United States Patent

[11] **3,600,552**

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[54] **PORTABLE ELECTRIC APPLIANCE**
8 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** ..... **219/222,** 132/33 R, 132/39, 219/242, 219/521
[51] **Int. Cl.** **A45d 4/16,** A45d 2/10, H05b 3/00
[50] **Field of Search** ..... 219/222-—226, 242, 521, 457, 432, 433, 435, 521; 132/32—39, 33 R, 40, 39, 41, 42

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ABSTRACT: A hair roller heating apparatus comprising, a plastic casing having a container section housing a heat conductive flat plate with straight, continuous, elongated, spaced, parallel rails extending upwardly from one side and a U-shaped heating element on the opposite side of the plate for heating the plate and rails. Hair rollers of various diameters each comprise an outer tubular cylindrical plastic member and an inner tubular cylindrical aluminum member fitting within the outer member in heat transfer relation therewith. Each of the inner and outer members have diametric recesses which fit on the rails with the inner member in heat transfer relation with the rails.

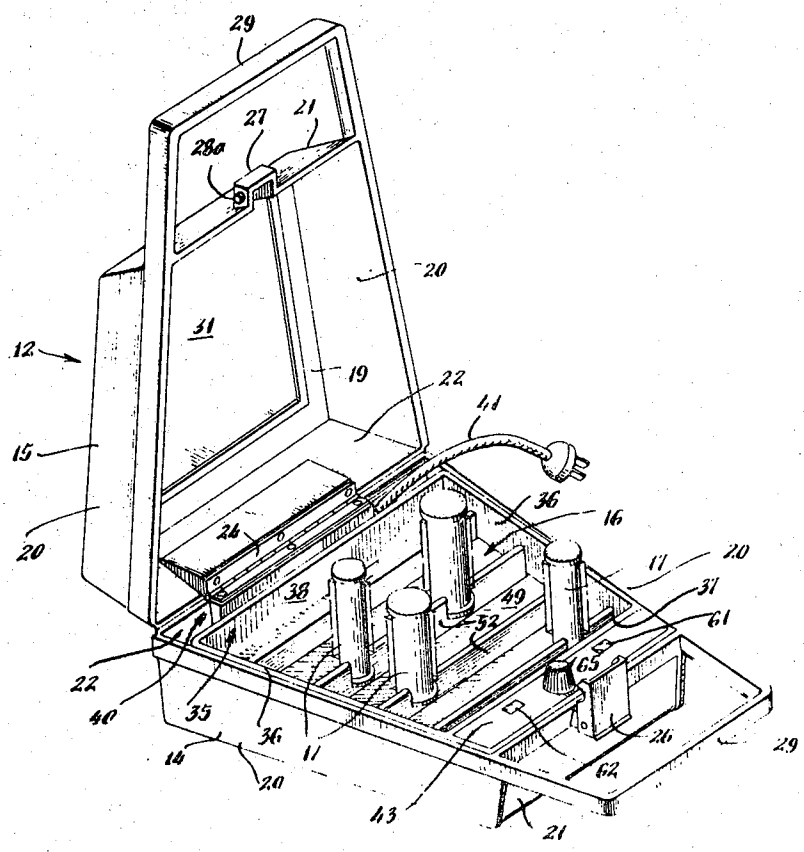

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Fig. 1.

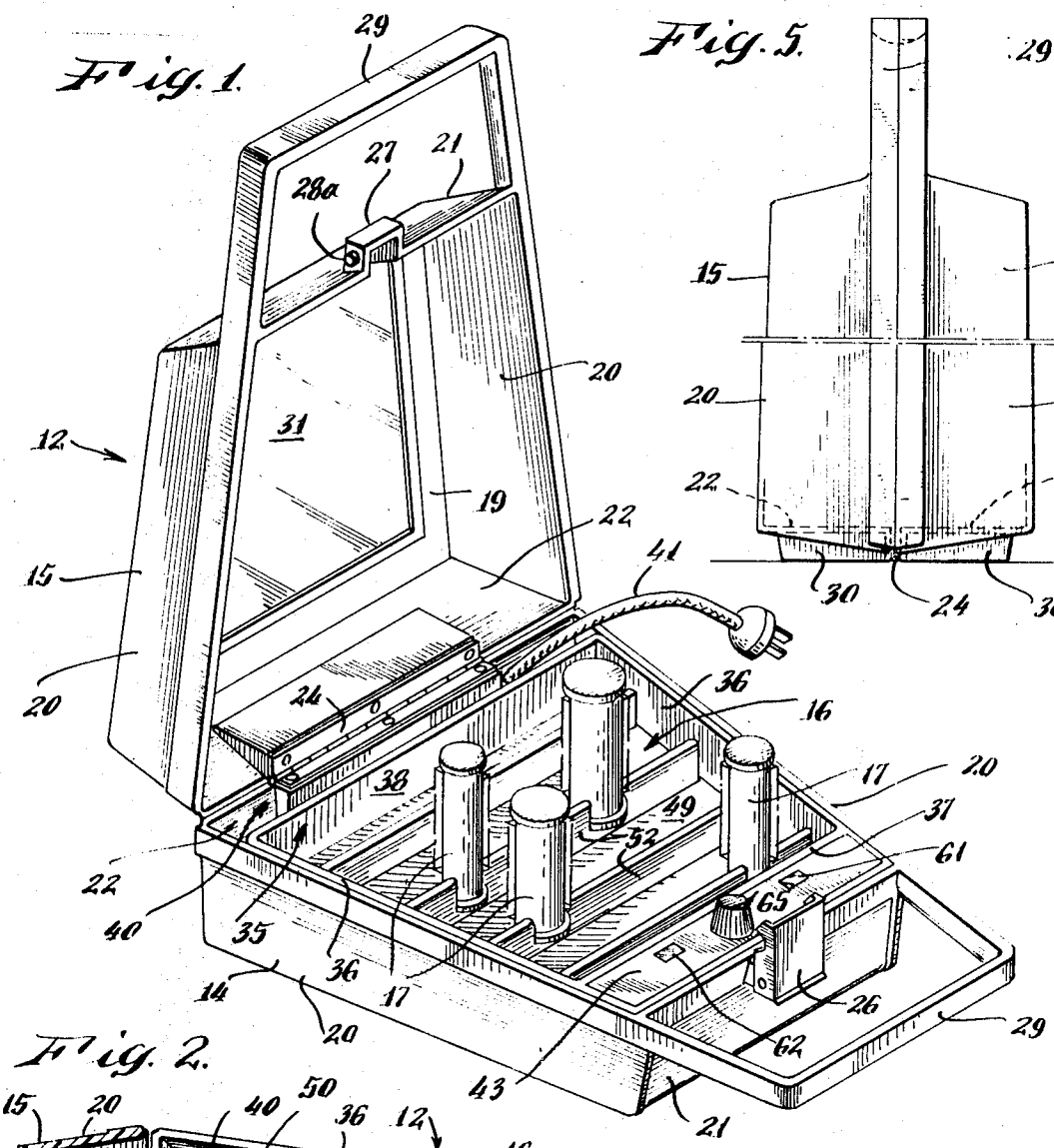


Fig. 5.

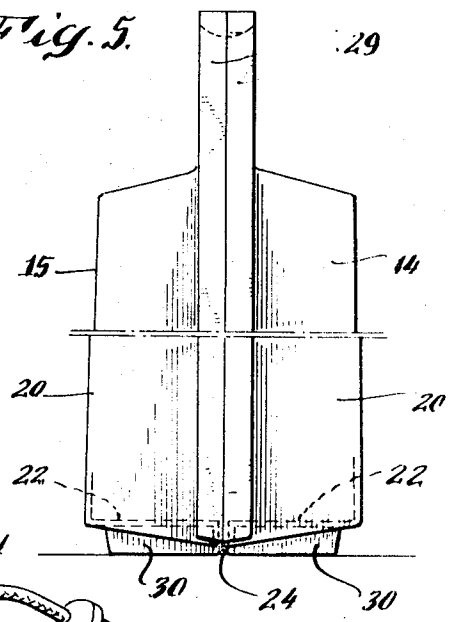
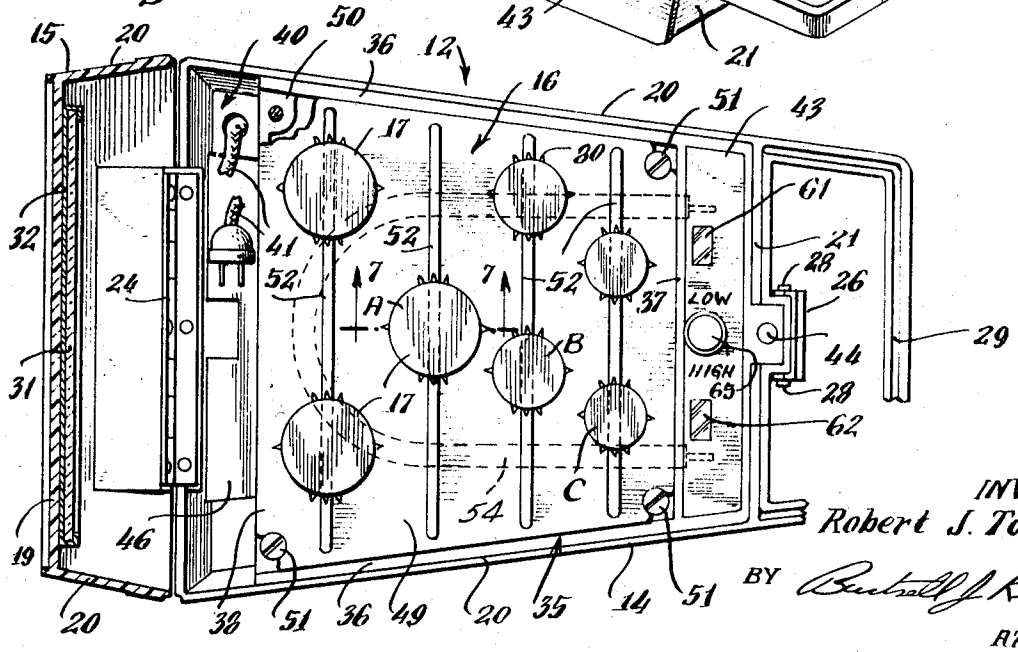


Fig. 2.



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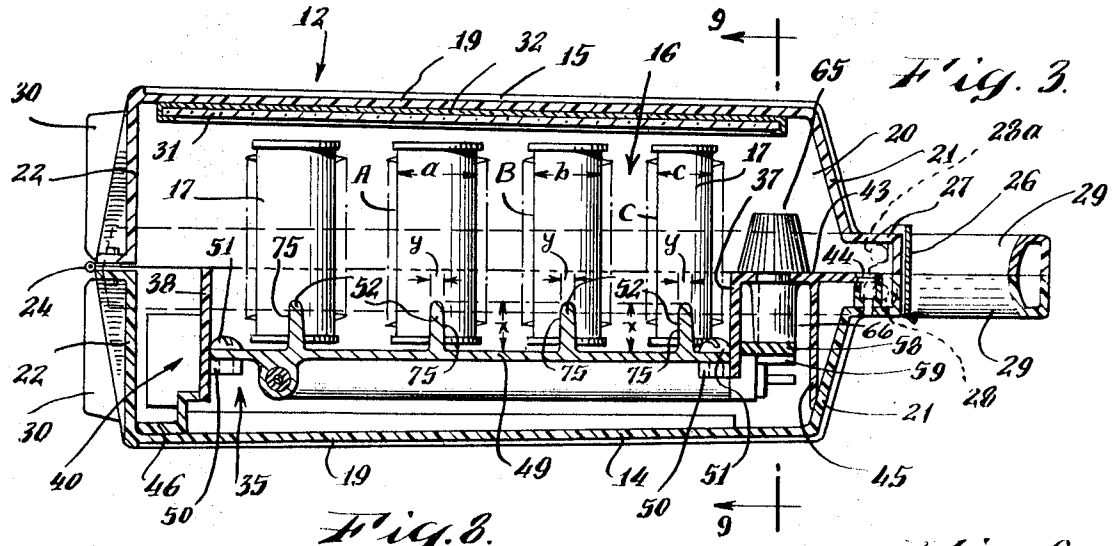
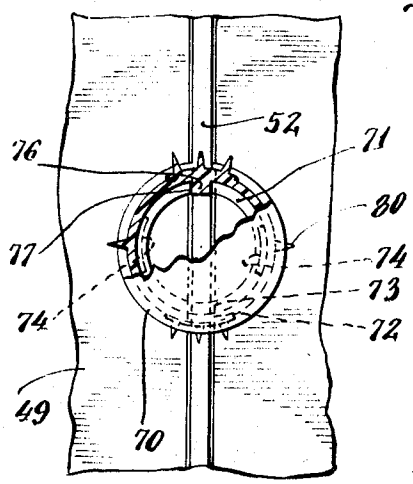


Fig. 3.

Fig. 8.



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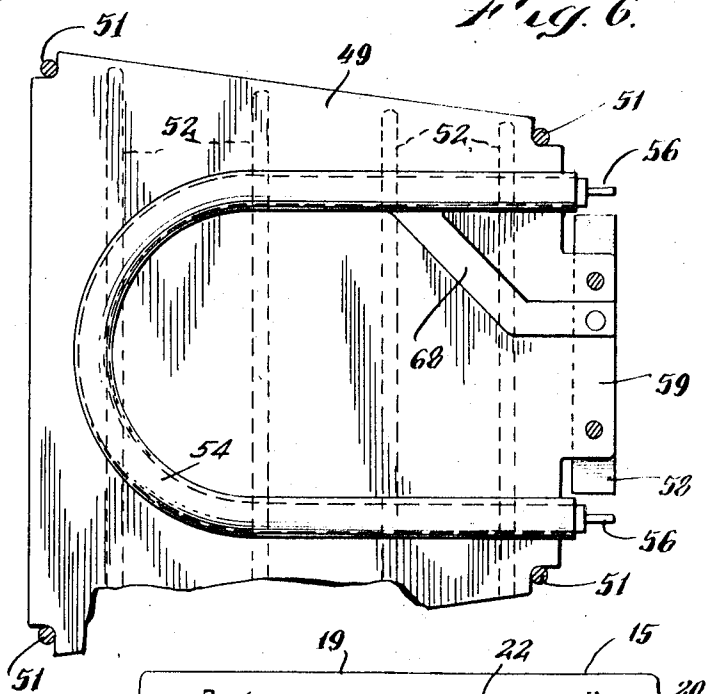
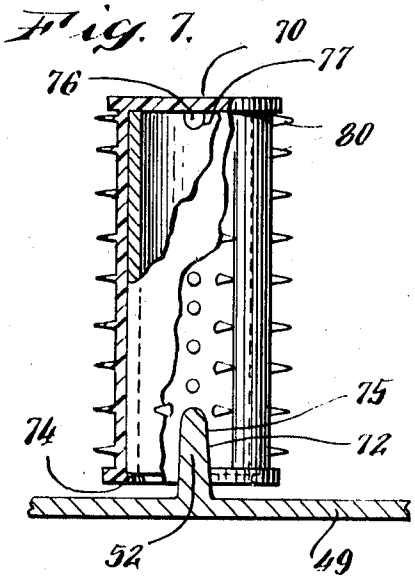


Fig. 7.



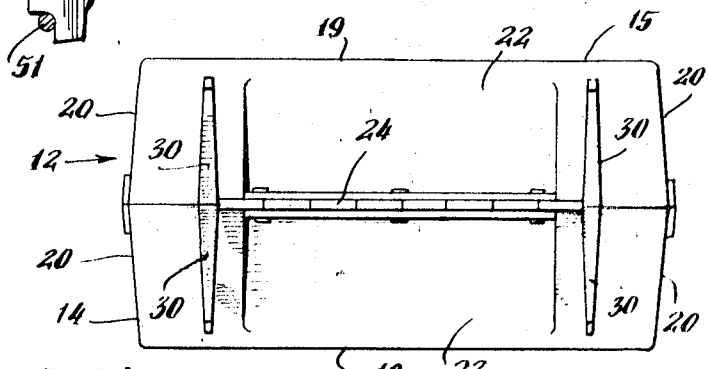


Fig. 4.

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Fig. 9.

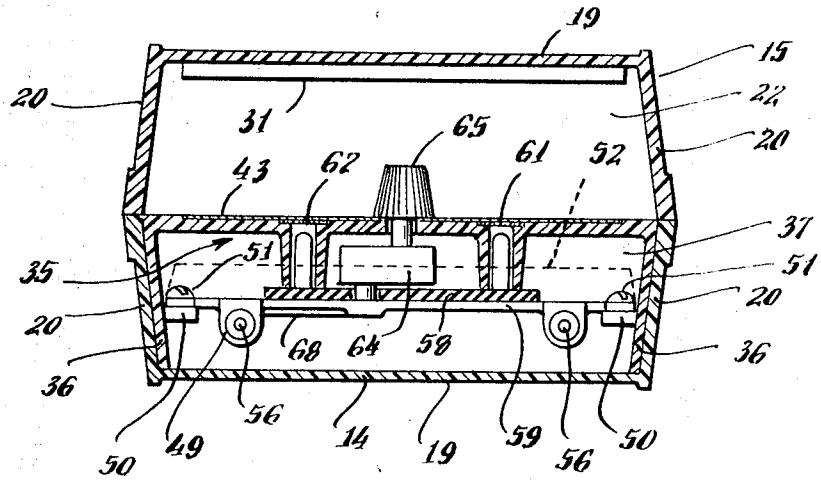


Fig. 10.

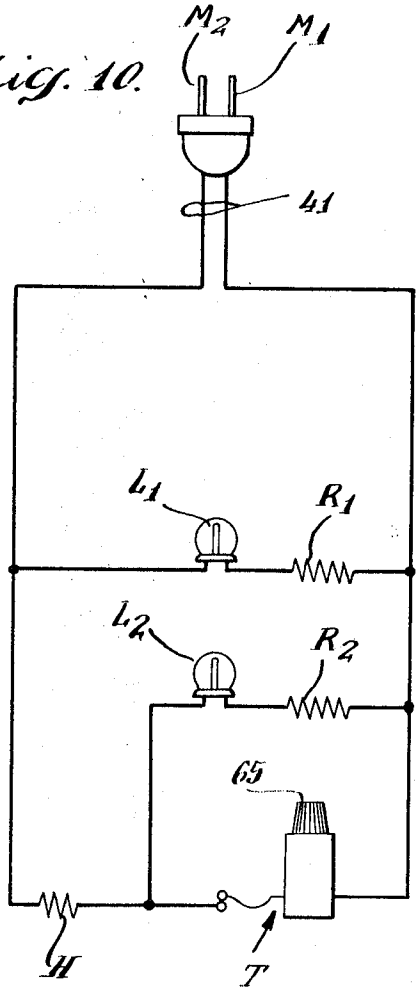
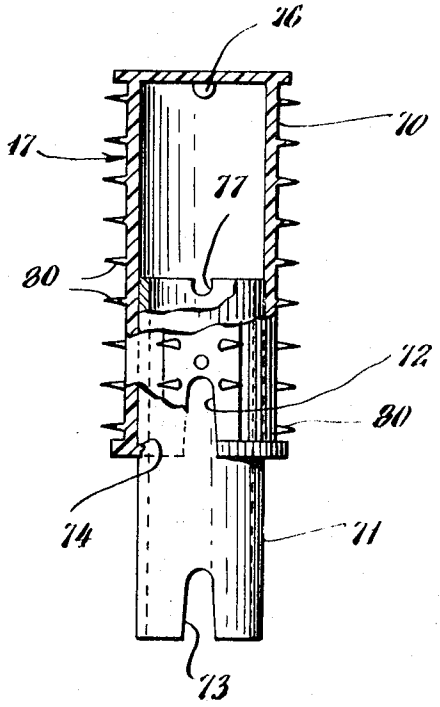


Fig. 11.



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PORTABLE ELECTRIC APPLIANCE

BACKGROUND OF INVENTION

This invention relates to new and useful improvements in hair setting and curling devices and more particularly to devices of the latter type employing hair rollers and heating means therefore.

Hair setting and curling devices which include means for heating hair rollers to a selected temperature for use in the curling or setting of a woman's hair are well known. These devices usually comprise a casing wherein means are provided for detachably supporting hair rollers and wherein other means are provided for heating the supporting means whereby heat is conducted to the hair rollers. The rollers retain the heat and in use when the same are heated to a desired temperature they are removed from the supporting means. A cluster of hair is wound about the heated outer surface of the roller and as a result of the heat imparted to the cluster of hair by the roller the former is more readily curled and the roller may be removed from the hair after only several minutes.

These known hair setting devices usually include means for heating hair rollers of varying sizes having different diametric dimensions in that different size rollers are used in the setting of air and in forming of different hair styles. In order to accommodate these hair rollers of varying diametric dimensions, known devices are provided with a plurality of different sized hair rollers supporting means.

These known devices present problems and inconveniences in use in that due to the several different hair roller sizes known units, due to space limitations, can only provide several supporting means for any one size roller. As a result, if a person desires to heat a plurality of rollers of the same dimension she can only heat a few rollers at one time. The user is thereby subjected to inconvenient delays before all the rollers of one size can be heated and the setting of the hair completed.

It is an object of the present invention to provide novel hair setting means.

Another object is to provide a novel hair-setting device which includes novel means for accommodating and heating hair rollers.

Another object is to provide a novel hair-setting device which includes novel means for accommodating and heating hair rollers wherein a universal mounting means is provided for supporting and heating rollers of varying or like dimensions.

A still further object is to provide novel hair roller mounting means within a hair setting device for accommodating hair rollers of varying dimensions and which means results in the increased efficiency of the device in effecting full utilization of the heating capacity of the unit during operation.

A further object is to provide a novel hair roller comprised of relatively few and economical parts and having novel mounting and heat conduction means adaptable to rollers of varying dimensions.

SUMMARY OF INVENTION

The present invention contemplates novel hair setting and curling means including novel hair roller means and heating apparatus therefor. In one embodiment the heating apparatus is provided in a casing and includes a heating plate having a plurality of spaced and parallel rail members on one face with heating means provided on the other face for heating the rail members to selected temperatures. Hair rollers are provided and have groove means in one end thereof of a mating configuration to that of the outer configuration of the rail members whereby the rollers are adapted to be fitted over the rails with heat conducted from the rail members to the rollers.

The above and other objects and advantages of the present invention will appear more fully hereinafter from a consideration of the detailed description which follows taken together with the accompanying drawings where one embodiment is illustrated.

DESCRIPTION OF THE DRAWING

In the drawings:

FIG. 1 is a perspective view of a hair-setting device embodying the present invention and shows the casing cover therefor in open position;

FIG. 2 is a plan view of the container portion of the device of FIG. 1 with portions of the cover section shown in cross section;

FIG. 3 is a cross-sectional elevational view of device of FIG. 1 with the casing cover in closed position;

FIG. 4 is a rear elevational view of the device as shown in FIG. 3;

FIG. 5 is a side view of the device as shown in FIG. 5 with the casing standing on the rear walls thereof;

FIG. 6 is a bottom fragmentary view of the heating plate;

FIG. 7 is an enlarged sectional view taken on the line 7–7 of FIG. 2;

FIG. 8 is a plan view of the hair roller shown in FIG. 7 with part of the top of the hair roller broken away to show the interior thereof;

FIG. 9 is a sectional view taken on the line 9–9 of FIG. 3;

FIG. 10 is a simplified schematic wiring diagram for the device;

FIG. 11 is an exploded view of a hair roller.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings for a more detailed description of the present invention, a hair-setting device which incorporates one embodiment of the present invention is generally indicated by the reference numeral **12**. Device **12** (FIG. 1) comprises a casing which is preferably made of premolded plastic material and includes a container section **14** and cover section **15** and in which container section **14** is provided heating apparatus generally indicated by the numeral **16** in FIG. 1 for heating hair rollers **17** arranged thereon.

Container **14** and cover **15** are box-shaped and of identical configuration to each other. Each section **14**—**15** includes a bottom wall **19** vertical sidewalls **20**, a front wall **21** and a rear wall **22**. A hinge **24** is secured to adjacent portions of rear walls **22** of cover **15** and container **14** whereby cover **15** is adapted to be pivoted on hinge **24** between an open position (FIG. 1) to a closed position (FIGS. 3 and 5) relative to container **14**.

Latch means are provided on adjacent edges of front walls **21** of container **14** and cover **15** and which latch means include a clasp **26** pivoted to pintles **28** (FIG. 2) provided on a projecting portion **27** of front wall **21** of container **14**. Clasp **26** is provided with hooks adapted to engage over pintles **28** on cover **15**. Clasp **26** is held in latched position by spring means (not shown) in a usual manner to maintain sections **14** and **15** in closed relationship as desired. Handle extensions **29** are provided on each section **14**—**15** and as shown in FIGS. **4** and **5** rear walls **22** have foot projections **30** formed on the outer surface thereof whereby device **12** may be stood in a vertical position (FIG. 5) when not in use. In addition a mirror **31** is secured to the inner face of rear wall **22** of cover section **15** by a suitable adhesive **32** (FIG. 2).

As mentioned it is a feature of the present invention to provide novel means for heating hair rollers **17**. To this end the heating apparatus **16** includes a frame member **35** formed of a suitable plastic material and which frame **35** is provided with sidewalls **36**, a front wall **37**, and a rear wall **38**. Frame **35** is disposed in container **14** with sidewalls **36** (FIGS. 1 and 2) abutting against sidewalls **20** of container **14**. The rear wall **38** of frame **35** is spaced from container rear wall **22** to provide a compartment **40** therebetween for storing an appliance cord **41** shown in FIG. 2.

A ledge **43** is provided on front wall **37** of frame **35** which provides an indicator panel at the front by screw fastening member **44** (FIGS. 2 and 3). A reinforcing leg **45** depends from panel **43** and engages front wall **21** of container **14**. A flange **46** (FIGS. 2 and 3) extends from rear wall **38** of frame **35** and extends transversely of bottom wall **19** of container **14**

and to which wall flange 46 is secured by suitable means (not shown) to position frame 35 within container 14.

Heating apparatus 16 further includes a plate member 49 preferably of cast aluminum. Plate 49 is secured to the lower portions of frame 35 at the corners thereof screws 51 threaded into fittings provided in bosses 50 located at the corners of frame 35 (FIGS. 2 and 3).

Means for supporting hair rollers 17 are formed on one face of plate 49 and include rail means comprising spaced and parallel tapered bars 52 extending transversely of plate 49. A U-shaped tubular heating element 54 (FIGS. 2, 6) is cast on the opposite face of plate 49 and includes therein a suitable well-known heating means such as a resistance wiring encased in compressed magnesium oxide. End terminals of heating element 54 have suitable electrical connections (not shown) with appliance cord 41 and a terminal board 58.

Terminal board 58 (FIGS. 3, 6, and 9) comprises a rectangular-shaped insulated member secured to an extension 59 of plate 49. Indicator lamps 61 and 62 are mounted on terminal board 58 and are visible at appropriate aperture portions in panel 43 (FIGS. 1 and 2) for purposes to be explained. A thermostat 64 having a rotatable control knob 65 is disposed on panel 43 and extends downwardly through a passage 66 (FIG. 3) to terminal board 58 and has a suitable connection with a heat sink 68 (FIG. 6) provided in plate 49 and through which heat sink 68 heat is conducted from heater element 54 for controlling operation of thermostat 64 and correspondingly the temperature of plate 49.

Hair rollers 17 each comprise an outer hollow cylindrical member 70 closed at the top and formed of suitable molded plastic material. As seen with respect to one roller 17 in FIGS. 7, 8 and 11 a hollow inner cylindrical core 71 preferably of aluminum, is fitted in cylinder 70. Cylinder 71 is maintained therein by a boss 74 on the lower edge of the inner surface of cylinder 70 and over which boss is seated the edge of cylinder 71. Means are provided on roller 17 whereby the latter is adapted to be mounted on rails 52. To this end a pair of aligned notchlike recesses 72 are provided in the bottom edge of cylinder 70 and a pair of aligned notchlike recesses 73 are formed on bottom edge of core 71 and which recesses 72—23 together form a groove 75 conforming in configuration to the cross-sectional configuration (FIG. 3) of a rail 52 and extending length wise or longitudinally of the hair rollers. The rail means are elongated to hold a plurality of rollers.

Locating means (FIGS. 8, 9 and 11) are provided within cylinders 70—71 for insuring the alignment of recesses 72—73 and include a boss 76 on the upper inner surface of cylinder 70 adapted to engage in cut out portion 77 of core 71 when the latter is inserted in cylinder 70. In this manner core 71 can be located in only one position in cylinder 70 and is fixed against rotation therein.

The outer surface of cylinder 71 is provided with comb teeth 80. As seen i FIG. 8, teeth 80 are arranged in a first pair of diametrically opposed group of three rows and a second pair of diametrically opposed pair of single rows with the surface between the groups of teeth being smooth. The latter arrangement of teeth 80 being effective to comb hair wound about cylinder 70 in an efficient manner.

Although the above description is directed to one of the rollers 17, it is to be understood that the other rollers 17 are of the same construction and will differ in certain instances only in dimensions. As illustrated for example, the rollers 17 identified A, B and C in FIGS. 2 and 3 have varying diameters "*a*, *b*" and "*c*." Each roller, A, B and C however is provided with groove 75 of the same height "*x*" and width "*y*." As a result rollers A, B, C all have the same mounting means whereby the latter are accommodated on rails 52 without the necessity of providing rails of varying dimension to support rollers 17.

In FIG. 10 thermostat 64 is designated T and heating element 54 is designated H. The plug prongs of appliance cord 41 adapted for connection to a source of alternating power such as available in the usual household outlet are designated M1 and M2. Thermostat T is connected over input prong M1 in series with heating element H. Lights 61 and 62 are indicated as L1 and L2 respectively with protective resistors thereof designated R1 and R2 respectively. Light L1 is connected in parallel with thermostat T and element H, and is adapted to be it when prongs M1 and M2 are connected to a suitable outlet. Light L2 is adapted to be connected in series with heating element H under conditions where thermostat T interrupts applied power to element H when the desired temperature is reached and sensed by thermostat Tn a usual manner.

In accordance with the above described arrangement, if a person desires to use device 12, appliance cord 41 is connected to a suitable outlet and rollers 17 are mounted on rails 52 as described. Thermostat 64 is then set to a desired temperature by rotating knob 65 thereof to a selected position between temperature ratings indicated "High" and "Low" on panel 43 in FIG. 2. Under these conditions heating element 54 is activated to heat plate 49 and rails 52 to the desired temperature with the heat being transmitted to the outer surface of cylinders 70 through inner cores 71 in contact with rails 52. When the selected temperature is reached thermostat 65 operates in a usual manner to interrupt direct power to element 54 and lamp L2 is then lit as it is connected in series with element 54 and provides visual indication that rollers 17 are heated and ready for use.

It will be readily apparent from the foregoing description that the novel device has many advantages in use. One advantage among others is that the novel mounting means provided on rollers 17 allow rollers of varying or the same dimension to be mounted on rails 52 without differently dimensioned heating means or the like. If desired plate 49 may be used to heat at one time rollers of one size or to heat rollers of varying sizes. The fact that these rollers may be closely mounted adjacent each other upon rails 52 results in full utilization of the space available and effects a savings in parts and material. The universal mounting means further results in more efficient and simplified operating procedures in the placement of rollers within the device.

Although one embodiment of the present invention has been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto. Various changes can be made in the design and arrangement of parts without departing from the spirit and scope of the invention as the same will now be understood by those skilled in the art.

What I claim is:

1. Apparatus of the class described for heating hair, comprising:

a. a hair roller having an outer substantially cylindrical hollow member with a bottom end, an interior surface means and an exterior surface

b. two-spaced aligned, recesses extending longitudinally on opposite sides of the bottom end of the cylindrical member,

c. an inner heat transmitting core element disposed within the cylindrical member in intimate contact with the interior surface means of the cylindrical member to transmit heat thereto,

d. said core element having a bottom end and longitudinally extending recess means formed therein said recess means being aligned with said recesses,

e. support means having raillike means for mounting said hair roller and having heating means for heating said raillike means,

f. said raillike means when mounting said hair roller extending into said aligned recesses and said recess means and being in contact with said core element to conduct heat thereto,

g. the shape and dimensions of the raillike means extending into said aligned recesses and recess means being a function of the configuration and dimensions of the recesses and recess means.

2. The apparatus of claim 1 wherein said interior surface means of said cylindrical member is cylindrically shaped and

the core element is tubular and cylindrically shaped and said recess means is two spaced aligned notchlike recesses on opposite sides of said core element and in alignment with said recesses of said cylindrical member and said raillike means extends through all of said aligned recesses.

3. The apparatus of claim 2 wherein said recesses are diametrically aligned across the bottom ends and extend longitudinally of said outer cylindrical member and said core element.

4. The apparatus of claim 1 wherein said support means is a flat plate with said raillike means extending upwardly from the plate and said heating means is a heating element on said plate.

5. The apparatus of claim 4 wherein the core contact is an inner hollow cylindrical member concentrically disposed with respect to the outer cylindrical member and means are provided on both cylindrical members to restrain relative movement therebetween.

6. The apparatus of claim 5 wherein the raillike means is of tapered inverted U-shaped configuration in cross section and the recesses and recess means are similarly configurated.

7. Apparatus of the class described for heating hair, comprising in combination,

a. a casing,

b. a flat plate in the casing and including heating means for heating the plate,

c. a plurality of tubular hair rollers of various diameters each having a pair of identically sized and shaped diametrically opposite recesses at one end to form a groove, said rollers adapted to be positioned onto the heating plate with the axes thereof normal to the surface of the plate,

d. a plurality of spaced and parallel raillike members carried and heated by the heating plate, said raillike members being elongated for holding a plurality of rollers and being of identical size and shape and identical in size and shape to said recesses for fitting within the recesses to mount the hair rollers on the heating plate,

e. the spacing between raillike members being dependent upon the radii of the hair rollers mounted on adjacent rails.

8. The apparatus of claim 7 wherein said heating means is electric and a thermostat is provided and adapted to control operation of said heating means and light means is provided in circuit with said thermostat and with said heating element to provide a visual indication when the selected temperature of said heating means is reached.