

W. R. JEAUVONS.

BURNER.

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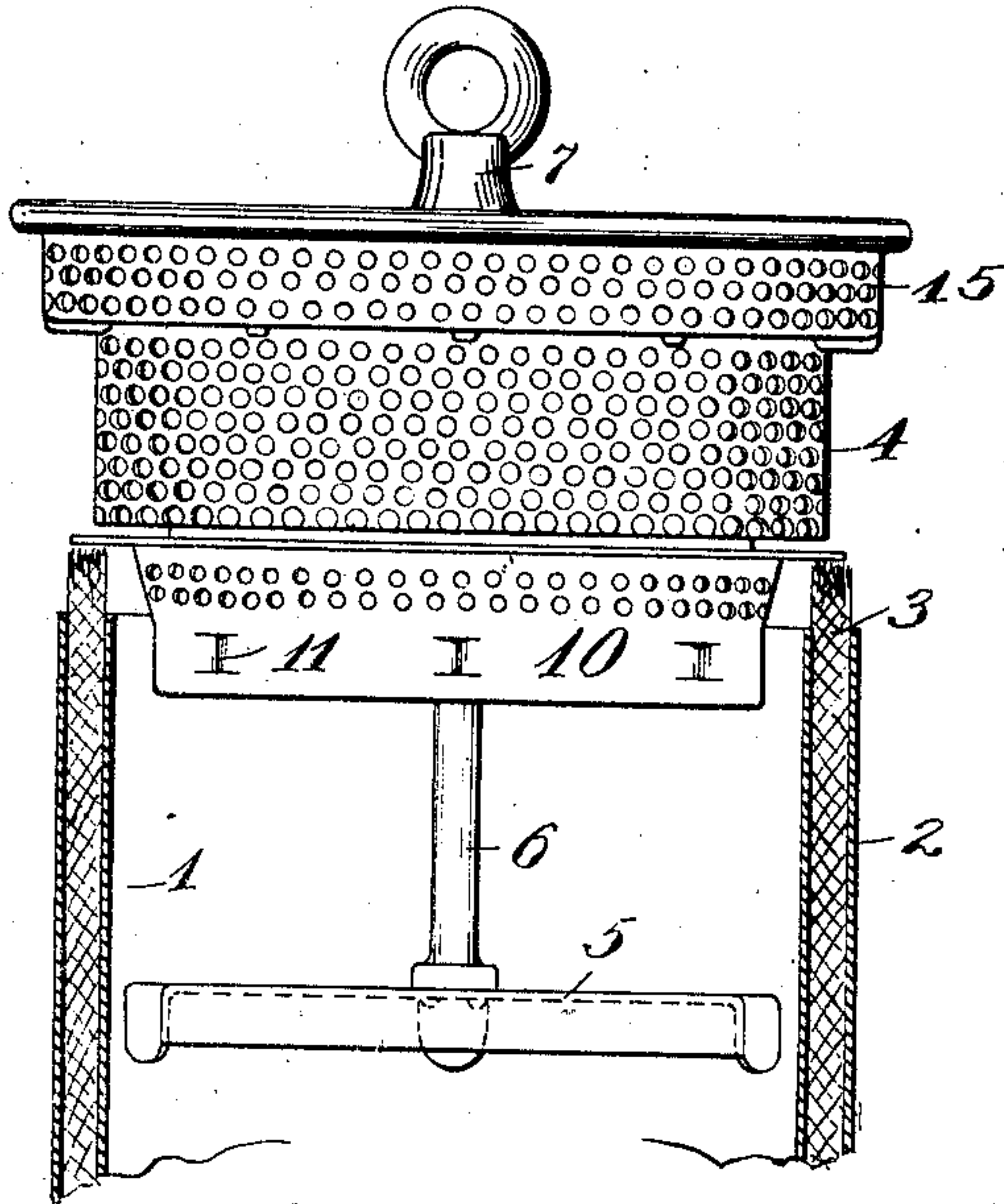


Fig. 1

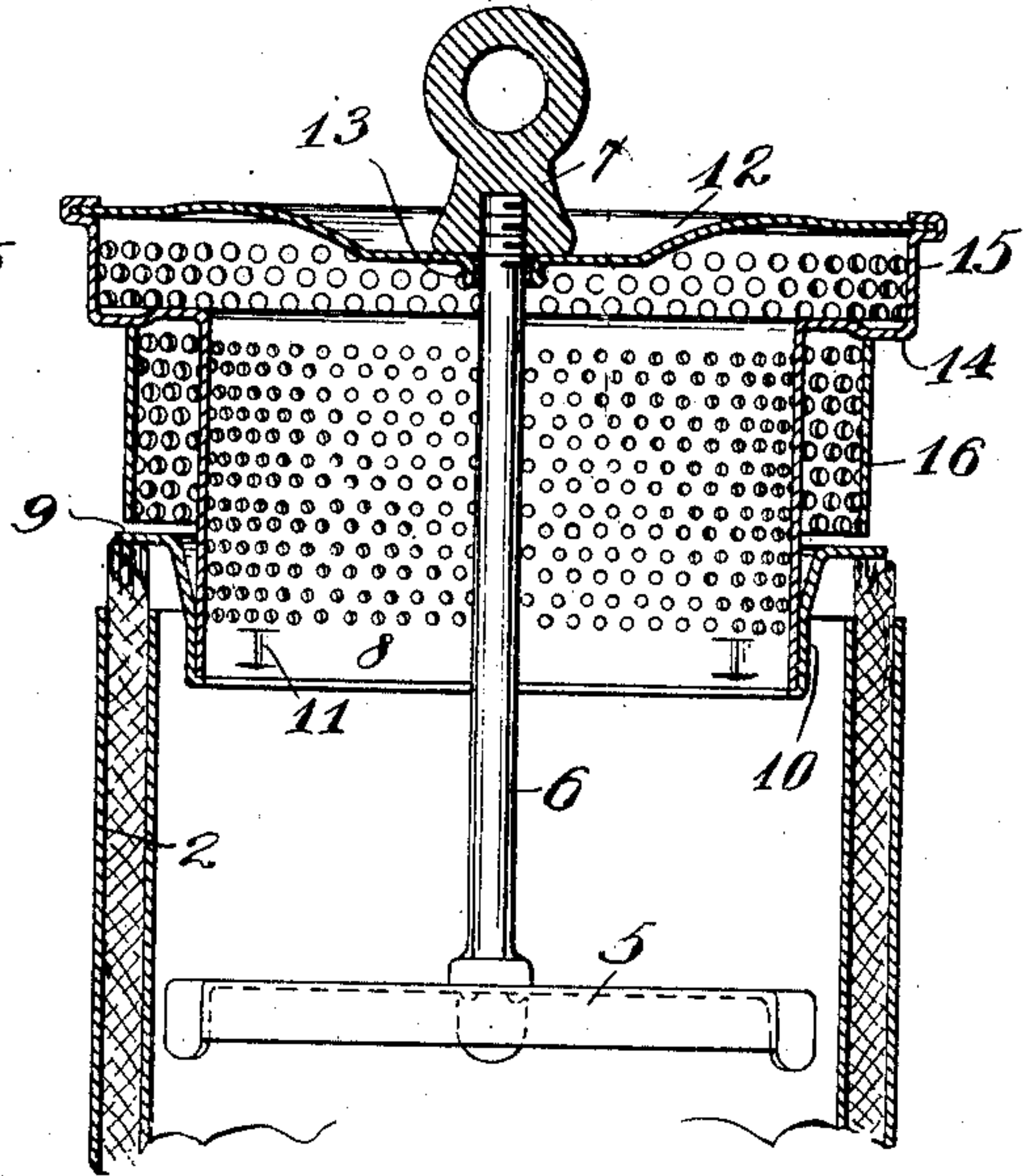


Fig. 2

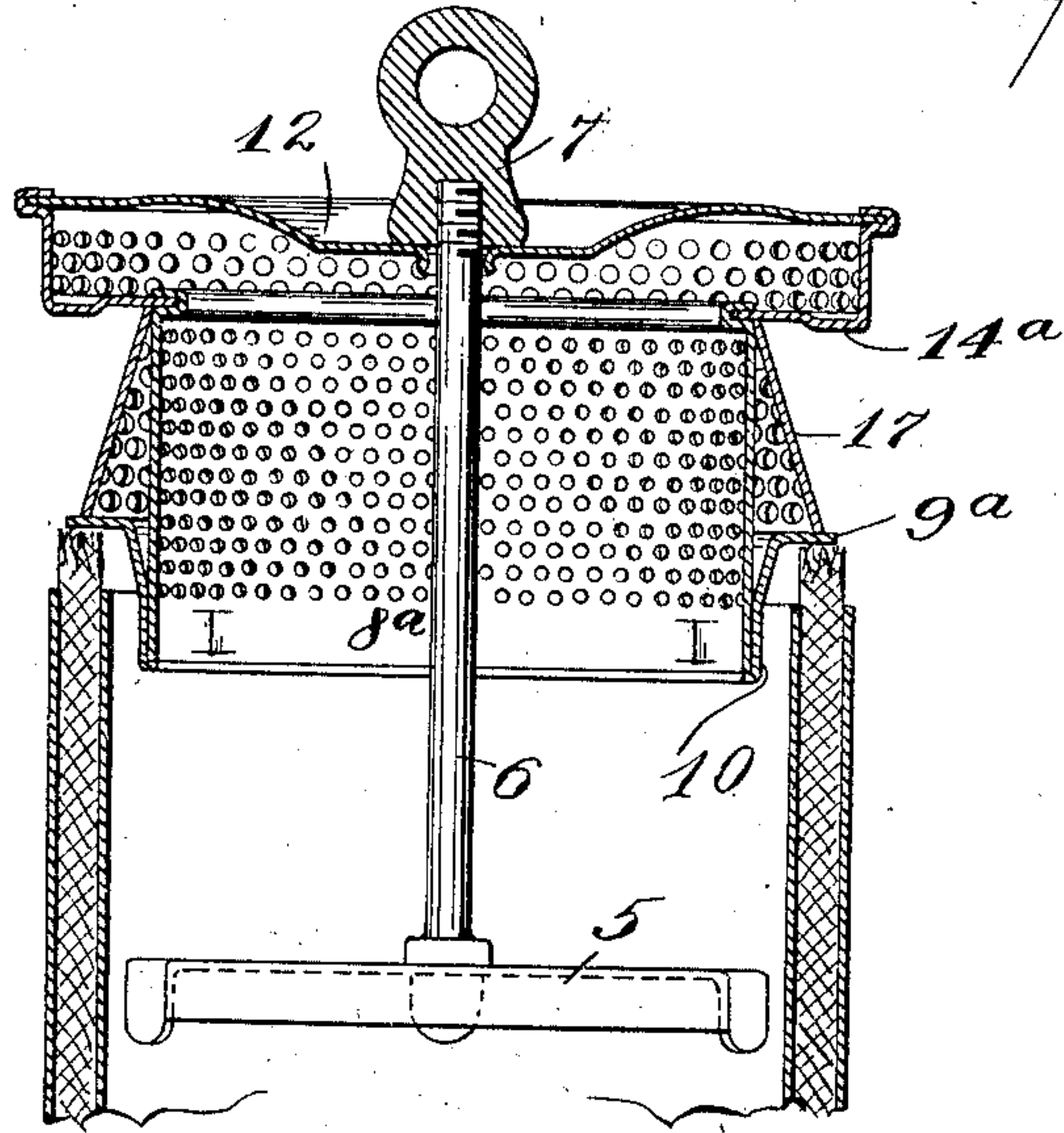


Fig. 3

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UNITED STATES PATENT OFFICE.

WILLIAM R. JEAVONS, OF CLEVELAND, OHIO.

BURNER.

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To all whom it may concern:

Be it known that I, WILLIAM R. JEAVONS, a citizen 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 Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to oil burners and more especially to burners which are employed in heating stoves and lamps and, in the preferred embodiment, is especially adapted for use with burners of stoves known to the trade as "smokeless heaters." In common with burners which have been employed heretofore with stoves of this type, it is provided with a stop for the wick, the stop being carried by the air distributor and being so arranged that the wick cannot be turned beyond a predetermined height.

In the embodiments of my invention disclosed herein, the wick-stop consists of a flange carried by the vertically-extending portion of the air distributor and projecting above and across the top of the wick tubes in a position to intercept the wick. As the wick rises, the flange rests on top of the wick and is carried upward thereby, carrying with it the air distributor, the upward excursion of the wick being limited by a stop nut which prevents the distributor from being raised beyond a certain predetermined distance. In the operation of ordinary burners of this type with the heavier oils, the stop is so set that when the wick is raised to the highest point its top is about a quarter of an inch above the top of the wick tubes, the area of wick thus exposed being that adapted for the production of the maximum flame and the amount of wick exposure providing an ample surface on the outside of the wick for the purpose of lighting the same. In operation, any slight irregularity in the top of the wick is practically negligible compared with the total amount of wick exposure and the flame produced is of substantially uniform height.

With the use of heavy oils and the stop arranged as described, the amount of vapor produced is sufficient to make a large flame, but not sufficient to make an excessively high flame that would produce smoke. In some localities, however, there are in use what are known as light oils, which are more

volatile and vaporize with less heat than do the heavier oils above referred to.

In operating a burner with lighter oils and having the stop arranged as described, the wick exposure will be too great for such lighter oils, excessive vaporization will be produced, and an excessively high and smoky flame will result. Also in some cases the chimneys or drums when designed for some certain uses may cause the burner parts to become abnormally heated, and even with the heavier grades of oil the vaporization and flame will be excessive. While these objectionable results could be overcome by so limiting the movement of the distributor as to reduce the wick exposure, yet this will result in the disadvantage that the space between the top of the wick tubes and the wick-stopping flange will be so small as to make it exceedingly difficult to initially light the burner. Furthermore, any irregularities of the wick will now bear a greater proportion to the total wick exposure than in the former case and will produce relatively greater irregularities in the flame than when the wick exposure is greater.

It is the object of this invention to maintain a large exposure of wick surface and at the same time reduce the rate of vaporization from such surface where the character of the oils or the character of the device used makes it desirable to do so. For this purpose, I make use of a shield or curtain of peculiar construction, additional to the air distributor and carried thereby, which serves to intercept the radiant heat of the flame from the wick-stop flange, thereby lessening the vaporization produced at the top of the wick by such flange.

Generally speaking, the invention may be defined as consisting of the combinations of elements embodied in the claims hereto annexed and illustrated in the drawings, wherein—

Figure 1 represents a view, partly in section and partly in elevation, of so much of a burner as is necessary to show my invention; Fig. 2 represents a view similar to Fig. 1 but showing the air distributor in vertical section; and Fig. 3 represents a vertical sectional view of a modification of the invention disclosed in the preceding figures.

Describing the parts by reference numerals, 1 and 2 represent respectively the inner and outer wick tubes of a burner, 3 the wick

and 4 the air distributor. Within the inner wick tube there is located a spider 5 from which there projects upwardly a rod 6 having its upper end threaded for the reception of the interiorly threaded stop nut 7. Nut 7 retains the air distributor 4 in place in the upper end of the inner wick tube and serves as a stop to limit its upward excursion when lifted by the wick.

10 The air distributor 4 comprises a vertically extending sleeve 8 of perforated material extending downwardly within the top of the inner wick tube and having secured thereto the stop or wick flange 9, which projects laterally into the path of the wick and rests upon its top surface when the wick is elevated above the wick tubes. The wick flange projects outwardly from a skirt 10, which is secured in any suitable manner to the lower end of the sleeve 8, as by pressing the metal inwardly, as shown at 11. The spreader plate 12 is provided with a central aperture 13 through which the top of the rod projects. Nut 7, when in place on the rod, limits the upward movement of the spreader plate, thereby limiting the upward movement of the distributor and its associated parts, including the flange 9, so that the wick can be raised only to a predetermined height.

30 For the purpose of enabling the burner to operate satisfactorily with light oils and still preserve a large wick exposure, I provide the following construction, whereby the top of the wick and the wick flange which is associated therewith are cooled relatively to the temperature which said wick and flange would otherwise attain. In the form of distributor which is illustrated herein, the upper end of sleeve 8 is extended outwardly at 40 14 and thence upwardly at 15 and is bent inwardly at the top to engage the spreader plate 12. To the outwardly extending portion 14 of the distributor there is secured a cylindrical curtain 16, the diameter whereof is slightly less than the diameter of the wick flange 9 and the lower end whereof is spaced a slight distance from said wick flange. It will be observed that curtain 16 is provided with larger perforations than sleeve 8, whereby said curtain has a relatively larger area of perforations than said sleeve and thus does not control the distribution of air through said sleeve, as any air which may flow through the perforations of the sleeve will have ample opportunity to escape unrestrictedly through the perforations in 16. The curtain 16 serves as a heat interceptor which shields the flange 9 from radiant heat of the flame, with the result that said flange and the top of the wick are maintained at a relatively low temperature compared with that which they would otherwise attain, enabling me to employ for light oils the same amount of wick exposure as with heavy oils and at the same time preserve a smokeless flame.

In Fig. 3 I have shown a modification of the invention illustrated in the preceding figures. In this case, the curtain 17 is frusto-conical in shape and is secured to the outwardly projecting portion 14^a of the air distributor at the junction of the sleeve 8^a therewith. From this point, the curtain 17 flares downwardly and outwardly, with its lower end resting on top of the wick flange 9^a. As is the case with the curtain shown in Figs. 1 and 2, the perforations in curtain 17 are larger than those in sleeve 8^a, so that the presence of this curtain does not interfere with the distribution of air through the distributor, its purpose being to shield flange 9^a and the top of the wick from the radiant heat of the flame.

In both modifications of my invention disclosed herein, there are provided simple and effective means whereby all of the advantages of large wick exposure may be retained with the use of light oils or in a device having conditions for abnormal heating of the parts, with the production of an efficient and smokeless flame therefrom.

While I have described my invention in detail, it will be obvious that the details of construction may be modified or varied without departing from the spirit of my invention, and hence I do not propose to be limited to such details except as they may be positively included in the claims hereof or may be rendered necessary by the prior state of the art.

Having described my invention, I claim:

1. In an oil burner, the combination of an inner and an outer wick tube, a wick therebetween, an air distributor comprising a perforated sleeve extending upwardly from the inner wick tube and having secured thereto a flange extending over the top of the wick and serving as a stop therefor, said sleeve extending above said flange, and a perforated curtain for said flange having a portion above and of greater diameter than the inner edge of said flange and in position to shield the inner portion of said flange from radiant heat of the flame, substantially as specified.

2. In an oil burner, the combination of an inner and an outer wick tube, a wick therebetween, an air distributor comprising a sleeve extending upwardly from the inner wick tube, a flange carried by said sleeve and extending over the top of the wick and serving as a stop therefor, and a curtain for said flange located outside of said sleeve and having a portion above and of greater diameter than the inner edge of said flange and in position to shield the inner portion of said flange from radiant heat of the flame, said sleeve being perforated above said flange, substantially as specified.

3. In an oil burner, the combination of an inner and an outer wick tube, a wick therebetween, an air distributor comprising a perforated sleeve extending upwardly from the

inner wick tube, a flange carried by said sleeve and projecting over the top of the wick and serving as a stop therefor, and a perforated curtain arranged exteriorly of said sleeve, the area of the perforations of said curtain being relatively greater than the area of the perforations of said sleeve, and said curtain being arranged to shield the inner portion of the flange from radiant heat of the flame, substantially as specified.

4. In an oil burner, the combination of an inner and an outer wick tube, a wick therebetween; an air distributor comprising a perforated sleeve extending upwardly from the inner wick tube, a flange carried by said sleeve and projecting over the top of the wick and serving as a stop therefor, and a perforated curtain arranged exteriorly of said sleeve with the lower end thereof adjacent to said flange and arranged to shield said flange from radiant heat of the flame, said flange and the lower portion of said curtain being of different internal diameters, substantially as specified.

5. In an oil burner, the combination of an inner and outer wick tube, a wick therebetween, an air distributor comprising a perforated sleeve extending upwardly from the inner wick tube and an outwardly projecting portion at the top of said sleeve, a flange carried by said sleeve and projecting over the top of the wick and serving as a stop therefor, said sleeve extending above said flange and being provided with perforations thereabove, and a perforated curtain interposed between said flange and the outwardly projecting portion of the distributor and having a portion

above and of greater diameter than the inner edge of said flange and in position to shield the flange from radiant heat of the flame, substantially as specified.

6. In an oil burner, the combination of an inner and outer wick tube, a wick therebetween, an air distributor comprising a perforated sleeve extending upwardly from the inner wick tube and an outwardly projecting portion connected to the top of said sleeve, a flange, and a perforated cylindrical curtain having its upper end supported from such outwardly extending portion of the distributor and having its lower end spaced from the flange and arranged to shield said flange from radiant heat of the flame, substantially as specified.

7. In an oil burner, the combination of an inner and an outer wick tube, a wick therebetween, a sleeve extending upwardly from the inner wick tube and having secured thereto a flange extending over the top of the wick and serving as a stop therefor, a curtain for said flange having a portion above and of greater diameter than the inner edge of said flange and in position to shield said flange from radiant heat of the flame, and means for supporting said sleeve and curtain, said sleeve being perforated above said flange, substantially as specified.

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

WILLIAM R. JEAUVONS

Witnesses:

J. B. HULL,

GRENNAN B. WEST.