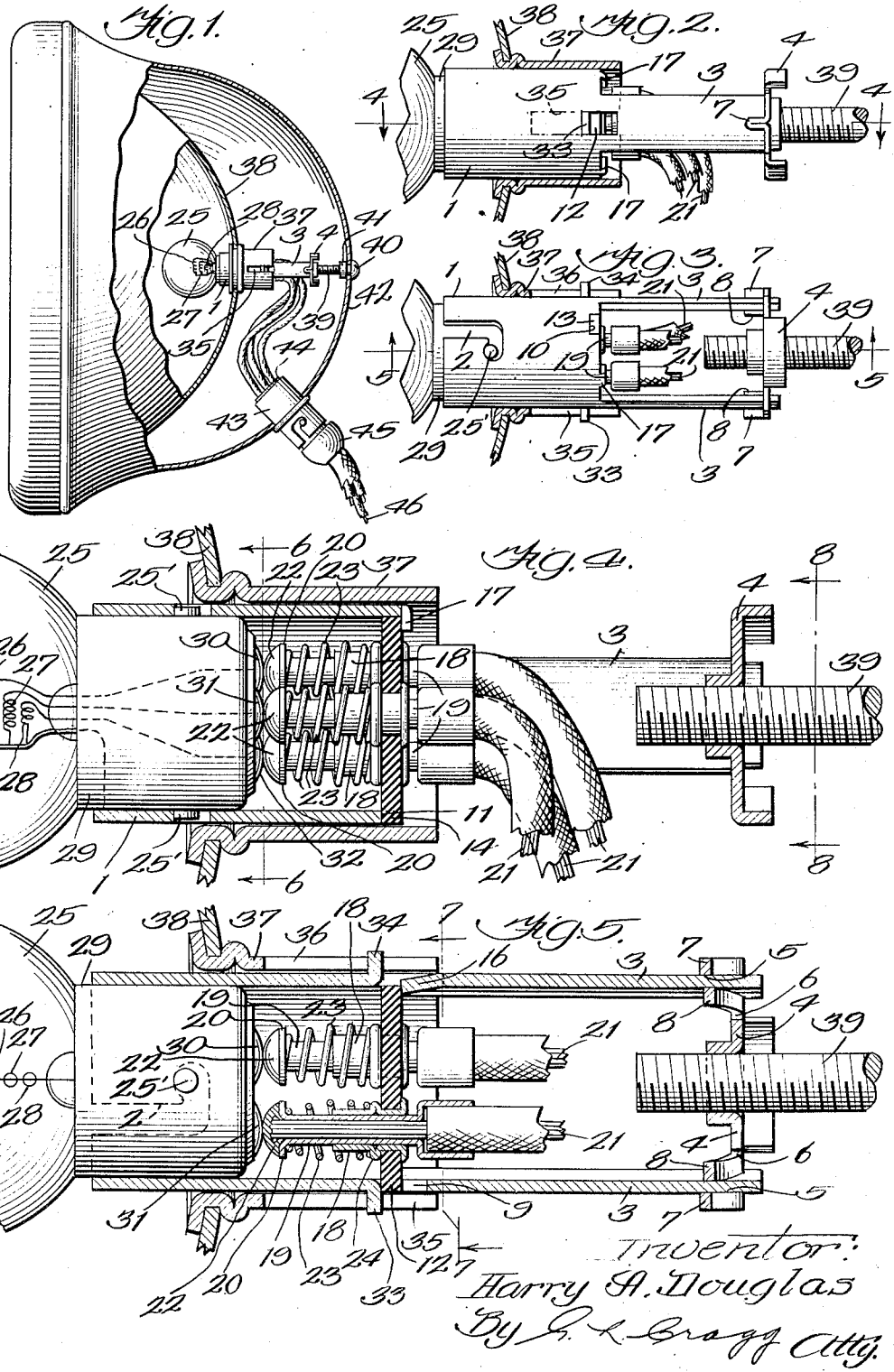
June 3, 1930. H. A. DOUGLAS 1,761,436

CIRCUIT CONTINUING DEVICE

Filed May 5, 1928 2 Sheets-Sheet 1



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CIRCUIT CONTINUING DEVICE

Filed May 5, 1928 2 Sheets-Sheet 2

Fig. 6.

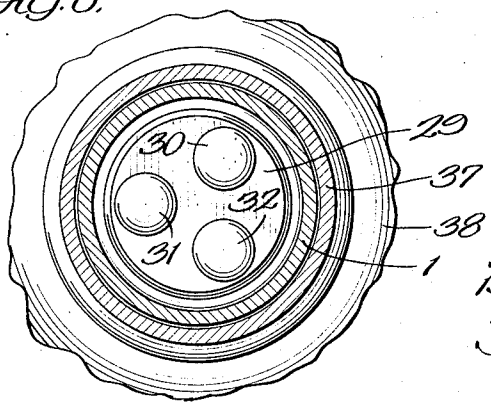



Fig. 7.

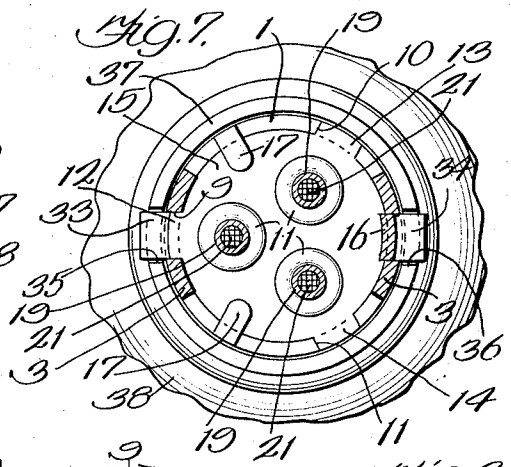



Fig. 9.

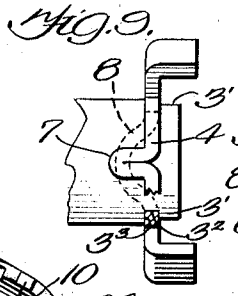



Fig. 8.

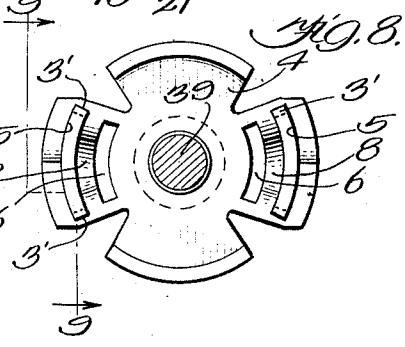






Fig. 10.

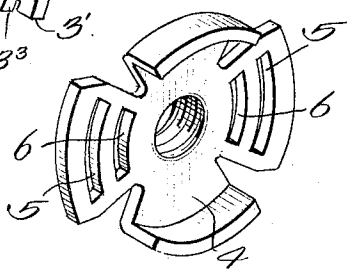
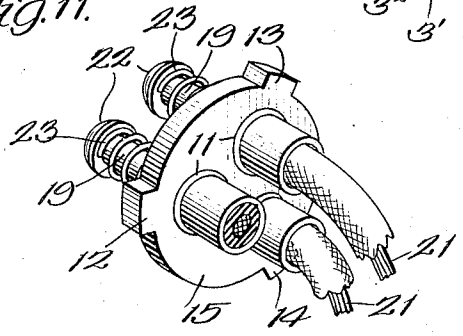



Fig. 11.




Inventor:
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Patented June 3, 1930

1,761,436

# UNITED STATES PATENT OFFICE

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN

## CIRCUIT-CONTINUING DEVICE

Application filed May 5, 1928. Serial No. 275,335.

My invention relates to circuit continuing devices, being of particular use in connection with electric head lights, though the invention is not to be thus restricted.

The invention has for one of its objects the provision of a very compact switching mechanism which is adapted to control several circuits. A circuit continuing device which serves this purpose is inclusive of a cylindrical shell, a contact carrying disc having radiating fingers which are spaced substantially one hundred and twenty degrees apart and are received within recesses formed in said shell, and contacts carried upon said disc and spaced substantially one hundred and twenty degrees apart and respectively radially aligned with said fingers. Prongs are desirably also provided upon the shell which are clinched upon the disc, said prongs being radially aligned with portions of the disc that are between adjacent contacts.

A circuit continuing device thus constructed is particularly adapted for use in connection with a plural filament incandescent lamp whose base may be assembled with the shell and may have filament terminal contacts thereon which are in engagement with the contacts that are provided upon the shell. Such a lamp may be provided with three filaments, one for furnishing the brightest illumination, another for furnishing a dimmer illumination, and a third for furnishing a still dimmer illumination suitable for parking. The contacts upon the disc and the contacts upon the lamp base are desirably constantly in engagement, the shell having a lateral opening at the rear of the disc through which the conducting wires are led to the contacts upon the disc, these conducting wires being connected with a suitable switch whereby a selected lamp filament may be included in circuit. These conducting wires are extended forwardly into the interiors of hollow metallic shanks of spring pressed plungers which terminate in flanges upon which buttons of solder are placed that secure the wires in mechanical and electrical assembly with said flanges. In the case of a head lamp, a concave reflector is provided which encloses the incandescent lamp bulb and which is provided with a tubular socket which receives the aforesaid shell and in which such shell is slidable to adjust the incandescent lamp bulb with respect to the focus of the reflector, the shell being suitably assembled with the object of the head lamp whereby it may be moved longitudinally from the exterior of the lamp.

The invention will be more fully explained by reference to the accompanying drawings in which Fig. 1 is a side elevation of a head lamp with portions shown in section; Fig. 2 is a longitudinal sectional view of portions of the head lamp in the region of the incandescent lamp bulb and on a larger scale, parts being shown in elevation; Fig. 3 is a view of the parts shown in Fig. 2 but taken at right angles to the direction in which Fig. 2 is taken; Fig. 4 is a sectional view on line 4—4 of Fig. 2 but on a larger scale; Fig. 5 is a sectional view on line 5—5 of Fig. 3 but on a larger scale; Fig. 6 is a sectional view on line 6—6 of Fig. 4; Fig. 7 is a sectional view on line 7—7 of Fig. 5; Fig. 8 is an end view of a shell; Fig. 9 is a sectional view on line 9—9 of Fig. 8; Fig. 10 is a perspective view showing the body of the shell and the end wall thereof in separated relation; and Fig. 11 is a perspective view of the contact carrying disc which is assembled with the shell.

The metallic shell 1 is cylindrical and is formed at one end with bayonet slots 2 whereby it may be separably assembled with an incandescent lamp or other contact carrier. Two strip metal fingers 3 are integrally formed with the shell and extend from one end thereof, these strip metal fingers being diametrically opposite. Each strip metal finger has its outer end portion reduced as indicated at 3′, the termination of each finger thus being narrower than the body of the finger. Each reduced finger end portion has two notches $3^2$ at the base thereof and at the longitudinal sides of the corresponding finger. The end wall 4 which is a piece of sheet metal and which is to be assembled with the fingers is formed with two pairs of substantially parallel slots 5 and 6, these slots being of arcuate curvature coaxial with the

arcuate curvature of the fingers. The members 3 are designed for insertion within the slots 5, the extreme outer ends of the reduced end portions of said members 3 being substantially coextensive, in length, with the slots 5 so as to be readily passed through said slots, the extent to which the fingers may be passed into the slots being limited by the shoulders $3^3$ at the base of the reduced end portions of said members 3. The notches $3^2$ are of the width which equals the thickness of the piece of sheet metal 4 whereby the sheet metal at the ends of the slots 5 is adapted to enter said notches. When the piece of sheet metal 4 has been bottomed upon the shoulders $3^3$, the piece 4 is buckled in the region of the slots as indicated at 7, 8 whereby the ends of the slots 5 are brought closer together to bring them fully within the notches $3^2$ to complete the joints between the parts 4 and 3, 3. The structure thus far described forms the subject matter of my copending application Serial No. 275,336 filed May 5, 1928, Case 232.

Said shell is formed with openings or recesses 9, 10, 11 which receive the fingers 12, 13 and 14 that are integrally formed with and radiate from the insulating disc 15. Said fingers and the recesses which receive them are spaced substantially one hundred and twenty degrees apart. One of the fingers 3 is formed with a prong 16 which is diametrically opposite the opening 9 and radially aligned with the portions of the disc that are between the fingers 13 and 14 and which prong is pressed inwardly to lap the disc 15 after this disc has been positioned, this prong and this opening cooperating to hold the disc in place. The disc is preferably further secured in position by means of prongs 17 which are integrally formed with the shell 1 and which are clinched over and into engagement with the disc, these prongs 17 being midway between the finger 12 and the other two disc fingers 13, 14 respectively. Metallic tubular guides 18 are in rigid assembly with the disc 15 through which they pass. These guides receive the tubular shanks 19 of plunger contacts, these shanks terminating in flanges 20 at the contacting ends of the plungers. Strands 21 of the conducting wires are passed through the shanks 19 to the region of the flanges upon these shanks and are secured at their forward ends to said flanges by means of buttons of solder indicated at 22. Coiled springs 23 surround the guides 18 and the tubular shanks 19, these springs having their ends abutting the shoulders 24 upon the guides 18 and the shank flanges 20. By this construction all gaps and movable parts are eliminated between the conducting wires 21 and the contacts with which these wires are in permanent mechanical and electrical connection.

The incandescent lamp 25 has bayonet pins 25′ upon its base for reception within the bayonet slots 2 when the lamp is to be assembled with the shell 1. Said lamp contains the filaments 26, 27 and 28 which serve respectively to furnish bright, dim and dimmer illumination when they are included in circuit. One terminal of each lamp filament is connected with the metallic sheath 29 which surrounds the base of the lamp bulb, the other terminals of the filaments being respectively connected with the contacting buttons 30, 31 and 32 which are upon the rear face of the lamp base, these buttons being aligned and preferably permanently engaged with the contacting buttons 22, respectively. The contacts 22 and the parts carrying them and pressing them into contacting position are distributed in a circular row that is concentric with the disc and are one hundred and twenty degrees apart, and are respectively radially aligned with the fingers 12, 13 and 14 where there is the most material in the disc structure at which these contacts could be placed, these contacts being thus separated as widely as possible from the surrounding metallic shell 1 to guard against short circuiting. The prongs 17 and the prong 16 are also separated one hundred and twenty degrees, being radially aligned with portions of the disc that are between the adjacent contacts 22, these prongs 17 and prong 16 being thus as widely separated from said contacts as possible in order to avoid short circuiting.

Diametrically opposite tongues 33 and 34 project from the shell 1 with which they are integrally formed and enter the slots 35 and 36 which are formed longitudinally in the tubular socket 37 which serves as a guide for the shell 1 as this shell is moved backwardly and forwardly to adjust the incandescent lamp bulb with reference to the concave reflector 38 which surrounds the bulb. The shell 1 and the lamp bulb thereon are adjusted back and forth by means of a bolt 39 which is screwed within the end wall 4 of said shell and which is held from longitudinal movement by means of its head 40 and an annular shoulder 41 between which the back 42 of a head lamp is snugly received. The bolt head is provided with a screw driver slot whereby the bolt may be turned to adjust the shell as described. Said lamp back 42 carries a shell 43 which receives a contact carrying plug 44 with whose contacts the wires 21 are respectively connected within the head lamp. A connecting plug 45 has bayonet pin and slot connection with the shell 43 upon the exterior of the head lamp, this connecting plug carrying contacts engageable with the contacts upon the carrier 44 and with which the external circuit wires 46 are connected.

Having thus described my invention, I claim:

A circuit continuing device including a shell having diametrically opposite openings

therein, one of which is formed by striking a single tongue from the shell and the other by striking a pair of tongues therefrom, a contact carrying disc having radiating fingers which are received respectively within the first named opening and within recesses formed in the end of the shell, one of the tongues of the aforesaid pair being bent inwardly to overlie the adjacent face of the disc and the remainder of said tongues being bent outwardly for sliding interfit with a shell receiving tubular socket, and prongs on the shell clinched upon said disc.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.