

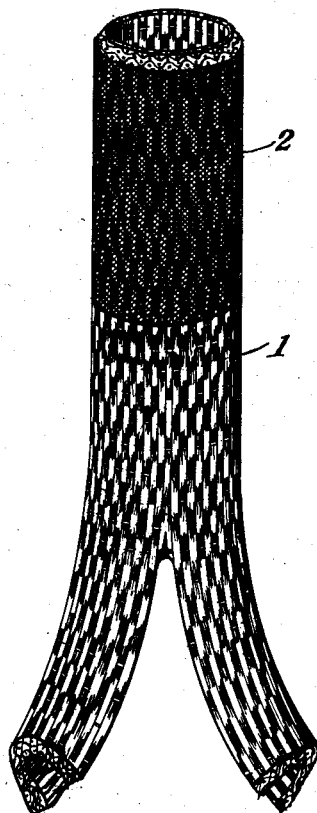
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J. GEPPERT

WICK

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JOSEPH GEPPERT  
INVENTOR.

BY

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# UNITED STATES PATENT OFFICE.

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## WICK.

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*To all whom it may concern:*

Be it known that I, JOSEPH GEPPERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wicks, of which the following is a specification.

The invention relates to wicks such as may be used in blue-flame and other lamps, objects thereof being to stiffen and size the wick, especially that part of the wick which is disposed above its connection with a wick raiser.

Lamp wicks ordinarily consist of cotton fibers which are more or less thickly interwoven and must possess sufficient capillarity to replace with sufficient velocity the liquid fuel consumed at the burning end. All such wicks are subject to longitudinal elongation or compression, even though they may be disposed between and guided by suitable wick tubes.

The wick end, where the fuel is burned, should protrude from the wick tubes uniformly so that like quantities of fuel will be burned at all points. If the wick exposure becomes ununiform by reason of its elongation, compression or distortion, such an ununiform wick results in an uneven flame, which will cause carbon deposits especially when used in blue-flame mantle lamps.

Many attempts have been made to stiffen these wicks, as by casein and similar substances, but in so far as I am aware, no stiffened cotton or similar wick which possesses the required degree of capillarity and otherwise fulfills the conditions of practical use, has heretofore been produced. In some instances the capillarity of the stiffened wick was found to be insufficient to afford an adequate supply of oil to the flame, while in other instances the stiffening material caused the wick to shrink and bind the wick tube, or was destroyed by the heat of the flame or rendered sticky and adherent to the surface of one or the other of the wick tubes.

The present invention, illustrated in the figure of the drawing, consists of a preferably cotton wick 1, in which preferably only the superficial fibers 2 are associated with end, it may be, penetrated by a substance

which at the high temperatures to which it is subjected when in use, is chemically and physically stable, and, notwithstanding the presence of the stiffening material, still possesses substantially, if not all of its natural capillarity. This substance is made from ingredients which are heat-treated in situ, the product being a solid which, because of its initial liquidity and fluency, has become intimately associated with the fibers of the wick either by penetration of the individual fibers, or by adherence to the surfaces of said fibers.

The ingredients which I have found useful in the production of a wick-stiffening material thus produced in situ, are a phenol or a cresol and formaldehyde with which an alkali is associated, and the specific formula which I have advantageously employed consists of 300 c. c. phenol—87%, or cresol, 170 c. c. formaldehyde solution, 750 c. c. water, and 22 gr. caustic soda.

In the preparation of these ingredients I find it advantageous to add the phenol, water and caustic soda together and heat to about 90° C. Then the formaldehyde solution is slowly added and the total brought to the boiling temperature. The mixture is then cooled and ready for use. The product of the aforesaid process is an aqueous solution of a condensation product possessing alkalinity. The strength of the solution may be varied by the addition of water, and its power of impregnation is largely dependent upon the temperature at which it is applied to the fabric. If boiling, it readily impregnates the entire fabric, but if applied cold, the impregnation will be superficial or shallow.

After applying the solution to a wick, the wick is put in an oven and heated at a temperature of about 150 degrees C. for 15 or 20 minutes, the chemicals being thereby set and hardened. The product thus produced, is not soluble in ordinary solvents or in hydrocarbon oil, and is therefore very useful for hardening wicks and at the same time fixing their shape and size. The product does not become gummy and sticky at any temperature within that to which it is subjected when in use, and does not seriously reduce the capillarity of the wick. The

solution is applied by a brush or by felt rolls. When in the claims I refer to a phenol, I mean also an equivalent cresol.

Having thus described my invention, what I claim is:

1. A wick containing a chemically and physically-stable solid stiffening substance heat-treated in situ.
2. A wick containing a superficially-disposed and physically and chemically-stable solid stiffening substance heat-treated in situ.
3. A wick containing a superficially-disposed and chemically and physically-stable solid stiffening substance formed in situ, said solid being a chemical condensation product.
4. A wick containing a chemical condensation product.
5. A wick containing a heat-treated condensation product associated with its superficial fibers only.
6. A wick containing the heat-treated product of an aqueous solution including a phenol, formaldehyde and an agent, said agent being a caustic alkali.
7. A wick containing the heat-treated product of an aqueous solution including a phenol, formaldehyde and an alkali.
8. An unshrinkable wick containing a solid heat-treated stiffening substance formed in situ.
9. A wick treated with an aqueous solution of a condensation product.
10. A tubular lamp wick, having capillary threads, and including an adherent stiffening and binding substance for unifying threads of said wick, said substance penetrating a desired portion of the wick and being insoluble in water and kerosene oil, and non-viscous at temperatures prevailing during the use of said wick in a lamp burner.

In testimony whereof I affix my signature.  
JOSEPH GEPPERT.