

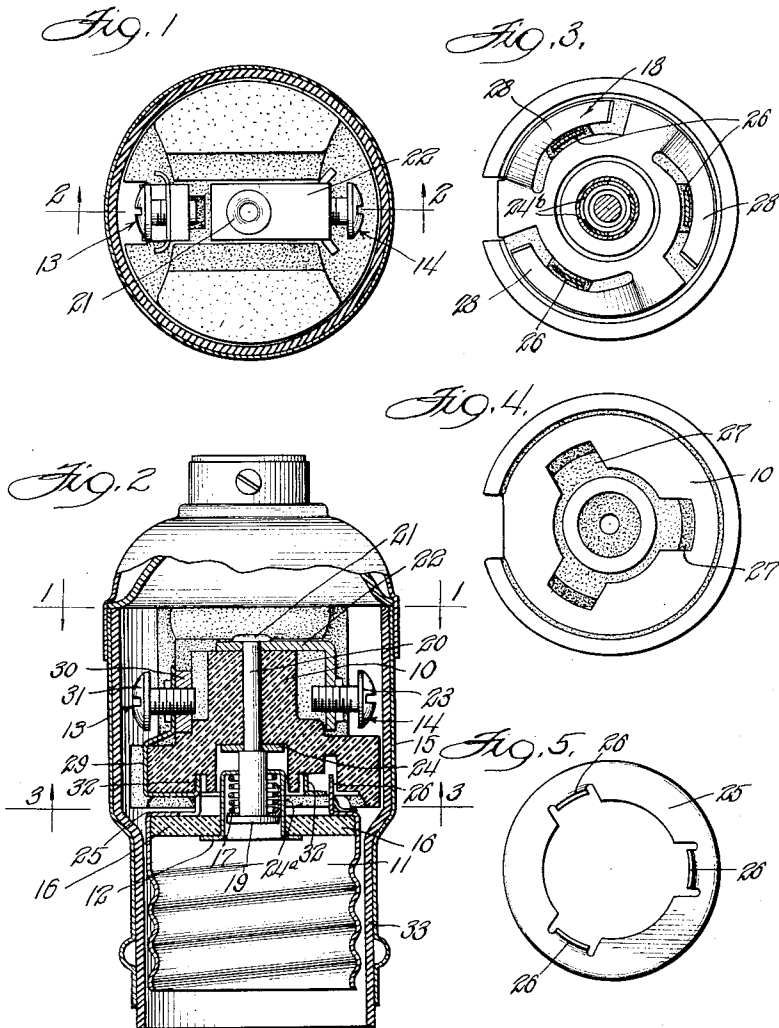
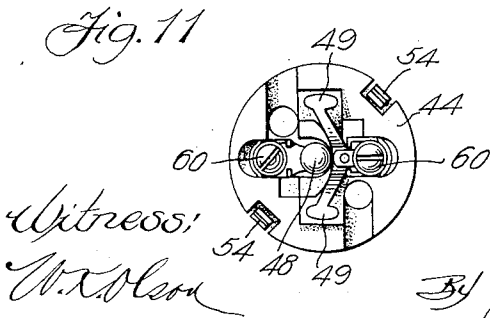
June 25, 1929.

R. B. BENJAMIN
SHOCK ABSORBING SOCKET

1,718,451

Filed Oct. 9, 1925

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 10.

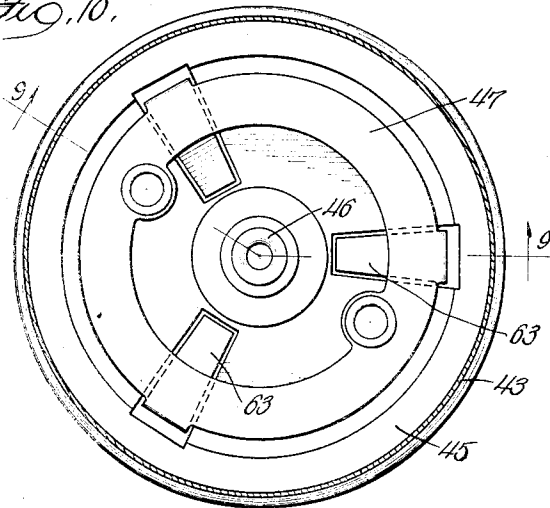


Fig. 6.

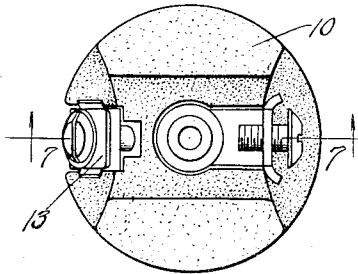


Fig. 7.

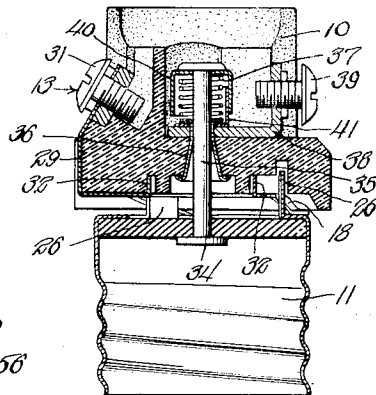


Fig. 9.

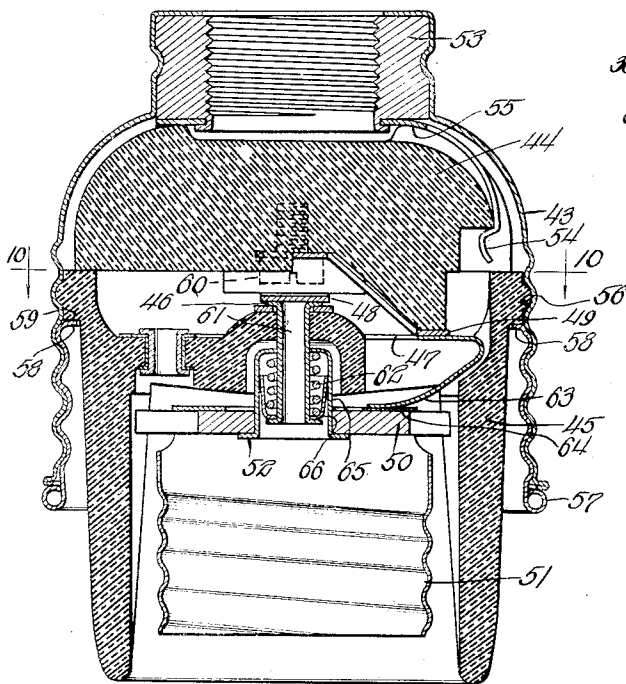
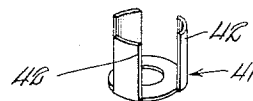


Fig. 8.



Witness:

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UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHOCK-ABSORBING SOCKET.

Application filed October 9, 1925. Serial No. 61,567.

My invention relates to electrical connector devices and more specifically to a shock-absorbing socket.

One of the objects of my invention is to provide an improved shock-absorbing socket, which will be durable and efficient in use, simple in construction and cheap to manufacture.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings in which an embodiment of my invention is shown—

Figure 1 is a transverse sectional view of a shock-absorbing lamp socket on the line 1—1 of Fig. 2;

Fig. 2 is an axial sectional view of the socket on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view substantially on the line 3—3 of Fig. 2;

Fig. 4 is a bottom view of the insulating base;

Fig. 5 is a top plan view of the threaded shell receptacle contact;

Fig. 6 is a plan view of the interior construction of a modified form of receptacle;

Fig. 7 is an axial section on the line 7—7 of Fig. 6;

Fig. 8 is a perspective view of a spring positioning and contact member;

Fig. 9 is an axial sectional view showing a somewhat different form of my invention, the section being on the line 9—9 of Fig. 10;

Fig. 10 is a sectional view on the line 10—10 of Fig. 9, and

Fig. 11 is a bottom view of the wiring base of Fig. 9.

The construction shown in Figs. 1 to 5, inclusive, comprises in a general way, a receptacle having an insulating wiring base 10, for supporting the shell and center contacts 11 and 12, and the wiring terminals 13 and 14, and a sheet metal casing 15 for housing the insulating base and parts supported thereby. The shell and center contacts 11 and 12 are supported in fixed position with respect to each other, and insulated from each other by means of an insulating disk 16. This unitary substantially cylindrical receptacle construction, comprising the shell contact 11, the center contact 12, and the insulating supporting disk 16, is resiliently and yieldably mounted by means of a pair of opposed spring devices 17

and 18, respectively, so that the entire lamp or bulb receiving construction is resiliently and yieldably mounted with respect to the supporting insulating base 10.

Referring now in detail to the construction, the center contact 12 may be formed as a part of an integral sheet metal stamping, having a cup-shaped portion for receiving the coil-compression spring 17, the lower end of which spring bears on the head 19 of a supporting rivet 20, secured to the insulating base 10. There is enough clearance around the head 19 of the rivet 20 to permit the threaded shell contact to have a slight tilting motion in any direction. The upper end 21 of this rivet 20 engages and is riveted over the base portion 22 of the binding plate, into which the binding screw 23 of the wiring terminal 14 is threaded. A washer 24 may be provided to distribute the pressure of the rivet 20 on the insulating base 10.

In order to insure a good electrical connection between the rivet 20 and the center contact 12, a sliding contact and spring containing member 24^a is provided, having three upwardly extending fingers 24^b, which embrace the spring 17 and which also bear against the stamping from which the center contact is formed.

The threaded shell contact 11 may be formed as a part of a sheet metal member, having a flange portion 25 bearing against the insulating disk 16 and having three upwardly extending positioning fingers 26, which extend upwardly into three corresponding recesses 27 in the insulating base 10 to prevent the threaded shell contact from turning when the lamp is screwed in. The spring device 18 may be formed as a part of an integral sheet metal stamping comprising in addition to the three leaf-spring contact members 28, a conducting strap portion 29, which extends upwardly into engagement with the binding plate portion 30 for the binding screw 31 of the wiring terminal 13. The flange of the threaded shell contact is thus electrically connected with the wiring terminal 13 through the spring contact fingers 28 and the conducting strip 29. In order to position the spring device 18 on the insulating base 10, three integral fingers 32 are struck up therefrom which extend into portions of the recesses 27 previously referred to. The spring contact members 28 constitute cantilever springs acting on the

unitary receptacle construction adjacent the periphery thereof, whereby the receptacle construction is yieldingly supported at three points.

5 The usual insulating lining or sleeve 33 is provided for insulating the live parts carried by the insulating base 10, from the outer casing 15.

10 The function of the spring devices 17 and 18 is obvious. The unitary construction comprising the center contact 12, the threaded shell contact 11, and the insulating disk 16, is yieldingly supported so that it can yield inwardly or outwardly or can be tilted in any
15 direction. This yielding freedom of movement of the socket part of the device with respect to the rigidly supported part of the device prevents excessive vibration from being transmitted to the socket part of the device and prevents the filament or other parts
20 within a bulb from being excessively jarred. The circumferential arrangement of the spring contact members 28 makes possible a very compact construction.

25 The circuit is from the binding screw 23 through the binding plate 22, rivet 20, spring 17, spring containing member 24^a, center contact 12, through the filament, shell contact 11 and spring contact members 28 to the binding screw 31.

30 The construction shown in Figs. 6, 7 and 8 is substantially the same as that shown in Figs. 1 to 5, inclusive, with the exception of the central spring support; the insulating
35 base 10, the threaded shell contact 11, the wiring terminal 13, and the spring device 18 are substantially identical with the construction previously described. In this form shown
40 in Figs. 6, 7 and 8, however, the center contact 34 is formed as a part of the rivet-like member 35, which extends upwardly through a flaring eyelet member 36, which permits a slight oscillation of the rivet-like member
45 35. A coil compression spring 37 exerts an upward pressure on the rivet-like member 35, which acts against the downward pressure exerted on the threaded shell contact 11 by the spring device 18, so that the springs oppose and balance each other. The flaring eyelet
50 36 not only serves as a guide for the member 35 but also serves to secure the binding plate 38 for the binding screw 39 in position on the insulating base 10.

55 The coil-compression spring 37 is housed by and between a cup-shaped sheet metal stamping 40, and a spider-shaped stamping 41 (Fig. 8) the arms 42 of the spider extending upwardly and engaging the cup-shaped member 40. This insures a good electrical
60 connection between the binding plate 38 and the member 35 through the members 40 and 41.

65 The construction shown in Figs. 9 and 10 comprises a cup-shaped casing 43, a wiring base 44 detachably secured in said casing, an

insulating supporting base or cup 45 screwed into said casing, and having center and side contacts 46 and 47 for engaging corresponding center and side contacts 48 and 49 on the wiring base, and a sub-assembly including an insulating disk or base 50 and threaded shell and center contacts 51 and 52 mounted thereon, which sub-assembly is yieldingly supported from the insulating cup.

70 An internally threaded bushing 53 is secured to the upper end of the casing 43, which can be screwed onto the end of the nipple through which the feed wires pass. The wiring base 44 is detachably secured in the cup-shaped casing 43 by means of spring fingers 54 extending from an annular member 55 which is secured to the bushing 53. In order to prevent undue strain on the threads 56 on the insulating cup 45 which screws into the threads on the casing 43, additional holding means are provided comprising a threaded ring 57 which screws up inside the threaded portion of the casing 43 and has an inwardly extending flange 58 which engages the downwardly facing shoulder 59 on the insulating
80 cup 45.

The wiring base is provided with a pair of binding screws 60 for the center and side contact members 48 and 49, respectively. The center contact 46 of the cup-shaped insulating base 45 is formed as the flange of a centrally located headed member 61 which serves as a support for the coil spring 62 which surrounds it. The side contact 47 for the insulating base is an annular sheet metal member having inwardly extending tongues 63, extending inwardly from the outer edge of the ring portion and engaging the flange 64 of the threaded shell contact 51 of the sub-assembly. A sheet metal cup-shaped member 65 surrounds the coil spring 62 and extends through the insulating disk 50 of the sub-assembly and is flanged over to secure it to the insulating disk and to provide the center contact 52 for the center of the inserted bulb. A cup member 66 is provided for the lower end of the coil spring 62 which affords a seat for the coil spring and also engages the outer cup-shaped member 65 to insure a good electrical contact.

In this construction the circuit is from the center contact 48 of the wiring base through the center contact 46 and headed member 61 mounted on the cup-shaped insulating base, through the two cup-shaped members 66 and 65 to the center contact of the bulb, through the bulb to the shell contact 51, through the contact springs 63 to the annular side contact member 47 and thence through the side contact 49 of the wiring base to the binding screw 60.

The centrally located coil spring 62 tends to force the sub-assembly toward the wiring base, while the spring tongues 63 spaced circumferentially about the central spring tend

to force the sub-assembly away from the wiring base. The spring tongues exert a balanced pressure about the central locked coil spring so that the sub-assembly is held in a delicately balanced position.

This application is a continuation as to common subject matter claimed herein of my copending application, Serial No. 400,064, filed July 30th, 1920.

I claim:

1. A shock-absorbing socket construction comprising a lamp receptacle construction including a threaded shell contact, a center contact, and insulating means for insulating said contacts from each other and supporting them against relative movement with respect to each other, whereby the contacts and insulating means form a unitary device, a support, and means for yieldingly mounting said lamp receptacle construction with respect to said support comprising opposed balanced spring devices on said support, one urging said unitary device away from said support, and the other urging it toward said support.

2. A shock-absorbing socket comprising a threaded shell contact, and means for yieldingly supporting said threaded shell contact, comprising a sheet metal member having a plurality of leaf springs struck up therefrom, and bearing on said threaded shell contact.

3. A shock-absorbing socket comprising a threaded shell contact, a wiring terminal therefor, and means for yieldingly supporting said threaded shell contact, comprising a sheet metal member having a plurality of leaf springs struck up therefrom and bearing on said threaded shell contact and electrically connected with said wiring terminal.

4. A shock-absorbing socket comprising a threaded shell contact, and means for yieldably supporting said threaded shell contact comprising a headed member, a coil spring surrounding said headed member and bearing on its head, and a cup-shaped member surrounding said spring, said headed member and cup-shaped member forming part of the electrical circuit.

5. A shock-absorbing socket construction for delicate electrical apparatus, comprising a base, a substantially cylindrical receptacle member for receiving the electrical apparatus, means on the receptacle member for engaging the electrical apparatus by a turning movement of the latter, and means for yieldingly supporting said receptacle member with respect to said base comprising a sheet metal member having a plurality of leaf springs struck up therefrom and located between said base and receptacle.

6. A shock-absorbing socket construction for delicate electrical apparatus, comprising a wiring base, a contact mounted thereon, a wiring terminal for said contact also mounted thereon, a supporting base, a contact mounted thereon for quick connection and

disconnection with respect to said first contact, a sub-assembly including (1) an insulating base, and (2) receptacle contacts mounted thereon, and means for yieldingly supporting said sub-assembly from said supporting base.

7. A shock-absorbing socket construction for delicate electrical apparatus, comprising a wiring base, a contact mounted thereon, a wiring terminal for said contact also mounted thereon, a supporting base, a contact mounted thereon for quick connection and disconnection with respect to said first contact, a sub-assembly including (1) an insulating base, and (2) receptacle contacts mounted thereon, and means for yieldingly supporting said sub-assembly from said supporting base, comprising a spring electrically connecting one of the contacts on the supporting base with a contact on the sub-assembly.

8. A shock-absorbing socket construction for delicate electrical apparatus, comprising a sub-assembly including (1) an insulating base and (2) receptacle contacts mounted thereon, a supporting base, and means for yieldingly supporting said sub-assembly from said supporting base, comprising an annular member of sheet material having a plurality of spring tongues extending inwardly from the outer edge thereof and engaging said sub-assembly.

9. A shock-absorbing socket construction for delicate electrical apparatus, comprising a sub-assembly including (1) an insulating base and (2) receptacle contacts mounted thereon, a supporting base, and means for yieldingly supporting said sub-assembly with respect to said supporting base, comprising an annular member of sheet material having a plurality of spring tongues extending inwardly from the outer edge thereof and engaging one of the contacts on the sub-assembly and serving to supply current thereto.

10. A shock-absorbing socket construction for delicate electrical apparatus comprising an insulating base, a headed member mounted thereon, a coil spring surrounding said headed member and bearing on said head, a cup surrounding said spring and acted on thereby, an insulating disk, said cup extending through said disk and having an outwardly extending flange engaging said disk and forming a center contact, and a threaded shell contact mounted on said disk.

11. A shock-absorbing socket construction for delicate electrical apparatus comprising an insulating base, a headed member mounted thereon, a coil spring surrounding said headed member and bearing on said head, a cup surrounding said spring and acted on thereby, an insulating disk, said cup extending through said disk and having an outwardly extending flange engaging said disk and forming a center contact, and a threaded

shell contact mounted on said disk and having an inwardly extending flange engaging said disk.

12. A shock-absorbing socket construction for delicate electrical apparatus comprising an insulating base, a headed member mounted thereon, a coil spring surrounding said headed member and bearing on said head, a cup surrounding said spring and acted on thereby, an insulating disk, said cup extending through said disk and having an outwardly extending flange engaging said disk and forming a center contact, and a threaded shell contact mounted on said disk and having an inwardly extending flange engaging said disk and a plurality of leaf springs engaging the flange on said shell contact.

13. A shock-absorbing socket construction for delicate electrical apparatus comprising a supporting base, and sub-assembly comprising (1) an insulating base and (2) receptacle contacts mounted thereon, a central headed member mounted on said supporting base, a coil spring surrounding said headed member and acting between said headed member and said sub-assembly to force said sub-assembly toward said supporting base, and a plurality of springs spaced circumferentially about said central headed member acting to force said sub-assembly away from said supporting base.

14. A shock-absorbing socket construction for delicate electrical apparatus comprising a supporting base, and sub-assembly comprising (1) an insulating base and (2) receptacle contacts mounted thereon, a central headed member mounted on said supporting base, a coil spring surrounding said headed member and acting between said headed member and said sub-assembly to force said sub-assembly toward said supporting base, and a plurality of cantilever springs spaced circumferentially about said central headed member

acting to force said sub-assembly away from said supporting base.

15. A shock-absorbing socket construction for delicate electrical apparatus comprising a supporting base, and sub-assembly comprising (1) an insulating base and (2) receptacle contacts mounted thereon, a central headed member mounted on said supporting base, a coil spring surrounding said headed member and acting between said headed member and said sub-assembly to force said sub-assembly toward said supporting base, and a plurality of radially extending cantilever springs spaced circumferentially about said central headed member acting to force said sub-assembly away from said supporting base.

16. A shock-absorbing socket construction for delicate electrical apparatus comprising a supporting base, a central headed member mounted thereon, a coil spring surrounding said headed member, a cup surrounding said coil spring, a sub-assembly comprising (1) an insulating base and (2) receptacle contacts mounted thereon and a cup member secured to said sub-assembly and surrounding said coil spring.

17. A shock-absorbing socket construction for delicate electrical apparatus comprising a supporting base, a central headed member mounted thereon, a coil spring surrounding said headed member, a cup surrounding said coil spring, a sub-assembly comprising (1) an insulating base and (2) receptacle contacts mounted thereon and a cup member secured to said sub-assembly and surrounding said coil spring, and a plurality of spring members spaced circumferentially about said headed member and acting on said sub-assembly.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.