March 5, 1935. J. M. CHAMBERLAIN 1,993,709

APPARATUS FOR FORMING SELF FITTING ENDS ON CANDLES

Filed Aug. 31, 1931 2 Sheets-Sheet 1

FIG. 1

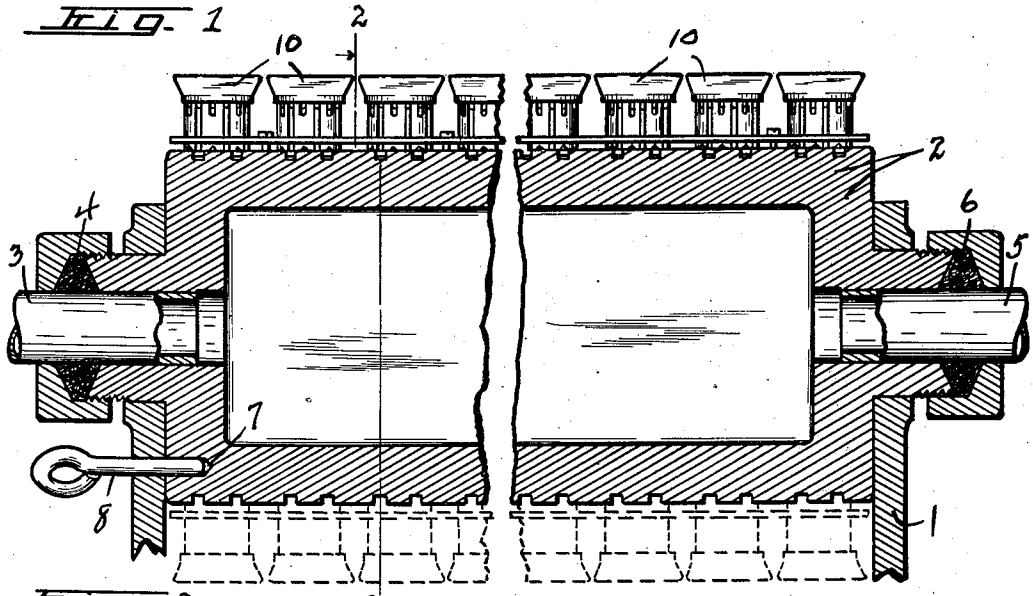


FIG. 2

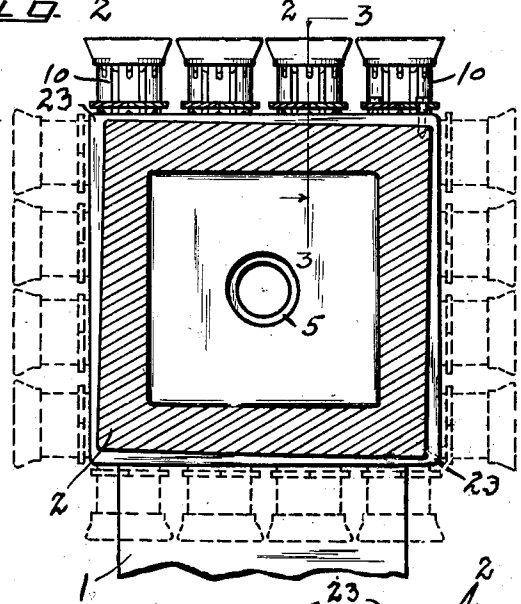


FIG. 3

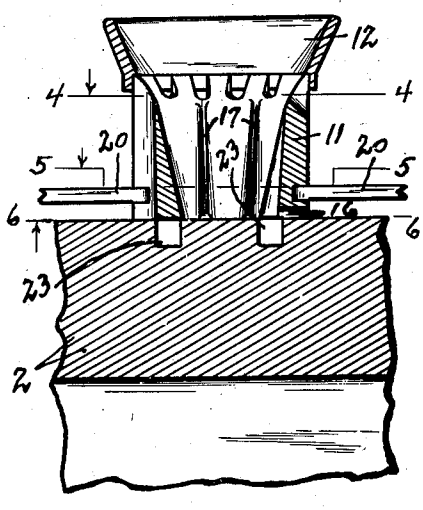
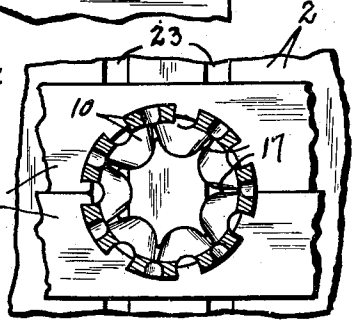


FIG. 4



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FIG. 5

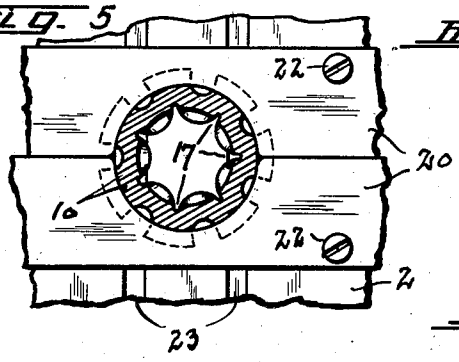


FIG. 6

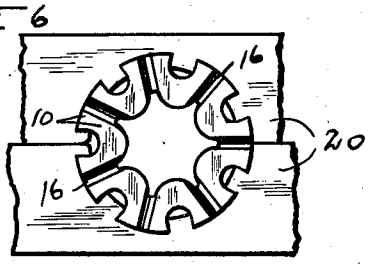


FIG. 7

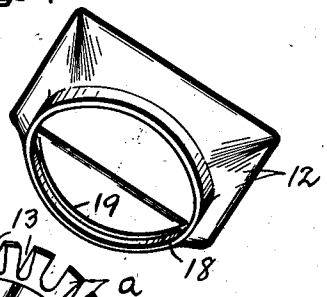


FIG. 10

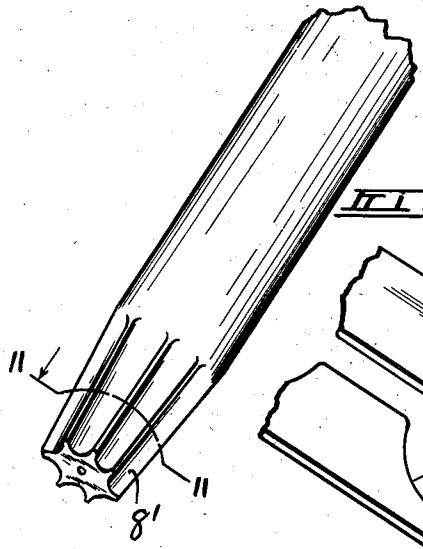


FIG. 8

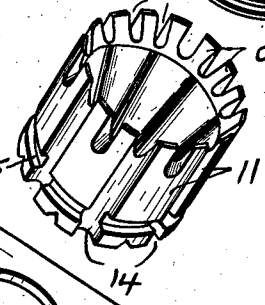


FIG. 9

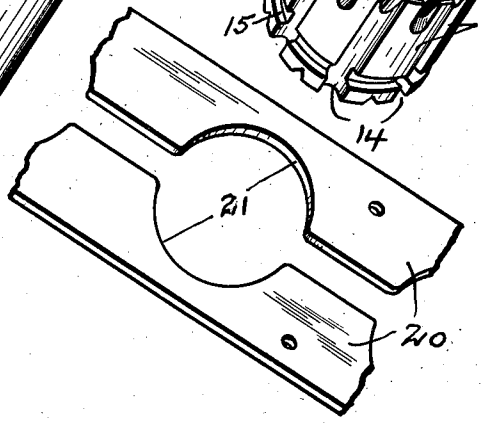
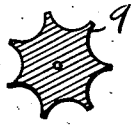


FIG. 11



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UNITED STATES PATENT OFFICE

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APPARATUS FOR FORMING SELF FITTING ENDS ON CANDLES

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Application August 31, 1931, Serial No. 560,405

14 Claims. (Cl. 18—1)

This invention relates to a new and improved apparatus for forming self-fitting ends on candles.

The main object of my invention is to provide a device for speedily and efficiently forming the ends of candles into a shape which will make them self-fitting when they are inserted in candle sticks and which will allow them to conform to candle sticks or holders of different sizes within certain limits.

Another object is to provide an apparatus which may be used as desired to form the ends of candles of different sizes.

Another object is to provide an apparatus by the use of which the ends of a plurality of candles may be shaped simultaneously.

Other objects and advantages relate to the size, shape, and arrangements of parts, all as will more fully appear from the following description taken in connection with the accompanying drawings, in which:—

Figure 1 is a vertical longitudinal section through my device.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a section on line 4—4 of Figure 3.

Figure 5 is a section on line 5—5 of Figure 3.

Figure 6 is an invert plan view on line 6—6 of Figure 3.

Figure 7 is a perspective view of the piece forming the upper end of the die.

Figure 8 is a perspective view of the main body of the die.

Figure 9 is a perspective view, partially broken away, of the holder by which the dies are secured in positon.

Figure 10 is a perspective view of the butt end of a candle after the same has been shaped to form.

Figure 11 is a section on line 11—11 of Figure 10.

My device comprises a main frame 1 in which is journaled a hollow steam box 2, here shown as square in cross section, which steam box 2 may be made of iron or other appropriate heat conducting material. In one end of steam box 2 is inserted a feed steam pipe 3, an appropriate stuffing box 4 being provided. In the other end of steam box 2 is inserted an exhaust steam pipe 5, an appropriate stuffing box 6 being provided.

In one of the ends of steam box 2 is provided an aperture 7 into which may be inserted the end of a pin 8 which is slidably mounted in frame 1. In the embodiment here shown, four apertures 7 are provided so that the steam box 2 may be locked in any desired one of four positions with relation to frame 1. When it is desired to change the position of steam box 2, the pin 8 is retracted to permit steam box 2 to be rotated in its bearings to bring it to the desired position when the pin 8 is then moved inwardly into registration with an aperture 7.

On each of the four outside faces of the steam box 2 I secure a plurality of dies hereinafter to be described. Any number of dies may be provided and I have here shown four rows of dies on each face. On Figure 2 I have indicated four rows of dies in heavy lines and on the other three faces I have indicated four rows of dies in dotted lines. The dies on one face differ in size from those on the other so that the device may be used to form the ends of candles of different diameters.

The result which I desire to accomplish is to provide a candle end 8' which tapers inwardly from a comparatively short distance from the end towards and to the end, and which has on its periphery a plurality, in this case shown as seven, of comparatively thin outwardly extending spaced flutes 9. The flutes 9 being comparatively thin in cross section will flatten out upon the insertion of the candle into a candle stick or holder to conform to the shape of the inside of such holder and when the candle is bottomed in the holder it will fit snugly and tightly therein.

The dies 10 used to form the ends of the candle 8' are similar in shape so that a description of one will be a description of the others.

The die 10 comprises a main body 11 and a top 12. The main body 11 is approximately cylindrical in form and has its upper end castellated as shown at *a* on Figure 9 to provide a plurality of circumferentially spaced laterally outwardly extending slots 13.

Although they may be differently arranged if desired, I provide on the outer face of the main body 11 and in communication with alternate slots 13, a plurality of longitudinally extending grooves 14. Adjacent the bottom of main body 11 is provided a circumferentially extending groove 15. The grooves 14 are deeper than the groove 15 for a purpose hereinafter to be described.

As perhaps may best be seen from Figure 6 I provide in the bottom face of main die 11 a plurality of spaced outwardly extending grooves 16.

As perhaps may best be seen from Figures 3 and 4, the inside of the main body 11 of the die 10 is tapered downwardly and inwardly from the top to the bottom so that the aperture in the

bottom is less in diameter than the aperture in the top.

In the tapered inner face of the main body 11 I provide a plurality, in this case shown as seven, of slots 17 which are in spaced relation and which preferably become gradually deeper as they approach the bottom of the main body 11. Although not essential, I prefer to form the slots 17 in such a way that they will have curving sides which merge into the adjacent portions of the main body 11.

The top member 12 has a collar 18 with an internal shoulder 19 and is adapted to fit on the castellated end of the main body 11, the shoulder 19 holding it in such a position that the grooves 13 are left open. The upper portion of member 12 flares outwardly and in this case is shown as square in form although it could be of a different shape if desired. The function of the member 12 is to guide the candles to be formed into the main body 11.

As a convenient means for securing the dies 10 on steam box 2, I provide a pair of straps 20 which have a plurality of opposed semicircular cut away portions 21. In the straps 20 I provide as many cut away portions 21 as there are dies 10 to be secured. These straps 10 with the cut away portions 21 are of a size and shape to encircle the main body 11 with the straps 20 seated in the groove 15. With the parts in this position, the straps 20 are secured to the steam box 2 as by screws 22 thus locking the dies 10 to the steam box 2 with the bottom of the dies 10 in physical contact with the steam box 2.

On each outer face of the steam box 2, I provide a pair of spaced laterally extending grooves 23 two for each lateral row of dies which extend from side to side of steam box 2 and which gradually increase in depth from one side of the steam box 2 to the opposite side thereof. The grooves 23 are so positioned that they are beneath the opposite edges of dies 10 and in communication with grooves or channels 14 when the same are in position on steam box 2.

Operation

When it is desired to use my apparatus to form the ends of candles, the steam box 2 is rotated to bring into the top position the dies of the appropriate size to receive the ends of the particular candle it is desired to form. Steam is then introduced into the steam box 2 to heat the same and the dies 10 being of an appropriate heat conducting metal and being in physical contact with steam box 2 will in turn become heated.

The candles to be formed are then suspended in spaced relation above the dies 10. The lower ends of the candle are squared off and then they are allowed to move by gravity down into the dies 10. The dies 10 being heated, parts of the butt end of the candle will melt as it descends into the die 10 and this will cause the end of the candle to conform to the shape of the inside of the main body 11 of the die 10. When the candles have seated in the dies 10 they are withdrawn therefrom and allowed to cool.

During the forming operation, the melted wax escapes through the slots 13, grooves 14, and grooves 16, the larger part of the same entering the grooves 23 and running downwardly therein to flow off the face of the steam box 2. The grooves 14 being deeper than the groove 15 in which the straps 20 are seated permits any melted wax flowing down the grooves 14 to pass downwardly beyond the straps 20.

This operation is repeated until the desired number of candles have been formed.

The dies 10 being heated, they are self-cleaning so that the slots 17 are always clear at the beginning of the forming operation.

Although I have here shown a particular way of heating the dies 10, it will be understood that other means may be employed for holding them at the proper temperature.

It will also be understood that although I have here shown a particular arrangement of the dies 10, that such arrangement may be varied as desired, for although I have shown an described a specific structure and form and relation of parts thereof as an exemplification of an embodiment of my invention, I do not desire to restrict myself to the exact size, shape or arrangement of parts as various changes may be made in the scope of the appended claims.

What I claim is:

1. An apparatus for forming the ends of candles comprising a die, a plurality of drain passages leading outwardly from the interior of the die, and means for heating the die.

2. An apparatus for forming the ends of candles comprising a die, a plurality of circumferentially spaced grooves in said die, a plurality of spaced laterally extending grooves in the under face of the die, and means for heating the die.

3. An apparatus for forming the ends of candles comprising a tubular die having a tapered inner surface, a plurality of circumferentially spaced grooves in such tapered surface, a plurality of spaced laterally extending grooves in the under face of the die, a plurality of drainage passages leading outwardly from the interior of the die, and means for heating the die.

4. An apparatus for forming the ends of candles comprising a box adapted to be filled with steam, a plurality of dies secured to the box in spaced relation, said dies comprising a cylindrical body having a downwardly and inwardly tapering inside face having spaced grooves therein, grooves in the box underneath the dies, and means for introducing steam into the box.

5. An apparatus for forming the ends of candles comprising a box adapted to be filled with steam, a plurality of dies secured to the box in spaced relation, said dies comprising a cylindrical body having a downwardly and inwardly tapering inside face having spaced grooves therein, said grooves gradually increasing in depth from top to bottom, grooves in the box underneath the dies, and means for introducing steam into the box.

6. An apparatus for forming the ends of candles comprising a die and a plurality of spaced laterally extending grooves in the under face of the die, and means for heating the die.

7. An apparatus for forming the ends of candles comprising a tubular die having a tapered inner surface, a plurality of drain passages leading outwardly from the interior of the die, a plurality of spaced laterally extending grooves in the under face of the die, and means for heating the die.

8. An apparatus for forming the ends of candles comprising a tubular die having the inside surface provided with spaced longitudinally extending grooves, and laterally extending grooves in the underside of the die in communication with said longitudinally extending grooves.

9. An apparatus for forming the ends of

candles comprising a box adapted to be filled with steam, a plurality of tubular dies, each of said dies having a plurality of longitudinally extending drain passages in the exterior surface thereof leading outwardly from the interior of the die, a peripheral groove in the exterior surface of said dies extending transversely of the passage and of less depth than said passages, and means engaging the peripheral groove for securing the dies to said box.

10. An apparatus for forming the ends of candles comprising a box adapted to be filled with steam, a plurality of tubular dies having a tapered inner surface, each die having a plurality of longitudinally extending drain passages in the exterior surface thereof leading outwardly from the interior of the die, a peripheral groove in the exterior surface of each die extending transversely of the passages and of less depth than said passages, means engaging the peripheral grooves for securing the dies to said box, and grooves in the box beneath the dies.

11. An apparatus for forming the ends of candles comprising a die having a tubular body portion and a top removably mounted on said body having a tapered passage therethrough in communication with the interior of the body, and drain passages in said body leading outwardly from the interior of the die beneath said top.

12. An apparatus for forming the ends of candles comprising a die having a tubular body portion and a top portion having a tapered passage therethrough in communication with the interior of the body portion, and drain passages in said body leading outwardly from the interior of the die beneath said top portion.

13. An apparatus for forming the end of a candle comprising a die, means for heating the die, said die having on its inner surface, longitudinally extending spaced depressions, and a bulging portion between adjacent depressions, said depressions being spaced apart a distance sufficient to prevent the adjacent material from flowing into the depressions formed in the candle and filling them with candle material when the candle is removed from the die.

14. An apparatus for forming ribs on the end of a candle comprising a die adapted to receive the end of a candle, said die having a tapered inner surface and a plurality of depressions for forming the ribs on the candle, and means for heating the die and means enabling the melted wax to flow away from the die.

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