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UNITED STATES PATENT OFFICE

2,458,743

DROP-OUT FUSE CONSTRUCTION

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Application December 30, 1946, Serial No. 719,205

2 Claims. (Cl. 200-114)

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This invention relates to drop-out fuse constructions.

Objects of this invention are to provide a housed type of drop-out fuse which is so made that it may be caused to operate in either of two different ways so that the fuse tube may slide downwardly and project from the housing, the door remaining closed or which, by a simple change, may be made to operate in a different manner to cause the fuse tube to slide downwardly and the door to fall to open position, in both instances giving a visual indication of the fact that the fuse has blown.

In general this invention is an improvement over that disclosed in my prior Patent, No. 2,231,510 of February 11, 1941, for Fuse Construction assigned to the same assignee as that of this application.

In the prior patent hereinabove noted, a construction was shown wherein the fuse tube assembly was slightly altered by the addition or removal of screws so as to change its mode of operation to either hold the door closed and allow the fuse tube to slide downwardly or to allow the fuse tube to slide downwardly and the door to drop open depending on the selection of the user.

In refusing the fuse device it is quite frequently the custom to carry a door and fuse tube assembly already refused and ready for installation and to replace a door and fuse assembly of a blown device with a new door and fuse assembly. With the old construction as shown in my prior patent hereinabove noted, it was necessary for the operator to remember which type of service was desired by the user, namely, whether the door dropped open or remained closed on blowing of the fuse so that the operator could alter the fuse tube and door assembly as required. However, this invention is designed to provide means carried by the stationary portion of the apparatus and to so arrange the lower contact structure that it will determine whether the door drops open or remains closed without requiring any thought on the part of the operator in renewing a blown fuse tube and door assembly as the same fuse tube and door assembly is used in all cases.

Further objects of this invention are to provide a drop-out fuse construction in which means are provided and are carried by the lower stationary contact which determine whether the door shall drop open or remain closed.

An embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a view partly in section and partly

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broken away showing the device in operative position.

Figure 2 is a fragmentary view partly broken away and partly in section showing the fuse tube in its lowest position after blowing and showing the door closed.

Figure 3 is a view corresponding to Figure 2 showing the arrangement for allowing the door to drop open upon blowing of the fuse.

Figure 4 is a front view of the lower stationary contact detached from the remainder of the apparatus.

Referring to the drawings, it will be seen that the device comprises a porcelain housing 1 with a "Bakelite" or other insulating door 2, which door is provided with trunnions 3 removably seated within hook-like supports 4 carried by the lower portion of the housing 1. The fuse tube and door assembly may be similar to that disclosed in my prior patent, No. Re. 22,372 reissued September 7, 1943, for a Fuse. The fuse tube is indicated by the reference character 5 and is provided with a screw threaded metal cap 6 which normally engages the upper stationary terminal or contact assembly indicated generally by the reference character 8. The insulating fuse tube 5 is provided with a metal sleeve 9 which is rigid therewith and which is provided with laterally projecting portions 10, which are normally held in retained or locked position against a shoulder 11 of a fuse link extracting lever 12, which latter is equipped with a spring pressed flip-out lever 13, the parts being normally held in place by the leader 14 of the fuse link. The leader is locked in place by means of a thumb nut 15. The thumb nut is carried by a threaded pin 16 integral with the lower terminal or contact 17 of the fuse tube and door assembly, such lower terminal or contact being rigidly secured to the door as indicated.

It is to be noted that the fuse link extracting lever 12 is pivoted as indicated at 18 to the contact or terminal 17.

The lower stationary terminal assembly indicated generally by the reference character 19 is provided with a pair of spring fingers 20. These spring fingers removably carry a pair of screws 21 which are located just above the upper shouldered portion 22 of the terminal 17 of the fuse tube and door assembly. These screws when in position will prevent the door from dropping open when the fuse link is ruptured. In this case the fuse tube will drop down to the position shown in Figure 2 upon rupture of the fuse link, but it will be seen that the screws 21, being positioned

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above the shoulder 22 of the terminal 17, will prevent the door from dropping open as this portion of the terminal 17 tends to rise slightly on outward rocking of the door and which would, therefore, have to compress the relatively stiff spring arms 26 in order to pass the screws 21. Thus under these conditions, the door will stay closed though the fuse tube slides downwardly to the indicating position shown in Figure 2. However, if the customer desires a type of service in which the door drops open upon blowing of the fuse link, all that is necessary is for the screws 21 to be removed. Under these conditions, upon blowing of the fuse link, the fuse tube will be released and will move downwardly as set forth in detail in my above noted patent, No. Re. 22,372. This downward motion of the fuse tube detaches its upper terminal 6 from the upper stationary terminal 3 and allows the door to swing open as the screws 21 have been removed and no obstruction is placed in the path of motion of the terminal 17 when the door rocks open. The door will rock to its fully open position as shown in Figure 3 and the fuse tube will slide back into the position shown in such figure.

It will be seen that in refusing no thought is required of the operator as he merely replaces a broken fuse and door assembly with a refused assembly and rocks it into place. The screws 21, when in place, determine that the door shall remain closed though the fuse tube slides downwardly upon blowing of the fuse link. When the screws 21 are removed, it is apparent that the fuse tube will first slide downwardly and the door will drop open and the fuse tube will slide back into the position shown in Figure 3. The type of service, as stated, is determined by the presence or absence of the screws 21 in the stationary lower contact of the housing.

It will be seen that a very simply type of drop-out fuse construction has been provided which will give either of the two types of operations desired although under all conditions the same type of door and fuse tube assembly are employed and thus it does not become necessary for the operator to remember which type of service the device is adjusted for.

It is to be noted particularly that the position of the trunnions 3 of the door, which constitute the pivot for the door and fuse tube assembly, is forward of the point of contact between the lower terminal 17 of the fuse tube and door assembly and the contact fingers 20 of the lower stationary contact. The arrangement is such that when the door rocks outwardly the lower terminal 17 tends to move away from the spring fingers 26 so that it is not retarded in this motion by the spring fingers, but instead the spring fingers themselves exert an outward push which assists in the outward rocking of the fuse tube and door assembly. However, it is to be noted that the screws 21, when in place, are located above the lower contact 17 so that outward rocking motion of the fuse tube and door assembly would cause the spring fingers to be compressed and, inasmuch as these spring fingers are relatively stiff or, in other words, are heavy spring type members, the outward rocking motion of the fuse tube and door assembly would be pre-

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vented. However, the fuse tube and door assembly could be manually pulled open whenever desired.

Although this invention has been described in considerable detail, it is to be understood that such description is intended as illustrative rather than limiting, as the invention may be variously embodied and is to be interpreted as claimed.

I claim:

1. A housed type of drop-out fuse comprising a housing provided with an open front, a door pivoted on said housing and normally closing said open front and biased for outward rocking motion, a fuse tube slidably carried by said door and normally restraining said door from outward rocking motion, a fuse link within said fuse arranged to normally restrain said fuse tube against sliding motion and arranged to release said fuse tube for sliding motion to inoperative position when said fuse link is ruptured, said housing having stationary upper and lower contacts normally electrically connected with said fuse link, said fuse tube being arranged to slide downwardly away from said upper contact on rupture of said fuse link, and at least one screw removably carried by said lower stationary contact for selectively allowing or preventing said door from outward rocking motion when said fuse tube slides downwardly, said screw having a head facing towards said open front and being directly accessible from said open front.

2. A housed type of drop-out fuse comprising a housing having upper and lower stationary contacts, a door pivoted to said housing and arranged for outward rocking motion, said door having a lower contact normally engaging said lower stationary contact and urged outwardly thereby to bias said door outwardly, a fuse tube slidably downwardly in the contact carried by said door and having an upper contact normally interlocking with said upper stationary contact to restrain said door from outward rocking motion until said fuse tube slides downwardly, a fuse link within said fuse tube electrically connecting the contact of said fuse tube and the contact of said door and normally restraining said fuse tube against downward sliding motion and releasing said fuse tube on rupture of said fuse link, and screw means removably carried by said lower stationary contact and coacting with the contact of said door for selectively allowing or preventing said door from outward rocking motion when said fuse tube slides downwardly, said screw means being removable without removing any other portion of said lower stationary contact.

WILLIAM O. SCHULTZ.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
Re. 22,372	Schultz	Sept. 7, 1943
2,138,255	Schultz et al.	Nov. 29, 1938
2,231,510	Schultz	Feb. 11, 1941
2,334,134	Steinmayer et al.	Nov. 9, 1943
2,338,823	Schultz	Jan. 11, 1944

Jan. 11, 1949.

W. O. SCHULTZ

2,458,743

DROP-OUT FUSE CONSTRUCTION

Filed Dec. 30, 1946

3 Sheets-Sheet 1

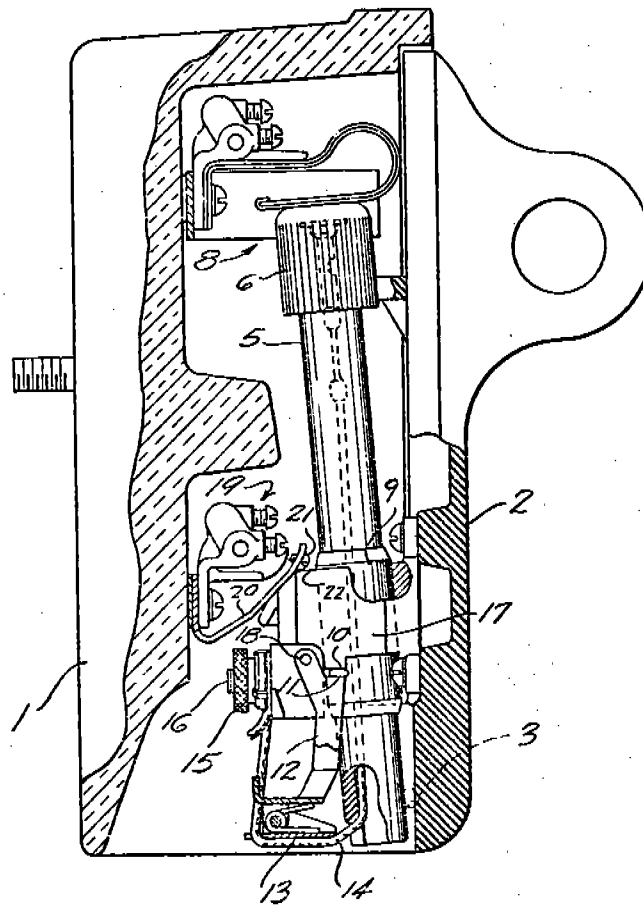


FIG. 1

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DROP-OUT FUSE CONSTRUCTION

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3 Sheets-Sheet 2

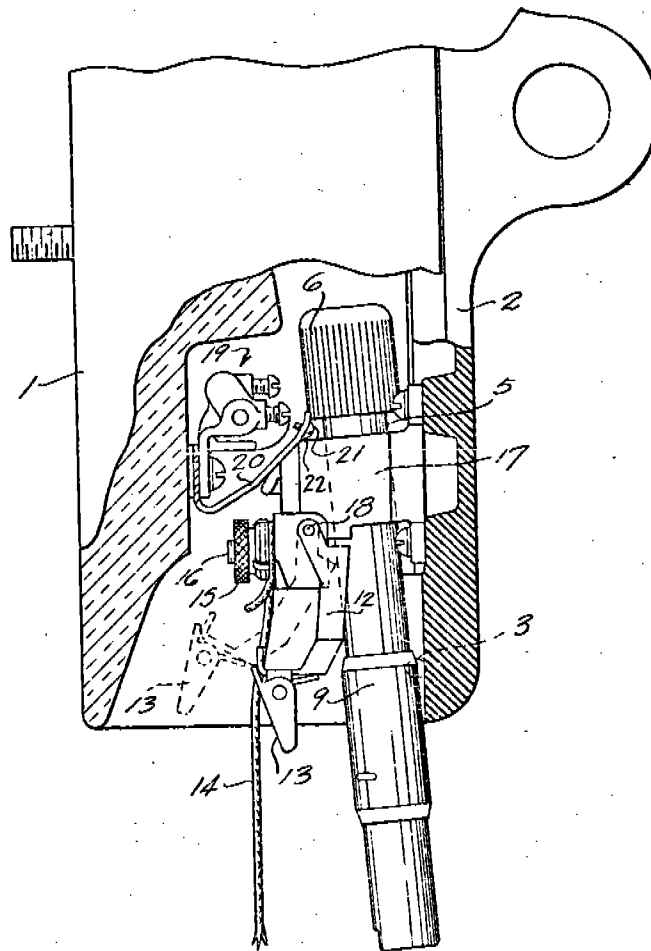


FIG. 2

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DROP-OUT FUSE CONSTRUCTION

2,458,743

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3 Sheets-Sheet 3

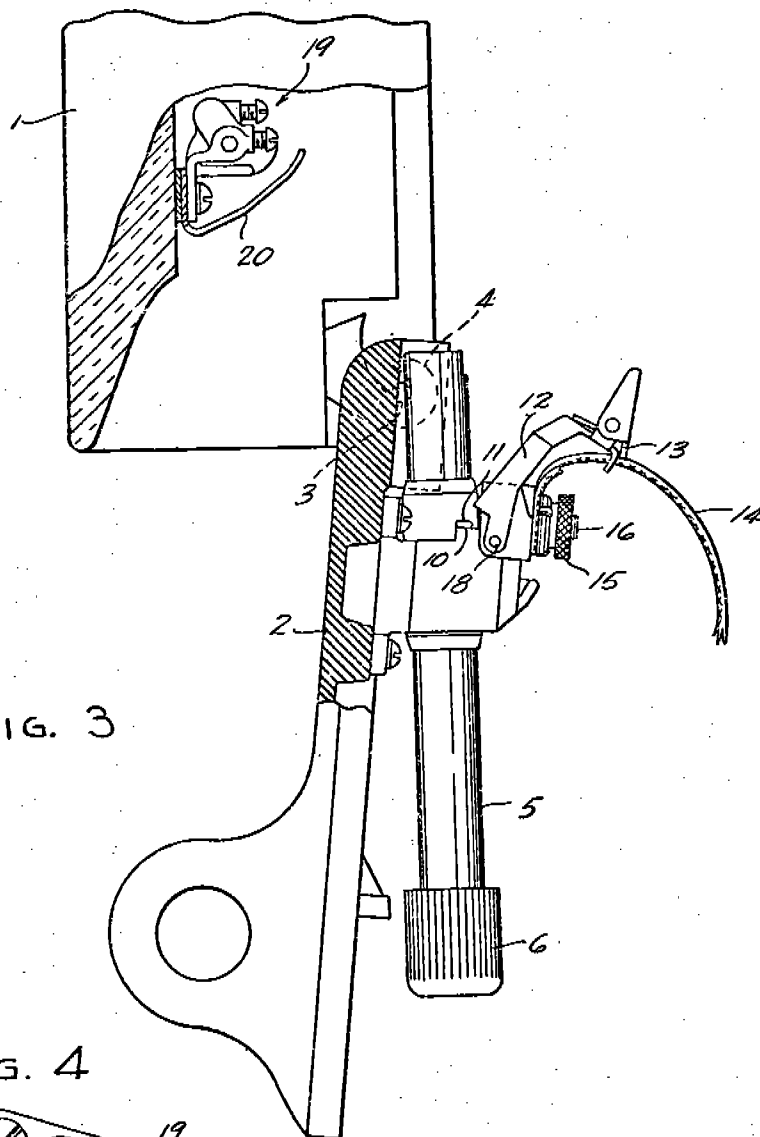


FIG. 3

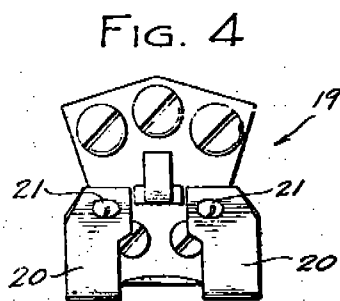


FIG. 4

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