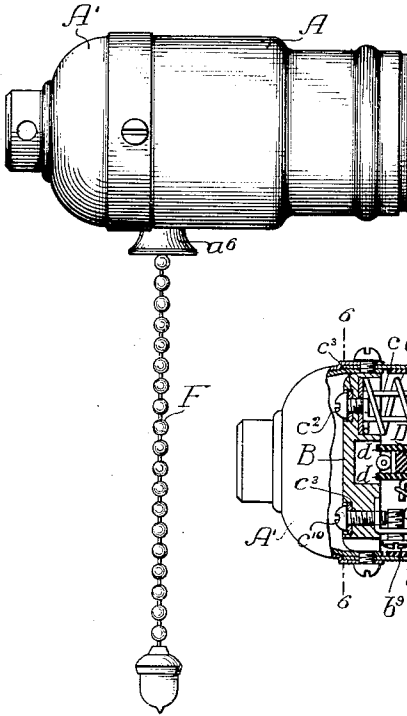


Fig. 2.

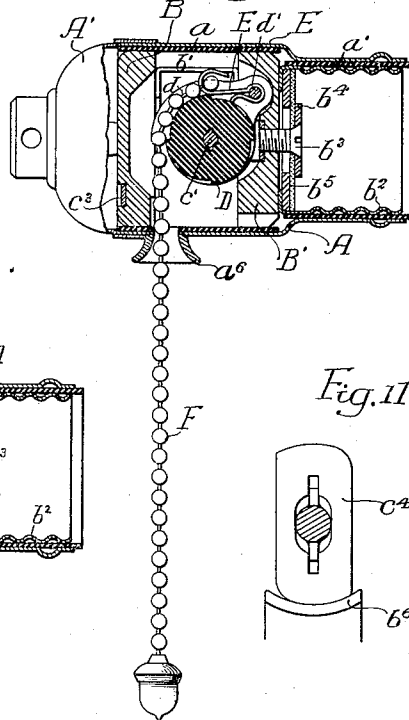


Fig. 3.

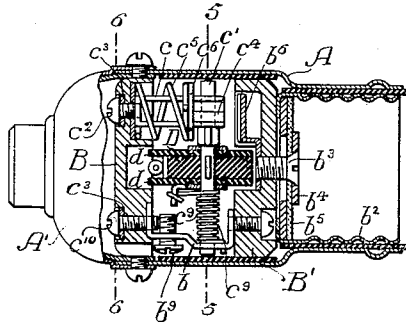


Fig. 11.

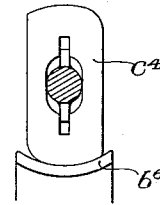


Fig. 4.

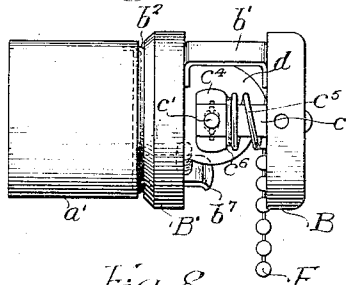


Fig. 5.

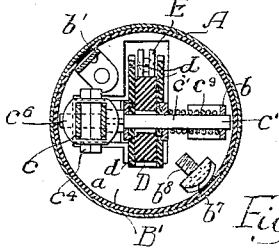


Fig. 6.

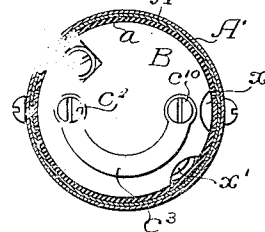


Fig. 8.

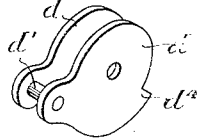


Fig. 10.

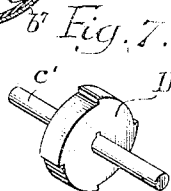
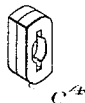


Fig. 9.



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UNITED STATES PATENT OFFICE.

HENRY T. PAISTE, OF PHILADELPHIA, PENNSYLVANIA.

PULL-SOCKET FOR INCANDESCENT LAMPS.

946,395.

Specification of Letters Patent.

Patented Jan. 11, 1910.

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To all whom it may concern:

Be it known that I, HENRY T. PAISTE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain improvements in Pull-Sockets for Incandescent Lamps, of which the following is a specification.

My invention relates to that particular class of sockets for incandescent electric lamps in which there is provided a switch, having in place of the ordinary hand operated key, a chain or equivalent operating member and mechanism whereby the switch is alternately turned on and off by a succession of pulls on said member.

One object of my invention is to provide a socket of the above noted class, which in addition to being substantial in construction and relatively simple as to the number and form of its parts, shall have these latter so arranged that the liability of the device failing to properly operate from any cause shall be reduced to a minimum.

Another object of the invention is to provide a form of rotary switch particularly adapted for use within an incandescent lamp socket of the usual size and which shall be capable of operation by a suitable pull exerted upon a chain or other flexible member depending from and extending into the socket; it being also desired that the parts shall be so arranged and constructed as to operate easily and practically noiselessly.

These and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which:—

Figure 1, is a side elevation of a lamp socket constructed according to my invention; Figs. 2 and 3, are vertical longitudinal sections of the socket shown in Fig. 1, taken in two planes at right angles to each other; Fig. 4, is a side elevation illustrating the interior construction of the socket, the outside casing being removed; Figs. 5 and 6, are respectively a transverse vertical section taken on the lines 5—5 and 6—6, Fig. 3; Figs. 7 to 10 inclusive are detached perspective views of various detail parts of my invention, and Fig. 11, is an enlarged end elevation of the contact head and its associated contact plate.

In the above drawings A represents the main portion of the casing of the socket which has also a cover or end section A'. Within this main portion is a lining of in-

sulating material made in two sections a and a', in the present instance the latter of these being in a portion of said casing smaller in diameter than the remainder.

Contained in the casing is the frame or supporting structure of the socket which consists of two disks B and B' of insulating material, usually porcelain, rigidly connected and held together by two metallic pieces b and b'. In addition there is rigidly mounted upon the disk B' a metallic shell b² which in the present instance is threaded, as the socket illustrated is of the Edison type. The shell is held in place by a screw b³ whose head engages a washer b⁴ which in turn causes an insulating washer b⁵ to be tightly held in engagement with an inwardly projecting flange of said shell. The inner end of the screw b³ passes through the insulating disk B' into a suitably threaded opening in a contact plate b⁶ on the opposite face of said disk and serves to hold said plate in position. The shell b² has electrically connected to it a projecting lug or plate b⁷ provided with a terminal screw b⁸ which constitutes one of the terminals of the plug. The piece b connecting the two disks B and B' has mounted in it a screw b⁹ which constitutes the second terminal of the plug, and in addition said piece, together with a U-shaped piece c mounted upon the disk B, provides supporting bearings for a shaft or spindle c'. Said piece c is held in place by a screw c², which also engages a semi-annular strip c³ mounted in a recess in the upper face of the disk B. Said piece is also connected by a screw c¹⁰ to the terminal piece b.

Fixed to the shaft or spindle c' is a contact head c⁴ and from Fig. 9 it will be seen that this consists of two elongated pieces of flat metal, which as shown in Fig. 11, have their ends curved concentrically with the shaft or spindle c' and I also round that corner at each end which first strikes the contact plate b⁶ when said head is turned. The contact plate aforesaid is also curved from the same radius as that of the ends of the contact head so that when the latter engages said plate the area of the contact between them is relatively great. Between the contact head c⁴ and the disk B there is mounted upon the U-shaped piece c a spiral spring c⁵ which continually presses a flat washer c⁶ toward said head c⁴. Upon the central portion of the spindle c' is non-rotatably fixed a ratchet wheel D of insulat-

ing material such as fiber, and on each side of this is loosely mounted a plate d also of insulating material, which plates are rigidly connected together by a pin d' , as shown in Fig. 8. Upon this pin is placed a pawl E, preferably made of a stiff metal strip shaped as shown in Fig. 10, so as to have a tooth e capable of engaging the teeth of the ratchet wheel. It also has one end e' forked or divided for the reception of the end member of the chain F, and this chain rests upon the ratchet wheel and is kept in place thereon by the side plates d . Also placed upon the shaft or spindle c' is a spiral spring c^9 having one end fastened to or resting upon the metallic piece b and its other end fastened to one of the side members d , the arrangement being such that the spring continually tends to hold the two side members in or return them to a position in which the chain F is wound somewhat more than one-quarter way around the ratchet wheel D. In order to prevent undue revolution of these side members d and consequently of the ratchet wheel, when tension is exerted on the chain, I extend the edges of said members as indicated at d^1 , so that when they have been given a quarter of a revolution these extensions strike the flat face of the disk B' and prevent further revolution of the ratchet wheel.

The chain, as shown in Fig. 2, extends from the pawl E over the ratchet wheel, between the two disks d and out through an opening in the side of the main portion of the casing A, which opening is provided with a bell mounted bushing a^0 . Under conditions of use the current supply wires enter the cap A' and after passing through suitable grooves x and x' in the edge of the insulating disk B, are respectively connected to the pieces b' and b .

If, when the switch is in a closed position, the circuit through the socket be followed out, it will be seen that current is free to pass from the piece b' to the threaded shell b^2 , thence through the lamp which is screwed into the socket and back to the center terminal formed by the screw b^3 and the washer or plate b^4 . From said screw it then passes to the contact plate b^0 , through the contact head c^4 , U-shaped piece c , screw c^2 , semi-annular piece c^3 , through screw c^{10} to the piece b and thence to the second current supply conductor; it being also possible that some current passes direct from the head c^4 to said piece b .

In order to open the switch, tension is exerted upon the chain F with the result that the tooth e of the pawl E is made to engage a tooth of the ratchet wheel D so that it, with the shaft or spindle c' , is turned through 90°; its further movement being prevented by the projections d^1 of the side plates d . As a consequence the contact head

c^4 is turned to a position out of engagement with the contact plate c^0 and is held in said disengaged position by means of the pressure of the spring c^9 upon the washer c^0 which engages its flat side. As soon as tension is removed from the chain F, the spring c^9 at once acts to return the two side plates d with the pawl E to the position shown in Fig. 2, and inasmuch as the ratchet wheel is provided with four teeth, successive pulls upon said chain alternately cause closing and opening of the switch and making and breaking of the circuit through the socket.

It will be noted that owing to the mounting and construction of the pawl E, its engagement with the teeth of the ratchet wheel is assured without the necessity for a spring to force it into engagement therewith, because of the fact that any tension exerted upon the chain at once draws its tooth e toward the said ratchet wheel. Again, it will be noted that the various current-carrying structures of the plug are so placed as to be out of the vicinity of the metallic chain, which engages only those parts formed of insulating material, so that the likelihood of damage from short circuits or from contact between the chain and a current carrying member is reduced to a minimum.

By reason of the peculiar construction of the contact head and its curved contact plate b^0 , said head, which is always turned in the direction of the arrow Fig. 11, comes into gradual engagement with said plate, obviating in a great measure the clicking or jar ordinarily occurring and promoting a smooth action of the parts. Again, heating of the parts is prevented by the large area of contact between the head c^4 and the contact plate b^0 .

It will be noted that the parts of the device are of a substantial construction, so that the probability of failure of the plug under the most severe tests of operation is reduced to a minimum.

I claim:

1. The combination in a pull socket of a receptacle for an incandescent lamp, a switch in circuit with a terminal of said receptacle including a shaft, a contact head mounted thereon, a contact member placed to be engaged by the head, a supporting structure loosely rotatable on the shaft as an axis, a pawl pivoted to said structure, a flexible operating member connected to said pawl and means for guiding said operating member to cause it to draw said pawl inwardly toward the center of the ratchet wheel.

2. The combination in a pull socket of a receptacle for an incandescent lamp, a switch in circuit with a terminal of said receptacle, said switch including a shaft, a contact head mounted thereon, a contact member placed to be engaged by the head,

a ratchet wheel on the shaft, a pawl, a supporting structure carrying said pawl and rotatable on the shaft as an axis, with a flexible operating member connected to said pawl and partly wound on a ratchet wheel, said pawl having a portion extending inwardly toward the center of said wheel.

3. A socket switch consisting of a supporting structure, two terminals, and a switch connected between said terminals, said switch including a revoluble shaft, a contact head thereon, a ratchet wheel of insulating material fixed to the shaft, a plate or plates also of insulating material and loosely rotatable on the shaft as an axis, a pawl pivotally carried by said plate or plates, a flexible operating member connected to the pawl, and a spring tending to oppose movement of the pawl and said operating member.

4. A socket switch including a supporting structure, terminals mounted thereon, a revoluble shaft having a contact head, a ratchet wheel fixed to the shaft, a pawl for said ratchet wheel having supporting means loosely rotatable on the shaft as an axis, said pawl being pivoted to the supporting means at one side of the ratchet wheel, an operating member connected to said pawl so that tension upon said member tends to turn the pawl on its pivot into engagement with the teeth of the ratchet wheel, and means tending to oppose movement of the pawl under the action of the operating means.

5. The combination of a lamp socket with a base structure having a switch in circuit with a terminal of said socket, said switch including a rotatable shaft, a contact head on said shaft, a contact plate co-acting with said head, a ratchet wheel fixed to the shaft and having on each side a plate projecting beyond its periphery, a pawl pivotally mounted between the plates, a flexible operating member directly connected to said pawl in the plane of the ratchet wheel, and a spring on said shaft connected to said plates so as to oppose movement of the pawl under the action of the operating member.

6. A pull socket having a supporting structure, a switch provided with operating means including a rotatable shaft, a ratchet wheel fixed to said shaft, and a supporting structure consisting of two rigidly connected plates mounted on the shaft on opposite sides of the ratchet wheel, a pawl pivotally

mounted on said supporting structure, and operating means capable of moving the supporting structure and of simultaneously drawing the pawl toward the ratchet wheel, said pawl supporting plates having a projecting shoulder or shoulders constructed to engage the switch supporting structure after they have been turned a predetermined distance upon the shaft.

7. The combination in a pull socket, of two disks of insulating material having a connecting structure, a shaft rotatably mounted between said disks, a switch having one of its members operatively connected to said shaft, a ratchet wheel of insulating material fixed to the shaft, a plate of insulating material rotatably mounted on the shaft on each side of said ratchet wheel, each plate being provided with a projection, a pin connecting said plates, a pawl on said pin, a flexible operating member connected to the pawl, and a spring connected to oppose movement of the said insulating plates, the projections of the plates being placed to engage one of the insulating disks after said plate has been turned about said shaft a predetermined distance by the operating member.

8. A pull socket having a supporting structure, a switch provided with operating means, said means including a rotatable shaft, a ratchet wheel, a pawl formed of an S-shaped piece, supporting means, and an operating member engaging one end of the pawl so as to draw the other end into engagement with the teeth of the ratchet.

9. The combination in a pull socket of a supporting structure, a switch carried thereby, and operating means for said switch, said means including a rotatable shaft, a ratchet wheel fixed thereto, a pawl supporting structure rotatably mounted on said shaft, a pawl consisting of an S-shaped piece of sheet metal mounted on said supporting member so that one of its ends is movable to engage the teeth of the ratchet, with an operating chain attached to the opposite end of the pawl.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HENRY T. PAISTE.

Witnesses:

WM. A. BARR,
Jos. H. KLEIN.