Sept. 22, 1942. E. A. EBERT 2,296,814

CLOTHES SPRINKLER

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Fig. 1.

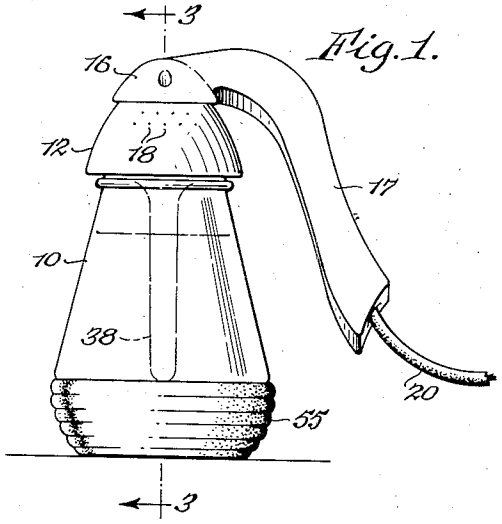


Fig. 2.

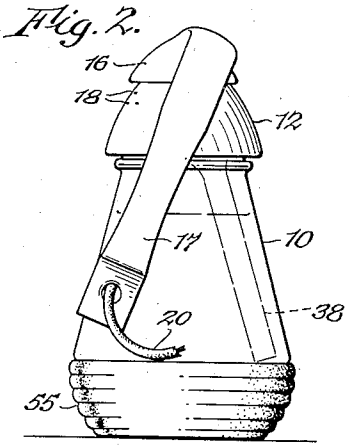


Fig. 3.

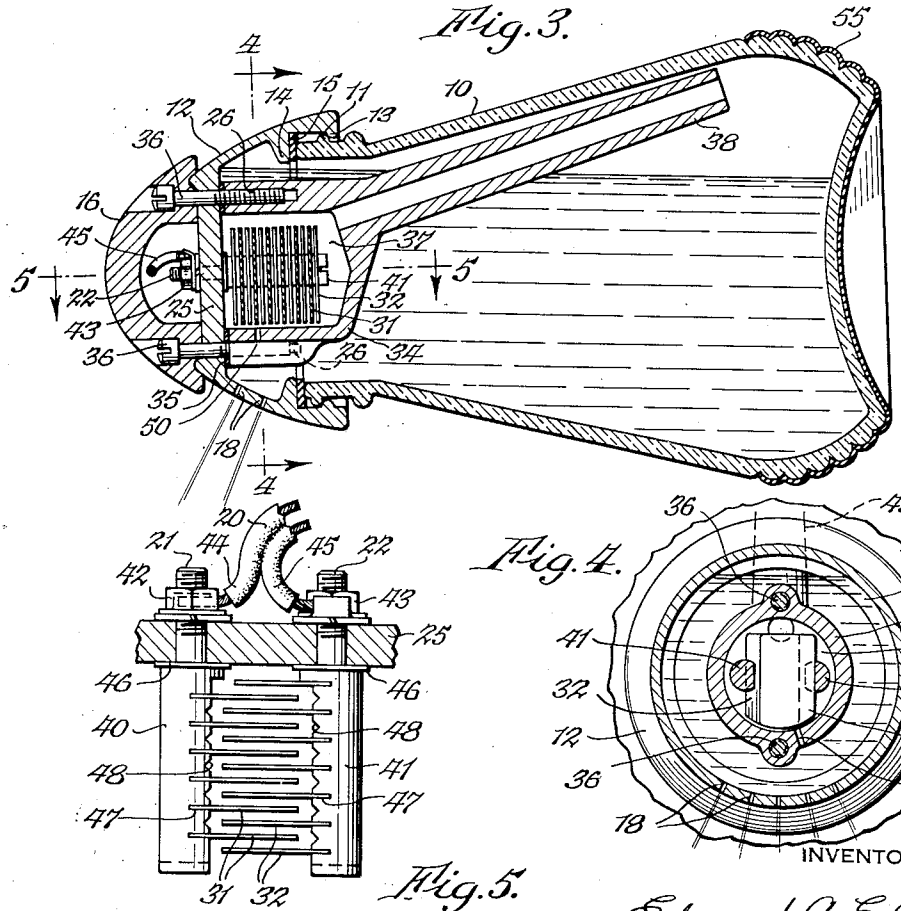


Fig. 5.

Fig. 4.

INVENTOR

Edward A. Ebert

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Fig. 6.

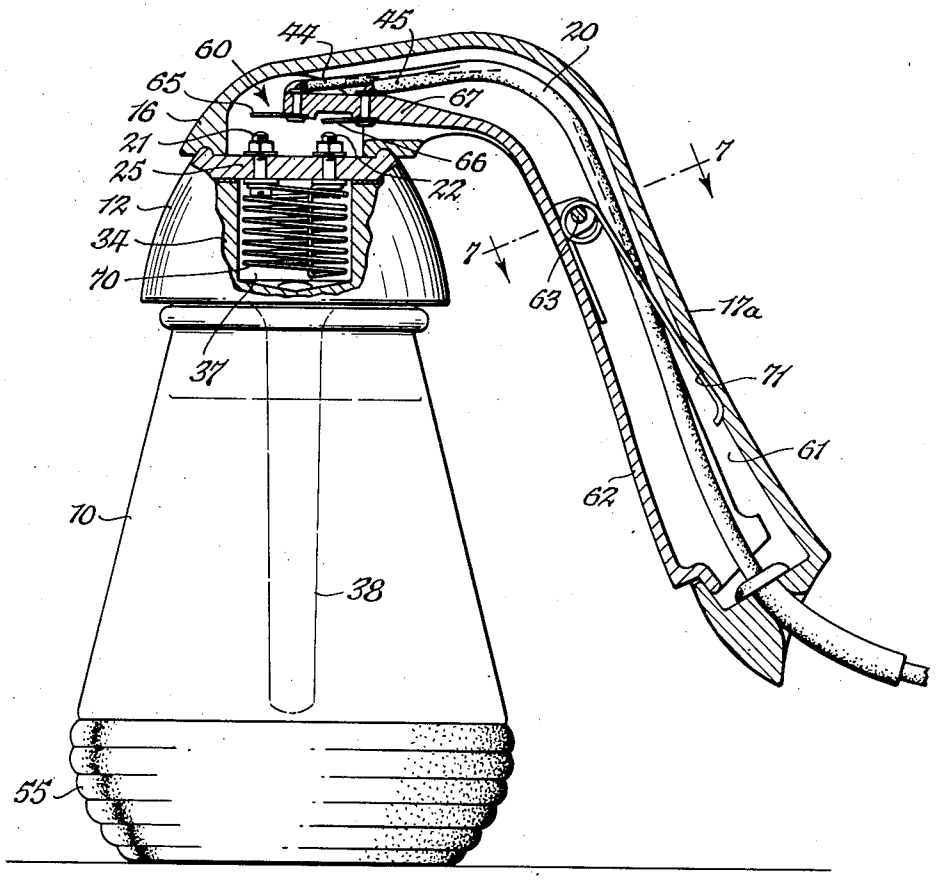


Fig. 8.

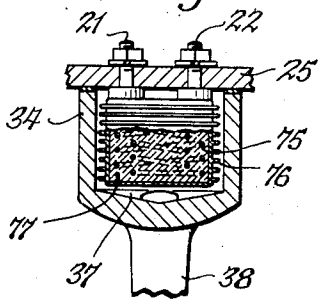
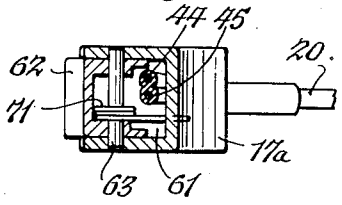


Fig. 7.



INVENTOR

Edward A. Ebert

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2,296,814

CLOTHES SPRINKLER

Edward A. Ebert, Buffalo, N. Y.

Application January 10, 1940, Serial No. 313,276

9 Claims. (Cl. 299—95)

This invention relates to an automatic sprinkler adapted more particularly, but not necessarily so limited, to the sprinkling of clothes to condition them for ironing.

The main object of the invention is to provide a sprinkler which will enable rapid and thorough sprinkling of clothes with a minimum of effort.

Another object is to provide a sprinkler which will operate on house current, either alternating or direct current, and which is automatically rendered operative when turned to a sprinkling position and inoperative when occupying a rest position.

A further object is to provide a sprinkler which is simple and light in construction and reliable in operation.

One other object is to provide a sprinkler which consumes a minimum amount of current and is always ready for immediate use.

Other objects and advantages will be apparent from the following description, drawings and claims.

In the accompanying drawings:

Fig. 1 is a front elevation of the automatic clothes sprinkler.

Fig. 2 is a side elevation thereof.

Fig. 3 is a cross sectional view of the sprinkler, tilted into an operative position, taken along line 3—3, Fig. 1.

Fig. 4 is a cross section, taken along line 4—4, Fig. 3.

Fig. 5 is an enlarged detail of the electrodes, taken along line 5—5, Fig. 3.

Fig. 6 is a side elevation of a modification with parts broken away.

Fig. 7 is a section taken along line 7—7, Fig. 6.

Fig. 8 is a modified form of heating element.

Referring now to the drawings, the sprinkler comprises a container 10 preferably molded of glass, which has threads 11 at its upper or open end. A cap or spray head 12, having threads 13 and preferably molded of insulating material, is screwed onto the threads 11 of the container 10. An inner flange 14 is provided in the cap 12 against which a gasket or seal member 15 is compressed by the mouth of the container 10.

Spray holes 18 are provided on the front side of the cap 12 and are located in such positions radially so as to give a satisfactory spray pattern on the clothes being sprinkled, the size and number of holes, of course, determining the amount of wetting.

Above the cap or spray head 12 is mounted a cover member 16 also preferably molded of insulating material and having a depending handle 17 which slants at an angle downwardly and to the left as shown in Fig. 2, and which also slants away from the container 10, as shown in Fig. 1.

This handle 17 is hollow and an electric cord 20 is passed through it to the terminals 21 and 22 under the cover 16. The live terminals 21 and 22 thus cannot be contacted by the hands of the operator.

Under the cap or sprayhead 12 is mounted an enclosure 34, preferably made of insulating material, which is provided with a gasket 35. A pair of screws 36 pass through openings provided in the cover 16 and aligned openings in a top wall 25 of the spray head 12 and are threaded into holes 26 in the enclosure 34. Thus, the three members, the cover 16 which is part of the handle 17, the spray head 12 through its top wall 25 and the enclosure 34 are rigidly clamped together.

A tubular member or pipe 38, which is carried by the enclosure 34, slants downwardly to the right, as shown in Fig. 2, when the sprinkler is in a position of rest and, when the sprinkler is held in an operative position, extends above the level of the liquid in the container 10, as shown in Fig. 3. The angle of the pipe 38 should be determined so that the outlet will be positioned as close as is practical to that portion of the wall of the container 10 which is uppermost when the container is tilted to its operative position. The inner end of the pipe 38 connects to that portion of the enclosure 34 which is uppermost when in use.

The enclosure 34 forms a chamber 37 which encloses the electrode posts 40 and 41, the post 40 having the terminal 21 and the post 41 having the terminal 22. Nuts 42 and 43 serve to establish an electrical connection between the wires 44 and 45 of the cord 20 and also mount the posts 40 and 41 on the upper wall 25 of the spray head 12. Washers 46 seal the electrode posts against the top wall 25 to prevent leakage.

Plates or electrodes 31 and 32 are held in slots 47 in the posts 40 and 41 by swedging the metal against the plates by means of a chisel-like tool which leaves the tool marks shown at 48.

A metering orifice 50 serves to communicate the chamber 37 with the fluid in the container 10 when it is tilted to an operative position.

The container 10 is preferably enveloped at its bottom with a sheath 55 of rubber or similar material, which insulates the container from the hands if it should be hot when being removed, from the cap 12, to be refilled. It also cushions the glass container 10 avoiding breakage and preventing the marring of any surface it contacts,

Operation

The container **10** is removed from the cap or sprayhead **12** and filled with water. It is then replaced and drawn up against the gasket **15** to make a tight joint.

After having connected the electric cord **20** to a current supply and spreading out the garment to be sprinkled, the operator grasps the handle **17** which faces him, as shown in Fig. 2, and tilts it to a sprinkling position, as shown in Fig. 3.

As the sprinkler is tilted the pipe **38** is brought to a horizontal position and then to the position shown in Fig. 3. Therefore, while the pipe **38** is still slanting downwardly water which filled the lower portion thereof is drained off, the pipe being at such an angle that as it approaches a horizontal position the level of the water falls below its end. This prevents water from running down the pipe and flooding the chamber **37**.

As soon as a sufficient head of water is developed by tilting the sprinkler, water is forced in a metered jet through the orifice **50** between the electrode plates **31** and **32** which turns the water into steam because of the potential across them. The steam thus created follows up the pipe **36** and creates a back pressure on the water in the container **10** and moves it forcibly out of the spray holes **18** in the spray head **12**.

By moving the sprinkler fast or slow over the object being sprinkled any desired amount of dampness can be had.

The sprinkler is then rested in an upright position and water, of course, does not flow between the electrodes because it has returned to the bottom of the container.

To take advantage of the fact that the electrodes continue to generate steam for a short time after the sprinkler is returned to its normal position they are mounted horizontally to prevent the water from draining off. Thus, after having been in action once the electrodes are heated and since steam is being generated the action is instantaneous thereafter unless too long an interval permits them to dry off.

Also, the metering hole **50** is of such a size that the electrodes **31** and **32** can never be overloaded or flooded with large quantities of water. If the electrodes were flooded it would take a while for them to heat a large quantity of water to the boiling point where steam would be generated. This would make the sprinkler sluggish in action. It will be noted that, although the steam generating unit is automatically rendered operative when the sprinkler is tilted to a spraying position, it will, nevertheless, be automatically rendered inoperative when the sprinkler becomes empty. This will indicate that the sprinkler should be refilled and also provides a safety feature.

I prefer to make the electrode posts **40** and **41** and electrode plates **31** and **32** of stainless steel or similar non-corrosive metal or material to prevent discoloration and contamination of the water in the sprinkler. Since such a small amount of water is needed for steam generation and since most of it recondenses, this being practically distilled water, the discoloration and contamination of the water would be very small if it did occur.

The electrodes **31** and **32** are of rectangular shape with one end concentric with the axis of the chamber **37**. The reason for making them of this shape is to turn into steam any water that accumulates in the bottom of the chamber **37** and also to permit steam, in the upper part of the chamber **37**, free access to the opening in the pipe **38**. This permits the steam to more or less free itself from large drops of water which tend to create a percolation in the pipe **38** and create a back pressure, preventing the flow of a steady jet of water into chamber **37** from the orifice **50**. A smoother operating sprinkler is thus obtained. It will also be noted that with this shape the electrodes can economically be stamped from continuous strips of uniform width.

Since steam is blown against the bottom of the container **10** from the pipe **38** it gets quite hot when it is almost empty. To avoid burning the hands when it is desirable to remove the container to refill it, the rubber sheath **55** is provided. As stated before, this sheath acts as an insulator and also prevents breakage of the container besides preventing the marring of surfaces the sprinkler rests upon.

It will be apparent from the foregoing that it is impossible to contact any live wires or charged metal parts since they are all enclosed by parts made of non-conducting material. Also it is necessary to unscrew the spray head from the container to refill it which means that the operator leaves that portion of the device connected to current, out of contact with the hands when the container is filled with water.

It has been found that much effort can be eliminated by setting the handle **17** at the angles shown in Figs. 1 and 2. Instead of having to twist the arm all the way to the shoulder as with a conventional pitcher handle, only a simple twist of the wrist is required with the handle set at these angles. It will also be noted that when the hand grips the handle it is approximately in line with the center of gravity of the sprinkler. All of this, of course, reduces fatigue and only a minimum of effort is required to operate the sprinkler.

The modified construction of sprinkler shown in Figs. 6 and 7 is similar to the one shown in the preceding Figs. 1–5 with the exception of a hand switch, generally indicated at **60**, in the handle **17***a*. In this construction the handle **17***a* is provided with a channel **61** which receives a switch lever **62**, which is pivoted near its upper end at **63**. Spring contact members **65** and **66** are mounted on an extension **67** of the lever **62** which extends into and under the cover member **16** and over the terminals **21** and **22**. A spring **71** normally urges the switch lever **62** away from the handle **17***a* and the spring contact members **65** and **66** away from the terminals **21** and **22**.

In operation when the handle is gripped by the operator the switch lever **62** is moved into the channel **61** of the handle **17***a* and the spring contact members **65** and **66** contact the terminals **21** and **22**, thereby providing them with current from the wires **44** and **45** of the cord **20**. When the sprinkler is brought to rest and the handle released the contacts **65** and **66** are disengaged from the terminals **21** and **22** and current is cut off.

The construction shown in Fig. 6 has the advantage that the heating element is energized when the handle **17***a* is clasped. The resistance element **70** therefore has an opportunity to become heated while the sprinkler is being tipped to its sprinkling position. The water, therefore, contacts a hot element and will be immediately vaporized.

The heating element **75** shown in Fig. 8 is of the conventional type but is sealed in a metal case **76** and insulated from it by insulating material **77**.

I claim as my invention:

1. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said device having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, an electric heating element for automatically vaporizing a portion only of said liquid, said heating element being supported in said container so that it is located above the level of said liquid in the inoperative position of said device and below the level of the liquid in the operative position, and circuit means for energizing said element when said device is tipped to said operative position, whereby to create a vapor pressure in the container to expel the liquid from said head in the form of a spray.

2. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said device having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a vaporizing chamber having an inlet for permitting a restricted flow of said liquid into said chamber and an outlet through which vapor may escape, an electric heating element for vaporizing the liquid entering said chamber, said heating element being supported in said container so that it is located above the level of said liquid in the inoperative position of said device and below the level of the liquid in the operative position, and circuit means for energizing said element when said device is tipped to said operative position, whereby to create a vapor pressure in the container to expel the liquid from said head in the form of a spray.

3. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said device having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a vaporizing chamber in said container which is located above the level of said liquid when the container occupies said position of rest, an open restricted passage through which said chamber communicates with the interior of said container and through which said liquid may enter said chamber when the device is tipped to said operative position, a heating element for vaporizing the liquid which enters said chamber, circuit means for energizing said heating element when the device is tipped to said operative position and a tube having one end communicating with said chamber and the other so located that it extends above the level of the liquid when the device is tipped to said last named position, whereby to conduct the vapor generated in said chamber without substantial condensation to a point above the liquid to create a pressure which will expel the liquid from said head in the form of a spray.

4. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a heating element for vaporizing a portion of said liquid and a circuit for furnishing power to said element, said element having spaced electrodes which are included in said circuit, which are supported out of contact with respect to said liquid in the inoperative position of the device and which are electrically connected by said liquid to automatically close said circuit when the device is tipped to said operative position, whereby to create a vapor pressure in the container to expel the liquid from said head in the form of a spray.

5. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a vaporizing chamber having a restricted passage through which a small amount of said liquid is permitted to enter the chamber when the device is tipped to said operative position, an electric heating element for vaporizing the liquid which enters said chamber, a circuit for furnishing power to said heating element, said element having spaced electrodes which are included in said circuit, which are supported out of contact with respect to said liquid in the inoperative position of the device and which are electrically connected by the liquid to automatically close said circuit when the device is tipped to said operative position and a conduit having one end communicating with said chamber and the other extending above the level of the liquid when the device is tipped to said last named position, whereby to conduct the vapor without substantial condensation to a point above the liquid to create a pressure which will expel the liquid from said head in the form of a spray.

6. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said container having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a vaporizing chamber in said container which is located above the level of said liquid when the container occupies said position of rest, an open restricted passage through which said chamber communicates with the interior of said container and through which said liquid may enter said chamber when the device is tipped to said operative position, a heating element for vaporizing the liquid which enters said chamber, a circuit for furnishing power to said heating element, said element having spaced electrodes which are included in said circuit, which are located in said chamber and which are electrically connected by said liquid to automatically close said circuit when the device is tipped to said operative position and a tube having one end communicating with said chamber and the other so located that it extends above the level of the liquid when the device is tipped

to said last named position, whereby to conduct the vapor generated in said chamber without substantial condensation to a point above the liquid to create a pressure which will expel the liquid from said head in the form of a spray.

7. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, a heating element for vaporizing a portion of said liquid and a circuit for furnishing power to said element, said element comprising two series of plates of opposite polarity disposed in condenser-like arrangement and supported so that they are held out of contact with respect to said liquid in said inoperative position of the device and which are electrically connected by said liquid to close said circuit when the device is tipped to said operative position, whereby to create a vapor pressure in the container to expel the liquid from said head in the form of a spray.

8. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said device having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, an electric heating element for vaporizing a portion only of said liquid to create a vapor pressure in the container, whereby to expel the liquid from said head in the form of a spray, said heating element being supported in said container so that it is located above the level of said liquid in the inoperative position of said device and below the level of the liquid in the operative position, circuit means for energizing said heating element, and a handle for manipulating said device, said handle, in the position of rest of the device, being located below said spray head and at the side of said container and being angularly inclined with respect to the vertical, whereby, with respect to the direction in which the device is turned to tip it from said position of rest to said operative position, the lower end of the handle is located in advance of the upper end.

9. A device of the character described having operative and inoperative positions which are angularly displaced with respect to one another and including a container for the liquid to be sprinkled, said device having a normal position of rest which corresponds to said inoperative position, a spray head carried by and communicating with said container and into which said liquid flows when the device is moved to said operative position, an electric heating element which is supported in the container so that it is located above the level of said liquid in the inoperative position of said device and below the level of the liquid in the operative position, and circuit means for energizing said element to vaporize a portion of said liquid when the device is tipped to said operative position, whereby to create a vapor pressure which will expel the liquid from said head in the form of a spray.

EDWARD A. EBERT.