July 5, 1927. 1,634,405

H. A. DOUGLAS

CIRCUIT CONTINUING DEVICE

Original Filed Dec. 30, 1919

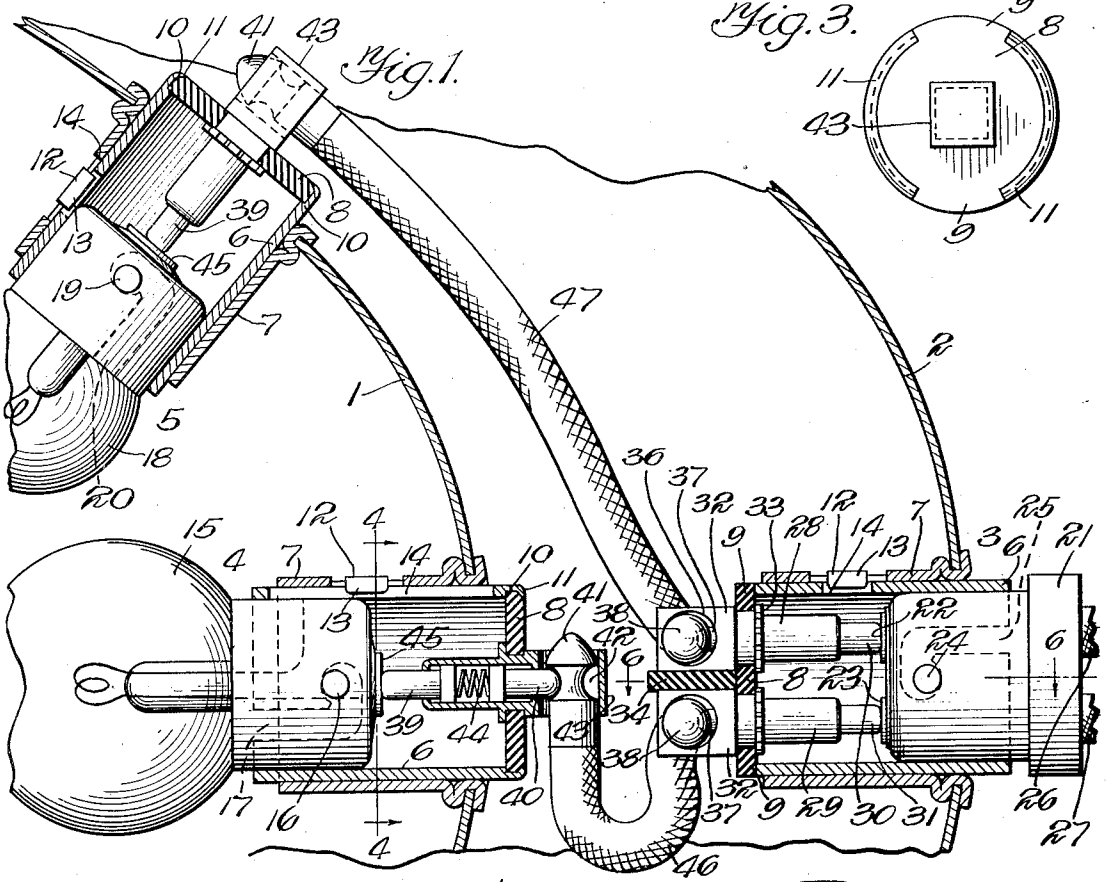


Fig. 1.

Fig. 3.

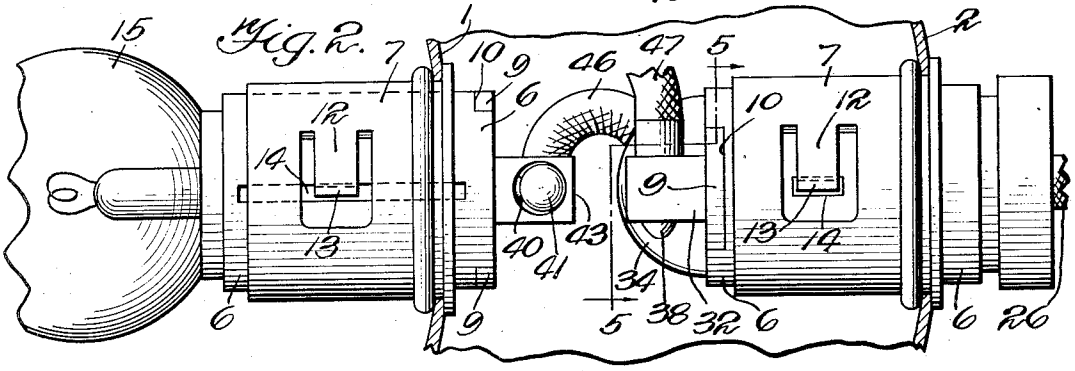


Fig. 2.

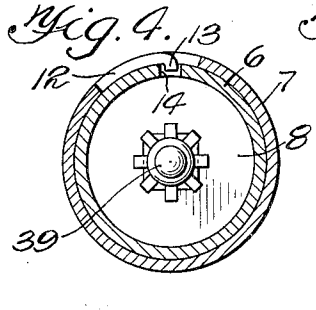


Fig. 4.

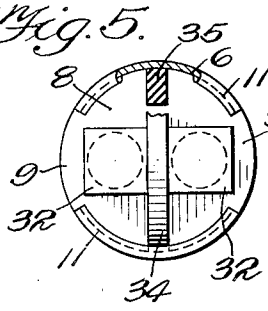


Fig. 5.

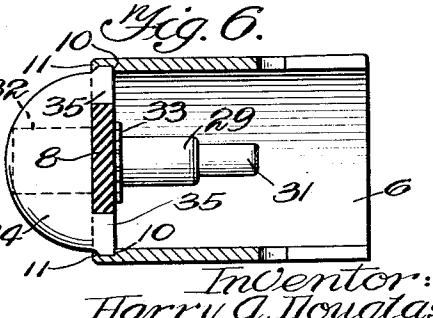


Fig. 6.

Inventor:
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UNITED STATES PATENT OFFICE.

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN.

CIRCUIT-CONTINUING DEVICE.

Original application filed December 30, 1919, Serial No. 348,416. Divided and this application filed May 23, 1921. Serial No. 471,951.

My invention relates to circuit continuing devices of the kind employing shells which carry contacts engageable with contacts upon contact carriers assembled with the shells, the present application being a division of my original application Serial No. 348,416, filed December 30, 1919.

The invention has for one of its objects the provision of an improved assemblage between the shell of a circuit continuing device and a contact supporting carrier. The construction by which this object of my invention is realized has a number of different characteristics that will be best understood by the description, later given, of the preferred embodiment of the invention.

Another feature of the invention resides in providing a formation upon the contact carrier engaging a polygonal part of a contact upon the carrier to prevent this contact from turning. This construction is of particular importance where such contact is accompanied by a neighboring contact, the formation upon the carrier preventing the first contact, or either contacts, from turning into engagement with the other.

Another feature of the invention relates to a circuit continuing device employing one element in the form of a shell and another element in the form of a sleeve in supporting relation to the shell. In carrying out this feature of my invention one of these elements is formed with a recess and the other is formed with a spring tongue having an angular end portion received in this recess, this construction being an improvement over those devices in which separately formed springs have been applied to shell supporting sleeves. Where this feature of my invention is embraced in a focal lamp structure the recess that receives the tongue end is elongated so that the sleeve and shell are maintained in assembly and are prevented from separating while at the same time permitting longitudinal adjusting movements of the lamp within a prescribed range.

I will explain my invention more fully by reference to the accompanying drawing showing the preferred embodiment thereof as it is adapted to a headlight structure. In the drawing Fig. 1 is a sectional view, with some parts in elevation, of a headlight having connecting devices thereon that are made in accordance with the invention; Fig. 2 is a view illustrating parts in elevation that are shown in section in Fig. 1; Fig. 3 is a rear view of the shell and contact carrying portions of either of the two forward circuit continuing devices shown in Fig. 1; Fig. 4 is a sectional view on line 4—4 of Fig. 1; Fig. 5 is a sectional view on line 5—5 of Fig. 2; and Fig. 6 is a sectional view on line 6—6 of Fig. 1.

Like parts are indicated by similar characters of reference throughout the different figures.

The invention is illustrated as being embodied in a headlight structure employing a concave reflector 1 and a casing 2, parts only of these elements being illustrated. The casing 2 supports a circuit continuing device 3 at its rear end, connections being taken from this circuit continuing device to the main incandescent lamp structure 4 that is located upon the axis of the reflector and the minor incandescent lamp structure 5 that is located upon one side of the axis of the reflector to furnish a dimmer light. The circuit continuing device 3 is a so-called two pole structure while the circuit continuing devices 4 and 5 are so-called single pole structures, these latter depending for the completion of their circuits upon the reflector 1 which is metallic and in electrical connection with one terminal of the filament of each lamp. The three circuit continuing devices illustrated have many characteristics of construction that are alike.

The circuit continuing device 3 will be first described in detail, parts of the other circuit continuing devices which are like those employed in the device 3 being respectively given similar characters of reference. This device includes a shell 6 held within a sleeve 7 which, in turn, is suitably supported upon the headlight or other mounting structure. The contact carrier 8, preferably a disc of insulating material, has an arcuate extension 9 projecting outwardly beyond the main bore of the shell 6 which has seat and lip formations 10, 11 respectively between and by which the contact carrier is engaged to prevent movement of this carrier longitudinally of the shell. The shell is omitted where the arcuate extensions 9 occur whereby notches are made in the shell by the side of lip formations in which the arcuate extensions of the carrier are received to prevent rotation thereof with

respect to the shell. Either the shell 6 or the sleeve 7, preferably the latter, is formed with a spring tongue 12 that is integral therewith, this tongue having an angular end portion 13 integral therewith to be received in a recess or slot 14 formed in the element 6 or 7 that is not formed with the spring tongue, in this instance the shell 6. The recesses 14 in the circuit continuing devices 3 and 5 are not appreciably longer than the tongue ends 13 that they receive so that the shells 6 can neither be turned nor moved longitudinally of the mounting sleeves 7, there being no occasion for longitudinal movement of the shells 6 in these circuit continuing devices 3 and 5. The circuit continuing device 4, however, has its recess or slot 14 in its shell 6 elongated longitudinally of the shell in order that this particular shell may be moved longitudinally of the sleeve for the purpose of focally adjusting the main incandescent lamp 15 whose base has bayonet projections 16 receivable within the bayonet channels 17. The minor incandescent lamp 18, being upon one side of the axis of the parabolic reflector 1, requires no focal adjustment. The base of this lamp has, similarly to the base of the lamp 15, bayonet projections 19 that are receivable within bayonet channels 20 of the corresponding shell 6.

Current is supplied to the lamps of the headlight structure with the aid of a connecting plug 21 carrying contact terminals 22 and 23 and having bayonet projections 24 receivable within the bayonet channels 25 in the shell 6 of the circuit continuing device 3 in order that the plug may be separably coupled with this shell. The contacts 22 and 23 upon the contact carrying plug are connected with conductors 26, 27 connected with the terminals of a suitable source of current.

The contact carrier 8 of the circuit continuing device 3 carries two metallic spring barrels 28 and 29 constituting parts of contact structures respectively complemental to the plug contacts 22 and 23. These spring barrels respectively carry contacts 30 and 31 having telescoping engagement therewith and which are rearwardly spring pressed respectively into engagement with the aforesaid plug contacts. The spring barrels 28 and 29 are each provided with enlargements 32 and 33 between which the corresponding contact carrier 8 is clamped. Each contact portion 32 is desirably polygonal in contour when viewed endwise. The portions of the contact structures passing through the contact carrier 8 of the circuit continuing device 3 are preferably circular and therefore have a tendency to turn within said carrier especially if the assembly between this carrier and said contacts is loosened. I therefore interpose a spacer of insulation 34 between adjacent polygonal faces of the contact portions 32 to prevent either of these portions from being turned into short circuiting engagement with the other. This spacer is preferably in the form of a rib provided with prong formations 35 received in the corresponding contact carrier 8 and preferably held between the corresponding seat and lip formations 10 and 11. This contact carrier 8, being held from rotation in the manner previously set forth, holds the rib 34 from rotating and keeps the contacts upon this carrier in proper relation to the contacts complemental thereto. By gripping the prong portions 35 between the seat 10 and lips 11 endwise movement of the rib 34 is prevented. Each of the contact portions 32 desirably has an opening 36 formed laterally therethrough and into each of which a contact element 37 is forwardly pressed to be engageable with a circuit continuing plug 38.

Each of the circuit continuing devices 4 and 5 has but one contact structure upon its carrier 8, these contact structures being similar in both of said devices 4 and 5, having a forwardly spring pressed contact 39 for engaging the contact upon the base of the corresponding incandescent lamp and a rearwardly spring pressed contact 40 for engaging a circuit continuing plug 41 receivable into the opening 42 formed laterally in the contact portion 43 and into which opening the rearwardly spring pressed contact 40 extends for the purpose of engaging this plug. A single spring 44 may serve to spread the contacts 39 and 40 apart in order that they may perform their respective functions. The spring pressed complemental contacts 30 and 37 may be similarly pressed apart as may also the complemental contacts 31 and 37.

The circuit continuing devices 4 and 5, being so-called single pole devices, have each only one contact upon its carrier 8. The metallic reflector 1 is connected with one terminal of each of the lamps 15 and 18 in a manner well understood, the filament of each lamp being electrically connected with the metallic sheath upon the base of such lamp which, in turn, is electrically connected with the shell holding this lamp base, and the sleeve holding such shell which has electrical connection with the reflector 1. The other terminal of each lamp filament is connected with the central contact 45 upon the base of such lamp to be engageable by the corresponding contact 39 as hitherto set forth. A cord 46 connects one plug 38 with one plug 41 and another cord 47 connects the remaining plug 38 with the remaining plug 41. The cord 46 establishes the circuit for the main incandescent lamp 15 and the cord 47 establishes the circuit for the minor incandescent lamp 18.

In the so-called single pole circuit continu-

ing devices there is no rib 34 inasmuch as there is but one contact structure upon the shell portion of such circuit continuing device. I therefore provide a central opening of polygonal contour in the contact carrier 8 of each single pole structure and correspondingly form the portion of the contact structure passing through this carrier whereby the contact structure is prevented from turning with respect to the carrier. These characteristics are well illustrated in Fig. 3.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A circuit continuing device including a shell; a contact; a carrier for the contact surrounded by the shell and having an extension projecting outwardly beyond the main bore of the shell, the shell having seat and lip formations between and by which said contact carrier is engaged to prevent movement thereof endwise of the shell, the shell being notched by the side of said formations to receive said extension to prevent rotation of the carrier; and a rib held between said formations upon the shell and in holding engagement with said contact to prevent said contact from turning.

2. A circuit continuing device including a shell; a contact; a carrier for the contact surrounded by the shell and having an extension projecting outwardly beyond the main bore of the shell, the shell having seat and lip formations between and by which said contact carrier is engaged to prevent movement thereof endwise of the shell, the shell being notched by the side of said formations to receive said extension to prevent rotation of the carrier; and a rib having a prong formation received in the contact carrier and held between said formations upon the shell and in holding engagement with said contact to prevent said contact from turning.

3. A circuit continuing device including a shell; a contact carrier carried by the shell; and a contact structure supported by said carrier and having current conducting portions upon both sides thereof, one of these portions being accessible upon the exterior of the shell and having a lateral opening therein, said contact structure having an outwardly spring pressed element extending into said opening; in combination with a current conducting plug receivable in the aforesaid opening and engageable by the aforesaid outwardly spring pressed element; and another contact carrier having a contact for engagement within the shell with the aforesaid contact structure, this contact carrier and said shell having complemental coupling formations.

4. A circuit continuing device including a shell; a contact; and a carrier for the contact surrounded by the shell and having an extension projecting laterally beyond the bore of the shell, the shell having seat and lip formations between and by which said contact carrier is engaged to prevent movement thereof endwise of the shell, the shell being notched by the side of said formations to receive said extension to prevent rotation of the carrier.

In witness whereof, I hereunto subscribe my name this 6th day of July, A. D. 1920.

HARRY A. DOUGLAS.