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SELF-SUSTAINING WICKING FOR CANDLE LIGHTS

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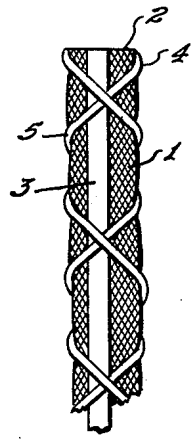

FIG. 1.

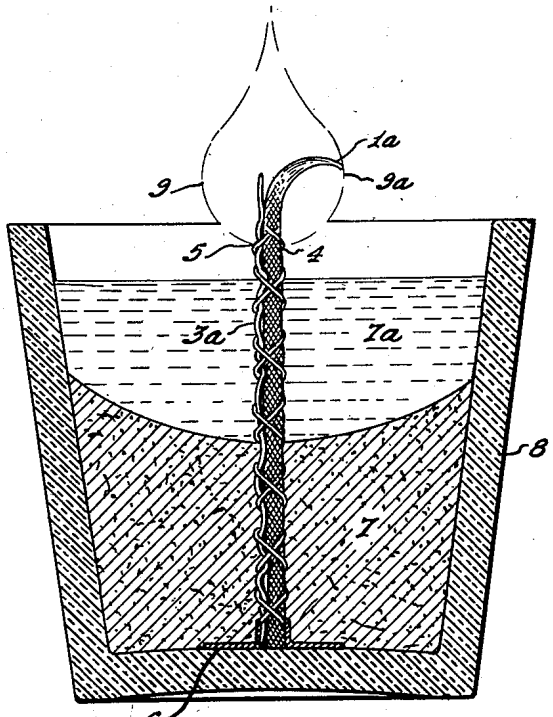

FIG. 2.

INVENTOR.
WILLIAM A. ROBERTS,
BY Allen & Allen
ATTORNEYS.

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SELF-SUSTAINING WICKING FOR CANDLE LIGHTS

William A. Roberts, Cincinnati, Ohio, assignor to The Atkins & Pearce Manufacturing Company, Cincinnati, Ohio, a corporation of Ohio

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6 Claims. (Cl. 67—22)

This invention has to do with wicking for night lights, votive lights and similar candle structures, particularly those which are burned in vessels wherein, during burning, a considerable depth of the fuel liquefies and can no longer support the wick in an upright position. The need for imparting self-sustaining characteristics to the wick has long been recognized, since if the wick is unsupported there is danger that it will sag and become submerged in the liquid fuel so that the flame is extinguished.

In Patent No. 1,751,383, Frank P. Atkins taught a candle wicking of textile strands braided about a central core wire of low melting point lead alloy, which has long been standard in the art. The core wire supports the wick through the depth of liquefied fuel. At the same time, the core wire is consumed or oxidized or disintegrated in the candle flame so that there is no problem of disposal.

The central-cord-wick, under some circumstances, does not afford the advantage of a "clean burning" wick. A textile wick will carbonize within the flame. It has long been known that if the carbonized wick bends or curls over within the flame so as to tend to protrude at the side of it, the end of the wick will be consumed or reduced to impalpable ash in the non-luminous outer envelope of the flame. This action is ordinarily observed in the burning of the common candle or taper. If, however, the carbonized wick is maintained upright within the flame so as to approach the top portion of the flame, it tends to collect carbon by accretion. This affects the symmetry of the flame and is likely to promote the formation of a carbon cap. Eventually the carbon deposits fall away, frequently in pieces of substantial size, and descend in the melted fuel. This is regarded as unsightly.

It has hitherto been proposed to wind a supporting wire helically about a textile wick. This has numerous disadvantages. A great deal more of the supporting wire is employed per unit length of wick, substantially increasing the cost of the product. A helix frequently does not afford as adequate a support as does a wire core. There is more of the metal to be consumed in the flame; and unless it is consumed at a low point in the flame it may still serve to cause the textile part of the wick to reach too high a point in the flame.

It is a principal object of this invention to provide a wicking in which the above noted disadvantages are eliminated.

It is an object of the invention to provide an improved candle wicking without the use of any greater quantity of metallic reinforcement than is employed in the metal-cored wick.

It is an object of the invention to provide a wicking of superior characteristics which can be manufactured at no increase in cost.

These and other objects of the invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, are accomplished by that certain construction and arrangement of parts of which an exemplary embodiment will now be described. Reference is made to the accompanying drawings wherein:

Figure 1 is an elevational view of a piece of wicking showing the manner of its construction.

Figure 2 is a vertical cross section of a votive light showing the wicking of this invention in operation.

Briefly, in the practice of this invention it has been found that its objects can be attained by binding a metallic reinforcing wire to the outer surface of a textile braided wick with double, crossed, helical servings or wrappings of textile strands.

This is illustrated in Figure 1 wherein a textile wicking is shown at **1**, formed of braided strands **2**. The size and number of the strands can be varied, as well understood in the art, to provide wickings of different capacities and capillarities suitable for lights and flames of different sizes. A reinforcing wire element **3** extends longitudinally of the wicking and is bound thereto by helical crossed windings of textile strands or threads **4** and **5**. The skilled worker in the art will understand how the wick structure set forth may be made in a single operation on a standard braiding machine, although it is not outside the scope of this invention to braid the main portion of the wick on a braiding machine and then serve the reinforcement wire to it by means of the textile strands **4** and **5** in a separate operation on a serving machine.

Whereas a central wire core tends somewhat to diminish the capillarity of a braided wicking, this is not true of the structure of this invention. It is a safe rule in making the product hereof to gauge the capillarity on the basis of the total weight of textile strands per unit length (including both the strands used in the braided portion of the wick and the serving strands **4** and **5**) as though no reinforcement were present.

A braided wick is preferred because of its greater homogeneity and coherence in burning; but a twisted main wick portion may be employed if desired.

The reinforcement should be a metallic wire of low melting point lead alloy as known in the art. It should be dead soft in physical characteristics and preferably is consumable in the flame. Its diameter and weight may be varied for wicks of different sizes; but in wicks for ordinary votive lights it is preferred to employ a wire having a diameter of substantially .015 to .025 inch and preferably .016 to .018 inch.

The diameter and characteristics of the various textile strands going to make up the article may likewise be varied for wicking of different sizes and capacities. By way of example, for ordinary votive lights, the main body of the wicking may be formed by braiding 9 to 18 textile strands of 50/1 weight, while the serving strands **4** and **5** may be threads of 50/2 weight. These values, however, may be widely varied for wicking intended for different purposes and varied also to control capillary capacity and hence flame size.

After the manufacture of the wicking in the way set forth, and prior to its use in a candle structure, it will be customary to spool it. In the spooling a curious action occurs. The wire reinforcement being wound with the wicking in an arcuate configuration on the spool becomes slightly stretched or elongated. As a consequence, when the wicking is again straightened out for use, the wire reinforcement tends to kink at the points at which it is served to the braided structure. This is illustrated at **3*a*** in Figure 2. This kinking has been found to be advantageous in that it diminishes the tendency of the wire reinforcement to acquire an arcuate set which would cause displacement of the wick as the fuel melts.

Before or after the initial spooling, but prior to the use of the wicking in a candle, it will normally be the practice to saturate the wick in a relatively heavy and relatively hard wax having a softening point higher than

the softening point of the normal candle fuel. This stiffens the wick and makes it easier to handle in the production of votive lights and the like.

In making a votive light, one procedure is to cut the candle wicking into suitable lengths, to each of which a thin sheet metal stand is fastened at one end. The stand may take various forms, as well understood in the art. Such a stand is shown at **6** in Figure 2. Cast bodies of suitable candle wax or fuel may be separately formed and provided with a central hole. In assembling a votive light the wicking is passed through the hole and the stand is embedded at the bottom of the cast body. A cast body of fuel is indicated at **7** in Figure 2.

In operation, the completed candle structure may be placed in a vessel **8** and burned therein. During the course of the burning a portion of the fuel, usually to a considerable depth, will liquefy as at *7a*. The wicking, being supported by the reinforcement will extend above the fuel and will burn with a flame **9**.

The serving of crossed strands **4** and **5** is an important feature of this invention. They serve to maintain the reinforcement bound to the braided wick section until the flame is entered, since they tend to retain each other in place. This is accomplished where two separate helical windings are used, the one lying wholly outside the other. An even better effect is secured where the two strands are, as it were, braided about the main wick and wire, by which is meant wound in such a way that at successive points where the strands cross, first one is on the outside and then the other. This is readily accomplished on a braiding machine.

At the same time, the serving strands, being relatively light in weight burn away at a low point within the flame, thus freeing the main braided portion of the wick from the wire reinforcement. The portion of the main wick within the flame carbonizes and bends over as at *1a*. The end of it comes into the area of the outer or non-luminous flame envelope indicated at *9a* and is consumed so that there are no carbon accretions. Since the braided main portion of the wick is dependably freed from the reinforcement at a low point in the flame, it makes no vital difference at what point within the flame the wire reinforcement is consumed. This will depend in part at least on the weight and diameter of the wire reinforcement and in part on its alloy composition.

Modifications may be made in the invention without

departing from the spirit of it. Having thus described the invention in an exemplary embodiment, what is claimed as new and desired to be secured by Letters Patent is:

1. A candle wicking comprising a body of textile strands, an external reinforcing wire of flame-destructible metal extending longitudinally along one side of the body, and an additional pair of textile strands forming a crossed helical winding, binding the wire to the body at spaced apart points where the helical windings cross each other.

2. The structure claimed in claim 1 wherein the said body is formed of braided textile strands.

3. The structure claimed in claim 1 wherein the said body is formed of braided textile strands, and wherein the said wire is a dead soft low melting point lead alloy wire.

4. The structure claimed in claim 1 wherein the said body is formed of braided textile strands, and wherein the said wire is a dead soft low melting point lead alloy wire, the said wire being slightly kinked between its points of contact with the said helical binding.

5. A candle for a votive light or like structure comprising a body of solid fuel, a wicking extending centrally of said body, said wicking comprising a braided textile core, an external longitudinally extending dead soft, heat-destructible metal wire reinforcement and a binding of crossed textile strands holding said reinforcement to said core at spaced apart points where the strands cross each other, and a support for said wick embedded in the bottom of said fuel body.

6. A candle wicking comprising a textile body characterized by capillarity for liquid fuel, a longitudinally extending external wire reinforcement, and a pair of flame releasable crossed textile strands binding said reinforcement to the exterior of said body at spaced apart intervals so that within a flame fed by said wick, said body will be released from said wire so that the end of said body can bend over and enter the outer zone of said flame.

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