United States Patent [19]

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[11] **3,754,116**

[45] **Aug. 21, 1973**

[54] **HAIR ROLLER APPLIANCE**

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[22] Filed: **Mar. 15, 1972**

[21] Appl. No.: **235,034**

Related U.S. Application Data

[63] Continuation of Ser. No. 174,954, May 28, 1971, abandoned.

[52] **U.S. Cl.** ..... **219/222,** 21/96, 126/20, 126/369, 132/33 R, 219/275, 219/401, 219/521

[51] **Int. Cl.** **H05b 3/02,** A45d 4/10

[58] **Field of Search** 219/222–226, 242, 271–276, 401, 521, 385; 126/369, 369.1, 369.2, 369.3, 20, 20.1, 20.2; 99/441; 21/92–97

[56] **References Cited**

UNITED STATES PATENTS

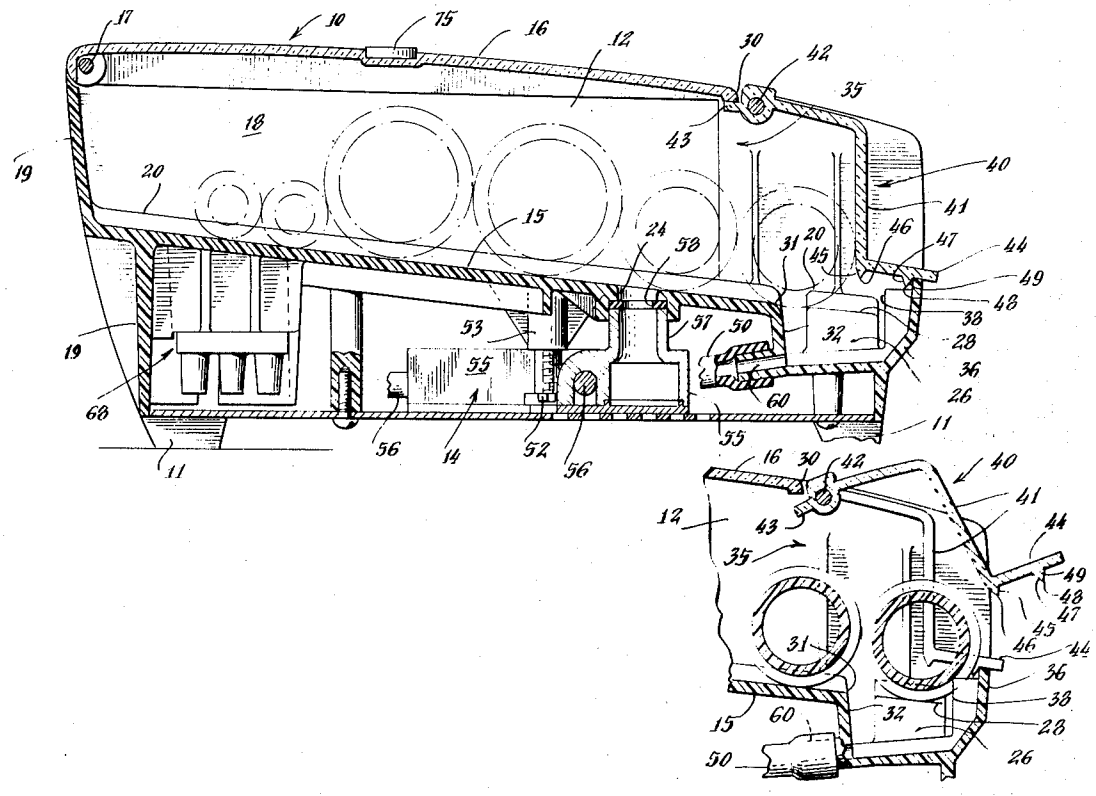
1,876,614	9/1932	Claus	126/20
1,305,499	6/1919	Spitz	21/96
839,255	12/1906	Ayer	219/517
3,493,723	2/1970	Popiel	219/401 X
3,493,722	2/1970	Popiel	219/401 X
3,646,316	2/1972	Volosin et al.	219/401 X
308,116	11/1884	Webb	126/369
1,422,348	7/1922	Duncan	219/401
1,435,143	11/1922	Bensman	21/95 X
2,532,868	12/1950	Van Cleve	126/369
874,278	12/1907	Adams	126/369

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[57] **ABSTRACT**

A portable appliance which includes a compartment for storing a plurality of hair rollers and an electrically energizable vapor generator cooperatively associated with the compartment to supply the compartment with hot vapor for heating and moistening the hair rollers. The floor of the compartment is inclined to cause the rollers to move, under the influence of gravity, through the compartment's access opening to a platform from which the rollers may be successively removed. A well is located in the floor of the compartment beneath the level of the opening in the floor through which vapor from the vapor generator passes into the compartment. The condensate thus tends to flow to the well rather than enter the inlet opening. In addition, the structure which is provided for opening and closing the access opening includes apparatus for causing condensate to flow to the well, rather than exit the appliance.

10 Claims, 8 Drawing Figures



Patented Aug. 21, 1973 3,754,116

4 Sheets-Sheet 1

Fig. 1.

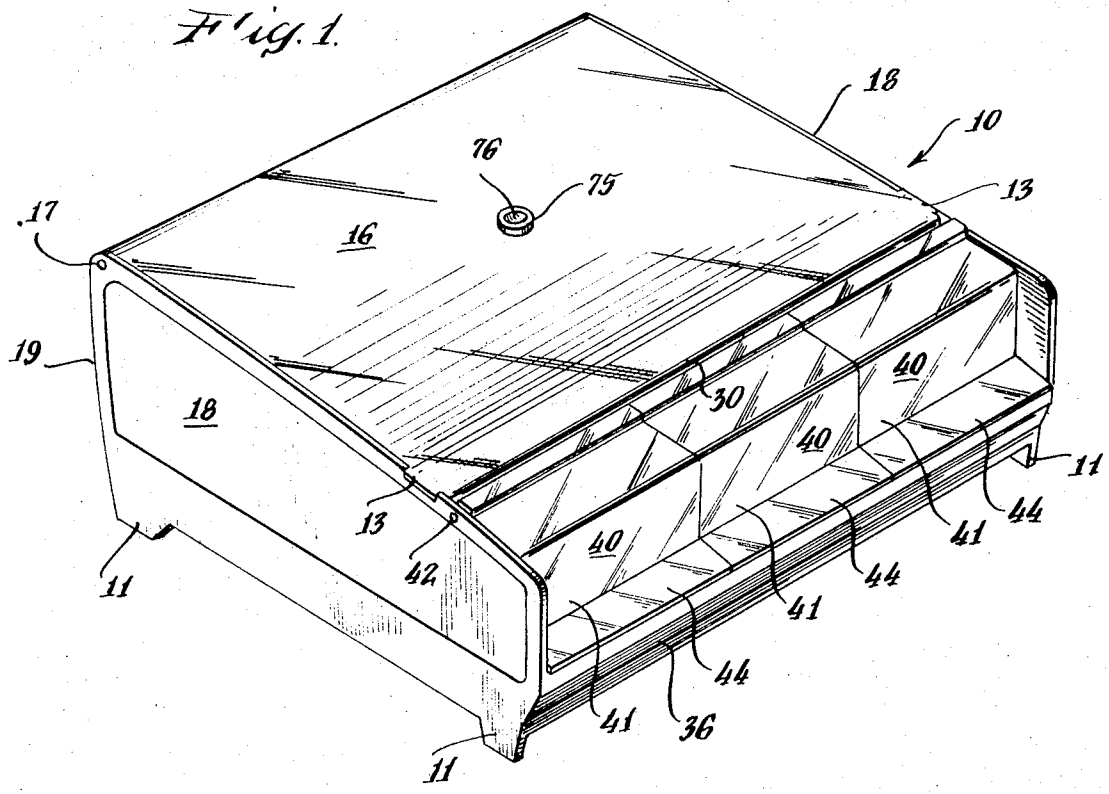
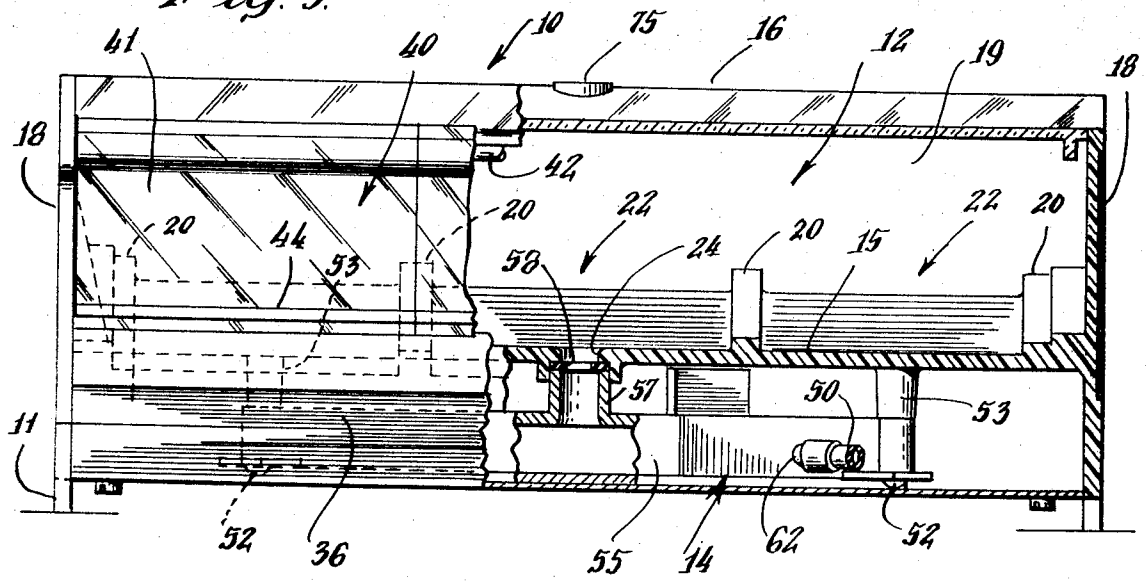


Fig. 3.



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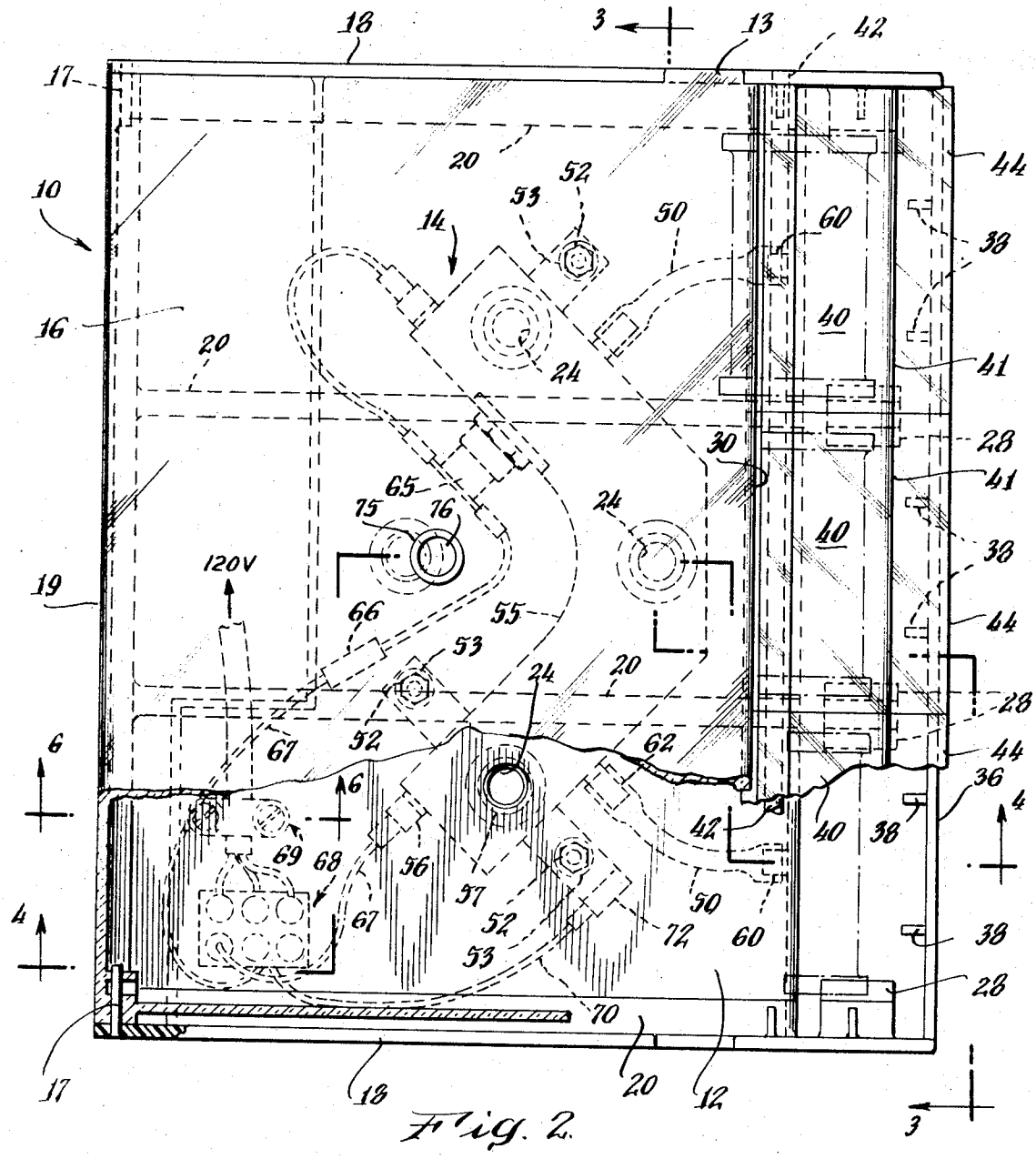


Fig. 2.

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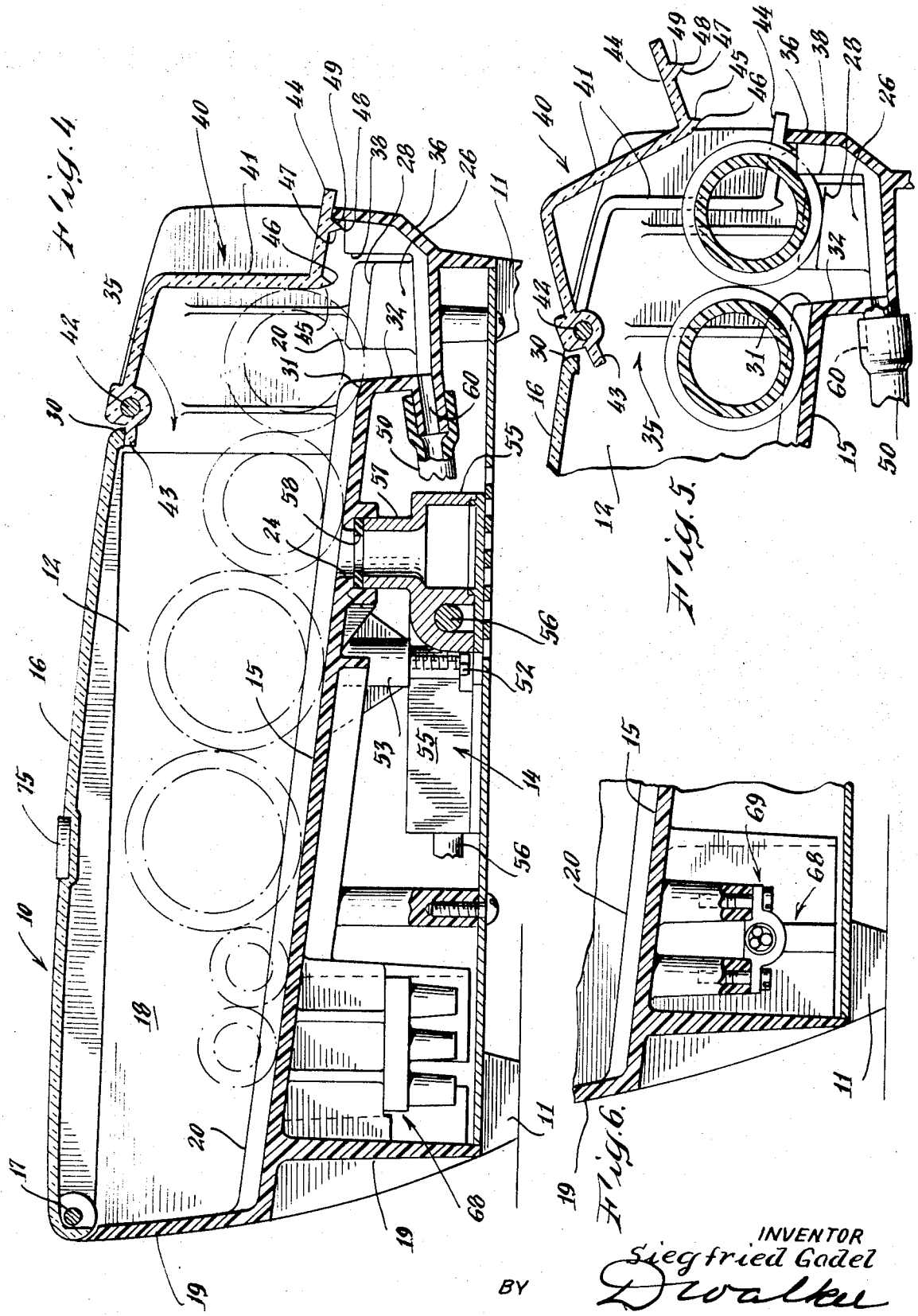


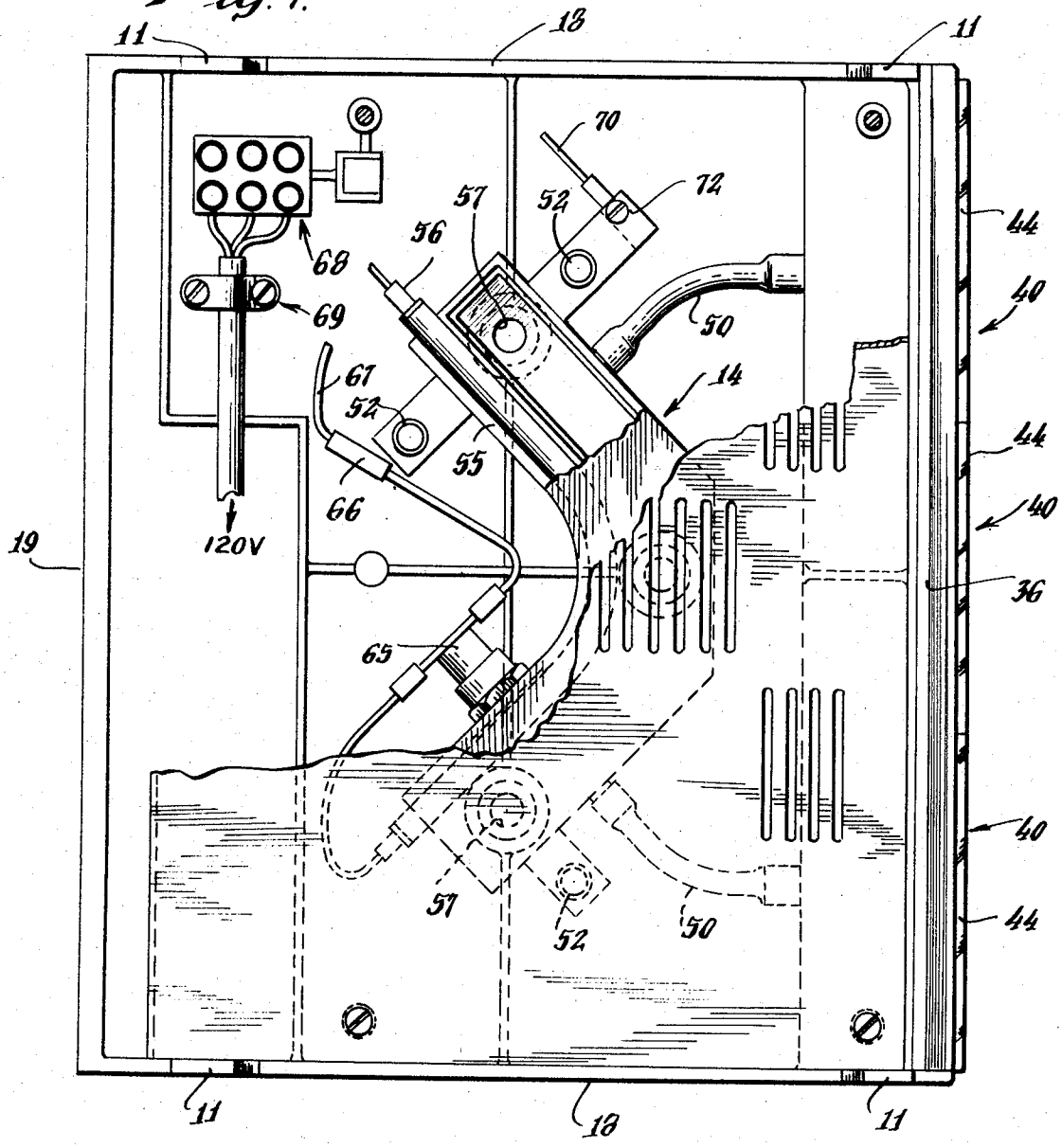
Fig. 4.

Fig. 5.

Fig. 6.

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Fig. 7.



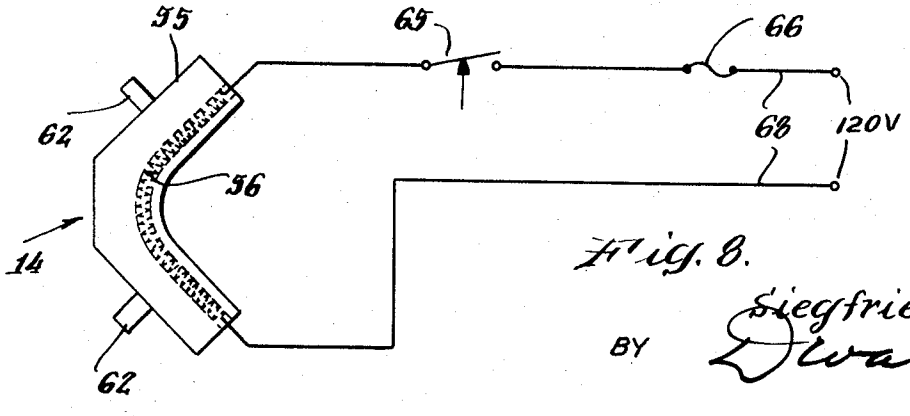


Fig. 8.

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HAIR ROLLER APPLIANCE

This is a continuation, of application Ser. No. 147,954 filed May 28, 1971, now abandoned.

BACKGROUND AND SUMMARY OF THE INVENTION

This invention is related to apparatus for heating rollers which are used for setting and styling hair, and more particularly to apparatus for both heating and moistening hair rollers.

In apparatus of the aforesaid type the hair rollers are stored in a compartment closely associated with a vapor generator which supplies hot vapor to the compartment for heating and moistening the rollers. When the rollers are sufficiently heated and moistened they are removed for use.

In the known prior art devices the vapor generator outlet serves as the condensate return line to the vapor generator, with the result that the vapor is partially cooled by the condensate just prior to entering the compartment. Since the heat content of the vapor is thereby reduced, the time required for the rollers to be ready for use is increased.

In some prior art devices, to avoid the hazard of having the user's hands come into contact with the hot vapor, the rollers are nested in trays which are removed from the compartment when the rollers are ready for use. In these devices, unless the rollers are relatively quickly removed from the trays while the trays are separated from the compartment, they have to be returned to the compartment for reheating. The delay in the user's hair curling or setting activity may become inordinately long due to the condensate from the tray flowing through the vapor inlet to the compartment, since the heat content of such condensate is quite low.

In some prior art devices the problem is somewhat alleviated due to the fact than an excessive amount of condensate drips from the apparatus during use, which is of course a problem in itself.

To solve these and other problems, and at the same time provide a simply and economically constructed appliance for heating and moistening hair rollers, the apparatus hereinafter described includes a built in condensate return system which substantially prevents condensate from returning to the vapor generator via the generator's vapor outlet. To avoid having excessive losses due to condensate dripping from the apparatus, it is a feature of the apparatus that it is also provided with the means to prevent condensate from exiting the compartment during use.

The inventive appliance is a portable device which includes a compartment for storing a plurality of hair rollers and a vapor generator, wherein the compartment has a floor provided with a vapor inlet opening and a well, and the well is located beneath the level of the vapor inlet opening. In addition the compartment has an access opening which is normally closed by an arrangement of apparatus which releases the rollers, one at a time, from the compartment, and is provided with means for causing condensate which accumulates thereon to flow to the well.

The appliance comprises: a compartment for storing a plurality of hair rollers, the compartment including a floor having a vapor inlet opening, a cover above the floor and means connecting the cover and floor, the compartment having an access opening through which the rollers may be successively dispensed; an electrically energizable vapor generator cooperatively associated with the compartment for supplying hot vapor to the compartment via the inlet opening to heat and moisten the rollers; the floor having a portion extending beyond the cover to provide a platform from which a first roller may be removed, the floor having a well beneath the level of the inlet opening for collecting condensate; the floor oriented to cause a second roller to move through the access opening and onto the platform under the influence of gravity in response to the first roller being removed from the platform; closure means including means movably connected to the cover for normally closing the access opening and holding rollers against movement to the platform, the closing means being movable for opening the access opening to release a roller for movement to the platform, and the closure means including means causing condensate thereon to flow to the well.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of apparatus embodying the invention;

FIG. **2** is an enlarged top plan view of FIG. **1**, with portions thereof partially in section;

FIG. **3** is a section taken substantially along the line **3—3** of FIG. **2**;

FIG. **4** is a section taken substantially along line **4—4** of FIG. **2**;

FIG. **5** is a portion of FIG. **4** showing rollers stored in the appliance;

FIG. **6** is a section taken substantially along line **6—6** of FIG. **2**;

FIG. **7** is a bottom view of FIG. **1**; and

FIG. **8** is a schematic view of a vapor generator circuit.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in the drawings, wherein like reference numerals designate like or corresponding parts throughout the several views, the appliance, **10**, is a portable device which generally includes a compartment, **12**, for storing a plurality of hair rollers; and a vapor generator, **14**, which is cooperatively associated with the compartment for providing the vapor to heat and moisten the rollers.

The compartment, including its floor, **15**, cover, **16**, opposed side walls, **18**, and rear wall, **19**, is construted of a thermoplastic type of plastic, such as the General Electric Company plastics known in the trade under the names LEXAN and NOREL, inexpensive plastics which can easily withstand saturated steam temperatures without physically deteriorating.

The floor, **15**, extends forwardly and downwardly from the rear wall, **19**, to form an inclined surface on which the rollers may be stored. Preferably, it is divided into three parallel sections, by means of a pair of elongated parallel interior walls, **20**, to allow three different sizes of rollers to be stored in separate, side-by-side, channels, **22**. The walls, **20**, are provided to guide the rollers downwardly towards the front of the compartment, without obstructing the flow of vapor between the channels. Accordingly, they extend upwardly from the floor a relatively short distance as compared to the height of the compartment's side walls, **18**, so that vapor from the vapor generator may freely pass be-

tween the channels, **22.** The vapor enters the compartment, via one or more inlet openings, **24,** which are preferably positioned in the floor of the compartment closer to the front end of the compartment than they are to the rear wall, to ensure having the rollers nearest the front end properly heated and moistened for removal.

As the vapor condenses due to cooling, it normally and naturally flows toward the front of the compartment. since the floor is lower at the front end of the compartment than it is at its rear end. To collect the condensate, the front end of the floor is provided with a well, **26,** into which the condensate drains, and, to facilitate removing drained rollers from the compartment, the floor is raised from the well to form a platform, **28,** on which the rollers nearest the front end of the compartment are seated.

The cover is spaced above the floor a distance sufficient to accommodate storing a plurality of the largest diameter roller commercially available for hair setting and stylind purposes. For ease of loading the compartment, the rearwardly extending end of the cover is pivoted to the opposed side walls of the compartment by means of an elongated pivot pin, **17.** The cover extends forwardly from the rear wall a lesser distance than does the floor. As shown in FIG. **1,** the cover is provided with tabs, **13,** extending over the top of the side walls for lifting the forward end of the cover.

As shown in FIGS. **4** and **5,** the forward edge, **30,** of the cover, terminates approximately in registry with the upper edge, **31,** of the rear wall, **32,** of the well, **26.** For the sake of simplicity, the opening between edges **30** and **31,** will hereinafter be referred to as the access opening into the compartment. The compartment thus has an access opening, **35,** through which the rollers are successively dispensed. The floor extends beyond both edge **31** of the well and edge **30** of the cover, to provide the user with ready access to the platform for removing the rollers for use. As shown in FIG. **6,** the floor is angularly oriented to cause the rollers in a particular channel to successively move through the access opening and onto the platform, under the influence of gravity, in response to removing a roller from the portion of the platform which is situated in front of the particular channel.

As shown in FIG. **1,** the side walls, **19,** also extend downwardly from the floor to form four legs, **11,** for supporting the apparatus in a substantially horizontal plane. The rear wall, **19,** also extends downwardly from the floor to cover the otherwise open area beneath the floor. Together, the downwardly extending portions of the side and rear walls define a cavity within which the vapor generator is located beneath the floor. At the front of the apparatus, the floor is curved upwardly from the bottom of the well to form an abbreviated front well, **36.** The front wall is terminated just above the level of the platform and provided with a plurality of rearwardly extending stops, **38** (FIGS. **2** and **5**), at spaced intervals along the length of the front of the apparatus. The stops halt the forward motion of the rollers in their respective channels to prevent them from rolling out of the apparatus. As shown in FIG. **5,** the stops terminate motion of the rollers so that the roller nearest the front end of the apparatus is situated on the platform, above the well, and forwardly of the access opening, **35.**

The closure means or closure, **40,** for the front end of the apparatus, is constructed and arranged to be cooperatively associated with the front wall, **36,** cover, **16,** and well, **26,** to promote the flow of condensate to the well. The closure preferably includes three door-like members, **41,** mounted abrest of one another on a pivot pin, **42,** which has its opposite ends connected to the side walls, **18,** just in front of the forward edge, **30,** of the cover, **16.** At the upper end of each closure member, there is laterally extending ridge portion, **43,** which extends toward the rear of the apparatus and beneath the cover to form a seal between the cover and closure member. In addition, the lower end of each of the closure members extends over the top of the upper edge of the front wall, **36,** to form a seal between the front wall and the member; and, a portion **44,** of the lower end of each member extends forwardly of the front wall, when the member is closed, for manually moving the member. Extending downwardly from each of the members is a ridge, **45,** terminated by an apex, **46,** from which condensate which forms on the closure tends to drip, rather than flow toward the front wall. Preferably, a second ridge, **47,** having a second apex, **48,** is also provided, next adjacent to the sealing surfaces of the front wall and member, to further promote the flow of condensate to the well; and, the forwardly facing surface, **49,** of ridge **47,** is formed to wipe the inner upper edge of the front wall, **36,** when the closure member, **41,** is pivoted upwardly to gain access to the rollers. It should be noted that a closure member of either L-shaped or Z-shaped cross-section, the latter being shown in the drawings, has a lower leg which normally lies in a horizontal plane extending over the top of the platform and well. These cross-sectional configurations are preferable because they provide horizontally extending surfaces adjacent to the front wall, where condensate is most likely to form, surfaces from which the condensate tends to fall due to its own weight.

As shown in FIGS. **4** and **5,** when the closure member is in its closed position, the roller next adjacent to the front wall of the apparatus is located toward the rear of the platform; whereas when it is in its opened position, the roller next adjacent to the front wall is in contact with one or more of the stops, **36.** The closure member thus holds the rollers against movement to the platform when the member is closed, and is movable for opening the access opening to release a roller for movement to the platform. As shown in FIG. **5,** approximately one-fourth of the circumference of the roller which is located for removal protrudes forwardly of the vertically extending portions, and upwardly of the horizontally extending portions of the closure members which remain closed. Accordingly, a roller may be easily grasped for removal from one of the channels, although the closure members of the other channels remain closed.

As shown in FIG. **2** and **4,** condensate which drains into the well flows downwardly through a pair of conduits. **50,** to the vapor generator, **14,** a major part of which lies in a horizontal plane beneath level of the bottom of the well. The vapor generator is removably connected to the underside of the floor by means of one or more fasteners such as bolts, **52,** which are threadably engaged with a like member of rigid, internally threaded, posts, **53,** that extend downwardly from the underside of the floor

The vapor generator generally includes an elongated hollow casing, **55**, which acts as a refillable container for carrying a liquid such as water; an elongated heating element, **56**, physically connected to the casing; and associated electrical circuitry for connecting the heating element to a source of supply of electrical energy.

The vapor generator has a vapor outlet, **57**, which extends upwardly from beneath the level of the bottom of the well to the inlet opening, **24**. Gasket, **58**, is interposed between the inlet, **24**, and outlet, **57**, to seal the surfaces between them. The conduit, **50**, connect the bottom of the well to the liquid carrying portion of the vapor generator so that liquid from the well is returned to the vapor generator as it collects in the well. Accordingly, condensate from within the compartment naturally flows to the well and thence to the vapor generator via the conduits under the influence of gravity. The conduits, **50**, are preferably flexible tubes which each have one of their ends connected to the well via one of the tubes, **60**, that extend from the bottom of the well; and the other of their ends connected to the vapor generator via one of the tubes, **62**, that extend from the liquid carrying portion **55**, of the vapor generator.

The heating element, **56**, is preferably a calrod element which is removably connected to the casing of the vapor generator by means well known in the art for replacement and maintenance purposes. As shown in FIG. **8**, the heating element is electrically connected in series with a switch, **65**, and in series with a fuse, **66**. The series combination of the heating element, switch and fuse, is connectable by means well known in the art to a source of supply of electrical energy. Switch **65** is preferably a heat sensitive switch, such as the resetable thermostat shown in FIGS. **2** and **7** at **65**; and fuse **66** is preferably a heat sensitive fuse, such as the replaceable fuse shown in FIG. **2** at **66**. Fuse **66** is chosen to open the electrical circuit before the compartment melts but after the thermostatic switch normally opens the circuit in response to the vapor generator being overheated. With this arrangement the thermostatic switch may fail without endangering the user. As shown in FIGS. **2** and **6**, the thermostatic switch is connected to the vapor generator by means well known in the art, and the wires, **67**, may be terminated by a plug (not shown) to connect the aforesaid series combination of parts to the source of supply of electrical energy. Preferably, these wires are first physically connected to the floor of the apparatus for strain relief purposes via the terminal block and strap means respectively numbered **68** and **69** in the drawings, and then connected to the plug. A ground lead, **70**, having one end connected to the vapor generator via a lug, **72**, and the other end connected to the plug via the block and strap means, **68** and **69**, may also be provided as a safety precaution.

the apparatus is of course energized when it is connected to the source of supply of electrical energy. Preferably, the cover of the apparatus is provided with a decorative cup-like receptacle, **75**, within which a material, **76**, which is characterized by its ability to change colors in response to being heated to a predetermined temperature, is deposited. For example, paint and dye prodcuts are available that have the characteristic of changing from one color to another on being heated to a temperature at which the curlers within the compartment are ready for use.

What is claimed is:

1. A portable appliance comprising:

a. a compartment for storing a plurality of hair rollers, the compartment including a floor having a vapor inlet opening, the compartment including a cover above the floor and means connecting the cover and floor, the compartment having an access opening through which the rollers may be successively dispensed;

b. an electrically energizable vapor generator cooperatively associated with the compartment for supplying hot vapor to the compartment via the inlet opening to heat and moisten the rollers;

c. the floor having a portion extending beyond the cover to provide a platform from which a first roller may be removed, the floor having a well beneath the level of the inlet opening for collecting condensate;

d. the floor oriented to cause a second roller to move through the access opening and onto the platform under the influence of gravity, in response to the first roller being removed from the platform; and

e. closure means including means movably connected to the compartment for normally closing the access opening and holding rollers against movement to the platform, the movable means being movable for opening the access opening to release a roller for movement to the platform.

2. The appliance according to claim **1**, wherein the floor is inclined at an angle with respect to the horizontal, the vapor generator has a vapor outlet extending upwardly from beneath the level of the bottom of the well to the inlet opening, and conduit means connecting the well and vapor generator in fluid flow communication with one another, whereby condensate from within the compartment normally flows to the well and thence to the vapor generator via the conduit means.

3. The appliance according to claim **2**, wherein the vapor generator includes a refillable container, a heating element physically connected to the container, a heat fuse electrically connected in series combination with the heating element, and means for electrically connecting the series combination of the heating element and heat fuse to a source of supply of electricity for energizing the heating element and thus the vapor generator.

4. The appliance according to claim **1**, wherein the closure means includes means for pivotally connecting the movable means to the compartment, and the movable means includes an elongated member extending across the access opening and over the platform, and means for manually moving the member.

5. The appliance according to claim **3**, wherein the elongated member is L-shaped in transverse cross-section, and the connecting means connects one leg of the member to the compartment.

6. The appliance according to claim **5**, wherein the member includes a ridge portion normally extending downwardly therefrom to cause condensate which collects on the member to flow to the well.

7. The appliance according to claim **4**, wherein the elongated member is Z-shaped in transverse cross-section, and the connecting means connects one of the two free legs of the member to the compartment.

8. The appliance according to claim **1**, wherein the closure means includes means causing condensate thereon to flow to the well.

9. The appliance according to claim **8**, wherein the means causing condensate to flow to the well includes a ridge portion of the closure means.

10. The appliance according to claim **9**, wherein the ridge portion has an apex normally pointing downwardly.

* * * * *