Aug. 6, 1940. A. F. HEINSOHN 2,210,290

WICK FOR OIL BURNERS

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Fig. 1.

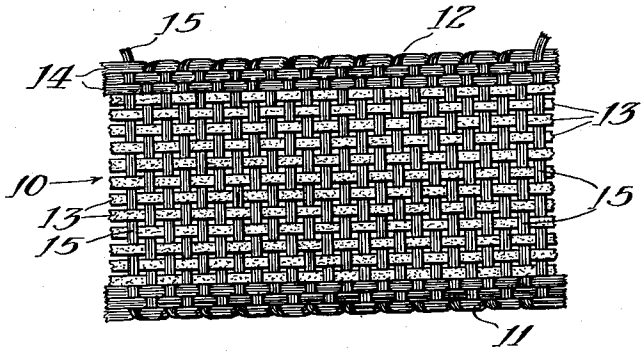


Fig. 2.

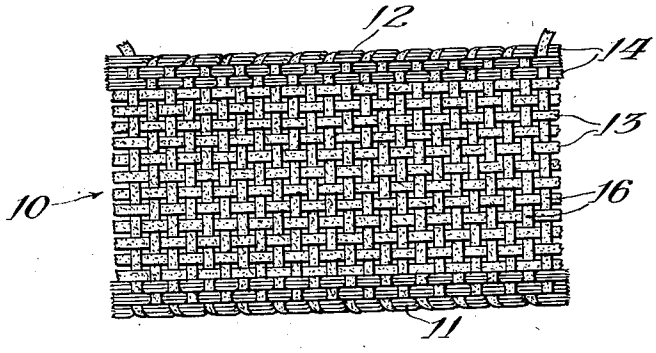
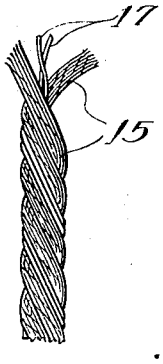


Fig. 3.



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WICK FOR OIL BURNERS

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8 Claims. (Cl. 139—420)

This invention relates to improvements in wicks for oil burners or the like, and particularly to a woven fabric wick in which the edges thereof are formed of glass yarn.

Wicks of the class herein contemplated are formed of elongated strips and are adapted to be annularly conformed to fit into relatively narrow annular wick compartments of conventional oil burners, wherein the wick acts as an absorption and initial ignition aid medium, and thereafter assists in the vaporization of fuel at the base of the wick compartment whereby the fuel is burned.

Due to the fact that in the operation of oil burners, wherein kerosene is generally used as the fuel, the wick is in the path of the vaporizing fuel and assists in such action, carbon resulting from the distillation and incomplete combustion of the fuel collects and cakes on the wick and closes the pores thereof in a relatively short time, so as to rapidly cut down its efficiency, require frequent removal and clearing, and as a whole the life thereof is short. Thus it has been found that the limiting factor of life in an asbestos wick, as well as any other wick, is its ability to resist carbon formation, while at the same time having good refractory and capillary properties. In general it has been found that a wick formed of asbestos fabric is most suitable for this class of wicks since it has desirable refractory and capillary properties, and when formed in elongated strips, can readily be cut and fit into the desired burner wick compartment. However, asbestos wicks, even when formed of relatively open weave, as well as other wicks having otherwise desirable wick properties, become rapidly encrusted with carbon formation and are required to be frequently replaced.

It is therefore the object of this invention to provide a wick of essentially woven fabric construction, and which while retaining the desirable capillary properties has a long life, has resistance over long or delayed periods to carbon formation and which particularly presents a substantially carbon free structure at and adjacent to its upper edge, throughout the life of the wick body.

Another object is to provide a wick suitable for use in an oil burner, in the form of an elongated strip of woven fabric formed of strands of asbestos, or other suitably equivalent material, having interwoven therewith strands of glass yarn.

Another object is to provide a wick suitable for use in an oil burner formed of interwoven strands of asbestos yarn and glass yarn, so formed that the longitudinal edges of the wick, and particularly the edge which forms its upper portion is essentially glass yarn, and in which the filler strands may also be of glass yarn.

Other objects and advantages of my invention will be apparent from a consideration of the following specification and drawing, wherein:

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

Fig. 2 is a view similar to Fig. 1 of a modified form of construction.

Fig. 3 is a detail view of a portion of a strand of glass yarn employed in the forming of my improved wick, and further illustrates wire reinforcement thereof.

Referring to the drawing, Figs. 1 and 2 illustrate sections of lengths 10 of woven fabric which may be cut off into suitable lengths and inserted into the annular wick compartments of conventional oil burners, the lower longitudinal edge 11 reaching to the fuel oil and the upper longitudinal edge 12 lying in the zone of the flame and being the portion of the wick which is most exposed to contact with air during the combustion of the fuel. The body of the wick comprises essentially warp strands 13, which are preferably asbestos, although strands of cotton or materials such as asbestos and cotton may be used. The selvage, or longitudinal defining edges of the wick are formed of several strands of glass yarn 14, and although the drawing discloses three warp strands of glass yarn in both the upper and lower edges, it will be understood that two or more strands of glass warp yarns may be used, and that only the upper edge 12 of the wick may be formed of glass yarn.

In the woven wick construction shown in Fig. 1, the filler strands 15 are also formed of glass yarn, whereas in the modified construction shown in Fig. 2, the filler strands 16 are of asbestos yarn, or other suitable material equivalent to the warp strands of the intermediate section of the wick. Fig. 3 illustrates in enlarged detail form a portion of a strand of glass yarn utilized as the filler in the woven construction of Fig. 1, and comprises the wire reinforcement inserts 17. The use of wire inserts is, however, optional, and if desired may be entirely omitted, or may be included in any or all of the yarn utilized in the wick, whether it be the glass yarns or the asbestos yarns.

I have found that by using a wick formed in accordance with my invention, carbon formation on the edge comprising the glass yarn is relatively loose, is freely removable, and leaves a

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cleaner edge than is possible with a construction having an asbestos edge, and as a result the life and efficiency of the wick as a whole is materially increased. Thus a wick embodying an interwoven fibrous glass yarn edge was used daily for a period of five months in a stove used for cooking purposes, before requiring replacement. However, even at the end of such period of use the glass edge remained effectively free of carbon deposition.

Knowing that carbon forms on the edge of a conventional wick, and that on one made in accordance with my invention carbon deposition is notably absent, it is my belief that the superior results obtained are due to the fact that any carbon formed must have been consumed. To consume such hard carbon two things were necessary. First, the temperature had to rise until the ignition point of coke was attained, and secondly, a sufficient supply of oxygen to support combustion was essential. Such condition can exist in the top edge of the burner, and on observation it appears that the flame produced by the glass edge wick is hotter than the flame produced by an asbestos edge wick. It is my further belief that a higher temperature is developed in the glass edge due to the fact that glass apparently reacts differently from asbestos to the development of higher temperature, and that since a higher temperature may be thus produced with glass, there is consequently a hotter flame produced due to improved distillation of the fuel. However, even though high temperatures are developed in the upper glass edge, examination of the ends of the glass fibres comprising the yarns failed to disclose any fusion. Examination of a specimen of my improved wick wherein the filler was of glass yarn disclosed after use that carbon deposition on the filler strands was less marked than on the remaining asbestos body thereof, giving evidence to the supporting of higher temperatures by the glass yarn even though the lower body portion of the wick is relatively excluded from access to air.

In order to further observe the effect of glass yarn in an oil burner wick, a wick was woven of all glass yarn, that is, all of the filler and all of the warp strands were formed of glass yarn, although such an all glass yarn construction is more expensive than an asbestos-glass yarn combination weave. The all glass yarn wick was subjected to a test run of equal length and under the same conditions as the glass-asbestos wick. However, at the end of the test run, whereas the glass-asbestos wick had a clean upper edge, as hereinbefore set forth, the all glass wick did not have a clean edge. On the contrary the warp strands of and adjacent to the upper edge of the all glass wick had a heavy, black, adherent carbon formation. In addition it was observed that use of the all glass wick rendered it difficult to regulate the height of the flame throughout its use. These difficulties of carbon formation and flame regulation were probably due to the high capillary properties of glass yarn, so that in the wick of all glass yarn construction the lifting of the fuel to the upper edge of the wick was too great, resulting in incomplete combustion, and difficulty in flame regulation.

It will thus be seen that while in my wick construction I have retained in the major body portion thereof material such as asbestos yarn which is most satisfactory due to its refractory and capillary properties, by incorporating therewith, and particularly at its upper edge, fibrous material that sustains a higher temperature, such as glass yarn, I have been able to provide a wick of improved life and efficiency, and by means of materials which in themselves do not produce as efficient results or are not as satisfactory as their combination, and particularly their method of combination as described herein.

I claim as my invention:

1. A wick for an oil burner comprising a strip of woven fabric, a plurality of longitudinal edge defining warp strands thereof being formed of glass yarn, the balance of the warp strands thereof being formed of asbestos yarn.

2. A wick for an oil burner comprising a strip of woven fabric, a plurality of longitudinal edge defining warp strands thereof being formed of glass yarn, the balance of the warp strands thereof being formed of cotton yarn.

3. A wick for an oil burner comprising essentially a strip of woven asbestos fabric and having interwoven therewith a plurality of longitudinal edge defining warp strands of glass yarn.

4. A wick for an oil burner comprising a strip of woven fabric, a plurality of warp strands thereof lying in and defining the longitudinal edges of said wick being formed of glass yarn, and the intermediate warp strands being formed of asbestos yarn.

5. A wick for an oil burner comprising a strip of woven fabric, a plurality of warp strands comprising a central longitudinally extending portion of said wick being formed of asbestos yarn, the balance of the warp strands and the filler strands being formed of glass yarn.

6. A wick for an oil burner comprising a strip of woven fabric, a plurality of warp strands comprising a central longitudinally extending portion of said wick being formed of asbestos yarn, the balance of the warp strands and the filler strands being formed of glass yarn, the said filler strands comprising wire reinforcement.

7. A wick for an oil burner comprising a strip of woven fabric, a plurality of warp strands comprising a central longitudinally extending portion of said wick being formed of asbestos yarn, the balance of the warp strands and the filler strands being formed of glass yarn, the said glass yarn comprising wire reinforcement.

8. A wick for an oil burner comprising a strip of woven fabric, a plurality of warp strands defining a longitudinal edge thereof and the filler strands thereof being formed of glass yarn, the said strands comprising wire reinforcement.

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