

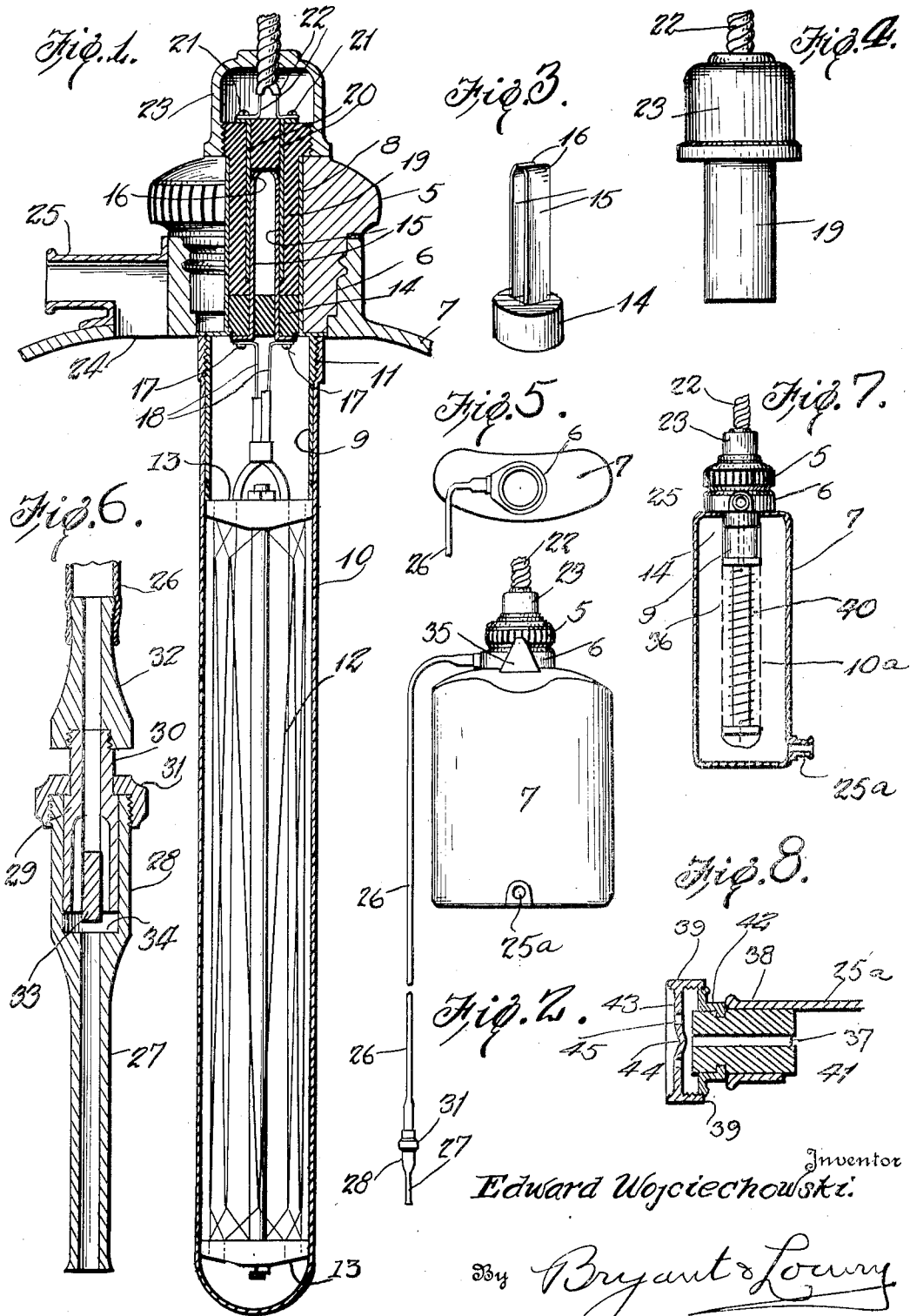
March 13, 1928.

1,662,555

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UNIVERSAL BOTTLE HEATER

Filed Dec. 18, 1926



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UNIVERSAL BOTTLE HEATER.

Application filed December 18, 1926. Serial No. 155,716.

This invention relates to improvements in electric heaters, and has more particular reference to an improved stopper and heating attachment for hot water bottles, fountain syringes, flasks, pads and the like.

The primary object of the invention is to provide a stopper and heating element of the above kind which is extremely simple and durable in construction as well as efficient in operation.

A further important object of the invention is to provide a heater of the above kind which may be cheaply and easily manufactured and assembled as well as readily taken apart for repair or renewal purposes.

A still further object is to provide simple and effective means for effecting connection of the heating element with a source of electricity.

Other objects will become apparent as the nature of the invention is better understood, and the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing, wherein like reference characters indicate corresponding parts throughout the several views,

Figure 1 is an enlarged fragmentary view partly in elevation and partly in central longitudinal section, illustrating a heater constructed in accordance with the present invention and applied to the neck of the reservoir of a fountain syringe;

Figure 2 is an elevational view of a complete fountain syringe equipped with a heater constructed in accordance with Figure 1;

Figure 3 is a perspective view of the stopper-carried contact strips and their supporting base;

Figure 4 is an elevational view of the plug adapted for engagement in the stopper for effecting electrical connection of conductors to the contact strips of Figure 3;

Figure 5 is a top plan view of the device shown in Figure 2 with the stopper and heater removed;

Figure 6 is an enlarged fragmentary longitudinal sectional view of the nozzle and valve for the outlet hose of the syringe shown in Figure 2;

Figure 7 is a view partly in elevation

and partly in section showing the stopper and heater of Figure 1 used as an air heating flask; and

Figure 8 is a detail sectional view showing a plug or stopper construction associated with one of the respective nipples;

Referring more in detail to the drawing, 5 indicates an externally threaded stopper adapted to be removably threaded into the filling opening neck 6 of a receptacle 7 which is shown in the nature of a flask capable of forming a hot water container or the fountain of a syringe.

The stopper 5 is formed with a relatively large central opening in which is tightly fitted or secured a metallic tube 8 which is rigidly joined at its lower end to the upper end of a hollow metal plug or capped sleeve 9. The tube 8 is disposed centrally of the upper end wall or cap of sleeve 9 and is of smaller diameter than the latter so that the cap or upper end wall of sleeve 9 abuts the inner or lower end of the stopper 5 about the central opening of the latter as shown clearly in Figure 1.

The sleeve 9 slidably fits, at its lower end portion, in upper part of a tubular heater casing 10 which is of slightly lesser diameter than the lower smaller end of the closure plug 5 of the receptacle 7 and which has its lower end closed as is clearly shown in Figure 1. The casing 10 and plug 9 are detachably joined by means of a threaded connection between their upper ends as generally indicated at 11, and removably disposed within the casing 10 is an electrical resistance element generally indicated at 12 and having a head piece 13 which is engaged by the lower end of the sleeve 9 so as to hold the resistance element firmly in place against vertical vibration.

Tightly fitted in the lower end of the tube 8 is a base member 14 of insulating material and preferably of relatively thick disk-like form as shown in Figures 1 and 3, and extending through as well as projecting upwardly from the base 14 is a pair of spaced resilient contact fingers or strips 15, the upper ends of which are inturned but in spaced relation as indicated at 16. The lower ends of the contact strips 15 extend through the base 14 and terminate in outturned lower ends bearing against the under

surface of the base 14 and equipped with binding screws 17, by means of which the terminal wires 18 of the resistance element 12 are respectively attached to the contact strips 15.

Removably slidably fitted in the upper end portion of the tube 8 is a cylindrical hollow plug element 19 of insulating material and this plug element is formed with a socket opening through the lower end thereof and within which is arranged a pair of spaced contact strips 20. The strips 20 are arranged and countersunk in opposite sides of the wall of the bore of plug member 19 so as to engage the contact strips 15 when said plug element 19 is inserted in the stopper 5 and its bearing tube 8. The intumed ends 16 of the strips 15 insure the passage of the contact strips 20 into engagement with the outer sides of the strips 15.

The contact strips 20 project through the upper end of the plug element 19 and terminate in outwardly directed upper ends equipped with screws 21 for connection of the respective conductors 22 of an attachment cord thereto. It will thus be seen that when the plug element 19 is inserted in the bearing tube 8 electrical connection is had between the conductors 22 of the attachment cord and the respective terminal wires 18 of the resistance element so that the latter will become effectively heated when the conductors 22 are connected at their other ends with a source of electricity. The connection of the conductors 22 with a source of electricity is preferably had through the use of an attachment plug connected to the other end of the attachment cord formed by conductors 22 and adapted to be plugged into a suitable wall or lamp socket of a house wiring system.

The upper end of the plug element 19 preferably projects above the top of the stopper 5 where it is externally threaded for reception of a detachable screw threaded protecting cap 23 through which the conductors 22 extend.

In view of the above description it will be seen that when the device is employed in connection with the stopper of a hot water flask or the fountain of a fountain syringe, the water may be effectively heated and then the plug element 19 detached from the stopper so as to permit the device to be readily handled without interference by the attachment cord being connected thereto. It will also be seen that the heater is bodily carried by the stopper 5 and is insertable through the neck 6 of the receptacle 7 or capable of being withdrawn from the latter when the stopper 5 is removed.

When adapting the device to a fountain syringe, the neck 6 is preferably provided with a hot water outlet passage 24 at one side of the filling opening in the neck and

opening through the adjacent side of the latter where it is equipped with a nipple 25 to which is connected one end of the outlet hose 26. The outer or other end of the hose 26 is equipped with a nozzle 27, the inner portion of which is enlarged as at 28 and provided with a cylindrical bore in which is longitudinally slidable a cylindrical valve element 29. The valve element 29 is provided with a reduced stem 30 slidably extending through a removable screw cap 31, provided upon the inner end of nozzle part 28, and detachably connected to a nipple 32 to which the other end of the hose 26 is attached. The passage of the nipple 32 communicates with a passage in the stem 30 and this passage is bifurcated or branched in the valve element or body 29 proper so as to open through the outer end of the latter at opposite sides of its longitudinal center where it is provided with a projecting head or plug 33. Thus, when the nozzle 27 is slid outwardly on and relative to the valve element 29, the head is withdrawn from the bore in the outer end portion of nozzle 27 and the outer end of valve element 29 is disposed in spaced relation to the shoulder 34 at the outer end of the enlarged portion 28 of nozzle 27 whereby the water may freely flow from the hose 26 through the nozzle. On the other hand, by sliding the nozzle 27 inwardly on the valve element 29 the head 33 will be caused to enter the bore of the outer end portion of nozzle 27 so as to close the latter and prevent further outward flow of the water. The receptacle or flask 7 of this fountain syringe is preferably equipped with means 35 for facilitating suspension thereof at an elevated point.

The construction will be substantially as above described in connection with water bottles, except that the latter will not be provided with a water outlet passage 24 or nipple 25, and the hose 26 and nozzle 27 will accordingly be dispensed with.

The bottle or receptacle 7 is also intended to be used as an air heater and provision is made for a circulation of air through the receptacle, one side thereof adjacent its lower end as shown in Figures 2 and 7 having a nipple 25^a similar to the nipple 25 at the upper end or neck portion of the receptacle, and as shown in Figure 7, a modified form of heater to be substituted for the heater shown in Figure 1 is disclosed. A spool 40 of insulating material is suspended from the block 14 and below the sleeve 9 while the conductor wires 17 and 18 leading to the spool has one section thereof coiled externally of the spool as shown in Figure 7 while the other section of the wire extends upwardly through an axial bore in the spool, the source of energy communicating with the conductors 17 and 18 in the same manner as described in connection

tion with Figure 1. The tubular casing 10 as shown in Figure 1 is removed and the casing 10^a shown in Figure 7 is substituted therefor, the casing 10^a having perforations 36 therein to permit the free circulation of air within the receptacle 7 in contact with the resistance element coiled around the spool 40.

When the device is to be used as a water heater with the type of resistance element shown in Figure 1, provision is made for closing the nipple 25^a and the valved stopper for closing the nipple is shown in detail in Figure 7. The stopper 41 having an axial bore 37 is placed into the nipple 25^a at the outer end 38 thereof and said stopper 41 carries a disk ring 42 adjacent its outer end that engages the outer beaded edge of the nipple 25^a to limit inward movement of the stopper. The peripheral edge of the disk ring 42 is threaded for the reception of a cap member for controlling passage through the bore 37 in the stopper 41. The cap 39 that is threaded on the disk ring 42 has an end wall 43 that is centrally dished as at 44 in line with the stopper bore 37 to be moved into engagement with the outer end of the stopper for closing the outer end of the bore. The end wall 43 of the cap 39 is provided with openings 45 laterally of the centrally dished portion 44 to permit communication between the interior of the receptacle 7 and the atmosphere when the cap 29 is moved away from the stopper 41.

When it is desired to use the receptacle as a device for heating air, the casing 10^a shown in Figure 7 is substituted for the casing 10 shown in Figure 1, while the type of heat resisting element shown in Figure 7 is also utilized, and the flexible tubing 26 and valve head 28 is removed from the nipple 25 and a stopper 41 may be substituted therefor in a manner similar to the stopper associated with the nipple 25^a. By moving the cap 39 outwardly of each stopper 41 at opposite ends of the receptacle 7, air will be permitted to freely circulate through the receptacle and be heated. If desired, both caps 39 may be closed and the temperature of the receptacle raised to a comparatively high degree. Also, the stopper and cap associated with the nipple 25^a may be employed when the type of heater shown in Figure 1 is employed for the purpose of heating water and the cap 39 with its stopper 41 upon the nipple 25^a may be so manipulated as to control the flow of water from the receptacle when the same is used as a fountain syringe. Obviously, by utilizing the flask as a core for a pad or by wrapping the flask in a towel, a dry heated pad may be had for various uses where a hot water bottle is not required. It is evident that the stopper 5 and a heater carried thereby constitute a heating means capable of gen-

eral use and not particularly limited for use in connection with any particular type of receptacle.

From the above detailed description it is believed that the construction and operation of the invention will at once be apparent and while there are herein shown and described the preferred embodiments of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:—

1. An electrical heater comprising a member provided with a central opening, an insulating base fixed within the lower end of said opening and having a pair of spaced contact strips projecting upwardly therefrom within said opening, a resistance carrying casing attached to the lower end of said member and having the terminal wires of its resistance connected to the respective contact strips, and a plug member removably fitted in said opening above the insulating base and provided with a pair of internal longitudinal contact strips respectively engageable with said first named contact strips and adapted to have conductors connected to the upper ends thereof.

2. In combination, a stopper formed with a central longitudinal opening, a pair of contact strips insulated from each other and supported in said opening, a plug member removably disposed in the opening and having a socketed lower end having spaced longitudinal contact strips therein engageable with the outer sides of the first named contact strips, means to connect the ends of conductors to the upper ends of the second named contact strips, and a resistance element mounted upon the lower end of the stopper and having terminal wires connected to the lower ends of the first named contact strips.

3. In combination, a stopper formed with a central longitudinal opening, a pair of contact strips insulated from each other and supported in said opening, a plug member removably disposed in the opening and having a socketed lower end having spaced longitudinal contact strips therein engageable with the outer sides of the first named contact strips, means to connect the ends of conductors to the upper ends of the second named contact strips, and a resistance element mounted upon the lower end of the stopper and having terminal wires connected to the lower ends of the first named contact strips, a depending member carried by the stopper, and a casing for the resistance element detachably joined at its upper end to said depending member.

4. In combination, a stopper having a central longitudinal opening, a pair of contact strips disposed longitudinally of and within

said opening, a hollow plug member removably fitted in the opening and having internal contact strips engageable with the outer sides of the first named contact strips, said
5 plug member having an upwardly projecting end, and a protecting cap removably engaged with said end of the plug member and engaging the upper end of the stopper, and a resistance element suspended from the stopper and having terminal wires connected 10 to the first named contact strips.

In testimony whereof I affix my signature.

EDWARD WOJCIECHOWSKI.