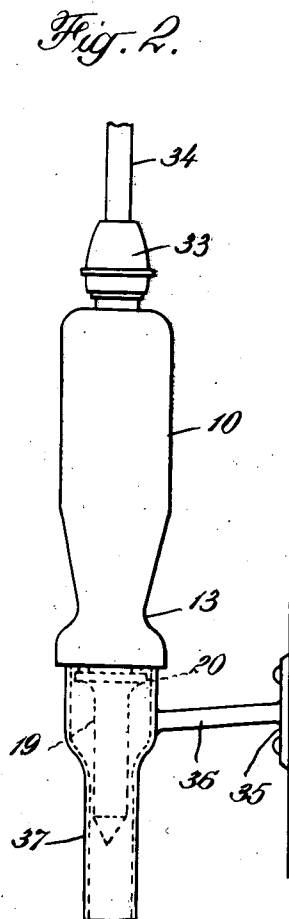
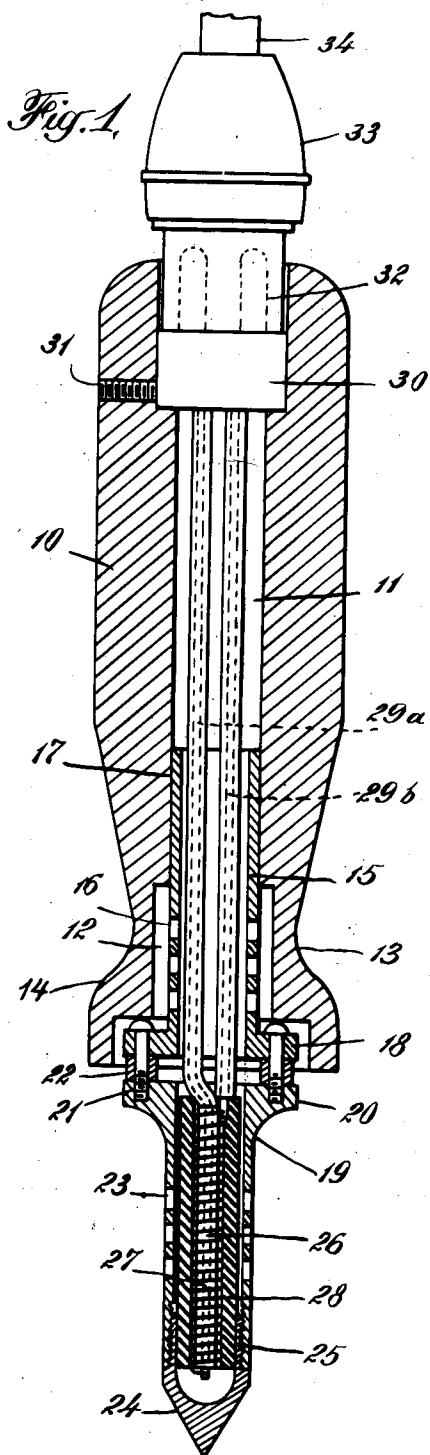


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H. E. YOCOM
HEATING APPLIANCE
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INVENTOR
Harry E. Yocom
BY *Jessie Davis Thoms*
ATTORNEYS

UNITED STATES PATENT OFFICE

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HEATING APPLIANCE

Harry E. Yocom, Reading, Pa., assignor to Rose-
dale Knitting Company, Reading, Pa., a corpo-
ration of Pennsylvania

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This invention relates to electrical heating appliances which include a heated element and a handle by which the appliance may be held and manipulated. More particularly, the invention has to do with a heating appliance of the type referred to containing various novel features of construction which make it easier and safer to operate and increase its durability. The appliance of the invention may be advantageously employed for numerous purposes, but it is especially useful for carrying on certain operations in the manufacture of hosiery. A form of the new appliance suitable for use in the hosiery field will, accordingly, be illustrated and described in detail for purposes of explanation.

In the manufacture of full-fashioned hosiery in accordance with present methods, the leg of the stocking is knitted on one machine and then transferred to another on which the foot is knitted. In the transfer of the leg from the first machine to the second, the loops along the lower edge of the fabric of the leg are topped on the needles of the footer and for this purpose, the operator employs a pointed instrument known as a "loose-courser." In this operation, it has been found that if the instrument is heated, the wales of the stocking which have been opened up will remain in that condition so that topping on is facilitated, and this is particularly true when the fabric is made of the fibre known commercially as "Nylon," although a heated loose-courser may also be used advantageously in the production of silk hosiery. In order to serve its intended purpose, such an instrument must be small, compact, and light, so that it can be readily manipulated, and it must be capable of use without danger of injury to the operator.

The present invention is, accordingly, directed to the provision of a heating appliance which may be used as a loose-courser in the manufacture of hosiery and it includes a handle carrying a tube closed at one end by a pointed tip, the tube containing an electric heating unit. The unit is supplied with current through conductors leading through the handle to a connector at the rear end thereof, this connector permitting attachment of the instrument to a cable leading to a source of current. The handle is made of a material which is a poor conductor of heat and it is constructed to permit air circulation between it and a portion of the tube. In addition, the handle is formed with a guard which prevents the fingers of the operator from slipping off and into contact with the hot parts.

For a better understanding of the invention,

reference may be made to the accompanying drawing, in which:

Fig. 1 is a view of the new instrument partly in longitudinal section and partly in elevation; and

Fig. 2 is a view illustrating a holder for the instrument with the latter in place therein.

Referring to the drawing, the new appliance in the form illustrated includes a handle 10 which is preferably made of wood or similar material of poor heat conductivity, this handle being preferably circular in cross-section, although it may have any other convenient shape. Extending axially through the handle is a passage 11 which is enlarged at one end to form a chamber 12.

Adjacent this end, the handle has a circumferential channel 13 in which the ends of the fingers of the operator normally rest, and the portion of the handle between the end thereof and the channel serves as a guard 14 which prevents the operator's fingers from slipping off the handle and into contact with the hot parts of the device.

Mounted in the handle at the end forming the guard is a tube provided with a pointed tip and containing a heating means, and in the construction illustrated, the tube is formed in two parts in alignment. The inner tube 15 is preferably made of stainless steel, although any other suitable metal may be used. The tube has a portion provided with perforations 16 which lies within the chamber and a rear end portion 17 which lies in the passage and makes snug contact with the walls thereof and prevents accidental dislodgment of the tube. At its outer end, the tube is provided with a flange 18 which may lie within the chamber, and the flange and the portion of the tube within the chamber to the rear of the flange are out of contact with the chamber walls.

At the end of the handle in alignment with the first tube is a second tube 19 which may be made of brass or other suitable material and may be mounted on tube 15 by having its flange 20 secured detachably to the flange 18, as by means of screws 21 passing through openings in the flange 18 and threaded into flange 20. The flanges are held spaced by washers 22 through which the screws extend, and the tube 19 with its flange preferably lies beyond the end of the handle. The tube 19 is formed with perforations 23 and its outer end is closed by a tip 24 which is preferably made of stainless steel and has a sleeve 25 threaded into the end of tube 19.

Within tube 19 is an electrical heating unit 26 which may conveniently be made of a cylinder

of mica around which is wound a coil 27 of a suitable resistance wire, the coil being encased in another mica cylinder 28 so as to be insulated electrically from the tube 19. Current is supplied to the heating unit through insulated conductors 29a, 29b, preferably covered with asbestos insulation, and conductor 29a extends through the inner mica cylinder and is connected to the outer end of the coil, while conductor 29b is connected to the inner end of the coil. The conductors extend through the tube 15 and passage 11 to a connector 30 which may be disposed in an enlargement of the passage at the rear end of the handle and held in place by set screw 31. The connector is of any standard type and is provided with a pair of terminals, one for each conductor. In the construction shown, the connector is provided with terminal prongs 32 which may be received in recesses in a receptacle 33 on the end of a current cable 34.

The loose-courser of the invention is preferably constructed to develop the desired amount of heat when supplied with 6 volt current so that there is no danger of shock, but when it is in use, the tip and tube 19 become heated to a temperature which would inflict a painful burn. However, the provision of the guard at the end of the handle near the hot parts prevents the operator's fingers from accidentally slipping off the handle and into contact with those parts. Also, discomfort to the operator is prevented by constructing the end of the handle within the guard to form a chamber, the walls of which lie out of contact with the inner tube 15. Since this tube is perforated, air may circulate both around the tube within the chamber and through the tube, and this serves to carry away some of the heat. The spacing of the end of the handle from the tube also keeps that portion of the handle from getting uncomfortably hot.

In the new appliance, the conductors connecting the heating coil and the terminals of the connector are relatively heavy wire, preferably copper, and these parts are not subjected to any strain during use. As will be readily apparent, the operator does not use the loose-courser continuously but puts it down and picks it up repeatedly. As a result, the cable 34 between the appliance and the source of current may become twisted and if the cable extended through the handle and were connected directly to the heating coil, that portion of the cable within the handle would become twisted, frayed, and broken, so that short circuits, which would frighten and possibly injure the operator, would result. In the present construction, any twisting of the cable takes place outside the handle and is not transmitted to the conductors within the handle. Accordingly, the manipulation of the appliance cannot result in injury to the enclosed conductors and heating element.

In order to afford the operator further protection against contact with the hot parts, it is desirable to provide a holder in which the loose-courser may be placed when not in use. Such a holder may include a plate 35 secured to any suitable support and provided with an arm 36 on the end of which is mounted a tubular member 37. The upper end member is of such size that it may receive the flange 20 on the loose-courser, while the lower part is of smaller diameter so as to provide a fairly close fit for the tube 29 and its tip. When mounted in the holder, the heated parts of the appliance are fully enclosed,

so that the operator cannot come into accidental contact therewith.

I claim:

1. A heating appliance which comprises a handle having a longitudinal passage there-through, the passage having a portion of increased diameter forming a chamber at one end of the handle, an inner tube within the chamber having an end entering the passage and fitting tightly against the passage wall, the remainder of the tube lying out of contact with the wall of said chamber, a second tube outside said chamber and lying in alignment with the first tube, means other than said tubes for connecting the tubes together, said connecting means having an operating portion lying within the portion of the passage of increased diameter, a part of said handle lying adjacent said operating portion of the connecting means and preventing operation thereof as long as said appliance is assembled, a tip closing the outer end of the second tube, a heating unit within the second tube, and conductors connected to the unit and leading through the inner tube and passage to the other end of the handle.

2. A heating appliance which comprises a handle having a longitudinal passage there-through, the passage having a portion of increased diameter forming a chamber at one end of the handle, an inner tube within the chamber having an end entering the narrower part of the passage and retained therein, the remainder of the tube lying within said chamber and out of contact with the wall thereof, a second tube outside said chamber and lying in alignment with the first tube, means other than said tubes for connecting the tubes together, said connecting means having an operating portion lying within the portion of the passage of increased diameter, a part of said handle lying adjacent said operating portion of the connecting means and preventing operation thereof as long as said appliance is assembled, a tip closing the outer end of the second tube, a heating unit within the second tube, and conductors connected to the unit and leading through the inner tube and passage to the other end of the handle.

3. A heating appliance which comprises a handle having a longitudinal passage there-through, the passage having a portion of increased diameter forming a chamber at one end of the handle, an inner tube within the chamber having an end retained within the narrower part of the passage, the remainder of the tube lying within said chamber and out of contact with the wall thereof, the outer end of said inner tube having an outwardly extending flange, a second tube outside said chamber and lying in alignment with said inner tube, the inner end of said second tube having an outwardly extending flange, means connecting said flanges together, said connecting means being wholly concealed in the assembled device, a tip closing the outer end of said second tube, a heating unit within said second tube, and conductors connected to said unit and extending through the inner tube and the passage in said handle to the end thereof remote from said tubes.

4. A heating appliance which comprises a handle having a longitudinal passage there-through, the passage having a portion of increased diameter forming a chamber at one end of the handle, an inner tube within the chamber having an end retained within the narrower part of the passage, the remainder of the tube lying

within said chamber and out of contact with the wall thereof, the outer end of said inner tube having an outwardly extending flange, a portion of the tube lying within said chamber being perforated, a second tube outside said chamber and lying in alignment with said inner tube, the inner end of said second tube having an outwardly extending flange, means connecting said flanges together, said connecting means being wholly concealed in the assembled device, a tip closing the outer end of said second tube, a heating unit within said second tube, and conductors connected to said unit and extending through the inner tube and the passage in said handle to the end thereof remote from said tubes, a portion of said second tube between said tip and the flange at the inner end thereof being perforated.

5. A heating appliance which comprises a handle having a longitudinal passage there-through, the passage having a portion of increased diameter forming a chamber at one end of the handle, an inner tube within the chamber

5 having an end retained within the narrower part of the passage, the remainder of the tube lying within said chamber and out of contact with the wall thereof, the outer end of said inner tube having an outwardly extending flange, a second tube outside said chamber and lying in alignment with said inner tube, the inner end of said second tube having an outwardly extending flange, means connecting said flanges together, the part of said connecting means which is operated to disconnect said flanges lying inwardly of said inner flange, a portion of said handle lying adjacent said part of the connecting means, whereby said connecting means cannot work loose and is wholly concealed in the assembled device, a tip closing the outer end of said second tube, a heating unit within said second tube, and conductors connected to said unit and extending through the inner tube and the passage in said handle to the end thereof remote from said tubes.

HARRY E. YOCOM.