Jan. 4, 1955 J. STEIN 2,698,894

ELECTRIC HAND AND HAIR DRIER

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FIG. 1

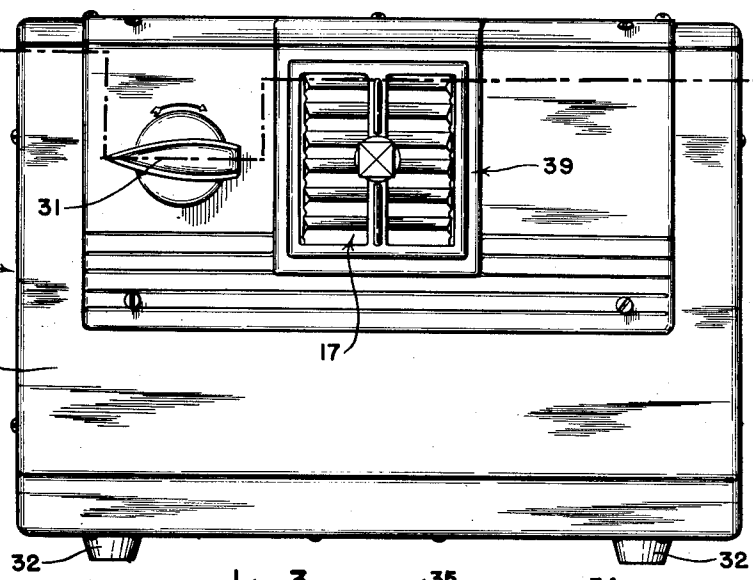
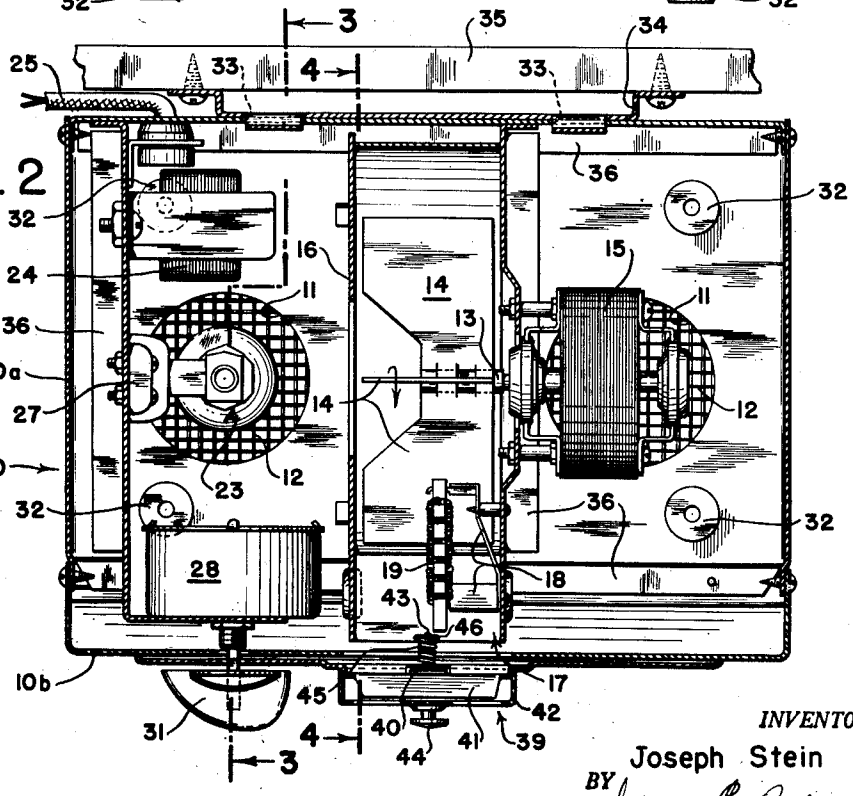


FIG. 2



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FIG. 3

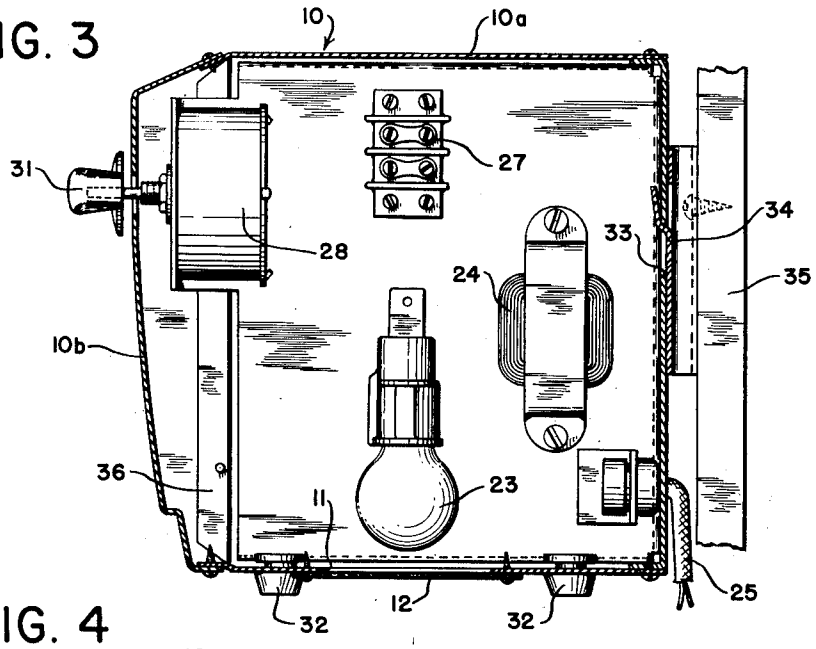
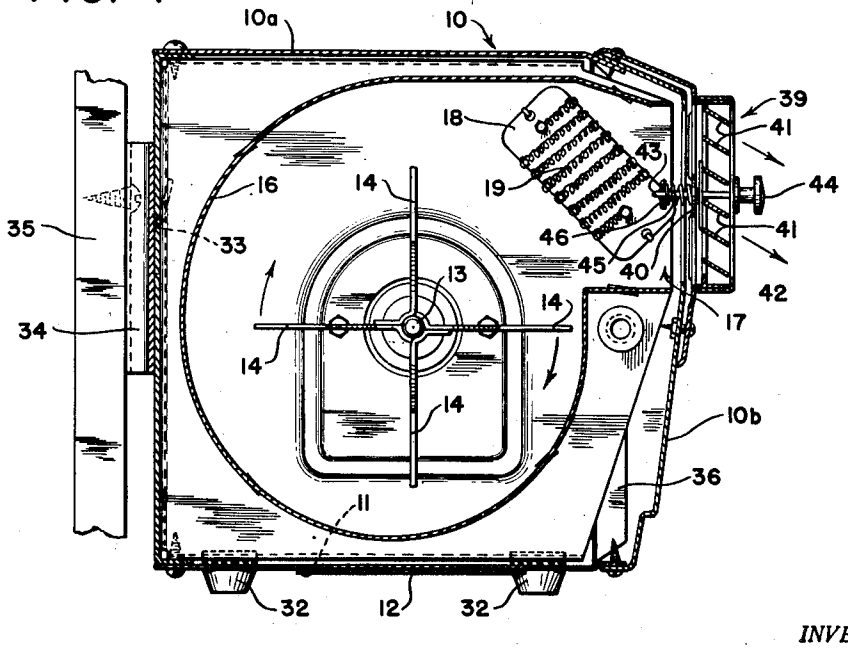


FIG. 4



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FIG. 5

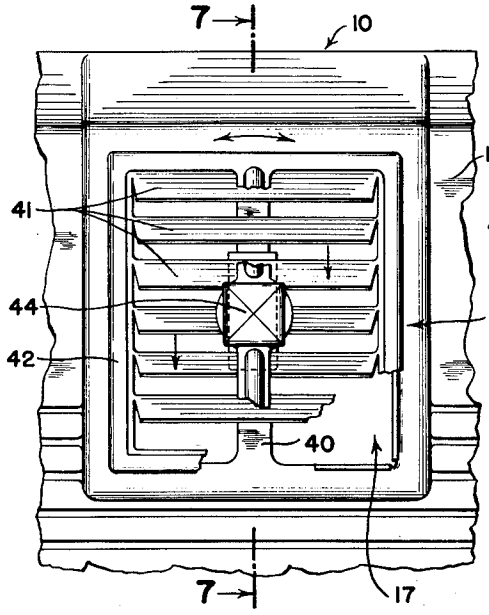


FIG. 6

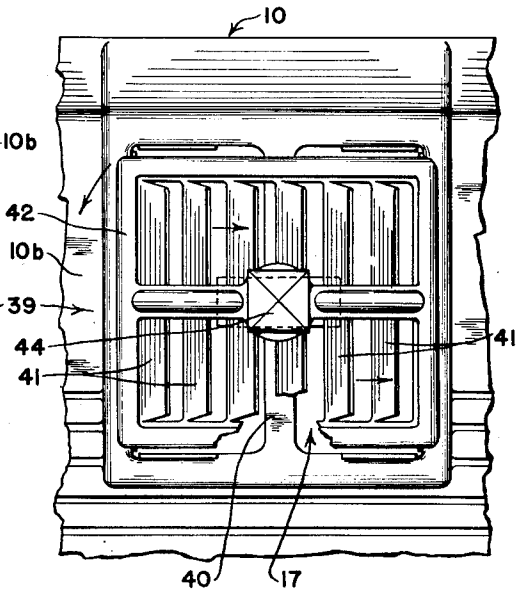


FIG. 8

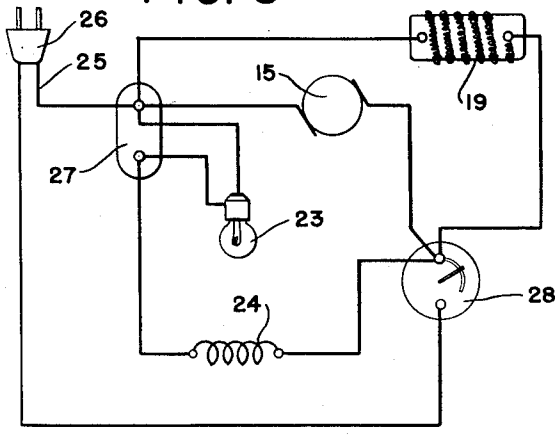
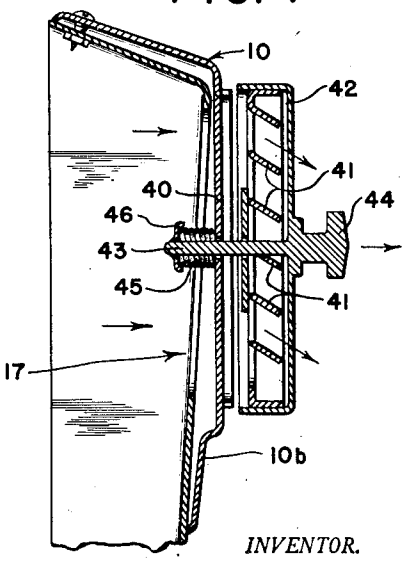


FIG. 7



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ELECTRIC HAND AND HAIR DRIER

Joseph Stein, New Haven, Conn.

Application November 6, 1953, Serial No. 390,488

2 Claims. (Cl. 219—39)

This invention relates to an apparatus for drying the hands and hair, and more particularly to an improved apparatus of the electrically motivated air stream type. This type of drier is not new, having found limited use in the past, particularly in washrooms maintained by commercial establishments as a service to the public, and by industrial plants. Where adopted, these driers have been utilized in recognition of basic problems in sanitation caused through use of conventional towels. Where paper towels are used, it is difficult without constant janitorial supervision to keep premises neat and tidy. Too often, towels are discarded on the floor, after use, regardless of the convenience of receptacles for their disposal. Such littering balances off the goodwill factor attendant upon availability to each person of a clean, new, individual towel. In the case of the cloth towel for common use by a number of people, there is again present the factor of unsightliness, for such towels certainly become grimy after only brief use. In addition, they present a problem in sanitation and control of contagious diseases which is obvious. In either case, that of paper or cloth towels, there is required the presence of some employee to renew the supply of paper towels, to place the cloth towel, to pick up after the users. Furthermore, there is always the necessity for providing storage space for the towels.

These various problems can be met admirably by an electric hand drier, yet such devices do not find universal use in facilities where they might be expected to be found. It is suggested that the reason for this is that existing driers are too expensive for broad appeal, and because of their structural complexity, are too prone to breakdown. In recognition of these factors, it is the primary object of this invention to provide an electric drier, simple in structure and hence dependable, and a device which is comparatively inexpensive.

The maintenance of washroom facilities, particularly where these are used by the general public results in another difficulty which should be taken into account. This has to do with protection of the health of those who utilize the facilities. Admittedly, the spread of contagious disease is positively encouraged by the use of a towel in common by many. Provision of a supply of disposable paper towels limits this danger by providing an individual sanitary and disposable drying means for each person. Yet this remedy works only partially, in this sense; it acts to prevent the spread of disease carriers, but it does not act to destroy them. It is not from the use of towels alone that the transfer of disease carriers may result. There are many surfaces in the washroom which the user touches which provide localities where germs may breed. It will thus be seen that destruction of germs in the process of drying the hands is highly desirable from a health standpoint.

It is, accordingly, a further very important object of this invention to provide means in an electric hand drier whereby destruction of such germs may be accomplished. It is well known that ozone is a powerful disinfectant. Intermingled in an air stream, it would have the salutary effect of destroying disease carrying organisms on hands or other surfaces exposed to the air stream. At the same time, dilution of pure ozone in an air stream will eliminate any possible deleterious effects due to the oxidizing and corrosive nature of pure ozone. Hence, the inclusion of a source of ozone for releasing that gas into the air stream will serve to carry out this object related to the protection of health.

As mentioned earlier, it is an object of this invention to provide a device in the nature of an electric drier which is comparatively inexpensive. It is obvious that a drier having this characteristic would be eminently suited for use in the home. The problems of laundering towels, and protection of health are present there as well as in commercial establishments. For home use, it is obvious that it would be desirable to have a drier which is easily portable, and this is another object of this invention. Furthermore, in the home particularly it would be especially advantageous to have a drier suitable for use as a hair drier. Making the device portable in itself goes a long way in such adaptation. Portability would insure that the drier could be mounted in a convenient place, as on a wall bracket, at a convenient height for drying the hair. But in addition the provision of means for rendering the direction of the emanating air stream variable is highly desirable. It is an object of this invention to accomplish this by a novel louvre means which is inexpensive to manufacture and simple to operate.

In devices of this character operating from an electric current, in either home or commercial use, the use of a minimum of current is highly desirable. One means of conserving current is to provide an automatic means for the turning off of the current after an interval of time. An object of this invention, therefore, is to conserve current by integrating an automatic timer switch into the electrical circuit whereby operation of the drier is interrupted after an interval of time.

How these and many other objects are to be implemented will become clear through a consideration of the foregoing drawings which show one embodiment of the invention, wherein:

Fig. 1 is a front view of the housing of the apparatus;

Fig. 2 is a section taken at **2—2** of Fig. 1;

Figs. 3 and 4 are sections taken at **3—3** and **4—4**, respectively, of Fig. 2;

Fig. 5 is an enlarged detail drawing of the louvre portion of the apparatus for directional control of the emerging air stream;

Fig. 6 is a view similar to that of Fig. 5, but with the louvres displaced for altering the direction of air flow;

Fig. 7 is a section taken at **7—7** of Fig. 5, and

Fig. 8 is a diagram showing the electrical circuit for operation of the apparatus.

The apparatus is carried in a housing **10**, having a body portion **10*a*** and front portion **10*b***. Air is admitted to the apparatus through inlet openings **11** in the housing, the inlet opening being covered by a screen **12** to prevent the possibility of entry into, and consequent harm to the apparatus by any air borne foreign bodies. Air so admitted is converted into a forced air stream by a fan system. A fan sleeve **13**, having fan blades **14** mounted thereon, is driven by motor **15**. Fan shroud **16** serves to direct the air stream resulting from operation of the fan to outlet opening **17**. Fixed to the wall of shroud **16** is a bracket **18** on which is mounted electrical resistance heater **19**. By this arrangement, the air stream impelled by the fan sweeps over heater **19**, so that upon emergence from outlet opening **17** in front portion **10*b*** of the housing the air stream is warm.

Interposed between inlet opening **11** and the fan system is a source of ozone, in the embodiment shown, an ozone lamp **23**. The ozone source being thus positioned, air reaching the fan system contains ozone. Ballast **24** is mounted within the apparatus, as required for operation of ozone lamp **23**.

Electricity is furnished to the apparatus from any standard source (not shown), through cord **25** and plug **26**. One side of the line is taken directly into terminal block **27**, the other side being tied into switch **28**. The electrically actuated components of the apparatus, ozone lamp **23**, motor **15**, and resistance heater **19**, are connected in parallel to the terminal block **27**, each component being also connected to switch **28**. Lamp ballast **24** is connected in the line between ozone lamp **23** and switch **28**. Switch **28** is a mechanical timer switch of conventional construction. Upon rotating switch knob **31**, the circuit causing actuation of the ozone lamp, motor and heater is closed. After an interval of time, the switch **28** will

turn itself off, opening the circuit and causing the enumerated components to cease operation.

Housing **10** carries the entire assembly. Because the apparatus is portable, feet **32** are provided for use when it is desired to simply stand the apparatus on any appropriate surface. Holes **33** are provided in the rear of housing **10** so that the apparatus may be suspended from a wall bracket **34** attached to wall **35** where this is desired.

Support members **36** within the housing are provided for mounting the various components of the assembly.

A means is provided for variably directing the stream of air expelled by the apparatus. A decorative escutcheon plate **39** is attached to front portion **10***b* of the housing, the escutcheon plate having an opening matching outlet opening **17** in portion **10***b*. A supporting bracket **40** is attached to the front portion **10***b* of the housing in such manner that it crosses outlet opening **17**. Louvres **41** are carried within louvre frame **42**, the frame being sufficient in extent to cover outlet opening **17**. A pin **43** passes through louvres **41** and is rigidly secured therein. Pin **43** freely passes through supporting bracket **40** and is free to rotate therein. A knob **44** is rigidly affixed to one end of pin **43**. A spring **45** is fitted over a portion of pin **43**, the spring being held in position by retaining washer **46**, which is immovably attached to pin **43**, as may best be seen by Figs. 4 and 7. When louvres **41** are in a desired position, as, for example, in Figs. 4 and 7, to direct the emitted air stream downward, spring **45** is relaxed. When it is then desired to direct the emitted air stream in some other direction, perhaps upward or to one side or another, the operator grasps and pulls on knob **44** which results in a compression of spring **45** (see Fig. 7). The operator may then rotate the knob, which means a consequent rotation of pin **43** and louvres **41**. Upon releasing the knob when the louvres are in the desired position, spring **45** will resume its relaxed position and securely hold the louvres in the new position.

While I have described a specific embodiment of my invention, it is obvious that variations may be made therein without departing from the spirit of my invention. For example, a different source for ozone might be used, or the disposition of one or another of the components within the apparatus might be varied.

I claim:

1. In a drier of the class described, means for generating a stream of air, means for heating said stream of air, and means whereby a gaseous additive to said stream of air may be made comprising a source of ozone so positioned in said drier that said ozone will enter said stream of air, a casing for all of said means having therein an outlet for said stream of air, a rigid strip of material integral with said housing passing across said outlet, a spindle rotatably passing through said rigid strip, a portion of said spindle extending on both sides of said strip, a spring concentrically mounted on the portion of said spindle on one side of said rigid strip, said spring being maintained in position on said spindle by retaining means mounted on said spindle; a series of louvres mounted in a frame, said frame being mounted on the portion of said spindle on the other side of said rigid strip.

2. In a portable electrically powered drier, means for generating a stream of air, comprising a series of rotatably mounted fan blades, and a motor for rotating said fan blades, an electric resistance element lying in the path of said stream of air, for heating said stream of air, a source of ozone, so positioned in said drier that ozone from said source will enter said stream of air; all of said mentioned means being electrically activated when a single switch is closed, and a mechanical timing device for opening said switch automatically after said drier has operated for an interval of time; a housing for all of said mentioned means, having therein an outlet for said stream of air, a rigid strip of material integral with said housing spanning said outlet, a spindle rotatably mounted in said strip with a portion of said spindle extending on both sides of said rigid strip, a spring concentrically mounted on the portion of said spindle on one side of said rigid strip, said spring being maintained in position on said spindle by retaining means mounted on said spindle, a series of louvres mounted on a frame, said frame being mounted on the portion of said spindle on the other side of said rigid strip.

References Cited in the file of this patent

UNITED STATES PATENTS

1,806,674	Donohue	May 26, 1931
2,521,769	Arcularius	Sept. 12, 1950
2,629,810	Ditlow	Feb. 24, 1953
2,646,629	Clemens	July 28, 1953