Dec. 21, 1926. 1,611,552

R. E. NAUMBURG

LOCKING DEVICE FOR ELECTRIC BULBS

Filed Nov. 28, 1924

Fig. 1

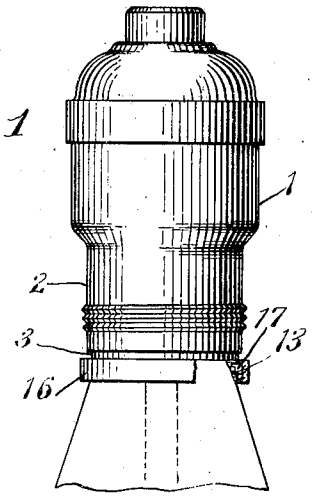
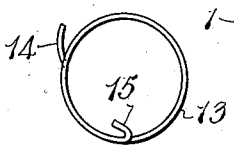


Fig. 7



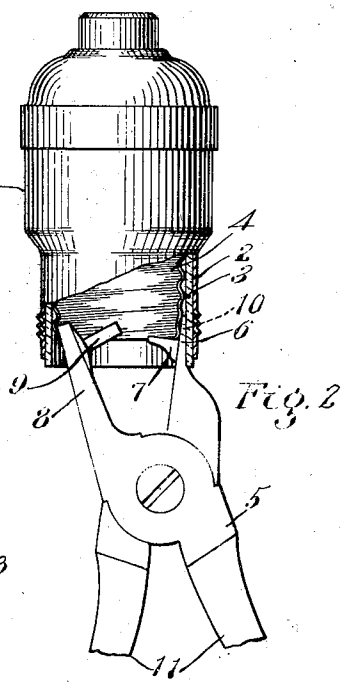
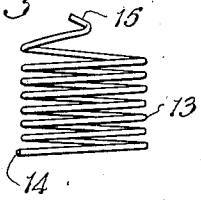


Fig. 2

Fig. 8



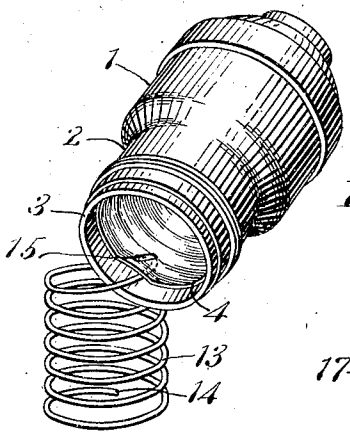


Fig. 3

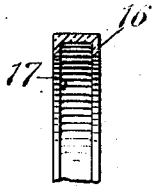


Fig. 5.

Fig. 6

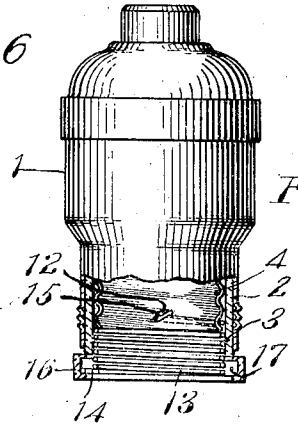
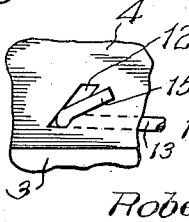


Fig. 9



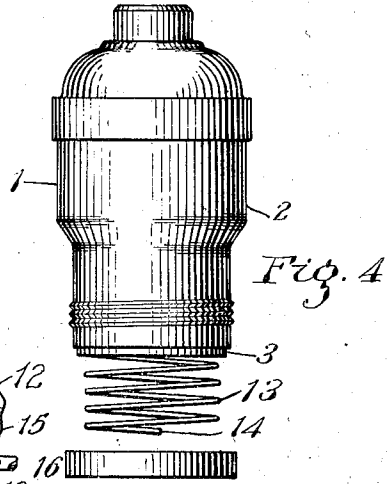


Fig. 4

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UNITED STATES PATENT OFFICE.

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LOCKING DEVICE FOR ELECTRIC BULBS.

Application filed November 28, 1924. Serial No. 752,576.

This invention relates to electric attachment sockets and to the manufacture thereof and consists more particularly in an improved automatically operative bulb locking socket and method of making the same. One type of such sockets differs from the ordinary sockets of commerce in that they are provided with attachments in the form of helical wire springs, each having a portion interlocking with its associated socket and an additional portion adapted to grip the base or threaded portion of a bulb to hold the bulb against removal. A guard or shield member of annular form and of non-conducting material retained in position by the bulb overlies the locking means when the bulb is in place and insulates the parts to prevent short-circuiting or shock and also serves to obstruct access to the locking means.

In a preferred form of my improved construction the portion interlocking with the end of the socket is preferably in the form of a hook formed by rebending the end of the wire away from the coil and toward the axis of the coil so that the plane of the bend will make an angle of about 45° with the axis of the spring since if it were to lie in a plane perpendicular to said axis it would tend to obstruct the insertion of the bulb in the socket, and if parallel to said axis it would be difficult to insert.

The spring hook preferably interlocks with an elongate narrow angularly disposed slot so inclined that the hook tends to move toward the bottom of the socket on an attempt to unscrew the bulb. The obliquity of the slot permits the use of a longer opening and so facilitates the placing of the hook, while permitting the desired length without such a long penetration axially of the socket, a feature of great value both because the bending of the socket necessary to permit the insertion of the slotting tool is minimized and because it is possible to secure the requisite length of slot even though an obstruction in the socket may preclude a very deep insertion of the slotting implement. By virtue of the oblique arrangement of the slot the hooked end of the spring is thrust against one end of the slot when the spring is forced in one direction as when inserting a bulb and is thrust against the opposite end of the slot when the spring is forced in the opposite direction as when attempting to unscrew a bulb, and the wear of such thrusts is divided between the ends of the slot. The formation of the elongate narrow slot permits easy entry of the hook therethrough, but turning the spring to its normal assembled position turns the hook transversely of the slot and so eliminates danger of accidental unhooking.

Among the objects of the invention are the provision of an improved socket and an improved method of producing the same, wherein the preliminary steps may be simple and easily performed, wherein the assembly of the component parts may be readily accomplished, in which the parts of the completed article may remain securely assembled, in which they may cooperate with each other and an electric lamp to hold the latter securely and with a minimum of wear after long use, and in which the parts may be used over again with a new bulb after the old ones are burnt out.

In the accompanying drawings in which a series of views illustrative of the various steps in the production of a finished locking socket are disclosed for purposes of illustration.

Fig. 1 is a side elevation with parts broken away of a finished socket with a bulb locked therein;

Fig. 2 is a view with parts broken away showing the operation of perforating the socket for the reception of the locking means;

Fig. 3 is a perspective view showing the locking means as initially attached;

Fig. 4 is a side elevation with the locking means brought into its normal free position;

Fig. 5 is a fragmentary section of an insulating collar or ring;

Fig. 6 is a view corresponding to Fig. 4 showing the parts in the position occupied when a bulb is locked in the socket;

Fig. 7 is an end view of the spring;

Fig. 8 is a side elevation of the spring; and

Fig. 9 is an enlarged detailed view of a portion of Fig. 6.

1 is an electric socket having therein an outer metallic housing 2, separated by an insulating sleeve 3 from its spirally corrugated inner sleeve or shell 4, into which threads the base portion of an electric light bulb. In the first stage of transforming this socket into a locking socket a punch 5 is employed. This punch has cooperating jaws, one in the form of a thin tapering

blade 6 provided with a stop 7 projecting laterally therefrom, and the other, 8, having formed thereon and projecting toward the blade 6 a punch element 9 which is in the form of a relatively wide, thin blade preferably arranged in a plane making an angle of approximately 45° with the longitudinal dimension of the part 8. The blade 6 is provided with a perforation 10 into which the end of the blade 9 may pass. In the use of this implement the thin blade 6 is pushed in between the shell 4 of the socket and the insulating sleeve 3 until the shoulder or stop member 7 comes into engagement with the outer end of the member 4, the other part of the punch then lying within the mouth of the socket. Pressure is then applied to the handles 11 of the punch to cause the blade 9 to penetrate the material of the sleeve 4, thus forming an elongate narrow slot 12 lying in a plane making an angle of approximately 45° with the axis of the socket and with its inner end in advance in a counter-clockwise direction. The slight flattening of the side of the sleeve 4 caused by the insertion of the blade 6 may be corrected by pressing the flattened side outwardly before the insertion of the bulb or by the insertion of the bulb. During punching the stop 7 serves the added function of limiting movement of the blade 8.

After the removal of the punch the next operation is the attachment of the locking spring 13 to the socket. This spring which is in the form of a helical wire spring whose convolutions are approximately equal in diameter to the internal diameter of the socket and extend in such a direction as to permit the end of the socket to be screwed into them, may be formed in any suitable way, but is provided at its outer extremity with a slightly out-turned end 14, which may if desired be beveled to permit the projecting lump of solder near the outer end of the base of the bulb to slide beneath it without difficulty. At its other end the spring is provided with an inwardly turned hook portion 15, this portion being arranged in a plane disposed obliquely to the axis of the spring and preferably at an angle of approximately 45° to the axis of the spring for the purpose of preventing obstruction to the movement of the bulb as the latter is inserted while still facilitating the insertion of the spring in the slot 12. The spring is positioned approximately as shown in Fig. 3 with the hooked end 15 inserted between the brass inner shell 4 and the next outer layer, herein the insulating sleeve 3, and the hook is caused to pass through the slot 12 by suitably turning the spring. While the hook 15 is held within the slot 12 the spring is swung until it assumes a position within the mouth of the socket as indicated in Fig. 4, in which position a part of one coil of spring will be located between the inner brass shell 4 and the layer of insulating material 3. After the placing of the spring the sleeve of the socket may be sprung back to approximately its initial curvature. A recessed washer 16 having an annular internal recess 17 is next placed over the outer end of the spring with the end 14 lying within the groove 17. It will then be possible for a bulb to be screwed into the socket passing through the convolutions of the spring 13 and to be securely locked by the spring in position, the bulb when fully screwed in forcing the washer 16 down substantially against the end of the socket, thus housing all portions of the spring within the outer limits of the socket and the member 16.

The device herein claimed is particularly applicable to porcelain and composition sockets in which the housing can not be removed for punching the shell.

I claim:

1. A device for locking an electric bulb in a socket having a slot therein, comprising a helical spring having a diameter approximately equal to that of the socket and having one end bent in a plane oblique to its axis to form a hook for interengagement with said slot.

2. An electric bulb connection comprising a socket member having an oblique slot in its periphery, a bulb locking spring, having a hook on its inner end for interengagement with said slot, and a ring enclosing the turns of the spring projecting beyond the mouth of said socket.

3. An electric bulb connection comprising a socket member having an aperture in its periphery, a bulb locking spring having an oblique hook on its inner end for interengagement with said aperture, and a ring enclosing the turns of the spring projecting beyond said mouth.

4. An electric bulb connection comprising a socket member having an oblique slot in its periphery, a bulb locking spring having an oblique hook on its inner end for interengagement with said slot, and a ring enclosing the turns of the spring projecting beyond the mouth of said socket.

5. The method of applying a helical locking spring to a lamp socket having an inner shell and a closely encircling housing, which comprises punching an oblique slot in the shell, bending the end of the spring in a plane oblique to the axis of the spring to form a hook, inserting the hook between the shell and housing, and interengaging the hook in said slot.

6. The method of applying a locking spring having a hooked end to a lamp socket having an inner shell and a closely encircling housing, which comprises flexing one side of the shell away from said housing and perforating said side, inserting the

hooked end of the spring between the shell and housing and interengaging the hook in the perforation, and then flexing said side back approximately to normal position.

7. The method of applying a locking spring having a hooked end to a lamp socket having an inner shell and a closely encircling housing, which comprises inserting a thin punch blade between the shell and housing, punching an aperture in the shell, inserting the hooked end of the spring between the shell and housing, and interengaging the hook in the aperture.

8. The method of applying a locking spring having a hooked end to a lamp socket having an inner shell and a closely encircling housing, which comprises flexing one side of the shell away from said housing and perforating said side, inserting the hooked end of the spring between the shell and housing and interengaging the hook in the perforation, and then flexing said side back approximately to normal position by inserting the lamp bulb.

9. The method of applying a helical locking spring to a lamp socket having an inner shell and a closely encircling housing, which comprises flexing the shell inwardly away from the housing, engaging the spring over the shell in the space between the shell and housing, and flexing the shell back approximately to normal position.

Signed by me at Boston, Massachusetts, this 20th day of November, 1924.

ROBERT E. NAUMBURG.