United States Patent [19]

Chen

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[54] **HAIR ROLLER MEANS**

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[73] Assignee: **Sperry Rand Corporation,** New York, N.Y.

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[52] **U.S. Cl.** ..... **132/33 R**

[51] **Int. Cl.** **A45d 2/12**

[58] **Field of Search** ..... 132/33 R, 39, 40, 132/42, 41, 43; 219/222; D28/3

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[57] **ABSTRACT**

An improvement in heatable and moistenable hair rollers having end edges and a smooth outer surface. The roller provided has an outer surface provided with means, such as a plurality of protrusions, for increasing the outer surface area, and thus the moisture retaining capacity of the roller. In addition, moisture guiding means are provided, such as a groove located adjacent each of the end edges, for preventing excess moisture on the rollers from overflowing the end edges and scalding the user's fingers. The invention may also include the provision of tapered end edges, to form rims for reducing the rate of dissipation of heat from the end edges of the roller.

5 Claims, 11 Drawing Figures

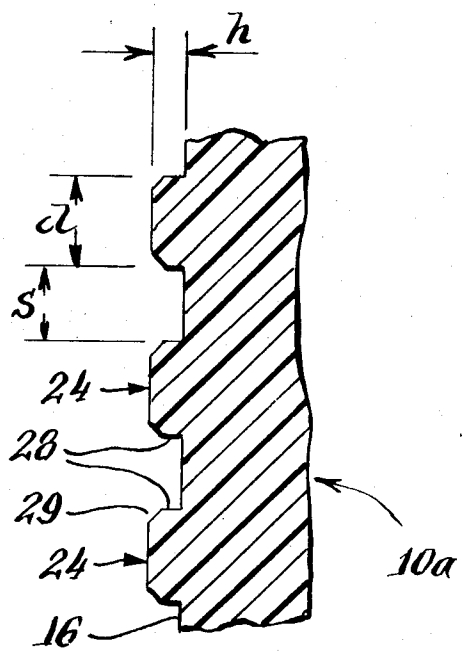


Fig. 1.

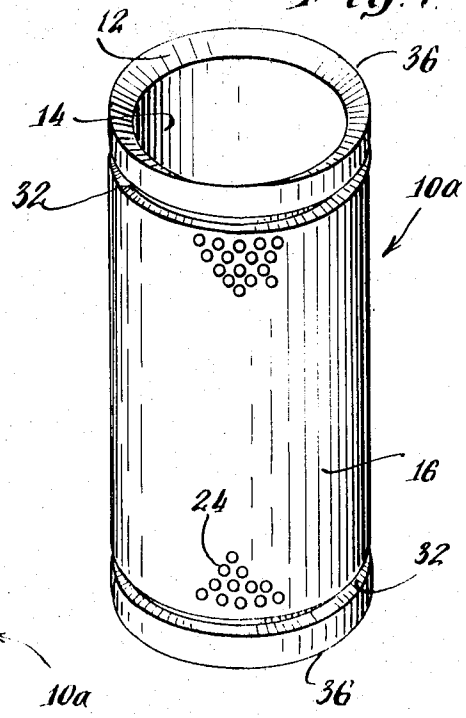


Fig. 2.

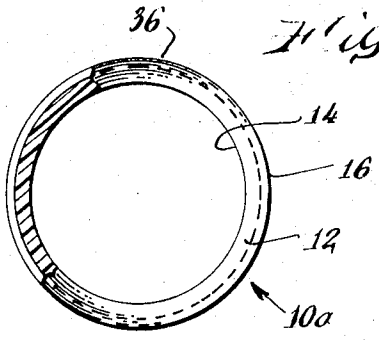
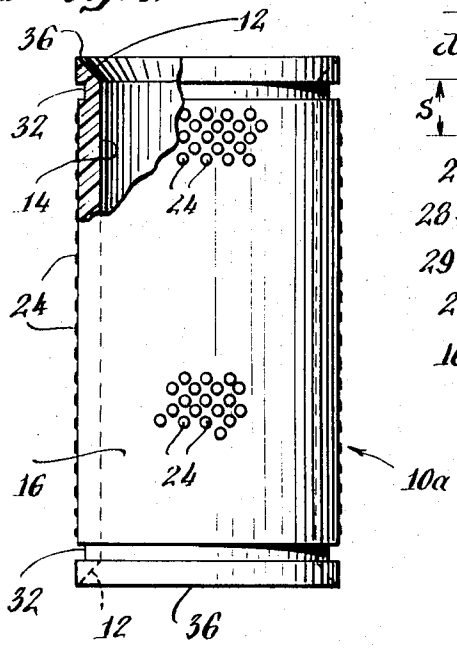


Fig. 3.



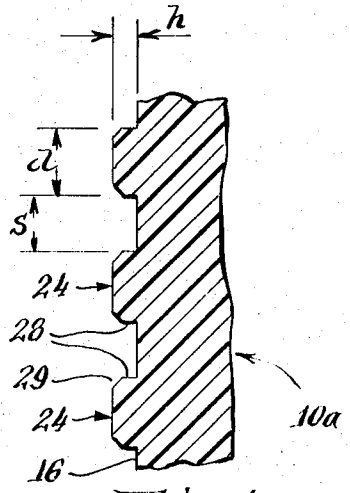


Fig. 4.

Fig. 5.

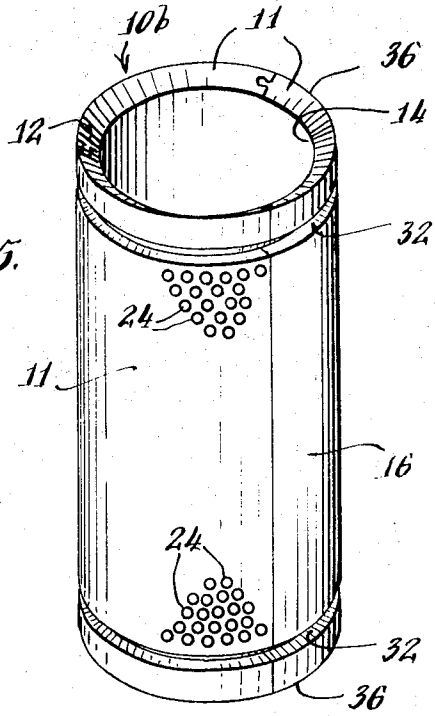
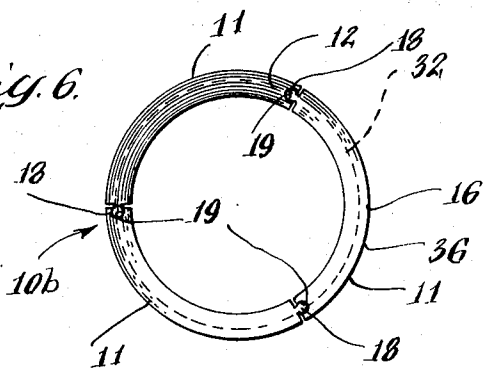


Fig. 6.



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Fig. 8.

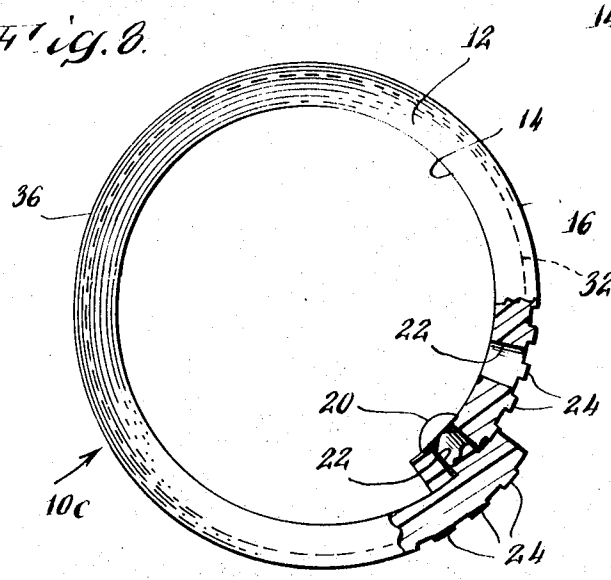


Fig. 7.

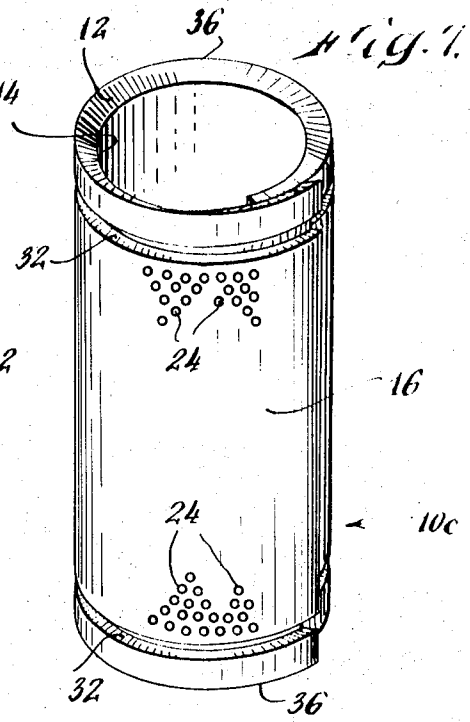


Fig. 9.

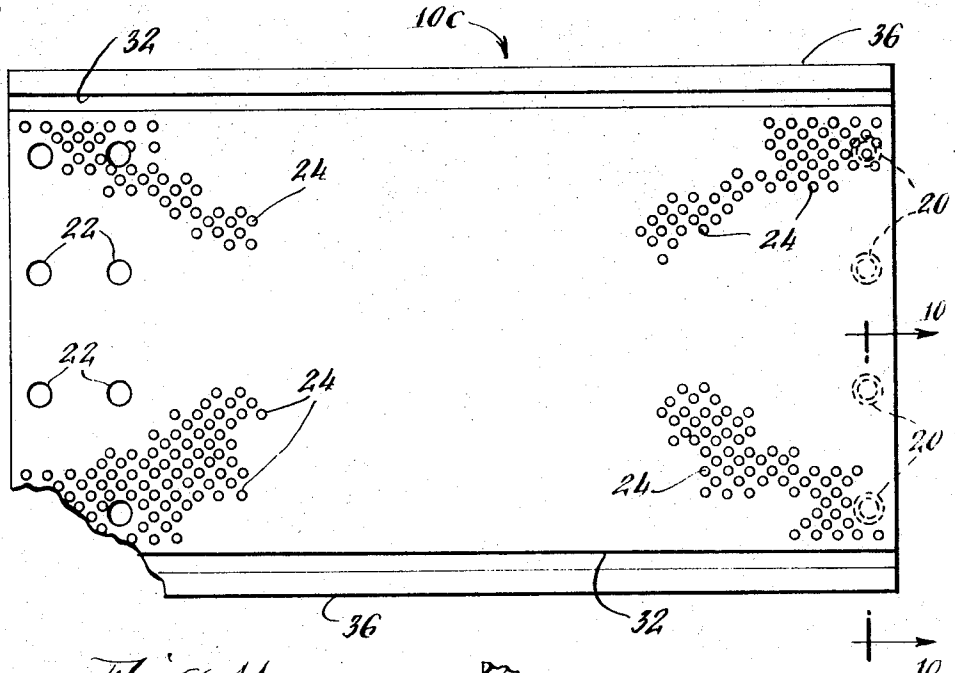


Fig. 11

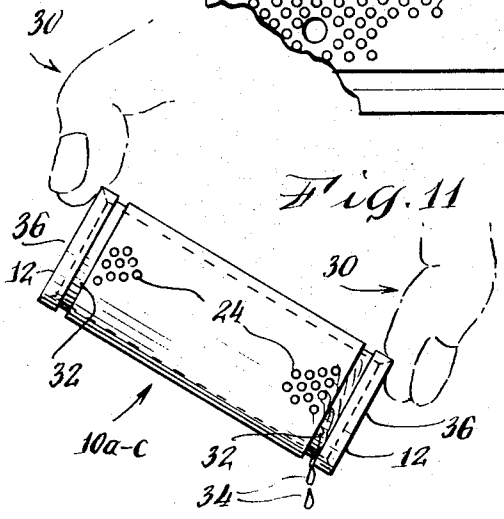
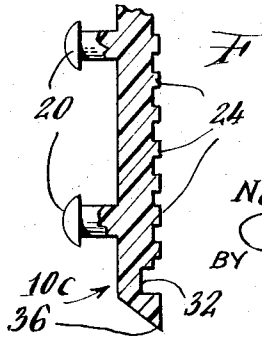


Fig. 10



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HAIR ROLLER MEANS

BACKGROUND AND SUMMARY OF THE INVENTION

Consumers have recently been provided with portable electrical appliances of the type which are used for heating and moistening hair rollers. Such appliances generally include a vapor generator adapted to be energized by a source of supply of electricity, and a compartment within which the hair rollers may be removably stored. To operate the appliance the hair rollers are stored in the compartment, a few ounces of liquid, usually water, are poured into the generator, and the generator is energized to vaporize the liquid; whereupon the vapor flows into the compartment to heat and moisten the hair rollers.

This invention is concerned with hair rollers which are adapted to be moistened; and more particularly with an improvement in hair roller means having a smooth outer surface, for adapting the hair roller means for both heating and moistening in an appliance of the aforesaid type.

Numerous prior art patentees have provided hair rollers having angularly-shaped protrusions which extend outwardly of the otherwise smooth cylindrically shaped bodies of the rollers, to provide the rollers with hair gripping features. For example, U. S. Pat. No. 2,750,948, to Lutz, discuses the construction of a hair roller having a knurled outer surface which increases the frictional contact of the roller with a lock of hair; U. S. Pat. No. 2,960,989, to Magee, discuses the provision of randomly spaced irregularly-shaped hard particles bonded to the outer surface of a roller to hold moistened hair; and U. S. Pat. No. 3,477,449, to Reiner, discuses the provisions of a hair roller with a roughened and outer surface to agument the mechanical gripping characteristics of the roller and increase the frictional force developed between hair and the outer surface of a roller.

Hair stretches as it is moistened and shrinks as it is dried. Accordingly, when a lock of hair is moistened and wound on a heated roller having a hair gripping surface, it is wound thereon in its stretched state. As the hair dries and shrinks, the angular edges of the surface of the roller tend to dig into the individual strands of hair with the result that they may be abraded, broken, cut, or otherwise damaged. On the other hand, if a roller is both heated and moistened, and a lock of hair is then wound on the roller, the hair stretches upon being moistened and may be displaced upon the surface of the roller; with the result that when the individual strands of hair shrink while drying, the roughened surface of the roller may still damage the hair.

In addition it has been found that when state-of-the-art hair rollers are moistened as well as being heated, users must be very careful about how they handle the rollers when removing them from the heating and moistening appliance and carrying them to their hair, to avoid having their fingers scalded by hot condensate flowing from the outer surface of the rollers.

Users normally and naturally grasp the tubularly shaped rollers by gripping a small portion, or segment, of each of the opposite ends of the rollers between their fingers. As a roller is lifted and carried to the user's hair, it is tilted, with the result that excess moisture on the outer surface of the roller flows toward the lowered end of the roller. Most of the moisture drips from the

underside of the roller, but some of the moisture inevitably flows onto the finger or fingers which grip the lowered end of the roller, with the result that the finger(s) may be scalded.

Accordingly, it is an object of this invention to provide an improvement in hair roller means having a smooth outer surface for adapting the hair roller for use with a heating and moistening appliance. Another object is to provide hair roller means including means for increasing the outer surface area and thus the moistenable area of the roller. Still another object is to provide means for preventing the excess moisture retained on a heated and moistened roller from flowing onto the user's fingers. Yet another object is to provide a hair roller having a plurality of flexible resilient protrusions extending from the otherwise smooth outer surface thereof for gripping the hair without damage thereto. And, another object is to provide a hair roller including means for retaining moisture thereon and for gripping the hair without damage thereto, and means for guiding the hot moisture away from the user's fingers while the roller is being removed from a heating and moistening appliance and carried to the user's hair.

The invention is an improvement in heatable and moistenable hair roller means having a smooth outer surface and opposed end edges, the improvement comprising: means on the outer surface of the hair roller means for increasing the outer surface area thereof to retain more moisture thereon, and moisture guiding means in communication with the outer surface for preventing excess moisture thereon from overflowing at least one of the end edges. The surface area increasing means of the invention may include a plurality of flexible resilient protrusions, whereas the guiding means may include spaced grooves, each of which is located parallel and adjacent to one of the end edges.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a hair roller;

FIG. **2** is a top plan view of the hair roller of FIG. **1**;

FIG. **3** is a side elevation of the hair roller of FIG. **1**;

FIG. **4** is an enlarged partial vertical section of the hair roller of FIG. **1**;

FIG. **5** is a perspective view of a segmentally constructed hair roller;

FIG. **6** is a top plan view of the hair roller of FIG. **5**;

FIG. **7** is a perspective view of an adjustably constructed hair roller;

FIG. **8** is an enlarged top plan view of the hair roller of FIG. **7**;

FIG. **9** is a developed side elevation of the hair roller of FIG. **7**;

FIG. **10** is an enlarged partial vertical section of the hair roller of FIG. **7**; and

FIG. **11** is a view of a tilted hair roller.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings, wherein like reference numerals designate like or corresponding parts throughout the several views, typical hair roller means **10***a*, **10***b* or **10***c* of the type here being considered, may be of solid tubular construction as shown in FIGS. **1–4** (**10***a*), of segmental tubular construction as shown in FIGS. **5** and **6** (**10***b*), or of adjustable tubular construction as shown in FIGS. **7-10** (**10***c*).

The hair rollers of the various figures differ from one another in that roller **10***a* of FIGS. **1–4** is constructed from a single cylindrically shaped piece of material, roller **10***b* of FIGS. **5** and **6** is constructed from a plurality of arcuately shaped segments **11**, and roller **10***c* of FIGS. **7–10** is constructed from a single rectangularly shaped piece of material. Each of the hair rollers **10***a–c* are hair roller means **10***a–c* having opposed end edges **12**, an inner surface **14** and an outer surface **16.**

As shown in FIGS. **5** and **6** the roller segments **11**, are each provided with a longitudinally extending tongue **18** and groove **19**, for longitudinally slidably engaging the segments in interlocking relationship with one another to form the roller means **10***b* of FIGS. **5.**

As shown in FIGS. **7–10**, the rectangularly shaped piece of material for constructing roller **10**c is provided with a plurality of latches **20**, at one of its sides, for engagement with a like number of sockets **22**, in one of a plurality of rows of sockets **22**, at the other of its sides, for fastening the sides together to form the roller means **10** of FIGS. **7–10***c*.

To increase the otherwise smooth outer surface area of any of the roller means **10***a–c*, the roller means are provided with a plurality of closely spaced protrusions **24** extend radially outwardly of the outer surfaces of the respective rollers **10***a–c*. Each of the protrusions **24** has a circumferentially extending outer surface **28** and may also have a chamfer surface **29.**

As shown in FIG. **4**, assuming circularly shaped protrusions **24**, measuring about sixteen thousandths of an inch in height, *h*, and fifty thousandths of an inch in diameter, *d*, and, assuming a spacing, *s*, between adjacent protrusions **24** of fifty thousandths of an inch; 100 protrusions per square inch of outer surface area will be provided. Since each of the protrusion increases the outer surface area of the roller means **10***a–c* by an amount equal to the area of the circumferentially extending surface **28** thereof, the outer surface area of the roller means **10***a–c* is increased approximately 25 percent.

In a preferred embodiment the protrusions **24** are circularly shaped, measure twelve thousandths of an inch in height and fifty thousandths of an inch in diameter, and are spaced apart from one another fifteen thousandths of an inch, to provide approximately two hundred and thirty-seven protrusions per square inch of outer surface area; thereby increasing the moistenable outer surface area of the roller means approximately 45 percent. Heights, *h*, of from eight to twenty thousandths of an inch, in combination with various diameters, *d*, in the range of from thirty to eighty thousandths of an inch and various spacings, *s*, of from ten to seventy thousandths of an inch, where *h*, *d* and *s* were chosen to provide outer surface area increases of at least approximately 25 percent, were found to be acceptable.

To avoid having the protrusions damage the hair the rollers are preferably constructed from a flexible resilient plastic material, such as a low density polyethylene plastic material, to impart to the aforesaid protrusions **24** the desired degree of flexibility and resiliency. The protrusions **24** have been found to deform sufficiently in response to hair pressure thereon to avoid damaging the hair, and regain their shape when the rollers are removed from the hair, when the plastic has a flexure modulus of from 15,000 to 50,000. Rather than increasing the mechanical gripping characteristics of the rollers by providing sharp edges to grip the hair, the protrusions augment the frictional force developed between the outer surface area of the roller and the hair wound thereon, by increasing the surface area of the roller which is brought into contact with the hair.

In practice, it has been found that when rollers are provided with the protrusions **24** hereinbefore described, the amount of moisture retained on the outer surface of the roller may be so great that the user's fingers are scalded by excess hot condensate flowing from the outer surface of the roller, when the roller is removed from a heating and moistening appliance and carried to the user's hair.

When removed from the appliance a portion of each of end edges **12** of the roller means **10***a–c* is grasped between the user's fingers **30**, as shown in FIG. **11**, and the roller means **10***a–c* is tilted. To direct the hot condensate away from the user's fingers **30**, grooves **32** are formed in the outer surfaces of the roller means **10***a–c*. With this arrangement, when hot condensate **34** flows toward the user's fingers, it flows into the groove **32** nearest the lowered end of the roller means, and is channeled by that groove **32** toward the underside of the roller means. As a result, the moisture which would otherwise flow onto the user's fingers **30** is guided away therefrom and cause to drip from the underside of the roller means.

In addition, to reduce the quantity of heat dissipated from the end edges of the roller means **10***a–c*, as it is carried to the user's hair, and thus protect the user's fingers **30** from being burned, the end edges **12** may be tapered to terminate each of the opposed end edges **12** with a rim **36.** The consequent reduction in the cross-sectional areas of the respective end edges that are grasped by the user, reduces the rate of heat dissipation therefrom to the fingers of the user.

Inasmuch as certain changes may be made in the above described invention without departing from the spirit and scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted in an illustrative rather than limiting sense. And, it is intended that the following claims should be interpreted to cover all the generic and specific features of the invention herein described, and to cover all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. An improvement in heatable and moistenable hair roller means having a smooth outer surface and opposed end edges, the improvement comprising:

a. means on the outer surface of the hair roller means for increasing the outer surface area thereof to retain more moisture thereon, the surface area increasing means including a plurality of uniformly dimensioned flexible resilient protrusions,

b. moisture guiding means in communication with the outer surface for preventing excess moisture thereon from overflowing the end edges, the guiding means including spaced circumferential grooves, one of said grooves located adjacent and parallel to each of said end edges, and

c. each of said end edges being reduced in area to form a rim.

2. The improvement according to claim **1**, wherein the opposed end edges are respectively tapered relative to the surface area to provide said rims.

3. The improvement according to claim 1 wherein each of said protrusions are circularly shaped protrusions, the height of each of said protrusions is not more than twenty thousandths of an inch and not less than eight thousandths of an inch, the diameter of each of said protrusions is not more than eighty thousandths of an inch, and a sufficient number of said protrusions are provided per square inch of the smooth outer surface area to increase said area at least approximately 25 percent.

4. An improvement in heatable and moistenable hair roller means having a smooth outer surface and opposed end edges, the improvement comprising: means on the outer surface of the hair roller means for increasing the outer surface area thereof to retain more

moisture thereon, the surface area increasing means including a plurality of flexible resilient circularly shaped protrusions measuring at least eight thousandths of an inch in height and not more than eighty thousandths of an inch in diameter, and a sufficient number of said protrusions are provided per square inch of the smooth outer surface area to increase said area at least approximately 25 percent.

5. The improvement according to claim 4 wherein each of said protrusions measure from eight thousandths of an inch in height to twenty thousandths of an inch in height and from thirty thousandths of an inch in diameter to eighty thousandths of an inch in diameter.

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