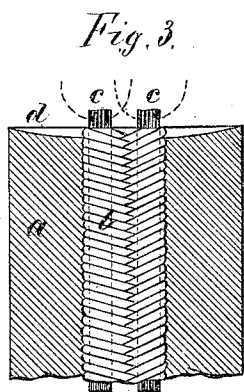
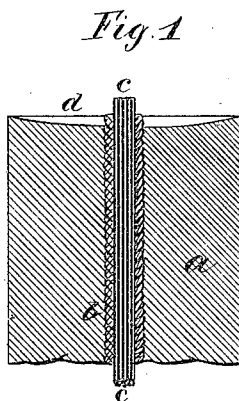
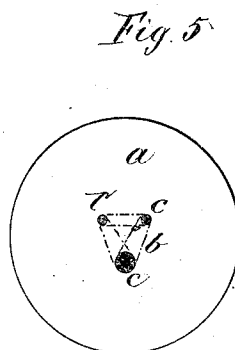
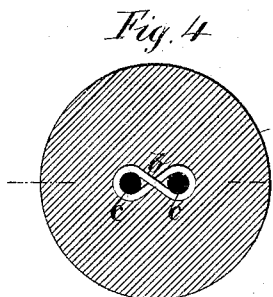
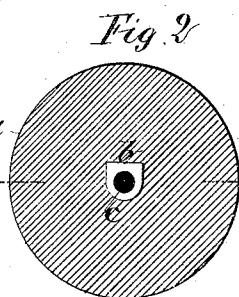
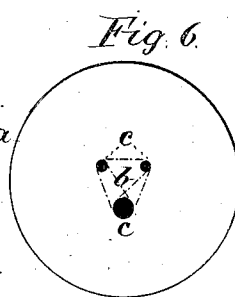
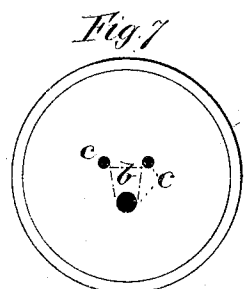
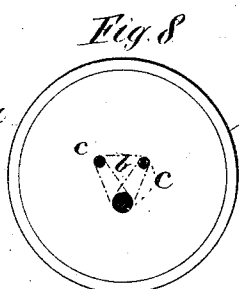
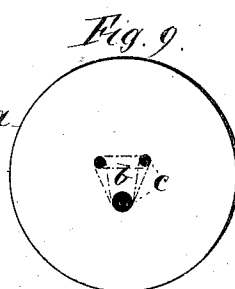
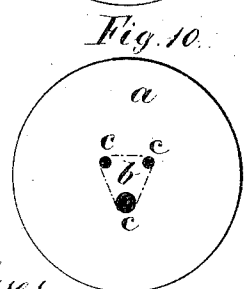


(Model.)

F. M. JOLY.
Manufacture of Candles.

No. 243,272.

Patented June 21, 1881.



Witnesses.
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FIRMIN M. JOLY, OF PARIS, FRANCE.

MANUFACTURE OF CANDLES.

SPECIFICATION forming part of Letters Patent No. 243,272, dated June 21, 1881.

Application filed January 27, 1881. (Model.) Patented in France November 24, 1880.

To all whom it may concern:

Be it known that I, FIRMIN MARIUS JOLY, a citizen of France, residing at Paris, in the Department of Seine, and Republic of France, have invented certain new and useful Improvements in the Manufacture of Candles; 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, reference being had to the accompanying drawings and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in the manufacture of candles, whereby a better light is obtained and considerable economy effected; and it consists in producing a candle with a wick having a core or cores composed each of a number of filaments or fibers arranged parallel with each other, forming a loose bundle, and inclosed within wick-strands plaited around or around and between said cores.

It further consists in providing a candle with a wick having two or more cores of varying diameter, each inclosed in a sheath formed by plaiting strands around and between said cores.

It further consists in the manufacture of candles that are composed of two thicknesses of material that have different melting-points, in combination with a wick having one or more cores of loose fibers arranged parallel with each other, and inclosed within a sheath or sheaths of plaited wick-strands; and it further consists in the method of manufacturing wicks for candles that have one or more cores the loose fibers or filaments of which are arranged parallel with each other in bundles and inclosed within a sheath or sheaths formed by plaiting, weaving, or twisting wick-strands around said core or cores.

In the manufacture of candles of whatsoever description and from whatsoever materials there yet remains an important problem to be solved—the waste arising from the unconsumed illuminating material, represented in part by imperfect combustion produced by the intermittent intensities of the flame, and in part by the material running to waste by the overflow of the melted material out of the cup formed by and below the flame in the can-

dles. This waste in candles as now manufactured is, as every one knows, very great, and, in order to obtain a maximum illuminating power, it is necessary, first, that the combustion should be perfect and continuous, while it is essential to economy that none of the material should run to waste. This can only be effected by the consumption of all the material of which the candle is composed to obtain therefrom the greatest illuminating power, the one being the natural sequence of the other. Many attempts have heretofore been made to obtain this desired result, but have generally been sought in a wrong direction, as they almost invariably relate to the composition of the material of which the candle is made, while a few have sought a remedy by providing appendages or accessories which were in general complicated and impracticable.

The object of my invention is to solve this problem and produce a candle that will burn with a practically uniform intensity, and giving the maximum illuminating power that can be produced by the material of which it is made by the practically perfect combustion of said material or its light-giving constituents. To obtain these results it is essential that all the material melted by the flame of a candle should be absorbed by the wick and fed to the flame, so that the cup formed around the wick by and below the flame shall be practically empty or dry, if I may so express myself, at all times, whereby the consumption of all the melted material is effected, and whereby the waste from running is avoided, and consequently a light of uniform intensity with a minimum vacillation of the flame is obtained. These results I obtain by forming a wick of a core or a number of cores composed of a bundle or bundles of parallel loose fibers, said core or number of cores being each inclosed in a sheath formed by wick-strands plaited around them.

Various methods of manufacture and arrangement may be resorted to in carrying out my invention, and in the accompanying sheet of drawings I have illustrated several of these methods.

In so far as the manufacture of the candle itself and as a whole is concerned, I propose to make no changes except such as are or may

be necessary to form a candle that has a core and an envelope for said core of materials of different densities or different degrees of fusion, a structure especially advantageous for ordinary tallow dips, as the outer and harder layer farthest removed from the focus of the flame will then melt much slower than the inner softer core, and form a comparatively deep cup around the wick. And when this structure is applied to dipped candles no change in the ordinary method of manufacture takes place except that of dipping into separate vats having materials of different degrees of fusion.

In practice I employ the usual soft tallow for the core, in which the wick or wicks are embedded, and when this core is of sufficient thickness I then dip the candle into hardened tallow to form an outer harder layer thereon. This layer may vary in thickness according to the dimensions (diameter) of the candle.

In tallow candles it is necessary, if any amount of light is desired, to frequently remove the carbonized wick extremity produced by imperfect combustion and resulting in smoke, which increased light lasts but a comparatively short time after each removal of said carbonized wick end. At each snuffing or removal of the carbonized wick portion the flame is brought close to the candle, melting the material rapidly, and, owing to the inadequate capillarity of the wick ordinarily employed, the melted material flows over the cup or cuts a furrow or passage through the edges thereof and runs to waste.

In the drawings above referred to, which illustrate the invention on a greatly-enlarged scale relatively to the dimensions of the ordinary candles, *a* represents the candle made of tallow, wax, stearine, or other analogous substance or combinations thereof; and *b* is the wick, which may be woven, plaited, or braided or twisted, in fact made in any of the usual methods employed to manufacture the same and of the usual material. With this ordinary wick I combine one or more auxiliary wicks, *c*, of a looser texture—that is to say, of greater capillarity—and in practice I preferably employ strands of loose fibers to form the core of the wick, as shown in Figs. 2 and 5.

Instead of one auxiliary wick, two such wicks may be employed, as shown in the drawings, or more than two such auxiliary wicks may be used, as shown in Figs. 5 to 10, inclusive.

A convenient way of arranging or grouping the auxiliary wicks to form two or more cores for the primary wick *b* is illustrated in the above-mentioned figures of drawings, the number of such wicks varying according to the composition of the candle, while the thickness of the strands or bunches may also be varied, as shown in Figs. 5 to 10, inclusive, of the drawings, where the diameter or thickness of two of the auxiliary wicks is equal to that of the third.

Owing to the greater capillarity of the core or cores of the wick all the melted material is

absorbed by the combined wicks and fed to the flame as required. They also act as a regulator to keep the flame as far away from the candle as possible, and when the illuminating material in the flame end of the wicks begins to exhaust the flame is seen to approach the candle or cup *d*, which takes place at comparatively long intervals, to melt a supply of the illuminating material, and immediately recede from the cup to its normal position. I have noted the extent of this recession of the flame to equal at times three-eighths of an inch, and usually one-quarter of an inch. The combined capillarity of the wicks of different densities being sufficient to absorb all the material that is melted by the flame, the cup *d*, formed by and below the latter, contains very little fluid illuminating material. Consequently there cannot be any waste of such material by running; and the vascillations of the flame being regular and at long intervals—*i.e.*, the approach of the flame toward the cup to melt a supply of illuminating material—there is no waste through imperfect combustion; hence no smoke, and consequently a maximum illuminating power, is obtained.

I am aware that candle-wicks have been made in which a plaited or woven wick is surrounded by loose fibers and the whole inclosed in a sheath of woven or plaited wick-strands; also, that such wicks have been made by interplaiting strands of fibers of different degrees of capillarity, and that candles have been made of two layers of material having different melting-points; and I do not wish to claim, broadly, a wick composed of fibers of different degrees of capillarity, or a candle composed of materials having varying melting-points.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A candle provided with a wick composed of a core or cores of fibers arranged parallel with one another, and an enveloping-sheath of wick-strands plaited around said core or cores, substantially as and for the purpose specified.

2. A candle provided with a wick composed of two or more cores of fibers arranged parallel with each other, each of said cores being isolated from the others by an enveloping-sheath of wick-strands plaited around and between the cores, substantially as described, for the purposes specified.

3. A candle provided with a wick having two or more cores of varying thicknesses, substantially as and for the purpose specified.

4. A candle provided with a wick composed of two or more cores of fibers arranged parallel with each other, said cores varying in thickness, substantially as and for the purpose specified.

5. A candle provided with a wick composed of two or more cores of fibers arranged parallel with one another, said cores varying in thickness and being isolated from each other by a sheath of wick-strands plaited around and

between the cores, substantially as and for the purpose specified.

6. The method of forming wicks for candles by first forming a bundle or bundles of fibers, arranged parallel with each other, and then plaiting, weaving, or twisting strands of fiber around said bundle or around and between said bundles, substantially as and for the purpose specified.

7. A candle-wick composed of a core or cores of fibers, arranged parallel with each other and inclosed in a sheath of plaited, twisted, or woven wick-strands, substantially as and for the purpose set forth.

8. A candle-wick composed of two or more cores the fibers of which are arranged parallel with each other, said cores being of varying

thickness and isolated from each other by a surrounding sheath of wick-strands woven, plaited, or twisted around and between them, substantially as and for the purpose specified.

9. A candle composed of two materials that have different melting-points, in combination with a wick composed of a core or cores the fibers of which are arranged parallel with each other and enveloped in plaited, twisted, or woven wick-tubes, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

FIRMIN MARIUS JOLY.

Witnesses:

ROBT. M. HOOPER,

E. PAGE.