

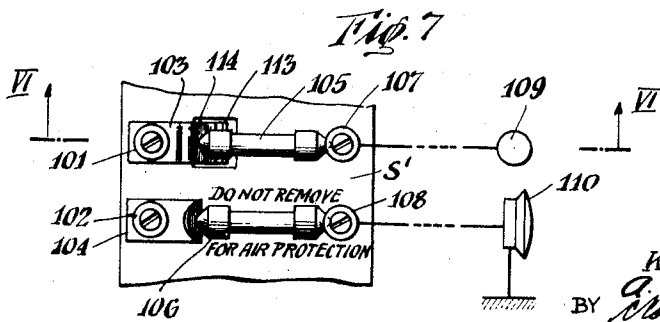
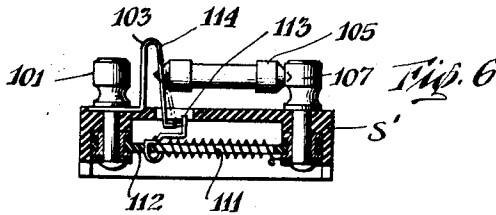
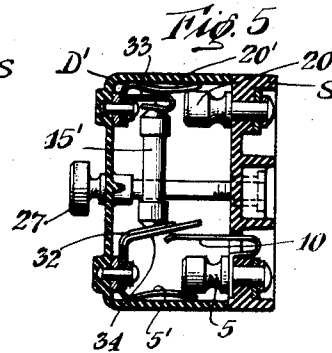
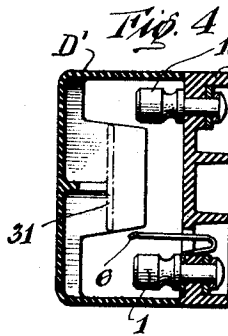
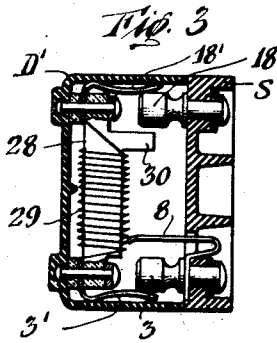
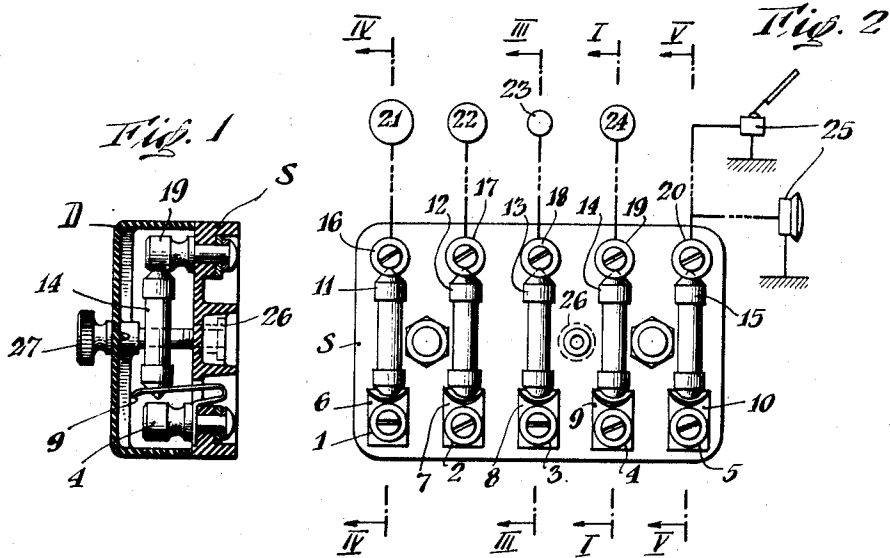
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FUSE BLOCK

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FUSE BLOCK

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9 Claims. (Cl. 200—133)

This invention relates to a fuse block and more particularly to one in which the fuses may be readily removed and replaced by voltage reducing resistances, circuit interrupting devices and/or auxiliary fuses. The invention is of particular importance with respect to the fuse block used in the electrical systems of vehicles which, in the case of air raids must quickly and efficaciously have some of their lighting circuits dimmed, other of their lighting circuits entirely cut out, and still other load circuits unaffected, in accordance with air-protection regulations.

Accordingly, an object of this invention is to produce an inexpensive device for changing the load circuits in an automobile in a quick and simple manner to comply with air-protection regulations.

Another object of this invention is to provide a fuse block from which the fuses may be quickly and simply removed and replaced by the necessary voltage-reducing resistors, circuit cut-out and auxiliary fuse parts, corresponding to the type of loads to which each fuse was originally connected.

Still another object of this invention is to provide a fuse block with a supplementary member, such as a cover, containing voltage-reducing resistors, circuit cut-outs and auxiliary fuses, which may be attached to the fuse block in electrical relationship to the originally protected load circuits, only upon removal of all of the original fuses.

A further object of this invention is to provide a fuse block in which voltage-reducing resistors are automatically inserted in the load circuits upon removal of the fuses.

A more specific object of this invention is to provide an arrangement, particularly for automobiles, wherein the various loads, such as the main headlights, search lights, dimmer lights, parking lights, panel lights, horn, windshield wiper, and the like are supplied through a fuse block, whereby, upon removal of the fuses a supplementary member may be added to the fuse block in contacting juxtaposition thereto in such a manner as to insure removal of all of the original fuses from the block, while entirely cutting out certain loads, such as the search lights and the main headlights, inserting dimming resistors in other loads, such as the dimming, parking and panel lights, and inserting auxiliary fuses in other circuits to be unaffected, such as the horn and windshield wiper.

These and other features, capabilities and advantages of the invention will appear from the

sub-joined detailed description of one embodiment and a modification thereof, illustrated in the accompanying drawing, in which:

Fig. 1 is a cross-sectional view taken along the line I—I of Fig. 2, illustrating a fuse block formed in accordance with invention and provided with a standard cover;

Fig. 2 is a plan view of the fuse block with fuses in place, indicating their connection to various circuits;

Fig. 3 is a cross-sectional view along the line III—III of Fig. 2, showing the fuse block with fuses removed and an auxiliary cover added thereto, in accordance with this invention;

Fig. 4 is a cross-sectional view along the line IV—IV of Fig. 2, with fuse removed and auxiliary cover added, similar to Fig. 3;

Fig. 5 is a cross-sectional view along the lines V—V of Fig. 2, with fuse removed and auxiliary cover added, similar to Figs. 3 and 4;

Fig. 6 is a cross-sectional view along the line VI—VI of Fig. 7, illustrating a modified form of fuse block; and

Fig. 7 is plan view of the modified form of fuse block illustrated in Fig. 6.

In the first form of the invention illustrated Figs. 1-5 inclusive, the fuse block is preferably provided with a number of terminals, five such terminals, 1-5 inclusive being shown by way of example. Each of these terminals, may be respectively provided with contact springs 6, 7, 8, 9 and 10 which are adapted to respectively press fuses 11, 12, 13, 14 and 15 into contact with another set of respectively cooperating terminals 16, 17, 18, 19 and 20. Current is adapted to be supplied to the terminals 1, 2, 3, 4 and 5 in any ordinary well-known manner (not shown), while the corresponding terminals 16, 17, 18, 19 and 20 are to be connected to various loads. In the case of an automobile, and merely by way of example, various loads have been indicated as connected to the terminals 16 to 20 incl. For example, the load 21 may be the main distance headlight of the vehicle, connected to the terminal 16; 22 may be a spot light connected to the terminal 17; 23 may be the panel or gauge lights connected to the terminal 18; 24 may be the dimmer or parking lights connected to the terminal 19; while 25 may be other loads such as the horn and windshield wiper motor connected to the terminal 20. A suitable cover D is preferably added to the fuse block as a protection for the fuses and the contacts, and this may be attached to the block through the use of a special screw 27 cooperating

with a threaded bushing 26 on the fuse block itself.

In the case of an air raid, it is necessary that for the sake of safety, most all of the loads such as indicated in Fig. 2, be modified to some extent. It is sufficient that in some of the lighting loads, such for example as the panel lights and the dimmer lights, only voltage-reducing means such as resistors be inserted in the circuits to still further dim the lighting loads. In the case of other loads, such as the bright headlights and spot lights, most air-protection regulations require that these be entirely extinguished, and the circuits thereto should accordingly be entirely broken. In the case of other loads, such as those comprising the horn and windshield wiper motor, no change is necessary. In order to affect the changes in loads in a simple but yet positive manner, in accordance with this invention we provide an auxiliary cover, D', more specifically illustrated in Figs. 3, 4 and 5.

The formation of the cover D' in its relationship to the lighting loads which need to be merely dimmed, is particularly illustrated in Fig. 3. The cover at this point contains a member 28 upon which a resistance 29 is mounted and interconnected at its ends with spring contacts 3' and 18' which, when the cover is fully applied, will electrically connect the resistor 29 across the block terminals 3 and 18. It is to be additionally noted that the resistor carrier 28 is provided with a projection 30 which extends into the space between the contact spring 8 and the terminal 18 normally occupied by a fuse, in the illustrated case the fuse 13. Accordingly, it is absolutely necessary to remove the fuse 13 before the cover D' can be added. Therefore, when the cover D' is added one can be absolutely sure that, for example, the panel light 23 will have the dimming resistor 29 serially connected therewith. A similar resistor and type of interconnection will be provided at all of those points in the cover where it is desired to dim the respectively connected loads. For example, a similar resistor would replace the fuse 14 in the circuit to the dimmer light 24. The proper value of the resistor can, of course, be correlated with the size of the loads to be dimmed, in a manner which will be at once apparent to those skilled in this art.

For those loads, such as the main headlights and spot lights, whose total extinguishment during air raids is absolutely necessary, the cover D' is formed as illustrated in Fig. 4. In this part of the cover, as for example, that part cooperating with the terminals 1 and 16 in the circuit of the main headlight 21, no electrical contact of any character is provided for shunting these terminals, but, on the other hand, the cover D' is preferably formed with means such as a projecting rib 31 which will extend into the space between the contact spring 6 and the terminal 16 where the fuse 11 would ordinarily be positioned. In this manner, removal of the fuse 11 and total extinguishment of the main headlamp 21 is assured. The cover will be similarly formed at other points where total extinguishment of the lamp load is desired, as for example, across the terminals 2 and 17 leading to the spot light 22.

In the case of those loads which are not to be affected, for example, the load circuits leading to the windshield wiper motor and the horn 25, the cover is preferably formed as illustrated in Fig. 5. At this point the cover D' supports an

auxiliary fuse 15', held in place between contact springs 32 and 33. Conducting spring extensions 20' and 5' respectively electrically interconnect the contact spring 33 with the terminal 20 and the contact spring 32 with the terminal 5. The circuit to the load 25 is thus completed through the fuse 15'. At the same time removal of the original fuse 15 is assured by the provision of a projecting member 34 connected to the cover, which will extend into space between the contact spring 10 and the terminal 20.

It will thus be seen that by means of the above-described construction, we have provided an arrangement which quickly, simply and positively will change the load circuits for the vehicle from normal use to use during air raids. All that it is necessary for the driver to do is remove all of the fuses from the fuse box and apply a supplementary cover member D'. In order to assure that the cover D' is correctly positioned with respect to the fuse block S, it will be noted that the threaded attaching member 27 and the threaded receiving portion 26 are eccentrically positioned. Thus, it is only possible to attach cover D' in one manner relatively to the fuse block S.

The invention may take a second form as illustrated in Figs. 6 and 7. In this case the fuse block S' is also provided with pairs of terminals such as 101, 107 and 102, 108 between which fuses 105 and 106 may be respectively interconnected through the use of contact springs 103 and 104. In the case of those loads such as the dimmer lights, which are to be still further dimmed for the sake of air protection, the fuse block S' is formed with a built in resistor which is to be automatically inserted in the circuit upon removal of the fuse. This is more clearly illustrated in Fig. 6 showing a resistor 111 mounted on a suitable support 112. The resistor may be permanently interconnected with one of the terminals at one end, such as the terminal 107 as illustrated, and at its other end provided with a projecting electrically conductive arm 113. In this case, the contact spring 103 is formed with a long leg 114 which will be normally under compression in holding the fuse 105 in place. The leg 114 is so positioned however that upon removal of the fuse 105 the end of this leg will spring out to contact the conductive extension 113 so that the circuit between the terminals 101 and 107 instead of being completed through the fuse 105, will now be completed through the resistor 111, thus reducing the applied voltage and dimming the light load 109.

In the case of those load circuits whose characteristics are not to be changed for air protection, such as the circuit for the horn 110, the fuse block S' is not provided with any resistor and the circuit fuse, such as fuse 106, is merely held in place between terminals 102 and 108 by the contact spring 104. It is preferable that a legend be added in a suitable manner to the fuse block S' about such fuses which need not be removed. In Fig. 7 such legend as "Do not remove for air protection!" has been added. In the case of those circuits (not shown) whose loads are to be cut out entirely during air raids, such for example, as the main headlights and search light circuits, a simple fuse clip such as illustrated for the horn 110 will be used, but in this case unaccompanied by a legend. Thus, the driver of the car in case of air raid will be instructed to remove all fuses from the fuse block except those specifically designated. By doing

this, he will automatically break the circuits to the lights which are to be entirely extinguished, and add appropriate resistances to the circuits containing lights to be dimmed, and leaves the fuses in the circuits unaffected by air protection regulations.

A study of the two forms of fuse blocks above described will at once reveal that they are simple and inexpensive to manufacture, while at the same time they are sure and simple to operate. The driver of the car needs not be familiar with the particular characteristics of all of the electrical load circuits for the vehicle, but if instructions are followed in both cases the electrical system will be automatically placed in a condition necessary for proper air protection.

The invention is obviously capable of many modifications, apparent to those skilled in this art. The number of circuits to be protected will vary in individual cases and the fuse blocks can be changed to meet the condition met, so long as the principles of the present invention are followed. In the form of invention illustrated in Figs. 1 to 5 inclusive, the added member need not necessarily be a cover but obviously may be a member inserted in any manner, for example, an insert which is adapted to be protected by a still further cover.

It will also be obvious that the fuse block arrangement described above may be used for stationary load systems as well as those upon vehicles of all character.

Accordingly, the invention is not intended to be limited to the two forms shown, which are to be understood as illustrative and not as limiting, as various changes in constructions and arrangement may be made, all coming within the scope of the claims which follow.

We claim:

1. A fuse block having a plurality of sets of spaced terminals, means for supporting a fuse between each set of terminals, and a cover for said block containing one or more pairs of circuit completing contacts mounted for engagement with said terminals and having a plurality of projections adapted to extend into the spaces between each set of terminals in such a manner that the removal of said fuses is necessary before the application of said cover to said fuse block is possible.

2. The combination according to claim 1, in combination with circuit shunting means electrically interconnected between certain pairs of said circuit completing contacts.

3. The combination according to claim 1, in combination with voltage reducing means electrically interconnected between certain pairs of said circuit completing contacts.

4. The combination according to claim 1, in combination with auxiliary fuse means electrically interconnected between certain of said pairs of circuit completing contacts.

5. The combination according to claim 1, in combination with a voltage reducing resistor electrically interconnected between certain of said pairs of circuit completing contacts.

6. The combination according to claim 1, in combination with means for attaching said cover to said block in a fixed predetermined relationship.

7. In an electrical distribution system of the class wherein a plurality of loads are supplied from a source of power through fuses, one serially connected with each load, the combination of a base having a plurality of pairs of terminals, releasable means for mounting said fuses between said terminals, and a cover adapted to be placed upon said base, said cover having one or more pairs of contacting arms adapted to establish contacts with corresponding pairs of terminals upon said base, and one or more resistances respectively connected across said contacting arms, whereby upon removal of said fuses and the addition of said cover, current is supplied to one or more of said loads through said resistances.

8. The combination according to claim 7, in which auxiliary fuses are connected across certain of said contacting arms, whereby upon removal of said fuses and the addition of said cover, current is supplied to certain of said loads through resistances and to the other of said loads through said auxiliary fuses.

9. The combination according to claim 7, in which certain of said loads comprise light sources which are to be dimmed by the insertion of said respective resistances.

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