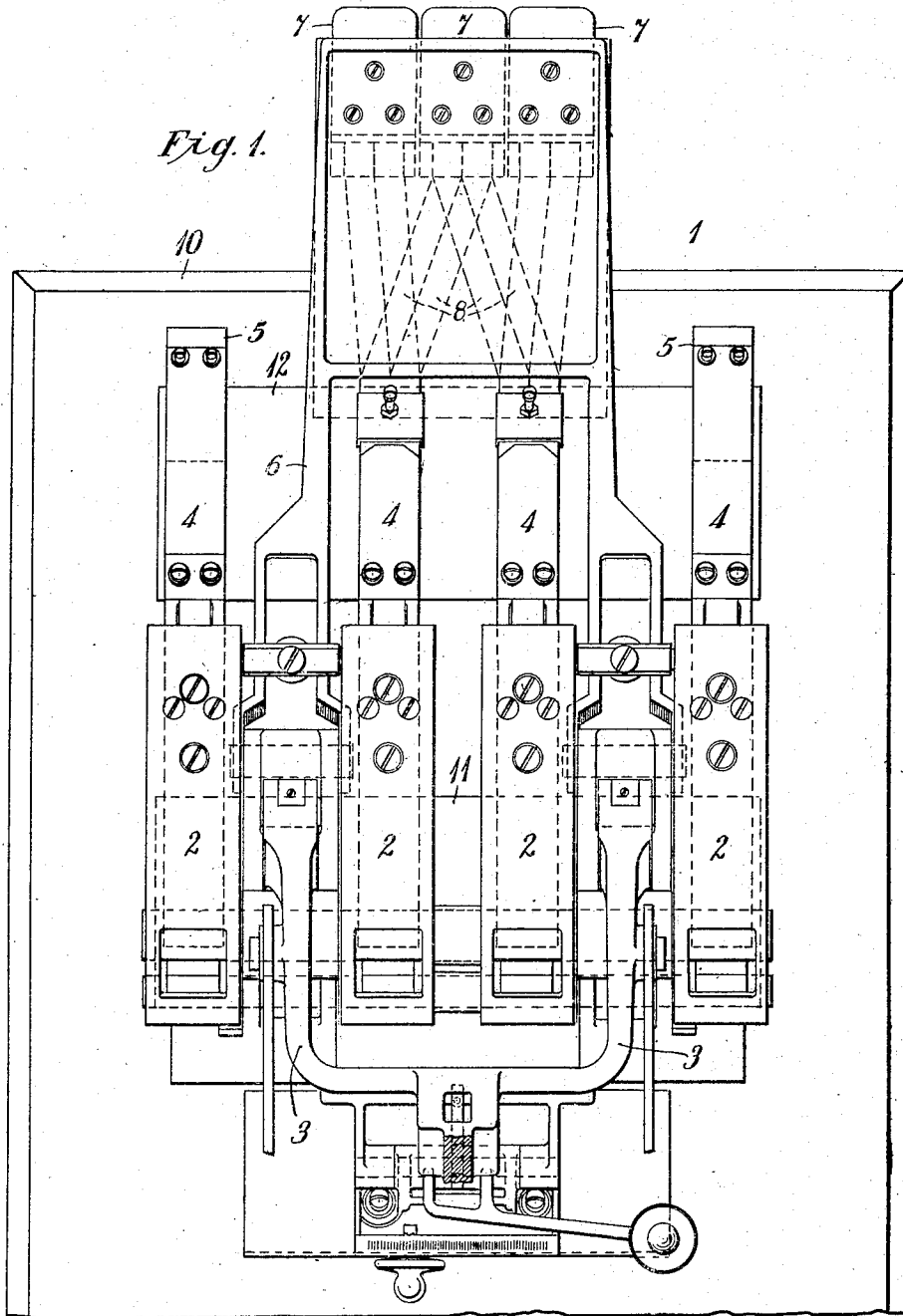


J. N. MAHONEY.
CIRCUIT INTERRUPTER.
APPLICATION FILED AUG. 11, 1913.

1,274,733.

Patented Aug. 6, 1918.

2 SHEETS—SHEET 1.



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Fig. 2.

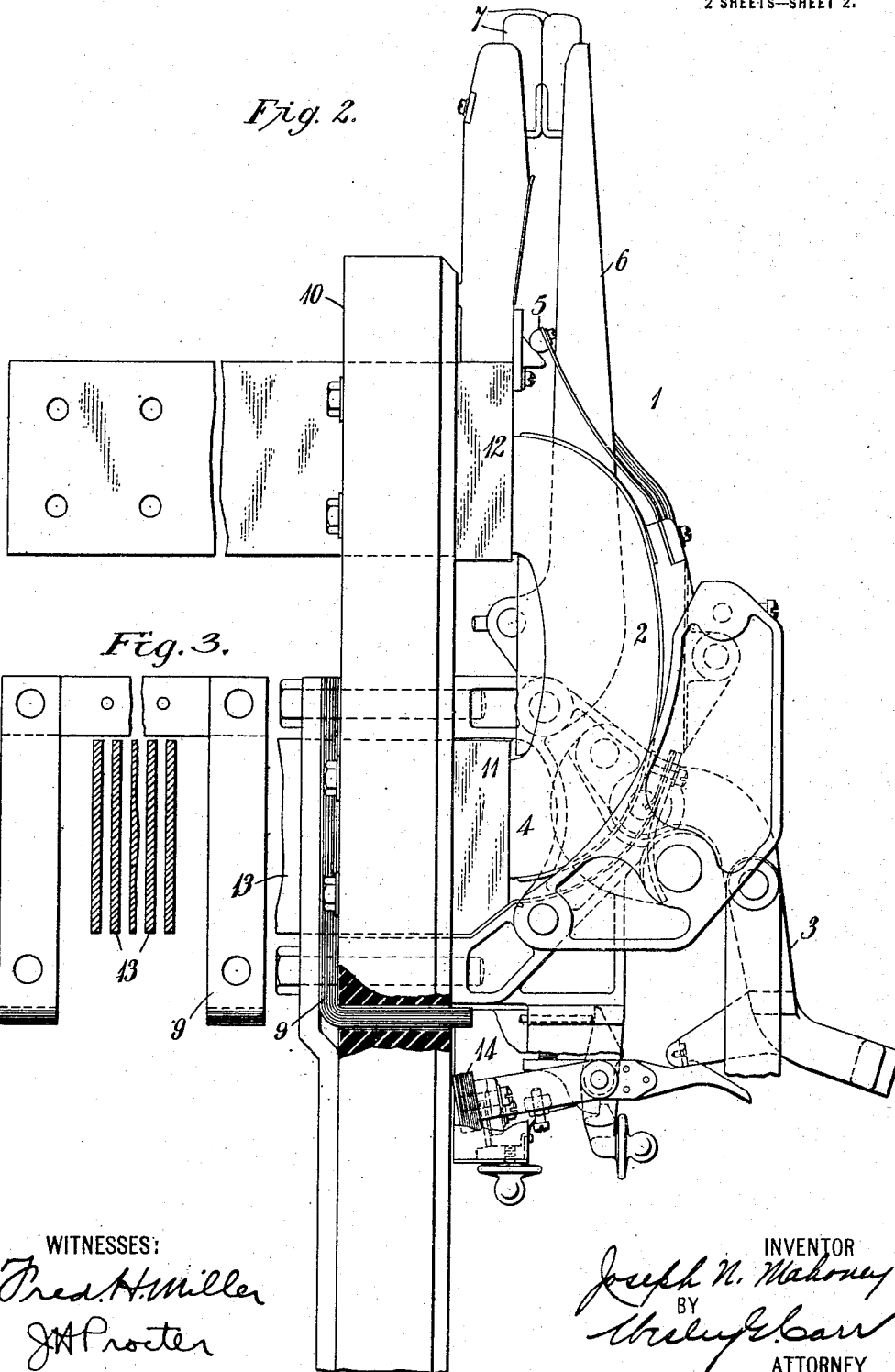
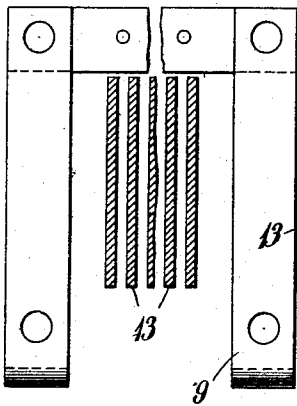


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH N. MAHONEY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

CIRCUIT-INTERRUPTER.

1,274,733.

Specification of Letters Patent.

Patented Aug. 6, 1918.

Application filed August 11, 1913. Serial No. 784,084.

To all whom it may concern:

Be it known that I, JOSEPH N. MAHONEY, a citizen of the United States, and a resident of Wilksburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Circuit-Interrupters, of which the following is a specification.

My invention relates to circuit interrupting devices and particularly to automatic circuit breakers.

The object of my invention is to provide a circuit breaker for relatively high-current service with provisions for cooling and for allowing flexibility of design.

Circuit breakers have been used heretofore with their tripping magnets mounted in close proximity to the brushes and with the brushes in close proximity to one another. This caused, when used on an alternating current circuit, a great amount of heating, due both to the iron loss and loss in copper from being in the proximity of the magnetic flux of the iron and to the skin effect on the copper contact pieces.

In my invention, I so arrange the tripping magnet that the heat lost therefrom will radiate away from the current-carrying parts and I so arrange the primary brushes that they are located on each side of the operating arm, thereby allowing a greater radiating surface for the current-carrying brushes. By so distributing the current-carrying main contacts and so placing the tripping magnet, I can increase the rating of a circuit breaker a relatively great amount without increasing the amount of active material.

Figure 1 of the accompanying drawings is a front elevation of a circuit breaker embodying my invention, Fig. 2 is a side view, partially in elevation and partially in section, of the circuit breaker shown in Fig. 1, and Fig. 3 is a rear fragmentary view of the tripping magnet and the current-carrying conductors shown partially in elevation and partially in section.

My invention is incorporated in a circuit breaker 1, comprising four main units 2 so arranged that there is one unit on each side of each operating lever arm 3. The four main units comprise main contact members 4 and secondary contact members 5. The operating lever arms 3 also operate an arm 6

that carries the tertiary contacts 7 which are connected to the secondary contact members 5 by flexible conductors 8.

The tripping magnet 9 is of U-shape and is placed on the back of a supporting member 10 which insulates it from the stationary contact members 11 and 12. The magnet 9 is placed around conductors 13 and attracts an armature 14 at any predetermined load, thereby opening the breaker in the usual way, which is familiar to those versed in the art. The terminal conductors 13 are divided into units in order to prevent undue heating.

The tertiary contact members 7 are interconnected with two of the secondary contact members 5. The object of placing the operating arm 3 between the units is to assist ventilation and to make the construction more symmetrical. Standard units may be assembled and, by so spacing them, any desired capacity may be had.

I desire that variations in size and arrangement of parts, which do not depart from the spirit of my invention shall be included within its scope.

I claim as my invention:

1. In an electrical circuit breaker, the combination with operating lever arms, of contact units arranged in pairs about each of the said lever arms, said contact units constituting groups comprising a plurality of contact members separated by relatively large air gaps, and means for interconnecting the said contact members.

2. In an electrical circuit breaker, the combination with contact units, of operating lever arms, said units being arranged in pairs and the said operating lever arms being located between the units of the respective pairs, said contact units comprising a plurality of contact members, and means for interconnecting the said contact members of different units.

3. In a circuit interrupter, the combination with contact units, of an operating lever arm for the movable members of the units, said units being disposed one on one side and the other on the other side of the lever arm to facilitate ventilation and dissipation of heat.

4. In an electrical circuit breaker, the combination with four contact units each comprising a main and a secondary contact member, of operating arms, said contact

units being arranged in pairs about the said operating arms, three tertiary contact members, means for connecting the said tertiary contact members to the said secondary contact members of the inner contact units, and a supporting member for the said contact units.

5. In a circuit interrupter, the combination with movable contact members, of an operating lever arm therefor, said contact members being disposed one on one side and the other on the other side of the lever arm to facilitate ventilation and dissipation of heat.

6. In a circuit interrupter, the combination with four main contact units, of operating lever arms therefor, said contact units being arranged one on each side of the said arms, and three auxiliary contact units operatively connected to the inner main contact units.

In testimony whereof, I have hereunto subscribed my name this 29th day of July, 1913.

JOSEPH N. MAHONEY.

Witnesses:

B. B. HINES,

M. C. MERZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."