Sept. 3, 1935. S. HUGHES 2,013,442

WICK FOR OIL BURNERS

Filed June 22, 1933

Fig. 1.

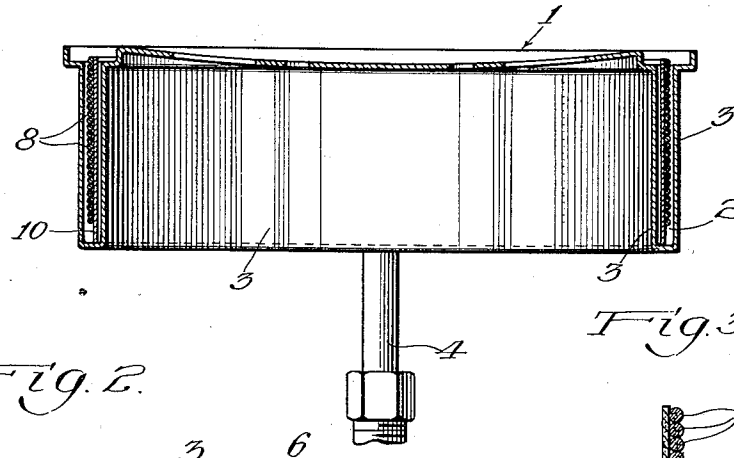


Fig. 3.

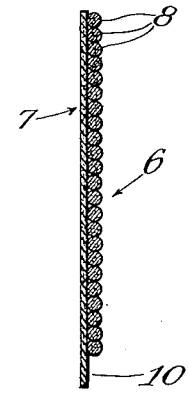


Fig. 2.

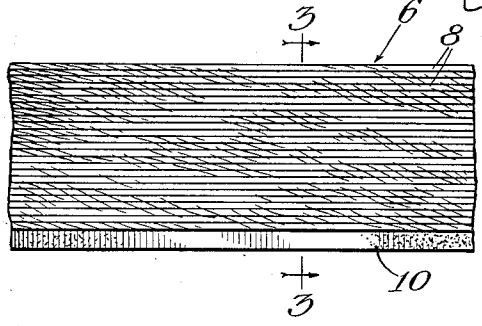


Fig. 4.

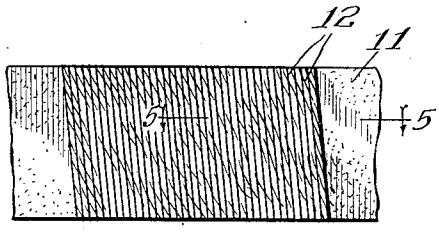
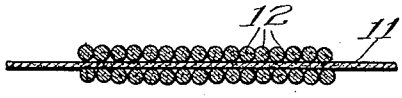


Fig. 5.



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WICK FOR OIL BURNERS

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4 Claims. (Cl. 67—69)

This invention relates to improvements in wicks for oil burners or the like and refers specifically to a wick constructed primarily of strands of asbestos with or without a metal core, said asbestos strands being adhesively mounted upon a supporting base and being disposed preferably in parallel relationship upon said base.

In oil burners, now being used, the wick compartments are of necessity relatively narrow, being purposely constructed in that manner for purposes of economy and efficiency. When the wick compartment is so constructed, a better control of the burner is obtained since a smaller "working volume" of fuel need be present in the compartment to supply the wick. Consequently, when the fuel supply is turned off, the flame is extinguished relatively quickly, because of the small volume of fuel normally present in the compartments. Moreover, if the fuel within the wick compartment has a relatively large surface area, as would be the case were the cross section of the wick compartment great, direct evaporation of the fuel, other than from the wick would render control of the flame difficult.

However, the width of the wick compartment is limited by the dimensions of the wick. Wicks of the woven asbestos yarn type or of the laminated asbestos sheet type heretofore used, must of necessity be of relatively thick construction. Hence, in utilizing these types of wicks, either the wick compartments must be made excessively wide, with the resulting disadvantages of sluggish control and poor economy or the compartments may be constructed relatively narrow and the clearance space between the wick and compartment walls be sacrificed, in which case poor vaporization and burning results very quickly in a carbonized wick and inefficient operation. In addition, difficulty is encountered in inserting and removing the wick from the compartment particularly the latter when, after use, the wick is found to be firmly "glued" in the compartment as a result of edibles, for instance, having boiled over thereon.

An important object of my invention resides in the provision of a wick for use with oil burners, which is efficient from the standpoint of absorption or capillary transfer of liquid and which is of extremely thin construction thereby being ideally adapted to use in wick compartments of narrow construction. The wick is extremely responsive to the liquid control of the burner, that is, a relatively short period after the introduction of fuel to the wick compartment, the wick may be lighted and a relatively short period after the fuel has been turned off, the flame goes out. During operation the intensifying or diminishing of the flame is quickly responsive to manipulation of the liquid control.

Another object of my invention resides in the fact that, due to its thin construction, even when used in relatively narrow wick compartments, clearance space is provided between the walls of the compartment and the wick whereby heat from the flame above can come down along the side of the wick and produce thorough vaporization of the fuel, with a reduction in the amount of carbon formed by incomplete distillation of the fuel.

A further object of my invention resides in the low cost of manufacture of the wick due to its simplicity as opposed to the cost of manufacture of the usual woven wicks which necessitate the use of a greater amount of material and must be made upon expensive, complicated machines.

Other objects and advantages of my invention will be apparent from the accompanying drawing and following detail description.

In the drawing, Fig. 1 is a diagrammatic sectional elevational view, illustrating a conventional type oil burner with which an embodiment of my invention may be used.

Fig. 1 is a fragmentary, elevational view of an oil burner wick constructed in accordance with the concepts of my invention.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary, elevational view of a slight modification of my invention.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4.

Referring in detail to the drawing, 1 indicates a conventional oil burner comprising an annular wick compartment 2 defined by walls 3. Inlet 4 for liquid fuel may connect into the lower portion of said compartment 2 whereby liquid fuel may be delivered to the burner. Wick 6 may be positioned within compartment 2 and is adapted to absorb and assist in the vaporization of the fuel at the base of the wick compartment whereby said fuel may be burned.

As a feature of my invention, wick 6 may comprise a base or strip 7 which may be constructed of relatively stiff paper, such as kraft paper, asbestos paper, sheet metal or woven wire screen. A plurality of strands 8 of absorbent incombustible material may be adhesively united to one or both faces of the base 7, said strands being preferably constructed of asbestos or of a mixture

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of asbestos and vegetable fibre with or without wire cores. The adhesive used may be sodium silicate or other adhesive not injuriously affected by heat.

In constructing wick 6, one or both faces of the base 7 may be coated with adhesive depending, of course, upon whether one or both faces are to carry the absorbent strands 8. Strands 8 may then be mounted upon base 7 in contiguous, parallel relationship as shown best in Figs. 2 and 3. Normally, but one layer of said asbestos strands is mounted upon one or each face of base 7. However, if a wick is desired which is adapted to carry a relatively large quantity of liquid fuel, one or more layers may be mounted upon one or each face, said strands being disposed parallel and contiguous.

If desired, the parallel strands may be disposed over an entire face or faces of base 7, or the disposition of the strands upon the base may be such as to provide a relatively narrow edge 10 of base 7 uncovered by said strands. In the latter case, wick 6 may be so disposed within compartment 2 that edge 10 of said wick will be positioned adjacent the bottom of the compartment. By this provision, the transference of fuel through compartment 2 may be accelerated and, in addition, absorption of fuel by the strands 8 is diminished when the level of liquid within compartment 2 is below the lowermost strand. On the other hand, absorption of said liquid and capillary transference of the same is accelerated when the level of liquid is above the lowermost strand. By this means a more accurate and responsive control of the flame is obtained and an economy of fuel results.

It can readily be seen that the construction of wick 6 permits the use of a relatively narrow fuel compartment 2 whereby the "working volume" of the fuel within said compartment is reduced to a minimum. Consequently, the flame produced by the wick is more responsive to the control of liquid into said compartment. Further, an oil burner provided with wick 6 may be lighted a shorter period after the introduction of fuel into the wick compartment than is the case with wicks heretofore used. In other words, by the use of my invention, a closer approach to instantaneous response of introduction of fuel and flame is obtained than has heretofore been possible.

Even when relatively narrow fuel compartments are utilized with their accompanying desirable results, sufficient space may be provided between the walls of the fuel compartment and the surface of the wick to permit the heat from the flame above to pass downwardly along the side of the wick within the compartment and assist vaporization of the fuel carried by the wick. This results in a more desirable combustible mixture and eliminates to a maximum degree the formation of carbon caused by incomplete distillation of the fuel.

It is to be understood, of course, that the strands 8 may be positioned longitudinally upon base 7 as shown in Figs. 2 and 3 or said strands, if desired, may be disposed diagonally or vertically across the face or faces of the base the diagonal or vertical strands being parallel and contiguous. Further, my invention contemplates the use of asbestos strands for instance, with or without metallic cores. If desired, both types of asbestos strands may be utilized upon the same wick.

Referring particularly to Figs. 4 and 5, a slight modification of my invention is shown which has substantially all of the desirable attributes inherent in wick 6. In this form of my invention a base 11, constructed of the same material which may form base 7, may carry a plurality of strands of asbestos 12. In this form of my invention strands 12 may be disposed in contiguous and parallel relationship, said strands being positioned transversely on the base 11.

To construct a wick of this character, both surfaces of base 11 may be coated with a relatively thin film of adhesive and strands 12 may be cemented in parallel relationship upon said base.

The form of my invention shown in Figs. 4 and 5 can be used advantageously where a burner is desired having a relatively high heat capacity. By the provision of the double layer of strands and their transverse disposition upon base 11, a relatively large quantity of liquid may be transferred from the base of the wick compartment to the upper portion of the wick in a comparatively short period of time. Hence, a thin responsive wick having a relatively high fuel capacity per unit of time is provided.

The term "strand" as used in the specification and claims is intended to mean, strands of asbestos or asbestos yarn which may be composed entirely of asbestos or a mixture of asbestos and vegetable fibre in any desired proportions, with or without metal cores.

By the use of the expression "incombustible" with reference to the material comprising the base, it is intended to mean a material which, although normally combustible, will not be deleteriously affected by the heat in the fuel compartment.

I claim as my invention:

1. A wick for an oil burner which comprises, a relatively flat, thin base of incombustible fibrous material having permanently united to a face thereof a plurality of strands of fibrous material comprising asbestos disposed in parallel relationship, a portion of said face adjacent an edge thereof being devoid of said asbestos strands.

2. A wick for an oil burner which comprises, a relatively flat, thin base of incombustible material having permanently united to a face thereof a plurality of strands of fibrous material comprising asbestos disposed longitudinally upon said base and in parallel relationship, a portion of said face adjacent an edge thereof being devoid of said asbestos strands.

3. A wick for an oil burner which comprises, a relatively flat, thin base constructed of metal having permanently united to a face thereof a plurality of strands of fibrous material comprising asbestos disposed in parallel relationship, a portion of said face adjacent an edge thereof being devoid of said asbestos strands.

4. A wick for an oil burner which comprises, a relatively flat, thin base of incombustible, fibrous material having permanently united to a face thereof a plurality of strands of fibrous material comprising asbestos disposed longitudinally upon said base and in parallel relationship, a portion of said face adjacent an edge thereof being devoid of said asbestos strands.

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