My invention relates to switch construction and more specifically to a two-circuit switch construction suitable for controlling the horn and lights of an automobile.

One of the objects of my invention is to provide a switch construction of this type which will be simple, cheap, durable and efficient.

Further objects will appear from the description and claims.

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

Figure 1 is an axial section of the switch construction;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 2;

Fig. 6 is a bottom view of the switch; and

Fig. 7 is a section showing the switch changed over from a grounded lighting circuit to a metallic lighting circuit.

Referring now to the drawings in detail, the construction shown therein comprises an insulating base 10, wiring terminals 19 and 12 mounted thereon for the horn and light circuits respectively, a grounded annular contact 13 also mounted on said insulating base affording a ground for both the horn and light circuits, a tiltable insulating button 14 for controlling the horn circuit and an insulating oscillatable annular operating member 15 for controlling the light circuit. The insulating base 10 is mounted in a metal cup-shaped housing member 16 which may be formed integrally with the spark lever, this metal member forming a ground for both circuits through the metal stamping 17 (Fig. 4) which electrically and mechanically connects the annular contact member 13 with the metal housing 16. The tiltable horn button 14 carries a metal contact plate 18 which cooperates with the annular grounded contact 13.

The circuit from the binding terminal 11 to the contact plate 18 is through the tubular metal member 19, into which the binding screw 20 is threaded, the metal plate 21 riveted to the tubular member 19 and the tubular metal post 22 riveted to the metal plate 21.

For yieldingly supporting the tiltable button in operative relation with respect to the post 22, a coil compression spring 23 is provided which acts between the metal plate 21 and the contact plate 18 to hold the latter yieldingly in engagement with the annular fulcrum flange 24 on the tubular post 22.

The annular grounded contact 13 is formed as an outwardly extending flange on the cup-shaped metal member 25 which is mounted on the insulating base 10. This cup-shaped metal member, as well as the metal plate 21 and tubular post are held in place on the insulating base by means of an axial screw 26 extending through the insulating base and threaded into the tubular post. An insulating washer 27 is interposed between the metal plate 21 and the bottom of the metal cup-like member to clampingly engage the bottom of the cup and to insulate it from the metal plate.

The cylindrical portion of the metal cup member has a working fit in the opening in the annular light-controlling operating member 15 so that this operating member is oscillatably mounted, partly on the insulating base 10 and partly on the cylindrical portion of the metal cup member; and is held in place against end-wise movement by the outwardly extending contact flange 13.

The lighting circuit from the wiring terminal 12 to the grounded metal cup 25 comprises the tubular member 28 into which the end of the supply wire is inserted, a contact member 29 formed integrally with the tubular member 28, a double leaf-spring member 30 mounted on the oscillatable annular member 15 and a contact lug 31 (Figs. 2 and 3) formed integrally with and extending downwardly from the grounded metal cup member 25. The double leaf-spring member 30 is seated in a V-shaped recess in the oscillatable operating member 15 and is provided with two spring portions 32 and 33, the tension of which is such as to hold them inwardly to bring them into engagement with the contact members 29 and 31, respectively, when the switch is turned to “on” position, as shown in Fig. 2. Positioning notches 34 and 35 are provided on the insulating base 10 to receive the inwardly bent portions 36 and 37 of the leaf-spring contact members when the switch is in closed “off” position.

As indicated above, the metal cup member 25 is mechanically and electrically connected with the metal housing member 16 by means of the metal stamping 17 which is riveted to the bottom of the cup member at 38 and secured to the metal housing by means of a
screw 39. In order that the switch construction may be held in the cup-shaped housing snugly and without any looseness of parts, the stamping is so formed that the lower end tends to spring away from the side of the housing member, as shown in Fig. 4, so that the strip is sprung by the screw 39 when the stamping is drawn up snugly against the inside of the cup-like housing. This tension in the metal stamping 17 holds the switch mechanism snugly against the other side of the housing member 16 and prevents any looseness of parts.

The metal piece comprising the contact 29 and tubular part 28 is inserted into the opening in the insulating base from the upper side and is held in place on the insulating base by means of the binding screw 40 which is threaded into the side of the tubular binding terminal portion. This contact and binding terminal member is held against downward movement in the insulating base by means of the square upper contact portion 29 and is held against upward movement in the insulating base by engagement of the laterally extending screw 40 with the lower face of the insulating base.

When the oscillatable operating member 15 is operated, the lighting circuit is broken at two points by the double leaf-spring switching member 30 in cooperation with the contact members 29 and 41. In case it is desired to change over the construction so that the lighting circuit will be a metallic circuit as distinguished from a grounded circuit, the construction shown in Fig. 7 is used. A metal cup member 29 is substituted for the metal cup 25 of the construction just described, this cup member having no downwardly extending contact lug corresponding to the downwardly extending contact lug 51, shown in Fig. 3. In place of this grounded contact lug, a contact 41 is provided which is secured by a screw 42 to the tubular wiring terminal member 43 mounted on the insulating base 10. This wiring terminal member 43 has an axial recess 44 therein to receive the end of the supply wire and is provided with a binding screw 45 which is threaded into the side of the tubular portion and engages the end of the supply wire to hold it in place. The contact 41 cooperates with the leaf-spring contact member 35 just as does the contact lug 31 in the construction previously described.

In operation, to sound the horn, the button 14 may be pressed at any point, which will cause some part of the contact plate 18 to engage the annular contact 13 to close the circuit.

To close the lighting circuit, the annular controlling member 15 is moved to a position to engage the spring contact members 29 and 33 to engage the contacts 29 and 31.

While I have shown but one form of my invention, it is obvious that it may be embodied in other forms covered and defined by the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A two-circuit switch construction comprising an insulating base, a cylindrical metal cup member mounted on said base and having an annular contact edge, a post centrally supported in said cup member, a tiltable insulating operating button for controlling one of the circuits, mounted on said post and having a contact cooperating with said annular contact edge, and means for controlling the other circuit comprising an annular member oscillatable about said cylindrical cup member, said cup member having a working fit in the opening in said annular member.

2. A two-circuit switch construction comprising an insulating base, a cylindrical metal cup member mounted on said base and having an annular contact edge, a post centrally supported in said cup member, a tiltable insulating operating button for controlling one of the circuits, mounted on said post and having a contact cooperating with said annular contact edge, and means for controlling the other circuit comprising an annular member oscillatable about said cylindrical cup member, said cup member having a working fit in the opening in said annular member, said annular member having a working fit in the opening in said annular member, said cylindrical member having an outwardly extending flange overlying said annular member to hold it in place against axial movement.

3. A two-circuit switch construction comprising a base, an insulating button tiltably mounted on said base, an insulating ring coaxial with said button oscillatably mounted on said base, an annular contact mounted on said base coaxial with said button, a contact carried by said button cooperating with said annular contact for controlling one of said circuits, a rigid contact mounted on said base, and a spring contact carried by said oscillatable ring and cooperating with said rigid contact for controlling the other circuit, said spring contact comprising a leaf spring member supported at both ends and having its intermediate portion yieldable in a general plane transverse to the axis of said oscillatable ring.

4. A two-circuit switch construction comprising a base, an insulating button tiltably mounted on said base, an insulating ring coaxial with said button oscillatably mounted on said base, an annular contact mounted on said base coaxial with said button, a contact carried by said button cooperating with said annular contact for controlling one of said circuits, a rigid contact mounted on said base, and a spring contact carried by said oscillatable ring and cooperating with said rigid contact for controlling the other circuit, said spring contact comprising a leaf spring lying
in a general plane transverse to the axis of said oscillatable ring, said leaf spring being held in place on said ring by said base.

5. A two-circuit switch construction comprising a base, a grounded annular contact detachably mounted thereon, a tiltable insulating button mounted thereon, a contact carried by said tiltable button and cooperating with said grounded contact to control one circuit, and an annular insulating member mounted on said base coaxially with said tiltable button, a switch contact mounted on said base having means for electrical connection with a feed wire, a contact carried by said grounded annular contact, and a switch member carried by said oscillatable annular member for controlling the circuit between said feed-wire contact and the contact carried by said grounded annular contact, and means whereby a contact having means for electrical connection with a feed wire may be substituted for the contact carried by the grounded annular contact.

6. A two-circuit switch construction comprising a base, a grounded annular contact detachably mounted thereon, a tiltable insulating button mounted thereon, a contact carried by said tiltable button and cooperating with said grounded contact to control one circuit, and an annular insulating member mounted on said base coaxially with said tiltable button, a switch contact mounted on said base having means for electrical connection with a feed wire, a contact carried by said grounded annular contact, and a switch member carried by said oscillatable annular member for controlling the circuit between said feed-wire contact and the contact carried by said grounded annular contact, and means whereby a contact having means for electrical connection with a feed wire may be substituted for the contact carried by the grounded annular contact.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.