Electricity – 100 Years Ago

This series of articles is provided by Ron Widup of Shermco Industries. The articles are extracted word-for-word from *Electrical Review, an Illustrated Weekly Journal of Scientific and Electrical Progress,* **Electrical Review Publishing Company, New York, NY 1898.**

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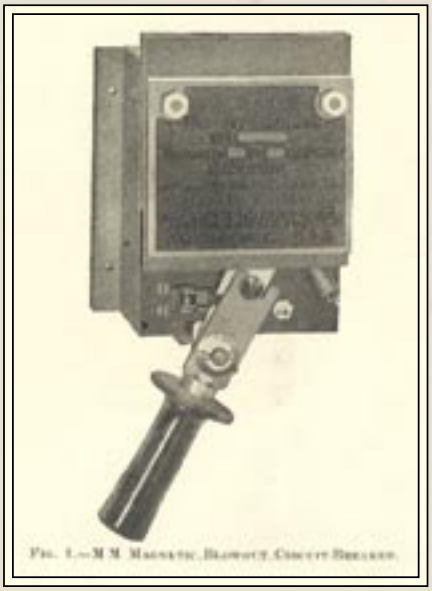
Magnetic Blowout Circuit-Breakers

The inherent tendency of all circuit-breaking devices to draw an arc at the last point of contact introduces a serious problem in the design of all switches and cut-out appliances. The roughening effect of the arc on the contacts destroys in a short time the usefulness of the apparatus, and, as the voltage and current increases, the difficulty is rapidly magnified. The only commercially practicable way of breaking direct-current circuits at 400 volts and above has been ascertained by exhaustive experiment to be by the use of a magnetic field, which destroys the arc at the instant of its formation, and promptly and positively opens the circuit and vents injury to the contacts. The advantages of the use of the magnetic blowout, wherever a direct-current electric circuit is to be opened are familiar to all users of electrical apparatus. By adding to a switch, equipped with a blowout magnet, a tripping device to open the circuit at a predetermined current, an automatic circuit-breaker is obtained which, for convenience and reliability, may be said to surpass any other form of cut-out.



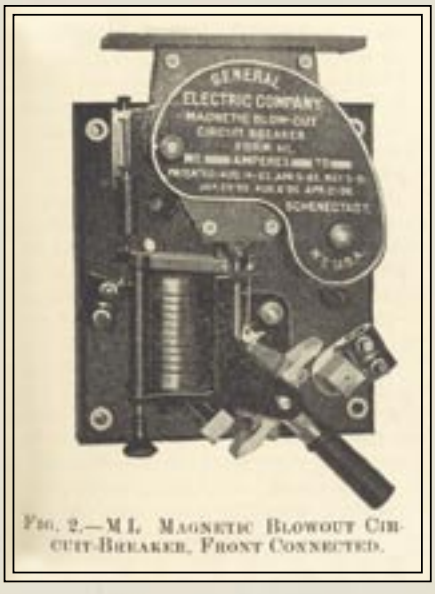


Fig. 2.—M L Magnetic Blowout Circuit-Breaker, Front Connected.

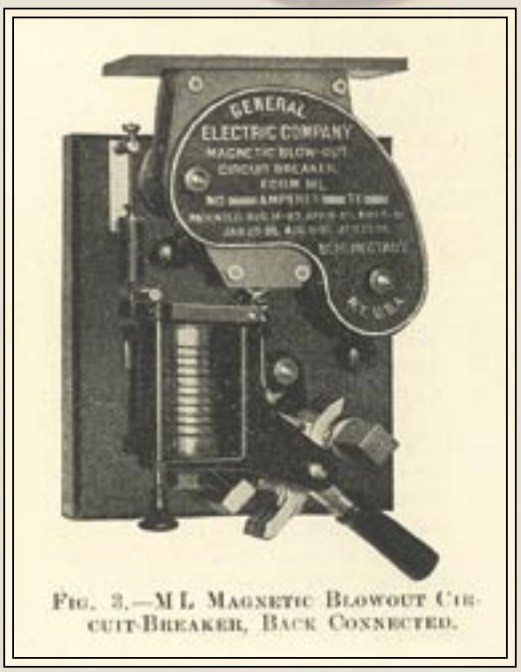


Fig. 3.—M L Magnetic Blowout Circuit-Breaker, Back Connected.

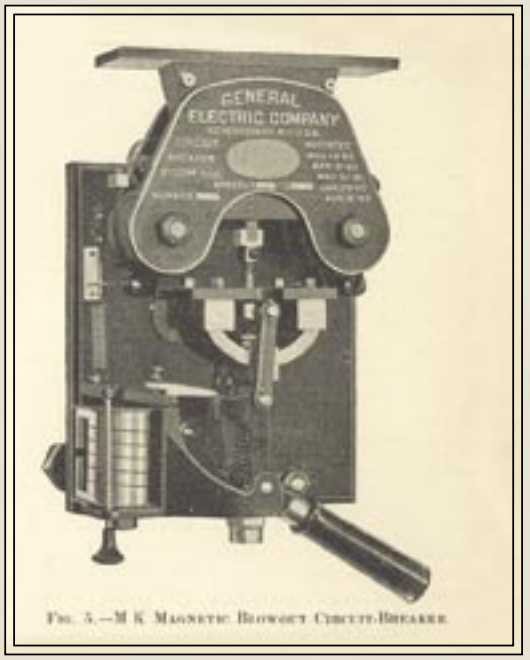


Fig. 5.—M K Magnetic Blowout Circuit-Breaker

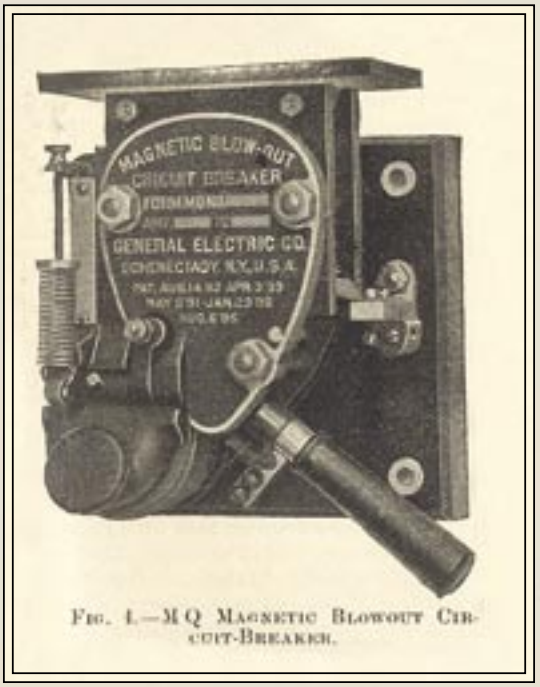


Fig. 4.—M Q Magnetic Blowout Circuit-Breaker.

The General Electric Company manufactures four different forms of magnetic blowout automatic circuit breakers for different classes of service. Each is rated by two numbers. The first indicating the lowest current that will automatically open the circuit, and the second number giving the maximum normal current carrying capacity, except in case of the form M M circuit-breaker, when the second number indicates the maximum capacity on the basis of intermittent service common in railway work. The tripping point is adjustable in any desired current, from the lowest rating to 50 per cent in excess of the maximum capacity, by adjusting the calibrating spring of the tripping armature.

The four different forms in which these circuit-breakers are made have certain radically different features, which adapt them to the special classes of service for which they are designed. All of them may, however, be used on any direct-current circuit, and with reasonable care and attention, will operate satisfactorily under the most severe conditions. Indeed, every case of injury to the circuit-breaker may he traced to improper adjustment or neglect of some simple precaution.

In the designation of the different forms of General Electric circuit-breakers, the first letter represents the general principle of operation; the second letter is arbitrary or denotes some features of construction. For example, the first letter in the form designation of all magnetic blowout circuit-breakers is M; the second letter is arbitrary. The circuit-breakers, formerly known as K, L, Q and M, are now known as M K, M Q and M M, respectively.