(No Model.)

E. L. BROWN.

CANDLE.

No. 345,272. Patented July 13, 1886.

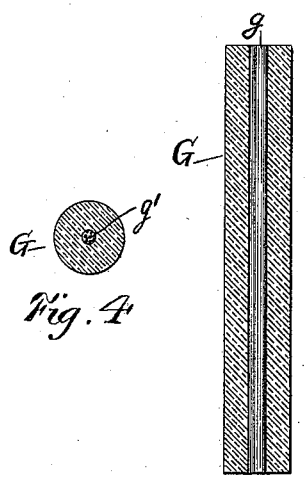

Fig. 4

Fig. 1.

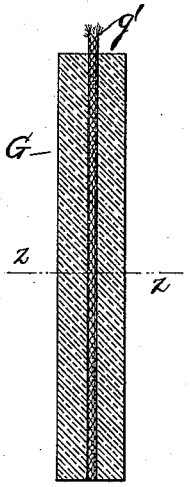

Fig. 2.

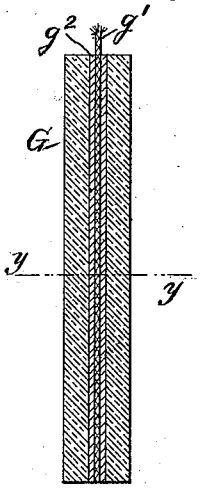

Fig. 3.

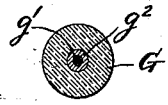

Fig. 5

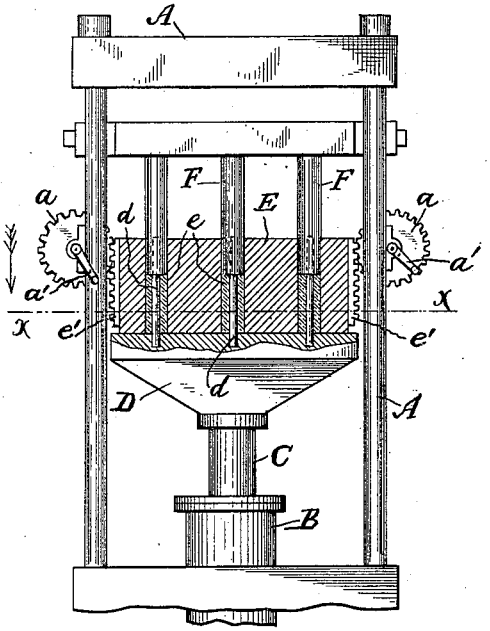

Fig. 6

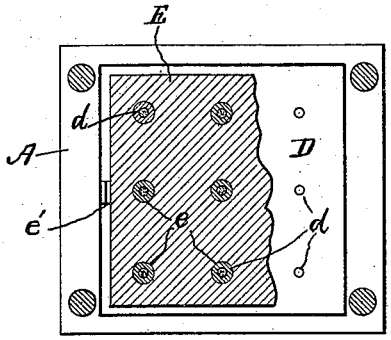

Fig. 7.

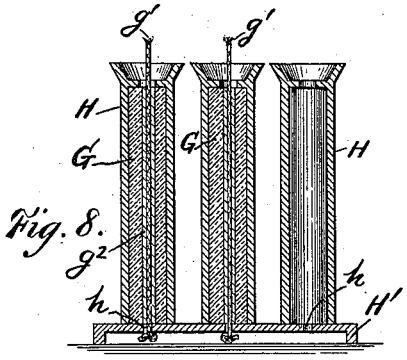

Fig. 8.

Witnesses.
Sam'l B. Dover
Arthur Holladay

Inventor.
Edwin Lee Brown
By Gridley & Fletcher
Attys.

UNITED STATES PATENT OFFICE.

EDWIN LEE BROWN, OF CHICAGO, ILLINOIS.

CANDLE.

SPECIFICATION forming part of Letters Patent No. 345,272, dated July 13, 1886.

Application filed July 20, 1885. Serial No. 172,135. (No specimens.)

To all whom it may concern:

Be it known that I, EDWIN LEE BROWN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Candles, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section of the candle body or cylinder before the insertion of the wick. Fig. 2 is a like view of the completed candle. Fig. 3 is a modification thereof. Fig. 4 is a transverse sectional view of said candle on the line *z z*, Fig. 2. Fig. 5 is a like view of said modified construction on the line *y y*, Fig. 3. Fig. 6 is a side view, partly in section, of a hydrostatic press, with molds and plungers for forming said candle-cylinders. Fig. 7 is a plan view of the same, in which the molding block or die is but partly shown, said part being in section upon the line *x x*, Fig. 6, as viewed in the direction of the arrow there shown; and Fig. 8 is a sectional view of a mold, showing one mode of inserting the wicks.

Like letters of reference indicate like parts in the different figures.

The object of my invention is to prevent unnecessary waste in the use of candles by so treating the same in their manufacture that they will melt very slowly, which object I accomplish by forming the body or cylinder of said candle under extreme pressure. In doing this I first mold the candle-cylinder substantially in the usual way, and then compress it by means of a hydrostatic press, or said fatty substance may be first compressed in blocks and the candle-cylinders cut therefrom, all of which is hereinafter more particularly described and claimed.

In the drawings, A represents the frame of a hydrostatic press, of which B is the water-pipe, C the usual piston, and D the table, rigidly attached to said piston, for supporting the compressing-mold.

Upon the table D, I place a metal mold or die, E, which is provided with a series of perforations or holes, *e*, of the diameter required for a candle, the thickness of said block being somewhat greater than the length intended for the finished candle.

Rigidly attached to the part D, and projecting vertically therefrom, as shown, at points representing, respectively, the center of each of said holes, are rods *d*, Figs. 6 and 7, the length of which may be that of the finished candle or the thickness of the block E, as hereinafter stated.

Rigidly attached to the frame A, and projecting downwardly therefrom, in positions corresponding, respectively, with those of the holes *e*, I place plungers F, Fig. 6, of the diameter of the holes *e*. Should the length of the rods *d* correspond with the thickness of the block E, said plungers F should be made hollow, as indicated in dotted lines in Fig. 6, in order to permit said plungers to pass into the holes *e*. Racks *e' e'*, Figs. 3, 6, and 7, are rigidly attached to the block E, which are adapted to engage with pinions *a a* upon shafts supported in suitable bearings upon the frame A, said shafts being provided with cranks *a' a'*, Fig. 6. By this or any equivalent mechanism the block or mold E may be lifted from the part D and raised above the point to which it would normally be raised by the piston C, for the purpose hereinafter stated. The block or mold E being in position, and the piston C lowered to its greatest extent, the material to be treated, consisting of tallow, wax, paraffine, stearine, spermaceti, or other oleaginous material, or any approved compound of two or more of said substances, as may be desired, is melted and poured into the holes *e* until the same are full. After cooling sufficiently, as may be found most advantageous, according to the ingredients used, hydraulic pressure is applied to the piston C, when the plungers F, entering the holes *e*, serve to compress said fatty material into a hollow cylinder, as shown in Fig. 1, of great hardness and density. Should the nature of the materials require it, the molten matter may be compressed while hot, or when just beginning to solidify, and allowed to cool under pressure, either of which methods might afford good results, according to the nature of the materials used. When the mold is sufficiently cooled, the piston C is lowered, and upon turning the cranks *a' a'* the block E is raised still farther, thus causing the candle-cylinders G to be pushed out of the molds by the stationary plungers F. The object of the rods *d* is to provide holes *g*, Fig. 1, for the insertion of the candle-wick. These holes may be large or small, ac-

cording to the size of the wick used and the manner of its insertion. Said wick is shown at g', Figs. 2 to 5, inclusive. Should the hole g be of the same size as the wick, the latter may be simply inserted by means of a needle or rod, and as upon lighting the candle the fat next to the wick is first melted, said molten material would at once fill up any spaces between the wick fibers and the cylinder G; but I prefer in inserting said wicks that they be drawn through a bath of molten fat directly into the holes g; or, as a modification of said method, said holes may be formed somewhat larger than the wick, and the cylinders G placed into the molds H, Fig. 8, which are provided with a flat detachable base, H', said base having perforations h therein for the reception of the wicks. The wicks g' are then inserted, and when drawn tight in the usual way melted wax or fat is poured into the space g^2 around said wick and permitted to harden, thus completing the operation.

A candle formed in the manner above described, by reason of its great density and hardness, will only melt with sufficient rapidity to support combustion without causing unnecessary waste.

I am aware that a process for making candles has been described, in which the tallow, either melted or solid, was designed to be forced through a long tube open at both ends, and around a concentric wick, the tube, intended to be cooled by water or otherwise, being of sufficient length to permit the tallow to cool while passing through, thus forming a continuous cylinder or candle, to be cut into shorter lengths, as desired, a sufficient amount of pressure only being required to push the material through the tube. This process will not produce the result desired to be obtained by me—viz., extreme hardness and density of the candle-body—and I make no claim thereto, as my purpose can only be accomplished by extraordinary pressure.

What I claim as new is—

1. The process, in the manufacture of candles, of making the body in the form of a hollow cylinder, under pressure, and afterward inserting the wick, substantially in the manner and for the purposes set forth.

2. As a new article of manufacture, a candle the body or cylinder of which is formed under hydraulic or other extreme pressure, substantially as and for the purposes specified.

EDWIN LEE BROWN.

Witnesses:
D. H. FLETCHER,
JOHN S. THOMPSON.