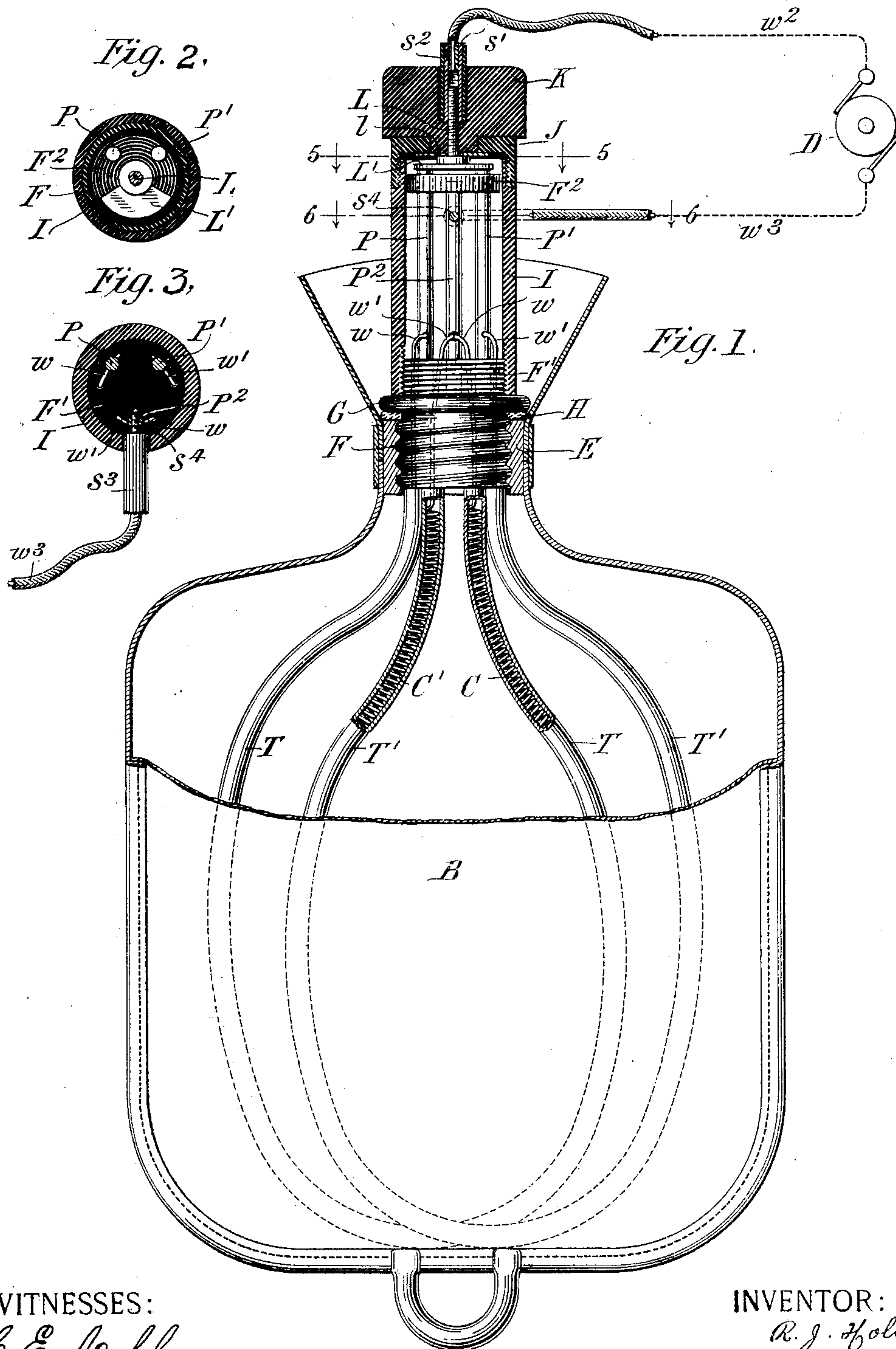


(No Model.)

R. J. HOLLAND.
ELECTRIC HEATER.

No. 600,285.

Patented Mar. 8, 1898.



WITNESSES:

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UNITED STATES PATENT OFFICE.

RICHARD J. HOLLAND, OF NEW YORK, N. Y.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 600,285, dated March 8, 1898.

Application filed December 24, 1896. Serial No. 616,875. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. HOLLAND, a subject of the Queen of Great Britain, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object to provide a flexible liquid-holding receptacle with a convenient electric heating apparatus, said receptacle being of such construction that it is especially adapted for applying local heat uniformly to any particular part of the body. The flexible liquid-holding receptacle may be in the form of an ordinary rubber hot-water bag or may be made as a belt or pad of any desired shape convenient for the purpose intended.

In carrying my invention into effect the liquid-holding receptacle has its mouth or aperture through which the liquid is introduced into and removed from the receptacle closed by a screw-plug, to which flexible resistance-coils, preferably provided with insulating coverings, are attached, and to which a switch device is also attached, so that the current can be conveniently turned off or on, or so that the plug or stopper with the switch and resistance-coils may be conveniently applied to or removed from the bag or receptacle.

In the accompanying drawings, Figure 1 is a sectional elevation of a hot-water bag embodying my invention. Figs. 2 and 3 are detail views on lines 5 5 and 6 6, respectively, of Fig. 1.

B denotes a flexible rubber bag or bottle, in the neck portion of which, below the funnel-shaped mouthpiece, is secured an internally-threaded ring E, of hard rubber or other suitable material, into which is screwed a threaded insulating-plug F, provided above its coarse-threaded part with a shoulder G and having a fine screw-threaded portion F' above the said shoulder. A soft-rubber washer H is preferably fitted to the said plug under the said shoulder G, said washer tightly encircling said plug. To the said plug F are attached any suitable number of flexible resistance-coils C C', preferably provided with

insulating waterproof coverings T T', which will protect the said resistance-coils from the action of the water or other liquid within the receptacle, and thereby prevent oxidation, corrosion, or other disintegrating action. It will be understood that any desired number of these resistance-coils, which are securely fitted and sealed into the said plug and the conductors to which pass through the latter, may be employed. Attached to the fine screw-threaded portion F' of the plug F is a cylinder or housing I, preferably of hard rubber, the lower portion of said cylinder being closed by the screw-plug F and the upper end of said cylinder by a screw-cap J, into which latter is fitted a hard-rubber top piece or knob K, adapted to be turned or rotated in said screw-cap J, and with which knob are connected metallic contact pieces or parts L L', constituting a switch, the parts of which are protected by said cylinder or housing and its cap J. A small quantity of some hardening cement or paint, as shellac, seals the lower part of the cylinder I, and thus prevents any liquids or moisture from attacking the metallic parts therein.

The terminals of the leading-wires from any source of electricity are preferably metallic-lined hard-rubber tubes. These fit into the holes either at the side or top of the cylinder and make connection with interiorly-projecting terminals of the heating-coils. This device makes short-circuiting of the leading-wires impossible and thus provides against possible injury, as burning.

The terminals *ww'* of the coils pass through fine rubber tubes that are fitted into the perforations of the screw-plug. These terminals *w* and *w'* are soldered on or fastened to metallic rods or pieces P, P', and P², which are inclosed in the cylinder or housing I in such a way that one end of each coil is connected to the piece P², while the other ends of the coils are connected to the metallic pieces P and P', respectively. The lower ends of these metallic pieces are securely fitted into the screw-plug F and their upper ends into a hard-rubber disk or diaphragm F². The ends of the pieces P and P' project through this disk, so as to make contact with the sector part L' of the switch. P² passes only part way through the disk, and is thus insulated from P and P',

as also from the switch. The terminals of the leading-wires w^2 and w^3 from any source of electricity D are brought into metallic connection with L and P^2 , respectively. The terminal of wire w^2 , that makes connection with L, consists of a short hard-rubber tube s^2 , in which is a metallic lining s' . This terminal is made to push down over the projecting metallic piece L, and thus by means of the sector L' makes contact with the metallic pieces P and P' . The terminal s^4 of wire w^3 is also covered with hard rubber and is made to screw into or to fit securely into a hole in the metallic piece P^2 .

Fig. 2, which is a cross-section through plane 5 5, Fig. 1, shows the position of the switch, as in Fig. 1, when not in contact with P or P' .

In Fig. 3 the terminal s^4 , with its hard-rubber covering s^3 , is shown fitted or screwed into the metallic piece P^2 .

In Fig. 1 only two resistance-coils, with means for insulation and necessary connections, are shown. Three or more such coils may be used, if desired, and these may be arranged so as to be connected in parallel or in series, according as a higher or lower temperature is required. In such case the mechanical parts, as will be readily understood, would be modified accordingly. Other means of making the connections than the one shown in the drawings may be used, if desired—such, for instance, as a push-button arrangement.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a flexible, liquid-holding receptacle provided with a contracted

mouth or aperture, of an insulating-closure consisting of a screw-plug having a connected housing, one or more resistance-coils within said receptacle and attached to said screw-plug, electrical connections to said coil or coils within said housing, and a switch also within said housing and by means of which the electric current may be turned off and on as desired.

2. The combination with a flexible, liquid-holding receptacle or bag B provided at its neck portion with the screw-threaded ring E, of an insulated plug F fitting in said ring, said plug being provided with one or more resistance-coils and with a cylinder or housing I, electric connections of said coil or coils inclosed in said housing, and a switch also within said housing and by means of which the current may be turned on or off.

3. The combination with a flexible, liquid-holding receptacle or bag the neck of which is provided with a screw-threaded ring E, of a screw-plug F fitting said ring, one or more resistance-coils attached to said screw-plug, a cylinder or housing I also attached to the said screw-plug, metallic rods or pieces P, P' , P^2 , inclosed in said housing and connected to said resistance-coils, and a switch, comprising the parts L, L' , also inclosed in said housing and by means of which the current may be turned off and on, as desired.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD J. HOLLAND.

Witnesses:

HENRY CALVER,

GEORGE W. HARRIS.