W. H. FAYLE AND W. G. CROWLE.

FUSE FOR ELECTRIC IRONS.

APPLICATION FILED JAN. 3, 1921.

1,416,008. Patented May 16, 1922.

Fig. 1.

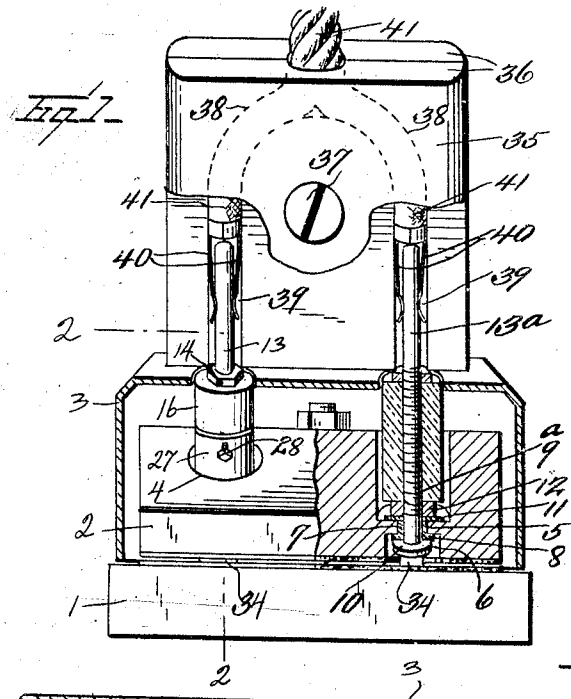


Fig. 3.

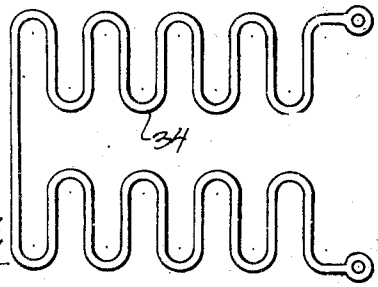
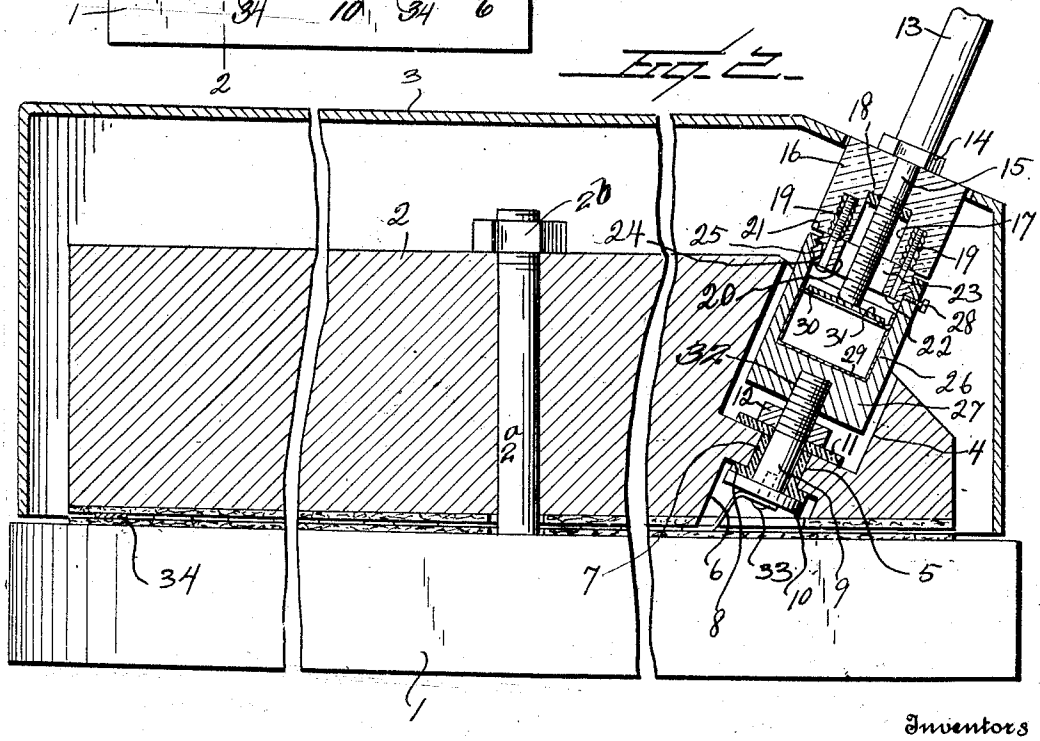


Fig. 2.



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FUSE FOR ELECTRIC IRONS.

1,416,008. Specification of Letters Patent. Patented May 16, 1922.

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To all whom it may concern:

Be it known that we, WILFRED H. FAYLE and WILLIAM G. CROWLE, citizens of the United States, residing at Chisholm, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Fuses for Electric Irons, of which the following is a specification, reference being had to the accompanying drawings.

It is well known that many disastrous fires occur by virtue of allowing electric irons to become overheated. An operator very often fails to switch off the current and leaves the iron on the ironing board, in view of which the iron will become intensely hot, the heat being transmitted through the open work of the iron holder to the cloth or other covering on the board, thereby causing a devastating fire.

It is the aim of the present invention to provide a safety device, for instance a safety fuse, especially adapted for use in conjunction with the electrical connections with the electric iron, in order to overcome fire hazards.

In other words the invention aims to provide an automatic circuit cut out consisting of a fusible electrical connection between the current supply and the heating element or grid of the iron, so that in case the operator or user of the iron fails to switch off the current, the fusible connection will break or melt or give away, thereby breaking the circuit and preventing the iron from becoming excessively hot, hence avoiding fire.

A further purpose is the provision of means for supporting the fusible material in contact with the usual cord contact rod of the iron, and when the fusible material melts, and since the cord contact is insulated from certain of the connections with the iron, and also since the cord contact is isolated in its mounting relatively to the iron, the circuit may be broken, when the fusible material melts or gives away, hence preventing fire.

While the design and construction at present illustrated and set forth is deemed preferable, it is obvious that as a result of a reduction of the invention to a more practical form for commercial purposes, the invention may be susceptible of changes, and the right to these changes is claimed, provided they are comprehended within the scope of what is claimed.

The invention comprises further features and combination of parts, as will be hereinafter set forth, shown in the drawings and claimed.

In the drawings:—

Figure 1 is a rear view of an electric iron with the socket connection broken away and the casing in section, showing the grid in section, and illustrating one of the connections between the heating element and one of the conducting wires and also disclosing the fuse connection in elevation.

Figure 2 is a sectional view on line 2—2 of Figure 1 showing the fuse connection with the grid and the heating element in section.

Figure 3 is a detail plan view of the heating element.

Referring more especially to the drawings, 1 designates the base of an electric iron and 2 denotes the grid, there being a threaded stud 2^a rising upwardly from the base and passing through the grid. The nut 2^b is mounted on the stud, to hold the grid and the base together. A casing or housing 3 encloses the grid, and may be connected to the base of the iron in any suitable manner (not shown). The grid has a depression 4, the bottom of which is drilled, to provide the opening 5. The under portion of the grid also has a depression 6, which is axially aligned with the depression 4. The bottom of the depression 4 constitutes a top of the depression 6, hence the opening 5 connects the two depressions.

However, a mica tube or bushing 7 is located in the opening 5, and is provided with a marginal flange or abutment 8, which engages the undersurface of the wall between the two depressions. A suitable contact bolt 9 extends through the sleeve or bushing 7, and its head 10 engages the marginal flange 8, thereby holding the mica sleeve or bushing 7 in the opening 5. A mica washer 11 is engaged with the shank of the bolt 9, and which shank has threaded thereon a nut 12, which may be turned home so as to contact with the mica washer 11, thereby not only holding the mica sleeve or bushing 7 in the opening 5, but also retaining the bolt 9 in position. The shank of the bolt extends beyond the nut 12, and constitutes means to

electrically connect the fuse structure to the grid.

The fuse structure comprises the cord contact rod 13, which has a shoulder 14, and beyond the shoulder is provided with a reduced portion 15, which passes through a porcelain body section 16 of the fuse structure. This porcelain body section has a cylindrical cavity 17, there being a nut 18 engaging said cavity, and is threaded upon the reduced shank 15 of the cord contact rod, thereby holding the cord contact rod rigid relatively to the body section 16. It will be noted that the reduced portion 15 of the cord contact rod is spaced considerably from the wall of the cavity 17.

In constructing the porcelain body section interiorly and exteriorly threaded brass bushings 19 are cast or formed in the body section. A circular ring plate 20 is engaged with the underface 21 of the porcelain body section, there being screws 22 passing through the circular ring plate, and are threaded into the brass bushings 19, thereby securely connecting the circular ring plate to the body section. The opening 23 of the circular ring plate is large enough, in order to prevent any electrical connections with the reduced portion 15 of the cord contact rod.

The exterior cylindrical surface of the circular ring plate is threaded as shown at 24, and these threads are designed to engage the interior threads 25 of the bore 26 of the lower brass section 27 of the fuse construction. A suitable set bolt 28 extends through the wall of the brass section 27 and binds against the surface of the circular ring plate 20, thereby holding the lower brass section 27 relatively to the ring plate of the porcelain body section. Mounted in the bore of the lower brass section 27 of the fuse structure is a container or cup 29, which has on its interior an annular supporting flange 30, designed to support a circular disk 31 of any suitable fusible material. This disk is supported in position, so as to be electrically engaged by the reduced portion 15 of the cord contact rod 13. The lower end of the brass section 27 has an interiorly threaded depression 32, which is engaged by the threaded end of the bolt 9, so as to connect the fuse structure with the grid.

The lower end of the bolt 9 is provided with a binding screw 33, to which one end of the heating coil or element 34 is connected. The other end of the heating element is designed to be electrically connected to the opposite cord contact rod 13^a, through the medium of the bolt 9^a, of which the cord contact rod 13^a is an extension. It is to be understood that either of the cord contact rods 13 and 13^a may have a fuse structure in the connections with the grid. It is to be noted that the depression 4 is of a diameter sufficient to avoid any electrical connections with the brass section 27.

In order that electrical conductors may be detachably connected to the cord contact rods 13 and 13^a, a coupling or connector 35 is provided, and may be constructed of any suitable material preferably slate. This connector or coupling comprises two sections 36, which are held together by a screw 37. The adjacent faces of the two sections of the connector or coupling are provided with channels 38, which extend from the single channel. The straight portions of the channels constitute sockets 39, in which the spring clips 40 are mounted in any suitable manner in order to hold them in place. The conductors 41 are twisted together as usual and enter the single channel of the connector or coupling, then they are separated and engaged in the channels 38, and are connected to the spring clips 40 in a convenient way. The connector or coupling 35 receives the cord contact rods 13 and 13^a in its sockets 39, so that the spring clips will contact with the rods. In fact the rods engage between the spring clips, thereby affording electrical connections with the heating element.

The fusible metal disk or plate 31 may be made from a compound of approximately 50 per cent lead and 50 per cent tin. However, should a higher or lower fusing point be required, the fuse plate or disk 31 may be compounded accordingly.

While the present form of fusible electrical connectors are disclosed for the present form of conventional iron, it is obvious that said fusible electrical connections may be constructed, and adapted for use in connection with any of the irons now in use.

It is obvious that should the user or operator of the iron neglectfully allow the iron to overheat, by failing to switch off the current, the excessive heat will fuse the metallic disk or plate 31, which will drop into the container or cup, thereby leaving the extremity of the reduced portion 15 of the cord contacting rod isolated from the wall of the brass section 27, hence breaking the electric circuit, and preventing the iron from overheating.

The fuse may be easily removed at any time, should it become burnt out, by placing a new fusible metallic disk or plate 31 on the flange 30 of the container 29.

The invention having been set forth, what is claimed as being useful is:

1. In a fuse construction, opposed fuse sections, one of insulating material, means connecting the two sections, a cord contact rod carried by the insulating section, a container carried within the other section, a fusible member, and means to support the fusible member in the container in contact with the lower end of the cord contact rod.

2. In a fuse construction, a cord contact

rod, a fusible member adjacent one end of the contact rod, a container having means integral on its interior and upon which said member rests to support said member in contact with said rod, and means to support the container relatively to the rod.

3. In a fuse construction, a cord contact rod, a fusible member in contact with the rod, a container support for the fusible member, and means to hold the support relatively to the cord contact rod, whereby when the member fuses or gives away and the material thereof deposits in the container support, the electrical connections are broken.

4. In a fuse construction, a metallic fuse section adapted for electrical connection with a heating element, an insulating fuse section, means connecting the two sections, a cord contact rod carried by the insulating section, a container support mounted on the interior of the metallic fuse section, and a fusible member supported by the container support in electrical contact with the cord contact rod.

5. In a fuse construction, a metallic fuse section adapted for electrical connection with a heating element, an insulating fuse section, a cord contact rod carried by the insulating fuse section, means uniting the two sections, the metallic fuse section having a chamber, a container in said chamber, a fusible member in the container, and means carried by the container for supporting the fusible member in contact with the cord contact rod.

6. In a fuse construction, an insulating fuse section, a metallic fuse section having a chamber and adapted for electrical connection with a heating element, a container in said chamber, means detachably connecting the two sections, a cord contact rod carried by the insulating section and having a reduced portion extending within the metallic fuse section and being isolated from its interior wall, a fusible member in contact with the isolated end of the cord contact rod, and means carried by the container for supporting the fusible member.

In testimony whereof we hereunto affix our signatures.

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WILLIAM G. CROWLE.