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CIRCUIT PROTECTING DEVICE

Filed Feb. 17, 1927

Fig. 1.

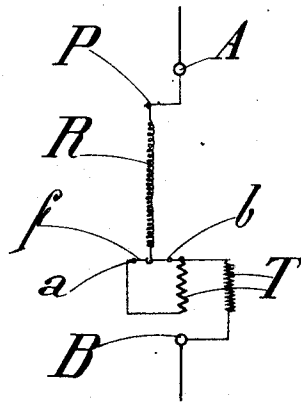
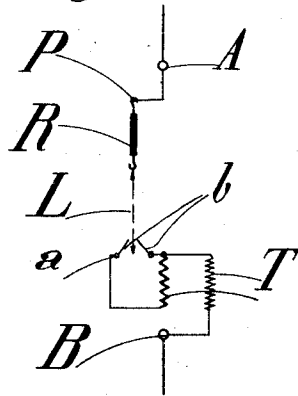


Fig. 2.



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UNITED STATES PATENT OFFICE

HENRI RENÉ LOUBET, OF PARIS, FRANCE, ASSIGNOR TO COMPAGNIE POUR LA FABRICATION DES COMPTEURS ET MATERIEL D'USINES À GAZ, OF MONTROUGE, SEINE, FRANCE, A JOINT-STOCK COMPANY OF FRANCE

CIRCUIT-PROTECTING DEVICE

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It is very difficult to design wire fuses for currents lower than 0.5 amps. approximately.

Owing to this fact, it is difficult to protect apparatus or machines which, due to their construction, can only stand weak currents, the intensity of which may dwindle to a figure of the order of a milli-ampère (milli-amperes, voltmeter transformers and the like).

The present invention relates to devices enabling apparatus to be protected through which weak currents flow, using fuses in which a current is caused to pass which is a direct function of and greater than that flowing through the apparatus to be protected.

In the accompanying drawing:

Fig. 1 is an example of how this device is put into practice.

Fig. 2 shows the position of the circuit parts after the fuse has been blown.

The current flowing through the circuit to be protected is passed through the primary winding *bB* of a transformer *T*.

The secondary winding *ba* is connected across the two ends *a* and *b* of a wire fuse *f*.

The transformer *T* enables the value of the primary current which may be very weak, of the order of a milli-ampère, to be raised to a value for which the fuse *f* can be easily designed, which fuse is well calibrated and has a considerable mechanical resistance.

The circuit to be protected is closed by the spiral spring *R* secured at one end to the point *P* and at the other end to the wire fuse *f*.

Hence the current in the circuit to be protected flows from *A* to *B* through the tensioned spring *R*, part of the fuse *f* and the primary winding of the transformer *T*.

On an overload occurring, the secondary currents of the transformer *T* melts the fuse *f* and the end of the spring *R* is freed.

The circuit is thus sharply broken and the part put out of circuit is separated from the remainder of the circuit by a distance *L* (Fig. 2) the length of which is calculated according to the voltage across the circuit.

The break can be made in air or in any other fluid either liquid or gaseous.

Although the invention has been described in the form which appears to be the best, it must be understood that this form of embodi-

ment has been chosen as an example and that any modified form of construction using means for impressing the suitably amplified overload current produced in a circuit of even very low capacity on a wire fuse of any size would come within the scope of the invention.

I claim:

1. A circuit protecting device comprising a fuse connected to a main circuit to be protected, a transformer, the primary winding of said transformer being mounted in said main circuit, the secondary winding of said transformer being connected in series with said fuse to constitute a second circuit with said fuse whereby said transformer is adapted to feed to said fuse a current much greater than the current flowing in said main circuit, and spring means mounted in said main circuit and connected to said fuse for breaking said main circuit as soon as said fuse melts.

2. A circuit protecting device comprising a fuse, a spring stretched between a point in said fuse intermediate its ends and a main circuit to be protected, said spring, the stretched length of which is great in comparison with the length of said fuse, closing said main circuit through said fuse, a transformer, the primary winding of said transformer being mounted in said main circuit, the secondary winding of said transformer being connected in series with said fuse to constitute a second circuit with said fuse, whereby said transformer is adapted to feed to said fuse a current much greater than the current flowing in said main circuit, said spring breaking said main circuit when said fuse melts at any point thereof.

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