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S. WANAMAKER

INSULATING AND INDICATING COVERING FOR CONTAINERS

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Fig. 1.

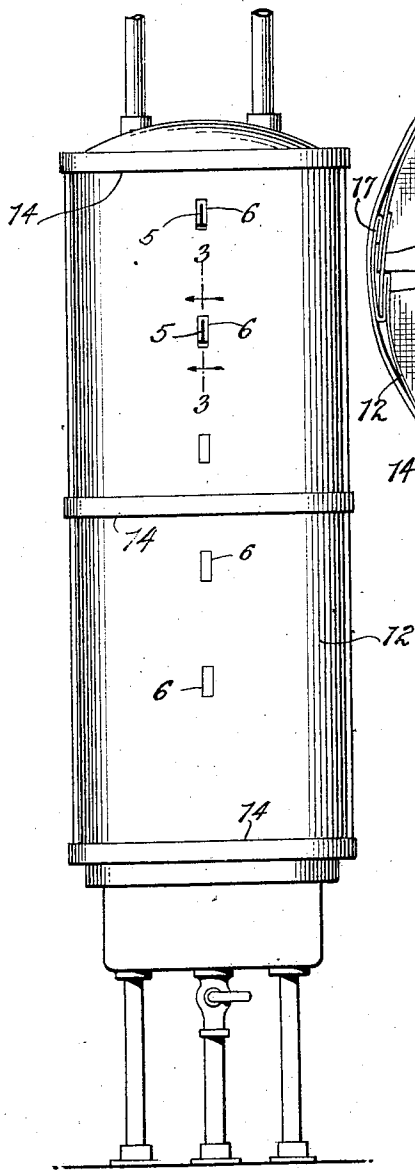



Fig. 2.

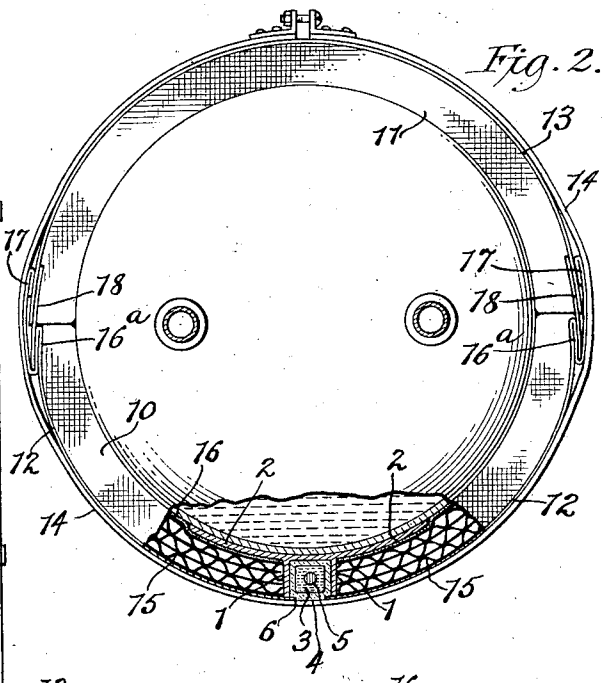
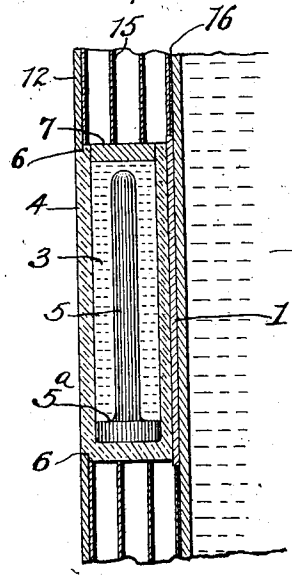



Fig. 3.




Inventor

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By his Attorney

N. F. Bernhard

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# UNITED STATES PATENT OFFICE.

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## INSULATING AND INDICATING COVERING FOR CONTAINERS.

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My invention is a covering wherein heat or cold in the contents of a container is indicated, and wherein provision is made, also, for insulating the contents against radiation and the effects of the surrounding atmosphere.

The invention is useful, more particularly, in a domestic boiler of that kind used for the storage of water in a heated condition, i. e., a stand boiler connected by appropriate piping with a stove or range, and with a dispensing faucet or faucets.

The thermal indicating means are useful more especially for visibly indicating the depth of heated and cold water in the boiler, thus affording means whereby a housekeeper may ascertain at a glance the approximate quantity of heated water available for use. A plurality of such thermal indicators are used, preferably spaced apart in a direction ranging lengthwise of the boiler, and such spaced thermal indicators afford means whereby the depth, approximately, of the hot water is shown by mere inspection, and similarly the depth, approximately, of the cold water, if any, contained within the boiler. Each thermal indicator, in one practical form, is embodied in a suitable casing composed of metal sensitive to temperature changes, together with a medium responsive to such temperature changes, whereby said medium solidifies in the presence of cold and liquefies in the presence of heat. If desired, a colored element may be positioned within the casing and enveloped by the encasing medium so as to be concealed by the medium when congealed and to be rendered visible upon the liquefaction of said medium.

The indicators are associated, usually, with a covering for the container by seating or partially encasing said indicators within said covering. The covering is embodied, preferably, in a sectional jacket, usually semi-cylindrical members which are unitary with an outer cylindrical casing, whereby the covering as a whole may be fitted to a stand boiler of standard size. The multi-part covering serves, primarily, as a means for retaining the heat against radiation, in order to economize in fuel required for heating the water, and for the over-night storage of water in a hot condition so as to be available for morning service. Such covering is applied by a plumber to the boiler expeditiously, and without the use of special tools. A feature of the insulating covering is that the outer casing is in sections the edges of which meet and are interconnected to produce a neat joint at each side of the boiler.

Other functions and advantages of the invention will appear from the following description taken in connection with the drawings, wherein—

Figure 1 is a side elevation of my covering and indicating means applied to an ordinary stand boiler.

Figure 2 is an enlarged plan view with a part of the encasing means broken away and in section, showing one of the thermal indicators.

Figure 3 is an enlarged vertical section on the line 3—3 of Figure 1, illustrating more particularly one of the thermal indicators

One form of indicating means is shown in Figures 2 and 3, whereas a practical arrangement of such means is shown in series in Figure 1, wherein the upper two indicators show the presence of hot water within the container or boiler, whereas the three lower indicators show the existence of colder water within said boiler. Each thermal indicator embodies a casing, 1, provided with wings, 2, a heat responsive medium, 3, a transparent or translucent container, 4, for said heat-responsive medium, and, if desired, a colored member, 5, enveloped by said heat-responsive medium. The detailed construction and arrangement of the several parts may be variously modified by a skilled constructor, but as shown the casing 1 and its wings 2 are unitary, said casing being open at the front exposed side, as at 6, whereas the integral wings 2 extend outwardly from the casing, at the rear side thereof. The casing is positioned within a suitable aperture or a slot provided in the encasing jacket, as will presently appear, but it is desirable that the rear part of the casing as well as the lateral wings 2 thereof shall have direct contact with the wall or shell of the boiler, whereas the open front part of said casing shall be positioned next to the outer shell or casing of the insulating jacket. The container 4 is a vessel of any desired shape and size, closed at the bottom and open at the top for the entry of the medium 3, and for the colored member 5, said open upper end being closed securely by appropriate means, such as the plug, 7, adapted to be sealed hermetically. The colored member 5 is in the form of a post having an enlarged bot-

tom end, 5ª, adapted to contact with the wall and the bottom of the vessel, 4, said post being composed of any material suitable for the purpose and being of a color which affords a desired contrast with the heat responsive medium 3. For example, the post 5 may be composed of glass, and it may be colored red, but the material and coloring are optional. The vessel 4 is composed of a suitable transparent or translucent material, such as glass, to render visible the medium 3 and the colored post 5, and this vessel is fitted within the casing 1 so as to be supported thereby, said vessel being exposed to view through the opening 6 provided within the front side of the casing.

The casing 1 and its wings 2 are composed usually of metal, the wings being integral with the casing. The casing and its wings are composed of metal sensitive to temperature changes, usually copper, and thus an increase or decrease in the temperature of the water present in the boiler is communicated by heat or cold transfer through the metal parts 1 and 2 to the casing 4, whereby the medium 3 is affected by such temperature changes. In this connection it may be stated that the utility of the wings 2 is to provide a contact of large area by the casing 1 with the boiler, and thus increase to a marked extent the sensitiveness of the metal parts to changes in the temperature of the water.

The heat responsive medium is composed of material suitable for the purpose, but according to my invention this material is required to be sensitive to temperature changes, so that said medium congeals in the presence of cold, and becomes liquid in the presence of heat. While various materials meet the requirements, I have found that animal fat is well adapted for the purpose, it having been determined that the kind of animal fat known in household parlance as "cresco" possesses the qualities desired and, moreover, is well calculated to serve for an almost indefinite period without deterioration or appreciable loss. The heat responsive medium fills the vessel 4, and when congealed by cold, it conceals the colored post so that the medium presents the well known white color to the view of an observer, but when such medium is liquefied by heat, it becomes almost invisible to the eye, and thus the colored post becomes visible, the contrasting colors (white and red) denoting the absence or presence, respectively, of hot water in the boiler.

The insulating covering is primarily intended to retain the heat in the water contained in the boiler by reducing the heat loss by radiation, and such covering is constructed for application to a boiler expeditiously and by unskilled labor. Said covering comprises a jacket in two parts, 10, 11, and an exterior casing, also composed of two parts, 12, 13, together with appropriate fastening means, such as a plurality of holding bands 14. The two halves or members 10, 11, are each made up of superposed layers of cellular material, 15, (see Figures 2 and 3), housed within a suitable sheathing, 16, the layers 15 and sheathing 16 being joined to and unitary with one of the two parts 12 or 13 of the outer casing. Obviously, the cellular material 15 may be composed of fibrous material well known in the insulating art, and these layers are superposed to produce a multiplicity of air cells, said layers being encased within the sheathing 16, and the whole bonded or united to one of the half sections 12 or 13. The section, 12 or 13, and the jacket member, 10 or 11, constitute units of the covering, there being two such units, one consisting of the casing member 10, and the insulating jacket member 12, whereas the other unit consists of the casing member 13, and the jacket member 11. The unitary members 10, 12, and 11, 13, respectively, are adapted for ready assemblage with respect to the boiler and to each other, and when thus applied and assembled, the adjacent edges of the casing members 10, 11, are relatively interconnected to present closed spaces or joints in order that the covering may present the required neat appearance and to afford protection to the cellular jacket members 12, 13. The adjacent edges of the casing parts 12, 13, may be interconnected by means appropriate for the purpose, but as shown in Figure 2, an edge of one casing member is folded or doubled upon itself at 16ª to produce a flap, 17, whereby a joint-closing member, 18, is adapted to overlap the adjacent edges of the two parts 12, 13, said closing member 18 being retained in position by frictional engagement with the folded and flap-formed edge 16ª, 17, of one of said parts 12. The flap 17 of one part 12 extends to and over the proximate edge of the other part 13, whereas the closing member 18 is in lapping relation to the proximate edges of both parts 12, 13, said closing member 18 being in frictional engagement not only with the part 13 and with the jacket member 11, but with the folded edge 16ª of part 12, so that the closing member is retained securely in position with reference to the proximity of both parts 12, 13.

The two-part jacket 10, 11, and the two-part casing 12, 13, having been assembled with the plates 18 around and into contact with the boiler, these parts are retained securely in place by outer bands 14, any desired number of which may be clamped around the casing 12, 13, for fixedly holding the insulating covering in position upon the boiler.

The insulating covering is constructed with a desired number of slots or openings,

6, for the accommodation of a plurality of thermal indicators, see Figure 1. As shown, provision is made for five indicators, one above the other in vertical series lengthwise of the boiler, but, obviously, the number of indicators and the arrangement thereof may be modified as desired or necessary. Provision for the indicators is made in the manufacture of the insulated covering, and the whole appliance is assembled upon the boiler and into contact therewith with facility. The thermal indicators are retained in operative position with respect to the insulated covering by seating the metal casings 1 within the openings 6, and by extending the lateral wings at the rear of said covering, whereby the glass vessels 4 are retained securely in place so as to expose the indicators to the view of an observer. With the water of the boiler in a hot condition from bottom to top, the heat responsive media, 3, in all the indicators will become liquefied and all of the colored posts will thus be exposed to view, but this condition seldom obtains in the usual service of domestic boilers. On the contrary, the water at the lower part of the boiler is in a more or less cold condition, whereas the water at the top becomes heated, and thus the two upper indicators respond to the hot water conditions, as shown in Figure 1, by the display of the colored posts, and, again, the three lower indicators respond to the cold water condition, wherein the heat present in the relatively cold water is so low that the media 3 are not liquefied and remain in a congealed state, so as to conceal from view the colored posts by the enveloping media.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a device for insulating and indicating the thermal condition of a domestic boiler, the combination of an insulating covering substantially encasing the boiler, and a thermal indicator co-operable with said covering and exposed to view through the same, said thermal indicator embodying a liquefiable enveloping medium and being in contact exteriorly with said boiler and influenced by the transference of heat from said boiler.

2. In a device for insulating and indicating the thermal condition of a domestic boiler, the combination of an insulating covering substantially encasing the boiler, and a thermal indicator exposed to view through said covering, said thermal indicator embodying a liquefiable enveloping medium and a heat transferring member in exterior contact with the wall of said boiler.

3. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination of an insulating covering substantially encasing a boiler, and a thermal indicator co-operable with said insulating covering and exposed to view through it, said thermal indicator including heat transferring means in exterior contact with the boiler and an enveloping heat responsive medium adapted to liquefy and solidify under the thermal changes of the boiler.

4. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination with an exterior covering, of a thermal indicator cooperable with, exposed to view through, said covering, said thermal indicator including a metallic encasing member for a liquefiable substance and provided with an extended heat-transferring member unitary with said encasing member, and an enveloping liquefiable substance within said encasing member, said encasing member and said extended member being positioned relatively to the exterior covering for direct contact with the exterior surface of the boiler.

5. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination with an exterior covering, of a thermal indicator co-operable with, and exposed to view through, said exterior covering, said thermal indicator including a chambered metallic member, an indicating member within said chambered member, and a liquefiable substance enveloping said indicating member and contrasting in color therewith, said chambered metallic member being positioned relatively to the exterior covering for direct contact with the exterior of the boiler.

6. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination with an exterior covering for encasing the boiler, and a thermal indicator co-operable with, and exposed through, said covering, said thermal member embodying a chambered casing for a liquefiable substance and provided with heat-transferring wings extending from said chambered casing, said wings and the chambered casing being composed of metal sensitive to the influence of heat and adapted for contact directly with the boiler.

7. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination with an exterior covering, of a thermal indicator exposed to view through said covering, said thermal indicator including a metallic supporting member provided with extensions adapted for contact with a boiler, a transparent encasing member supported within the supporting member, and a liquefiable substance within the encasing member.

8. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination with an exterior covering, of a thermal indicator exposed to

view through said covering, said thermal indicator including a chambered member, a heat-responsive medium composed of a liquefiable substance within said chambered member, and an indicating member enveloped by said heat-responsive medium.

9. In a device for insulating a domestic boiler and indicating the thermal condition thereof, the combination of an exterior covering substantially encasing the boiler, and a plurality of thermal indicators exposed to view through said covering, said thermal indicators extending in series lengthwise of the boiler and contacting directly therewith for indicating the hot and cold nature of the water in different parts of the boiler.

In testimony whereof I have hereto signed my name this 17th day of June, 1926.

SETH WANAMAKER.