

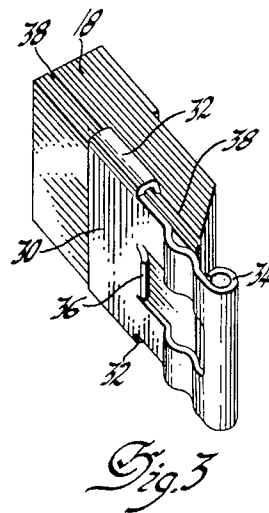
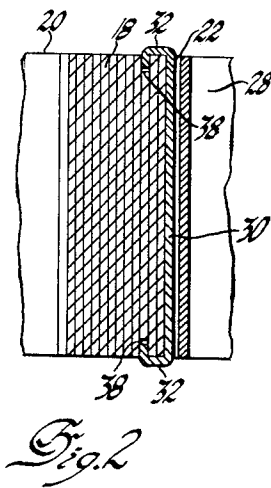
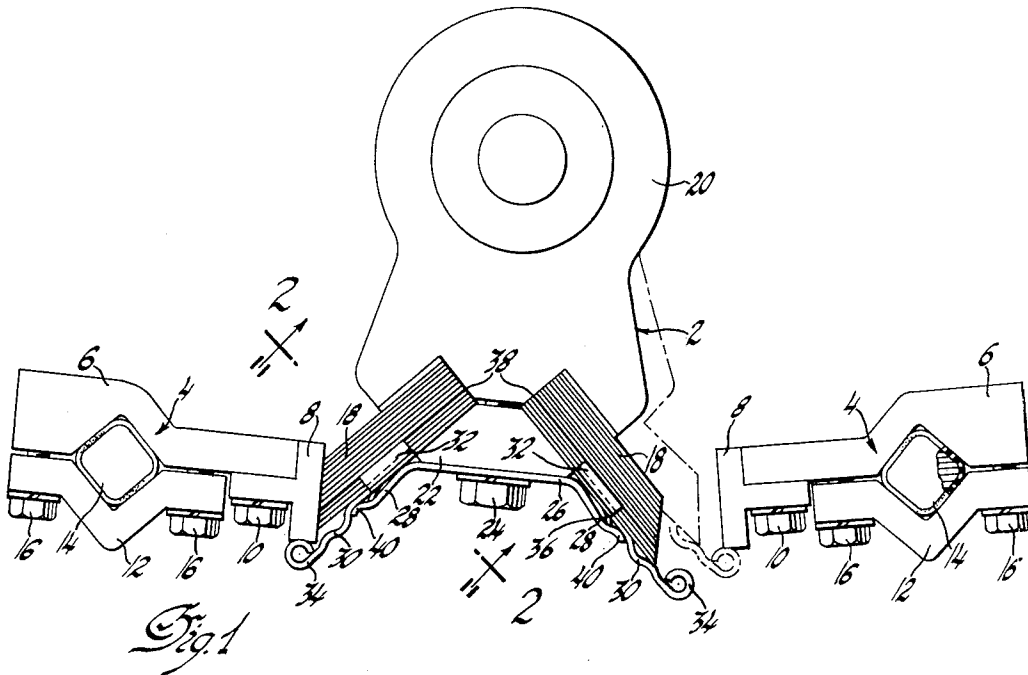
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R. C. WEIDE

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ARC PROTECTIVE DEVICE

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Inventor

Rudolph C. Weide

By

Willits, Helwig & Baillie
Attorneys

Attorneys

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ARC PROTECTIVE DEVICE

Rudolph C. Weide, La Grange, Ill., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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2 Claims. (Cl. 200—166)

This invention relates generally to electrical contacting devices used in combination with electrical circuits and more particularly to arc protection for the contact tips of electrical switches carrying heavy inductive currents.

It is well known in the electrical field that switches adapted to carry heavy current may have to function under the influence of heavy inductive current in the circuits which they must open and close and, therefore, their contacts will have to be protected against the hot arc which occurs while operating the contacts.

In the past various types of arc protective devices have been used on contacts carrying heavy inductive current. These protective devices have usually employed some type of resistance connected to one of the contacts to engage the other contact before the main contacts engage each other. Another type of arc protective device that has been used is one in which carbon piles are attached to one of the contacts and progressively engage the other contact prior to engagement between the main contacts. These past constructions have been unsatisfactory for several reasons, but mainly because the arc protection is built in along with the main portion of the switch to form an integral part thereof. In other words when these arc protective devices are ready to be replaced, the switch itself must be disassembled causing a complete shut-down of the circuits which the switch may complete until the switch can be replaced or repaired with new arc protection. There has been an increasing demand for an arc protective device which is of a simple construction and may be easily and quickly attached and detached from the main contact members without disturbing the operation of the heavy current switch.

It, therefore, is an object of this invention to provide an arc protective device to be used in combination with heavy current switches which may be quickly attached and detached to the main contacts of the heavy current switch without interrupting the operation of the switch.

It is another object of this invention to provide a detachable arc protective device having simple fastening means for attaching to a main contact of a heavy current switch where said device completes a circuit before the main contacts of the switch engage with each other and breaks a circuit after the main contacts disengage from each other.

It is a further object of this invention to provide an arc protective device which is of simple construction and inexpensive to manufacture.

In the drawings:

Figure 1 shows a heavy current switch of the type presently used on diesel-electric locomotives for connecting and disconnecting the traction motors in power and dynamic braking.

Figure 2 is a view taken along line 2—2 of Figure 1 and illustrates one means for fastening the arc protective device to one of the main contacts.

Figure 3 is a perspective detailed showing of the contacting portion of the arc protective device.

Referring now to Figure 1, a heavy current switch

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designated generally by 2 is shown. A pair of oppositely disposed stationary contact assemblies 4 are also shown consisting of contact carriers 6 and contact tips 8 attached to contact carriers 6 by bolts 10. Also a part of the stationary contact assemblies 4 are brackets 12 which clamp the contact carriers 6 to insulated supports 14 by means of bolts 16. A pair of angularly disposed laminated contacts 18 are shown attached to a rotatable member 20 by a crab 22 and a bolt 24. Extending transversely between the angularly disposed laminated contacts 18 is a flat resilient member 26 having end portions 28 extending in the same general direction and along one side of each of the angularly disposed laminated contacts 18. The member 26 is also fastened to the rotatable member 20 on one side of the crab 22 by the bolt 24. Inserted between the end portions 28 and one side of each of the laminated contact members 18 are arc protective devices 30.

Each of these arc protective devices consists of a flat contact having a pair of ears 32 oppositely disposed at one end thereof, a reenforced end in the form of a roll 34 at the other end thereof and a spring detent 36 located approximately in the center. The arc protective devices 30 slidably engage in a pair of grooves 38 adapted to receive the ears 32. The arc protective devices 30 are also adapted to be restrained from sliding between the portions 28 and the laminated contacts 18 by the spring detent 36 which abuts a ripple 40 in each of the end portions 28.

Referring now to the dotted lines in Figure 1, it may be seen that the reenforcing roll 34 will first engage the contact tip 8 before the main contacts 18 and 8 engage with each other. Upon opening the switch the main contacts 18 and 8 disengage from each other before the reenforced roll 34 disengages from the contact tip 8. This operation insures that all arcing will take place between the arc protecting devices 30 and an outer surface of the contact tips 8, thereby protecting the surfaces of the main contacts 8 and 18. It may also be seen that when the arc protective devices become so burned that they no longer supply the proper protection they may be very easily removed by simply lifting the end portions 28 and sliding the devices 30 off the contacts 18. New arc protective devices may be attached in a reverse manner.

I claim:

1. In an electrical contacting device, an integrally formed stationary contact having angularly separated flat contact surfaces thereon, a mating contact attached to a movable support and engageable with and disengageable from one of the flat surfaces of said stationary contact, a member attached to said support and having a resilient spring detent portion extending along said mating contact, and removable arc protecting contacting means frictionally retained between said detent portion and said mating contact and extending therebeyond to engage with another of the flat surfaces of said stationary contact before engagement of said mating contact and said stationary contact and to disengage from another of the flat surfaces of said stationary contact after disengagement of said mating contact and the one of said flat surfaces on said stationary contact.

2. In an electrical contacting device, an integrally formed stationary contact having a pair of angularly separated contact surfaces thereon, a movable support, a mating contact attached to said movable support and engageable with and disengageable from one of the contact surfaces on said stationary contact, a member attached to said support and having a resilient spring detent portion extending along said mating contact, said mating contact member having oppositely disposed grooves extending longitudinally therealong, and detachable arc protective contacting means for protecting said

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mating contact and the one of said contact surfaces having a pair of oppositely disposed ears slidably residing in said grooves, said detachable arc protective contacting means being frictionally secured between said resilient spring detent portion and said mating contact and extending therebeyond to engage with the other of said contact surfaces on said stationary contact before engagement of said mating contact and the one of the contact surfaces on said stationary contact and to disengage from the other of said contact surfaces on said stationary contact after

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disengagement of said mating contact and the one of said contact surfaces on said stationary contact.

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