T. F. I. O'BRIEN.

OIL BURNER.

APPLICATION FILED JAN. 15, 1918.

1,298,378.

Patented Mar. 25, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

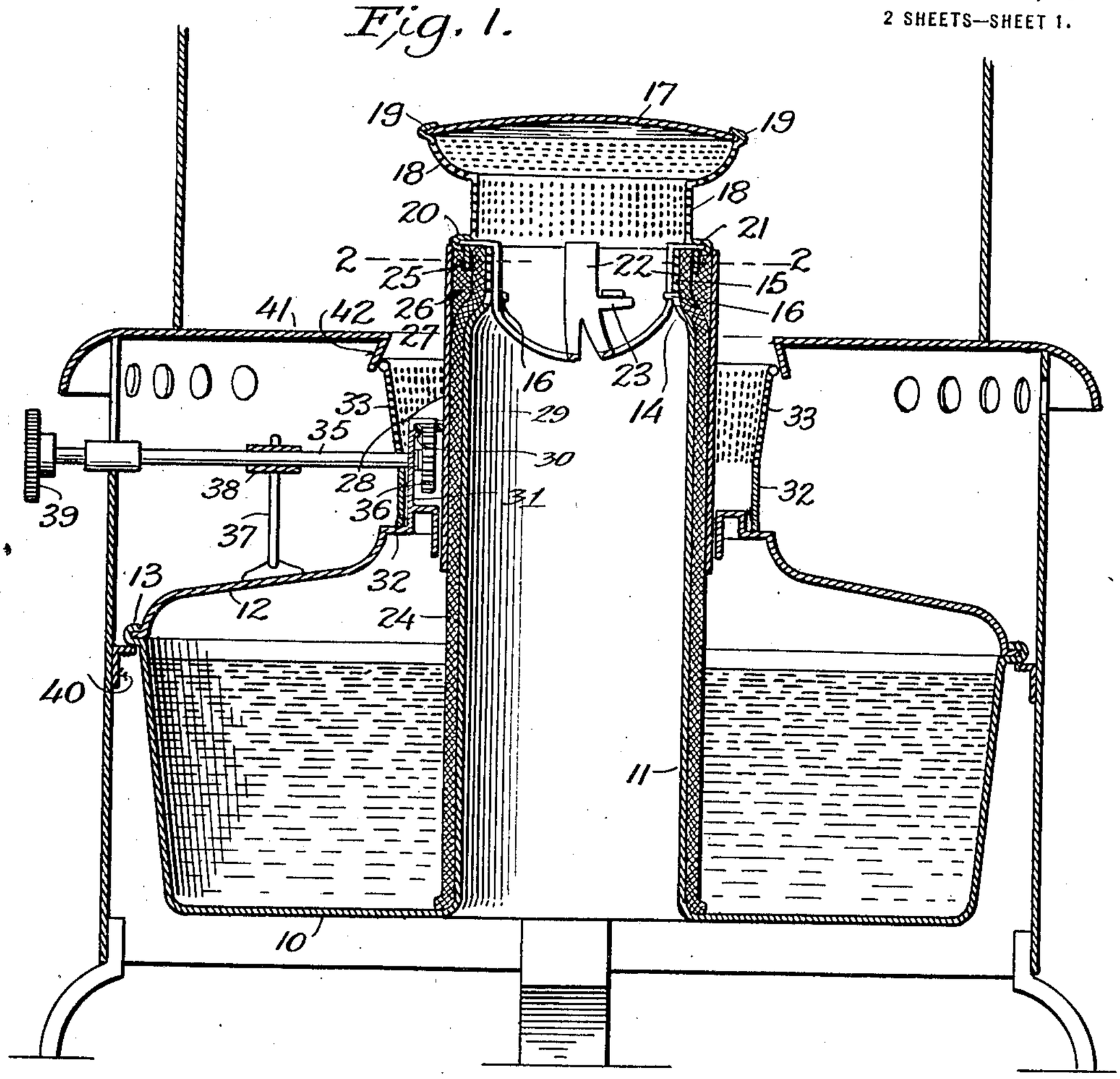

Fig. 2.

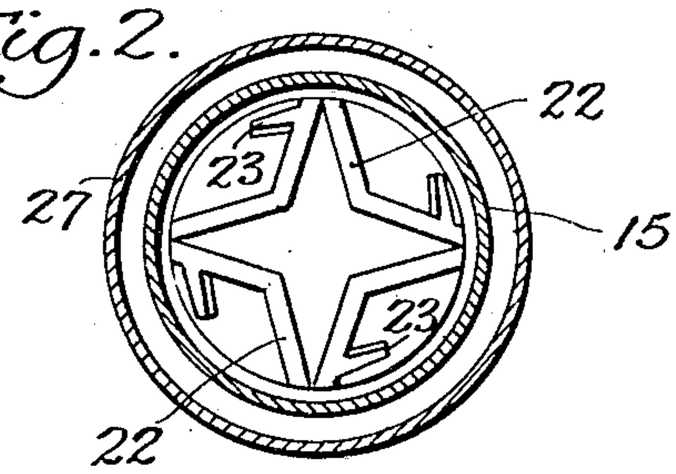

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Fig. 3.

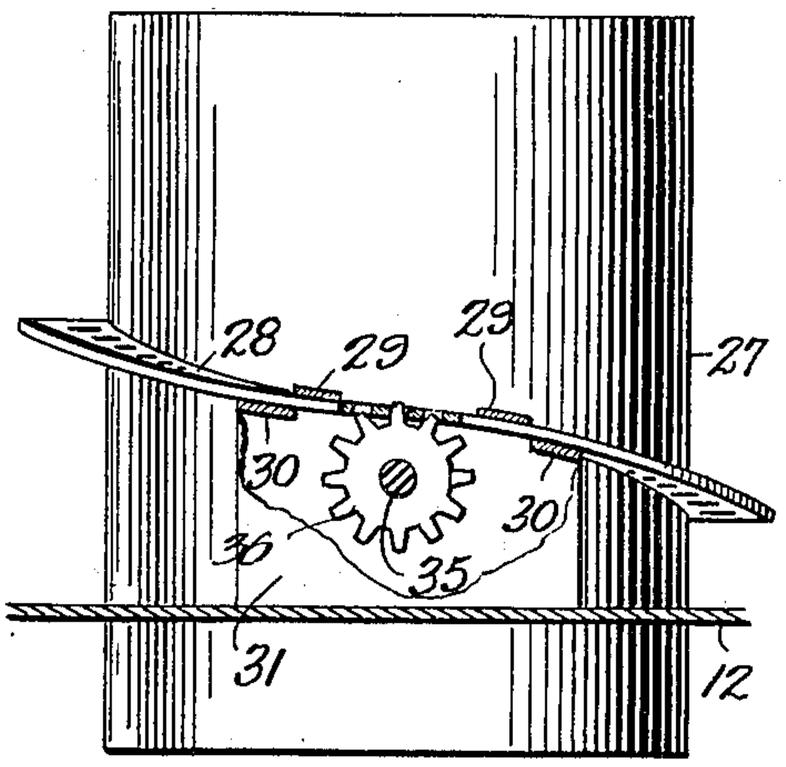


Fig. 4.

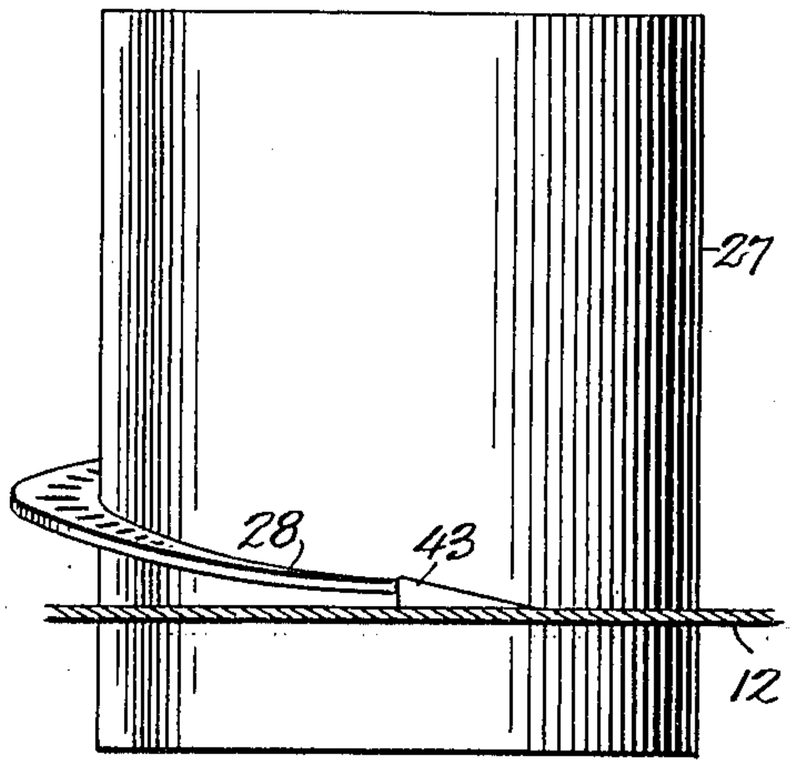


Fig. 5.

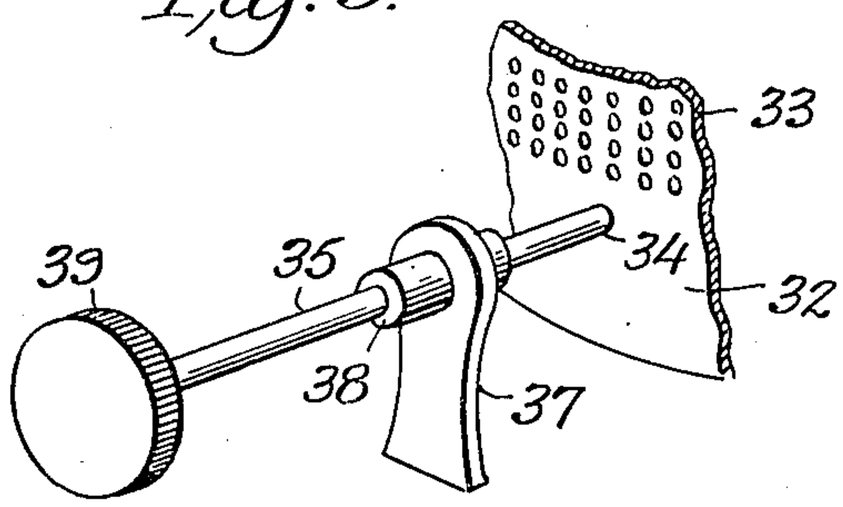
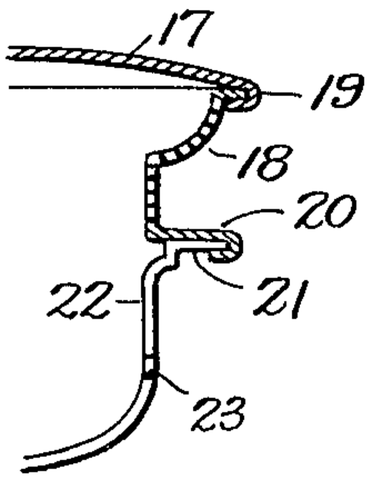


Fig. 6.



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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

1,298,378. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed January 15, 1918. Serial No. 211,990.

To all whom it may concern:

Be it known that I, THOMAS F. I. O'BRIEN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to oil burners and more particularly to that type of burner in which a wick is used.

It has for an object to provide a supplemental tip for the wick which may be easily removed as well as providing for mounting the wick so as to supply liberal quantities of fuel to support combustion.

A further object is the provision of a relatively stationary wick for feeding oil from a reservoir, a supplemental tip carried by the wick and means for exposing the supplemental tip for the combustion of the oil.

A still further object of this invention is the provision of a relatively stationary wick and a movable sleeve for exposing more or less of the wick for lighting and a simplified means for imparting movement to the wick-covering sleeve.

Further objects will be apparent from the following specification, appended claims and drawings in which,

Figure 1 is a vertical sectional view through the oil burner showing the burner in place in an oil heater,

Fig. 2 is a horizontal sectional view as on the line 2—2 of Fig. 1,

Fig. 3 is an elevation of the movable sleeve showing the rack and pinion in place,

Fig. 4 is a similar view at right-angles to Fig. 3,

Fig. 5 is a perspective view showing the mounting of the operating shaft,

Fig. 6 is a vertical sectional view through a slightly modified form of cap mounting, and Fig. 7 is a plan view of the spiral rack and guide.

Referring to the drawings in which the several features are clearly shown, 10 indicates the lower half of a reservoir from which a central tubular portion 11 rises. Secured to the edge of this lower portion is a flange of a top 12 of the reservoir. The edges of the portions 10 and 12 are secured to each other as by a lap joint 13 and the tube 11 may be also fastened to the bottom of the section 10 as by a lap joint, soldering in any other suitable manner.

The upper end of the tube 11 is contracted as at 14 and a portion of the upper end of this tube above the contraction is perforated at at 15. Inwardly directed tongues 16 are struck from the metal forming this tube and these tongues can be at any desired elevation relative to the perforated portion.

A cap is detachably carried by this tube and this cap comprises the convex top 17 to which the perforated side walls 18 are attached as by a lap joint 19 and these side walls terminate at their lower ends in an outwardly directed flange 20 the extremity of which is turned under to grip an annulus 21 bearing on the extreme upper edge of the tube 11. Depending from this annulus at intervals are the webs 22 which are slit longitudinally and curved inwardly so that the slit portions meet and form curved guides which assist in applying the cap to the upper end of the tube 11. Lugs 23 are formed on the webs 22 and these lugs engage under the inwardly directed extensions 16. In use, air rises freely through the tube 11, mixes with the vapor or gas emitted through the perforations in the upper part of the tube 11 the admixture passing through the perforated side walls 18 of the cap to support combustion when the wick is lighted.

A wick 24 is placed about the tube 11 and is slid downwardly until the lower end thereof touches the bottom of the reservoir and the upper end of this wick will be contracted to conform with the outer surface of this tube. That is, the diameter of the upper end will be proportionately less than the major portion thereof and this upper end is held relatively fixed upon the contracted end of the tube 11 as by placing a metallic band 25 about the extreme upper end of the wick. This band establishes the desired binding action to prevent movement of the wick 24, and the band also contacts with the flange or annulus 21 so that heat from the side walls of the cap and flange 20 is conducted down through the band 25 where it serves to vaporize the liquid fuel. A supplemental tip of fibrous material is shown at 26 and this tip is removable and replaceable when it is necessary. In placing this supplemental tip upon the constricted por-

tion of the major wick, it is evident that the interstices between the fibers of this supplemental wick are exposed to the major wick so that the liquid fuel may be duly collected in the supplemental tip and raised by capillarity to the exposed portion which is ignited.

A sleeve 27 surrounds the supplemental tip and the upper portion of the wick 24 and this sleeve controls the exposure or covering of the supplemental tip as this sleeve is moved on the wick 24 and tip 26. When this sleeve is elevated the upper edge closely approaches the flange 20 to smother any flame but when this sleeve is lowered, it is evident that a predetermined portion of the outer face of the supplemental tip is exposed and the oil raised by this wick may be consumed. This sleeve also conducts a small amount of heat downwardly below the exposed surface of the tip, which is dissipated through the liquid fuel raised by the wick to assist in gasifying the oil. A spiral rack 28 is carried by the sleeve 27 and serves to guide the sleeve 27 in its spiral movement. This rack passes between the guides 29 and 30 (see Fig. 3) formed on the bracket 31 which is attached to, and rises from the top 12 of the reservoir. A guard or collar 32 is carried by the top of the reservoir with its upper portion perforated as at 33 to permit the free passage of air currents upwardly between this guard and the sleeve 27. This guard has a bearing 34 formed therein for the inner end of an operating shaft 35 on which the pinion 36 is attached to mesh with the rack 28 to control its longitudinal movement through the guides 29 and 30. A standard 37 is carried by the top 12 and this standard has a sleeve 38 secured therein through which the shaft 35 passes. The shaft 35 extends beyond the sleeve 38 to the outside of the casing of the oil heater and has a thumb-wheel 39 attached to the outer end thereof.

The burner is positioned in the oil stove by having the flange 13 rest upon a supporting flange 40 in the stove body or casing 40′ and by having the diaphragm or top 41 with its central opening 42 positioned to receive the guard 32. Air is admitted to both sides of the flame occurring at its source about the exposed portion of the supplemental tip 26. By manipulation of the thumb nut 39, the degree of exposure of the supplemental tip may be regulated to intensify or reduce the flame as desired. When it is desired to replace a tip for a charred one, the cap is partially rotated to disengage the lug 23 from the extension 16, whereupon the cap may be raised and removed. By turning pinion 36 the rack 28 is rotated in either direction, and inasmuch as the rack is carried by the sleeve 27, the latter moves accordingly. When it is desired to remove the sleeve, the pinion is rotated until it rides off of the rack. Whereupon the sleeve may be pushed with the fingers still farther so as to clear the guides, which will permit the sleeve to be readily lifted. When it is desired to control the downward movement of the sleeve 27, a stop 43 may be attached to the top 12 and positioned to arrest continued movement of the rack 28 as the end of the rack will contact with the shoulder formed by the stop and then it will be impossible to lower the sleeve beyond a predetermined point.

In Fig. 6, the webs 22′ are shown as offset from the inner wall of the perforated portion of the top of the tube 11 so that the entire inner surface of the tube is free and unobstructed, and gas generated by the heat conducted through this metallic perforated tube may escape freely into the tube 11 where it is carried off by the air currents.

Having thus described this invention, I claim:

1. In an oil burner, a stationary wick, having a contracted end; a retaining, heat conducting band about a portion of the contracted end, and a detachable wick section superimposed on said retaining band and contracted end of said wick having capillary interstices disposed to increase absorption of said detachable wick section.

2. In an oil burner, a stationary wick, a supporting tube for said wick having a contracted end, said wick being of reduced diameter over said contracted end of said tube, a retaining band encircling the end of said wick and contracted tube to lock said wick upon said tube, and a detachable wick section superimposed upon said reduced end of said wick having an external periphery equal to that of said wick and having fibers thereof longitudinally disposed over longitudinal fibers of said wick.

3. In an oil burner, a stationary wick, a sleeve spirally movable on said wick for exposing and covering portions of said wick, a rack and pinion for imparting movement to said sleeve, and guides for directing the course of travel of said sleeve.

4. In an oil burner, a stationary wick, a supporting tube for said wick, a cap removably carried by said tube, a sleeve spirally movable on said wick, a rack and pinion for imparting movement to said sleeve and guides for directing the course of travel of said sleeve.

5. In an oil burner, a reservoir, a tube rising therefrom, a wick surrounding said tube, a retaining ring for holding said wick stationary on said tube, said wick and tube being contracted at one end, a detachable wick section superimposed on said contracted wick and retaining ring, a flanged cap removably carried by said tube, a flange of said cap overlying said wick, detachable

wick section, and retaining ring, and adapted to conduct heat to said retaining ring, guiding and locking means carried by said cap for applying and removing said cap to and from said tube, a sleeve movable on said wick and detachable wick section for exposing and covering portions of said detachable wick section, guides for determining the travel of said sleeve on said wick sections, and remotely controlled actuating means for imparting movement to said sleeve.

6. In an oil burner, a reservoir, a tube rising from said reservoir and having a contracted upper portion, a main stationary wick mounted on said tube and having its upper extremity contracted to conform with the upper contracted portion of the tube, a sleeve of uniform diameter operable on said wick, and an auxiliary wick disposed between the contracted extremity of the main wick and said sleeve.

7. In an oil burner, a stationary wick, a sleeve slidable on said wick for exposing and covering portions thereof, a spiral rack, a pinion for imparting longitudinal movement to said sleeve, and guides for directing the course of travel of said sleeve.

8. A casing, a reservoir supported within said casing and having a tube which projects through the top of said casing, said tube carrying a wick, wick controlling means, and a guard interposed between said reservoir and the top of the casing, and inclosing said means.

9. A casing, a reservoir supported within said casing and having a tube which projects through the top thereof, said tube carrying a wick, wick controlling means, and a perforated collar surrounding said means and arranged between the reservoir and the top of the casing.

10. A reservoir, a wick tube rising therefrom, a projection disposed inwardly adjacent the top of said tube, a partially rotatable flame spreader having a base adapted to enter said tube, said base having a lug designed for engagement with said projection, when said flame spreader is rotated.

In testimony whereof I affix my signature.

THOMAS F. I. O'BRIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."