G. H. LOFTS.

ELECTRICALLY HEATED ARTICLE TO AVOID DAMAGE THROUGH OVERHEATING.

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1,382,101. Patented June 21, 1921.

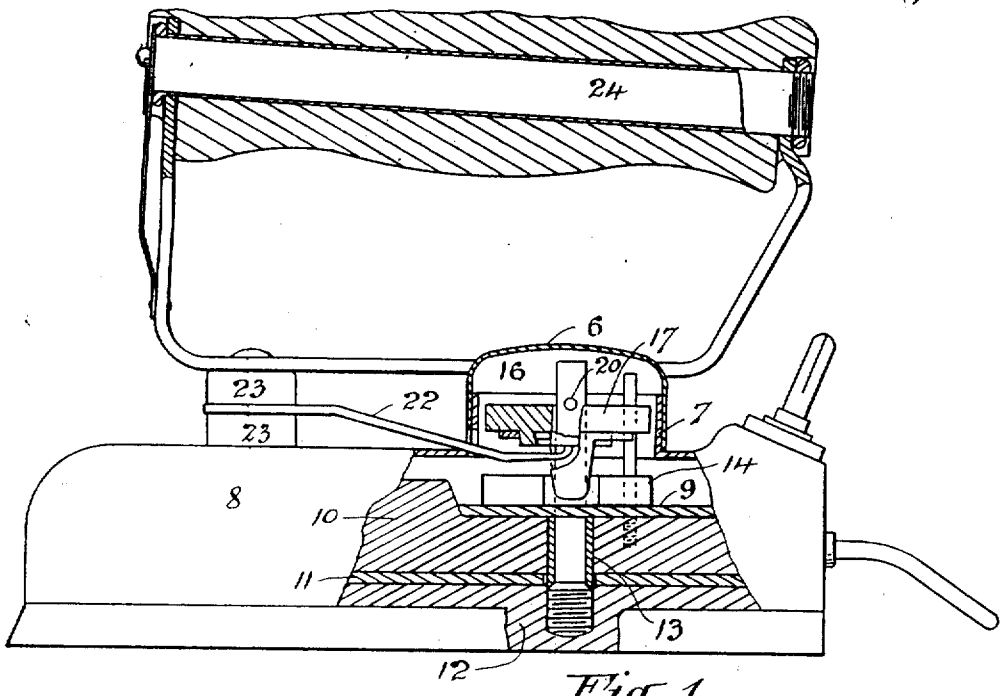


Fig. 1

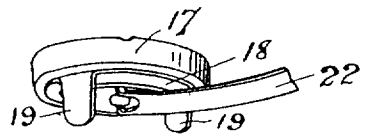


Fig. 3

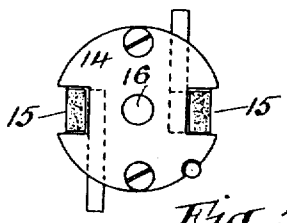


Fig. 5

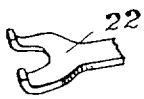


Fig. 4

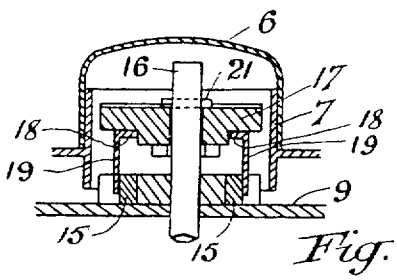


Fig. 2

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UNITED STATES PATENT OFFICE.

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ELECTRICALLY-HEATED ARTICLE TO AVOID DAMAGE THROUGH OVERHEATING.

1,382,101. Specification of Letters Patent. Patented June 21, 1921.

Application filed April 15, 1920. Serial No. 374,146.

To all whom it may concern:

Be it known that I, GEORGE HARRY LOFTS, a subject of the King of Great Britain, residing at Elizabeth street, Hobart, State of Tasmania, Australia, have invented certain new and useful Improvements Relating to Electrically-Heated Articles to Avoid Damage Through Overheating, of which the following is a specification.

This invention provides means whereby articles heated electrically either by direct or alternating current such as electric irons and like goods may be prevented from causing damage through overheating due to the current having been inadvertently left on.

An object of the invention is to provide a novel escapement device that is held by a pin made of a soft metal such as zinc and which, under the influence of pressure, is sheared or parted thus releasing the parts and breaking the electrical circuit when the iron becomes too hot.

Heat insulation means are provided between the heating element and the working parts and electric connections are made in the usual way on the iron, the shape, weight and design of which is retained as closely as possible while adapting the same to the operation of my invention.

It is important in this class of apparatus to so arrange the parts under the influence of the current that it will be difficult, if not impossible, in the ordinary handling of the appliance to receive electric shocks. In my invention the parts are specially designed to avoid occurrences of this kind as will be seen from a closer inspection of the invention hereinafter to be described.

But in order to fully understand the same and the manner in which the invention operates when applied to say, electric irons, reference is made to the accompanying drawing, in which,

Figure 1 is a side elevation, partly in section, of an electric iron fitted with the escapement or cut-off.

Fig. 2 is a detail sectional elevation of the cut-off means that is retained under a nickel plated dome that accords in appearance with the container of the iron.

Fig. 3 shows in perspective view the upper member or shearing washer of the cut-off and also the bearing spring.

Fig. 4 is a detail perspective view of the end of the said spring, and

Fig. 5 illustrates in plan view the lower member of the cut-off.

The invention can be applied to the ordinary electric iron and is easily adapted for use therewith. The main outward alteration will consist of the dome 6 that fits over the annular outwardly turned flange 7 from the container or cover 8. The cut-off is housed within this part above the heat insulation 9 that lies upon the iron insole 10 beneath which is the heating element 11 in contact with the sole 12 and is connected electrically in series with the heating element.

A vertical spindle 16 preferably of copper, is screwed into the sole 12 and projects upward into the dome. The spindle passes through the heating element and the insole from each of which it should be heat insulated by 13. Reposing upon the insulation and about the spindle is a fixed washer 14 that is made of asbestos wood or other like insulating and heat resisting material. This washer is fitted with carbon contacts 15 or in lieu of carbon may have metal contacts. Higher up the spindle is the shearing or sliding washer 17 also of asbestos wood or other hard non-conducting and heat resisting material and under this washer is a metal plate 18 having depending lugs 19 that are normally in contact with the carbons 15. Immediately above the washer 17 is an opening 20 through the spindle through which the zinc or other suitable soft metal pin 21 is passed, the face of the washer 17 being preferably grooved diametrically to accommodate the pin.

Bearing below the washer is a stout spring 22 that is mounted in heat insulation 23, and having its end bifurcated and slightly upturned to embrace the spindle and at the same time to bear upon the washer. This spring should be stout and is preferably composed of leaves of sufficient strength to cause, by its upward pressure on the washer 17, that member to shear off the pin when the heat imparted to the pin through the spindle from its connection with the iron sole is sufficient to soften the same.

The spindle is heavily coated with nickel and the pin 21 is composed of a fusible metal though it should be distinctly understood that it is not intended to be fused but only softened, the spring pressure being enough to cause it to be parted when in that

condition. To use a fusible element in this connection would be inconvenient and it is dispensed with to avoid the fused metal adhering to the parts comprising the cut-off.

In the handle of the iron is a hollow member or tube 24 that is closed by a clip and is used to contain spare pins 20.

In operation, the iron is used in the ordinary way, the heating element keeping the sole hot. From this the heat flows through the spindle to the pin 20. While the iron is in use its sole temperature will remain safe but should it be left on a dry surface the temperature of both sole and spindle will gradually rise until the safe point is reached. At this critical temperature the pin 20 will be softened and rendered easily shearable. When this occurs the spring will lift the washer on the spindle and the lugs 19 out of contact with the carbons 15, thus breaking electrical contact in the iron, the temperature of which would otherwise have continued to increase until ignition of contacting material occurred.

As before explained, the shearing washer 17 is made of material such as asbestos wood which is hard and is a bad conductor of heat. On this comparatively cool surface the pin lays while being heated at its middle part by contact with the spindle and this will be found to facilitate the shearing of the pin by the washer in a clean and effective way.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a cutoff for an electrically heated article, the combination of a heated member, a heat conducting spindle projecting therefrom, a non-heat conducting shearing member slidable on the spindle, a fusible pin in the spindle and forming a stop for said shearing member, and against which the shearing member bears, electric contact elements one of which is movable with the shearing member, and a spring exerting its tension on said movable contact element and said shearing member to cause the latter to cut the pin and thereby enable the movable contact element to separate from the other contact element when the fusible pin is rendered soft by excessive heat of the heated member and the conducting spindle.

2. In an electrically heated article, a heated member, an insulator thereon, an insole, separated from the heated member by said insulator, a heat conducting spindle projecting from the heated member and through said insole and said insulator, a non-heat conducting shearing member slidable on the spindle, a fusible pin in the spindle and forming a stop for said shearing member, a fixed electrical contact element on the insole, a movable electrical contact element slidable on the spindle with the shearing member and having a lug normally in contact with said fixed contact element, and a spring exerting its tension upon said movable contact element and said shearing member to cause the latter to cut the pin and thereby enable the movable contact element to separate from the fixed contact element when the fusible pin is rendered soft by excessive heat of the heated member and the conducting spindle.

In testimony whereof I affix my signature.

GEORGE HARRY LOFTS.