W. R. JEAVONS & A. R. WHITTAKER.

OIL STOVE.

APPLICATION FILED AUG. 6, 1914.

1,214,547.

Patented Feb. 6, 1917.

2 SHEETS—SHEET 1.

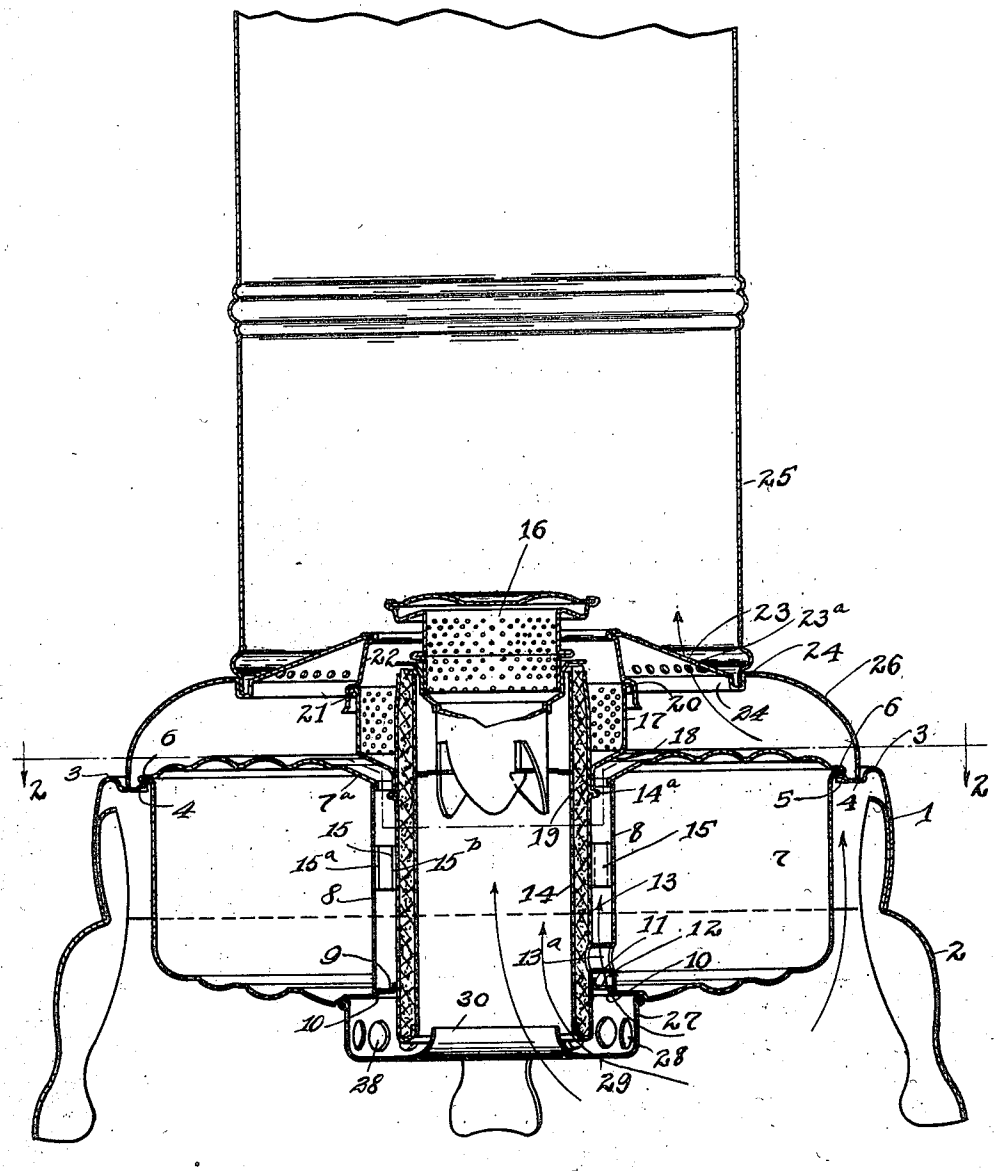


FIG-1

Witnesses
R. L. Bruce.
C. H. Duell.

Inventors
William R. Jeavons
Arnold R. Whittaker
By Hull & Smith
Atty's

W. R. JEAVONS & A. R. WHITTAKER.

OIL STOVE.

APPLICATION FILED AUG. 6, 1914.

1,214,547.

Patented Feb. 6, 1917.

2 SHEETS—SHEET 2.

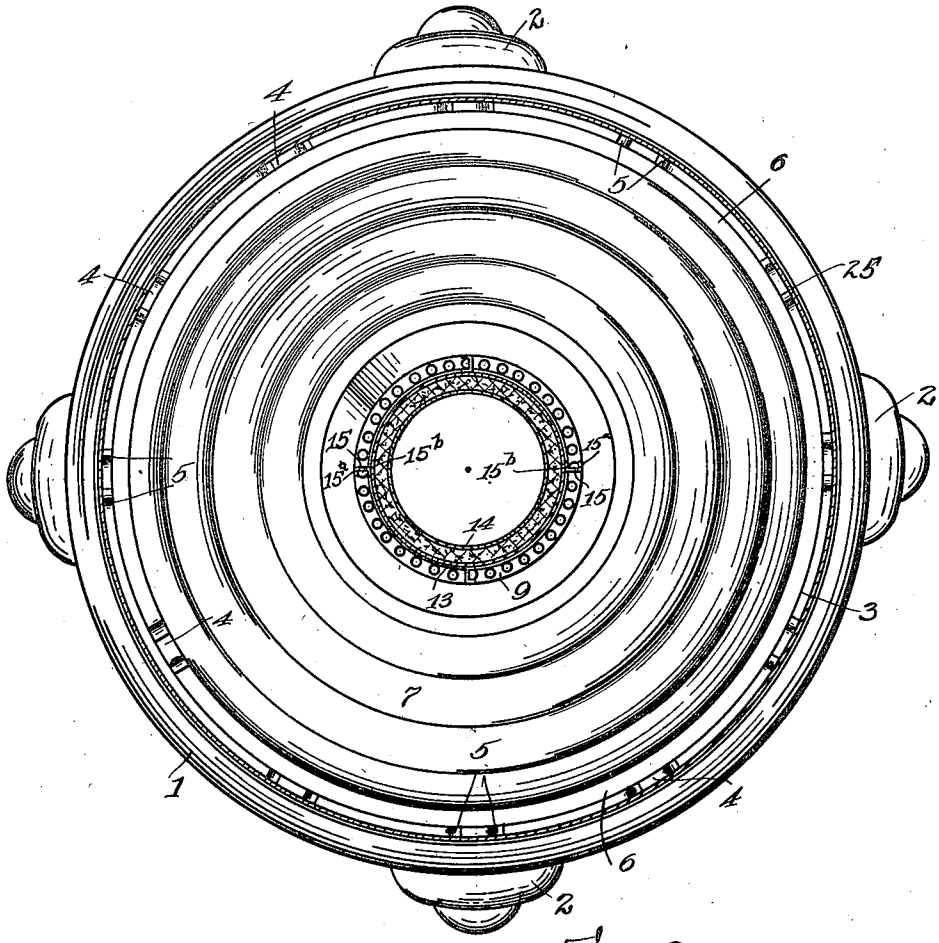


Fig-2

Witnesses
R. L. Bruck.
H. Duvall.

Inventors
William R. Jeavons
Amos R. Whittaker
By Hull & Smith.
Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM R. JEAVONS AND ARNOLD R. WHITTAKER, OF CLEVELAND, OHIO.

OIL-STOVE.

1,214,547. Specification of Letters Patent. Patented Feb. 6, 1917.

Application filed August 6, 1914. Serial No. 855,407.

To all whom it may concern:

Be it known that we, WILLIAM R. JEAVONS and ARNOLD R. WHITTAKER, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Oil-Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to oil stoves of the so-called "smokeless heater" type, and more particularly to stoves such as covered by the patent to William R. Jeavons No. 1,089,841, issued March, 10, 1914, wherein the oil reservoir or font is shallow and has an extended top which is subjected to the radiant heat from the bottom of the drum or combustion chamber thereabove and wherein the oil is maintained between the seepage limit and the point where the oil will fail to feed sufficiently. In securing a proper supply of oil to the vaporizing surface of the wick, it is desirable, if not extremely important, to maintain the temperature in the top of the font at approximately 115° F. and not materially in excess thereof.

It is the general purpose of this invention to secure the advantages above set forth and particularly the object of maintaining the temperature of the oil at about and not materially exceeding the temperature specified.

In the drawings forming part hereof Figure 1 represents a central vertical sectional view through a heater of the kind referred to; and Fig. 2 a transverse sectional view corresponding to the line 2—2 of Fig. 1.

Describing by reference characters the various parts illustrated herein, 1 denotes a stove base or "ring base" supported by legs 2, which base supports the reservoir and the burner and drum used in connection therewith. The ring 1 may be of sheet metal, and is shown as provided with an upwardly projecting bead 3 and with a series of inwardly projecting segmental flanges 4 forming a seat for the base or "cone plate" of the drum thereabove. These flanges may be provided with upwardly projecting bosses 5 (as in our application No. 855,044, filed August 4, 1914) which engage an outwardly projecting flange 6 at the outer edge of the top of the reservoir or font 7.

The reservoir 7 is an annular reservoir and is provided with an inner cylindrical wall 8. The bottom of the reservoir is shown as extending inwardly from the wall 8, thus providing a horizontal ring 9, there being a shoulder 10 formed at the junction of the ring and reservoir bottom for the support of the wall 8. At its inner edge, this bottom-extension ring is provided with an upwardly extending flange 11 which is adapted to bear against the outer wick tube. The body of the ring is freely perforated, as shown at 12.

13 denotes the outer wick tube and 14 the inner wick tube of the burner. The outer wick tube extends below the bottom of the reservoir and is secured to the flange 11 of the ring 12, as by means of solder. The inner wick tube 14 is secured to the outer wick tube, and both wick tubes project upwardly above the top of the reservoir. To further steady and center the wick tubes with reference to the central opening through the reservoir, ribs 15 are provided, said ribs being shown as of channel shape, with the webs of the channels extending radially and the flanges 15^a, 15^b secured respectively to the wall 8 and to the wick tube 13. The space between the wick tubes communicates with the reservoir by means of a tube 13^a connecting said space and the lower portion of the reservoir. Removably mounted within the upper portion of the inner wick tube is the air distributer 16, which may be of any approved type, as for instance that shown in the patent to William R. Jeavons No. 906,887.

Below the top thereof, the outer wick tube is provided with an outwardly projecting ledge 14^a, which may be conveniently formed by doubling the metal upon itself. This ledge may form a support for the gallery. This gallery comprises a cylindrical perforated wall 17, an inwardly projecting bottom wall 18, and a downwardly projecting cylindrical wall 19 which is adapted to sleeve upon the outer wick tube and to have its bottom edge supported upon the ledge 14^a. The bottom wall 18 is imperforate and is shown as extending substantially parallel to the inclined surface 7^a of the top of the reservoir therebeneath. The upper end of the cylindrical wall 17 is preferably bent outwardly into inverted U shape, as shown at 20, thereby to coöperate with the downwardly and outwardly projecting skirt 21 which is at the bottom of a collar 22 secured to and projecting downwardly from the inner edge of the annular bottom or cone plate 23 of the drum, the parts 17—22 being sub-

stantially identical with the corresponding parts shown, described and claimed in our copending application No. 855,045, filed August 4, 1914. This bottom or cone plate is provided with an annular seat 24 for the drum 25 and projects downwardly and outwardly from said seat, the bottom edge of the outer portion 26 of the cone plate being supported within the bead 3 and upon the segments 4. The drum may be hinged in any approved manner (not shown).

The bottom of the reservoir is shown as provided with a wind shield 27 having perforations 28 therein, the bottom of the wind shield being projected inwardly at 29 and thence upwardly, as shown at 30, within the bottom of the inner wick tube. This wind shield is of the type shown, described and claimed in the application of William R. Jeavons No. 782,005. The space between the wall 27 of the wind shield and the lower portion of the outer wick tube communicates freely with the annuular chamber provided between the wick tube and the inner wall 8 of the reservoir.

Air needed for combustion will be drawn from the chamber or space between the cone plate and the reservoir top, through the perforations in the cylindrical wall 17; also a limited quantity of air will be drawn through the perforations 23^a, tending to break up the hot air currents which eddy downwardly from the proximity of the flame and which ordinarily contact with the drum base or cone plate, unduly heating the same, thereby to a certain extent cooling said cone plate; and the air thus drawn will be replaced by air passing upwardly between the outer wall of the reservoir and the ring 1 and through the openings between the segmental flanges and between the bosses upon said flanges and also through the wind shield openings 28 and through the annular passageway between the wall 8 and the outer wick tube, also upwardly through the interior of the inner wick tube, the air ascending in the annular passageway between the wall 8 and the wick tube 13 being deflected outwardly by the imperforate bottom 18 of the gallery; and, as the amount of air needed for combustion and for the induced currents of air caused by the upward flow of the products of combustion is large and as all the air needed must pass upwardly through the annular passageway between the outer reservoir and ring 1 and the passageway between the outer wick tube and wall 8 and through the interior of the inner wick tube, there is a considerable cooling tendency on the reservoir surfaces which precludes the possibility of the oil heating above the maximum temperature required for the operation of the stove. To secure the proper cooling of the front the space between the outer wick tube and the inner wall of the font must be sufficiently narrow or restricted as to cause a rapid circulation of the air therethrough and insure the contact of the air current with the walls of the passageway. In practice we have found a width of about $\frac{3}{8}$ inch to be efficient. In order to secure the best efficiency in breaking up the hot air currents which eddy downwardly from the proximity of the flame (as referred to hereinbefore) it is preferable to make the perforations 23^a not materially greater than $\frac{3}{32}$ inch diameter, whereby the air flowing through the cone plate to the space thereabove is properly limited.

By the construction described, although the top of the reservoir is subjected (and intentionally so) to radiant heat from the cone plate or the bottom of the combustion chamber, the heating effect is kept within the most efficient limits by the air distributing arrangement provided.

Having thus described our invention, what we claim is:—

1. In an oil heater, the combination of a base, an annular reservoir supported thereby and providing therewith an air circulating space, a pair of wick tubes within the reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a gallery extending about the upper portion of the outer wick tube, a drum above said wick tubes and having a bottom adapted to be supported above said passageway, and a collar depending from such bottom and coöperating with the top of the gallery.

2. In an oil heater, the combination of an annular reservoir having an extended top, a ring surrounding and supporting the reservoir and forming therewith a vertically extending annular passageway, a pair of wick tubes within the reservoir and forming with the inner wall thereof a vertically extending annular passageway, a drum above the wick tubes and having an annular bottom adapted to be supported above said passageways, a collar depending from the central portion of such bottom, and a gallery surrounding the outer wick tube and having an imperforate bottom and having a perforated cylindrical wall the top whereof is in operative relation to said collar.

3. In an oil heater, the combination of an annular reservoir having an extended top, a pair of wick tubes within the central portion of the reservoir and forming with the inner wall thereof a vertically extending annular passageway, a drum above the wick tubes and having an annular bottom adapted to be supported above said reservoir and to receive therebeneath air flowing from said passageway and air flowing inwardly above the top of the reservoir, a collar depending from the inner portion of such bottom,

and a gallery surrounding the outer wick tube, said gallery having an imperforate bottom extending outwardly above the inner annular passageway and also having a perforated cylindrical wall the top whereof is in operative relation to said collar.

4. In a stove of the character described, the combination of a reservoir having a horizontally extended top, wick tubes projecting upwardly from the reservoir, a gallery extending about the upper portion of the outer wick tube, a drum above the wick tubes and having a bottom, and means whereby air may circulate upwardly about the exterior of the reservoir and upwardly about the outer wick tube and be delivered beneath said bottom and thence through said gallery.

5. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes within the central wall of the reservoir and communicating with said reservoir and forming a vertically extending annular passageway with the inner wall of said reservoir, a gallery surrounding the upper portion of the outer wick tube and having an imperforate portion extending outwardly above the top of the annular passageway, said gallery being provided with a vertically extending perforated wall through which air flowing through the passageway may be admitted to the space about the top of the outer wick tube.

6. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes within the central wall of the reservoir and communicating with said reservoir and forming a vertically extending annular passageway with the inner wall of said reservoir, a gallery surrounding the upper portion of the outer wick tube, said gallery being provided with a vertically extending perforated wall through which air flowing through the passageway may be admitted to the space about the top of the outer wick tube, and means for deflecting outwardly above the reservoir top the air flowing through said passageway.

7. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes within the central portion of the reservoir and spaced from the inner wall thereof to provide an annular passageway therewith, a drum having a bottom extending above the top of the reservoir, means whereby air may circulate inwardly beneath said bottom and above the top of the reservoir, and means whereby the air flowing upwardly through the annular passageway may circulate outwardly above the top of the reservoir and beneath said bottom.

8. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes within the central portion of the reservoir and spaced from the inner wall thereof to provide an annular passageway, a gallery surrounding the upper portion of the outer wick tube, a drum having a bottom extending above the top of the reservoir, means whereby air may circulate about the outer wall of the reservoir and inwardly into the space beneath the drum bottom, and means whereby the air flowing upwardly through the annular passageway may be deflected outwardly above the top of the reservoir and beneath the bottom plate and thence delivered into and through the gallery.

9. In a heater of the character described, the combination of an annular reservoir having its top inclined upwardly and outwardly from the inner wall thereof, a pair of wick tubes mounted within said reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a gallery about the upper portion of the outer wick tube, and a deflector extending substantially parallel with the inclined portion of the reservoir thereby to deflect outwardly the air flowing upwardly through such passageway prior to its passage through the gallery.

10. In a heater of the character described, the combination of an annular reservoir having its top inclined upwardly and outwardly from the inner wall thereof, a pair of wick tubes mounted within said reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a gallery about the upper portion of the outer wick tube, a deflector extending substantially parallel with the inclined portion of the reservoir thereby to deflect outwardly the air flowing upwardly through such passageway prior to its passage through the gallery, and a drum having a bottom extending above the top of the reservoir.

11. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes mounted within the reservoir and forming with the inner wall thereof a vertical annular passageway, and a wind shield projecting downwardly from the bottom of the reservoir thence inwardly across the bottom of the annular space and across the bottoms of the wick tubes and thence upwardly within the inner wick tube to form an annular space therewith, said shield being provided with perforations in the downwardly extending wall thereof.

12. In an oil heater, the combination of a base, an annular reservoir supported thereby and providing therewith an air circulating space, a pair of wick tubes within the reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a gallery extending about the upper portion of the outer wick tube, a drum above

said wick tubes and having a bottom adapted to be supported above said passageway, a collar depending from such bottom and cooperating with the top of the gallery, and means whereby air in limited quantity may pass from such air circulating space through the drum bottom to the space thereabove.

13. In an oil heater, the combination of an annular reservoir having an extended top, a ring surrounding and supporting the reservoir and forming therewith a vertically extending annular passageway, a pair of wick tubes within the reservoir and forming with the inner wall thereof a vertically extending annular passageway, a drum above the wick tubes and having an annular bottom adapted to be supported above said passageways, a collar depending from the inner portion of such bottom, a gallery surrounding the outer wick tube and having an imperforate bottom and having a perforated cylindrical wall the top whereof is in operative relation to said collar, and means whereby air in limited quantity may circulate through the drum bottom to the space in the drum thereabove.

14. In a stove of the character described, the combination of a reservoir having a horizontally extended top, wick tubes projecting upwardly from the reservoir, a gallery extending about the upper portion of the outer wick tube, a drum above the wick tubes and having an inwardly extending bottom, means whereby air may circulate upwardly about the exterior of the reservoir and upwardly about the outer wick tube and be delivered beneath said bottom and thence through said gallery, and means whereby air in limited quantity may circulate through such bottom to the space in the drum thereabove.

15. In a stove of the character described, the combination of a reservoir having an extended top, wick tubes projecting upwardly from the reservoir and spaced therefrom to form an annular passageway, a drum above the wick tubes, said drum having an inwardly extending bottom, means whereby air may be conducted from the exterior of the reservoir and from the annular passageway to the space between the reservoir top and the bottom of the drum, and means whereby air in limited quantity may circulate through the drum bottom to the space in the drum thereabove.

16. In a heater of the character described, the combination of an annular reservoir, a pair of wick tubes within the central portion of the reservoir and spaced from the inner wall thereof to provide an annular passageway, a gallery surrounding the upper portion of the outer wick tube, a drum having a bottom extending above the top of the reservoir, means whereby air may circulate about the outer wall of the reservoir and inwardly into the space beneath the drum bottom, means whereby the air flowing upwardly through the annular passageway may be deflected outwardly above the top of the reservoir and beneath the drum bottom and thence delivered into and through the gallery, and means whereby air in limited quantity may circulate through the drum bottom to the space in the drum thereabove.

17. In a heater of the character described, the combination of an annular reservoir having its top inclined upwardly and outwardly from the inner wall thereof, a pair of wick tubes mounted within said reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a gallery about the upper portion of the outer wick tube, a deflector extending substantially parallel with the inclined portion of the reservoir thereby to deflect outwardly the air flowing upwardly through such passageway prior to its passage through the gallery, a drum having a bottom extending above the top of the reservoir, and means whereby air in limited quantity may circulate through such bottom to the space in the drum thereabove.

18. In a heater of the character described, the combination of an annular reservoir having its top inclined upwardly and outwardly from the inner wall thereof, a pair of wick tubes mounted within said reservoir and spaced from the inner wall thereof to provide therewith an annular passageway, a drum coöperating with said wick tubes and having a bottom extending above the top of the reservoir and forming an air-circulating space therewith through which air is conducted in operative relation to the space above the wick tubes, a deflector extending outwardly from the outer wick tube substantially parallel with the inclined portion of the reservoir thereby to deflect outwardly into such space and in cooling relation to the top of the reservoir the air which flows upwardly through such passageway, and means whereby air may also circulate inwardly through such space beneath the said bottom and above the top of the reservoir and in cooling relation to the reservoir.

In testimony whereof, we hereunto affix our signatures in the presence of two witnesses.

WILLIAM R. JEAVONS.
ARNOLD R. WHITTAKER.

Witnesses:
J. B. HULL,
BRENNAN B. WEST.