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FESTIVE CANDLE

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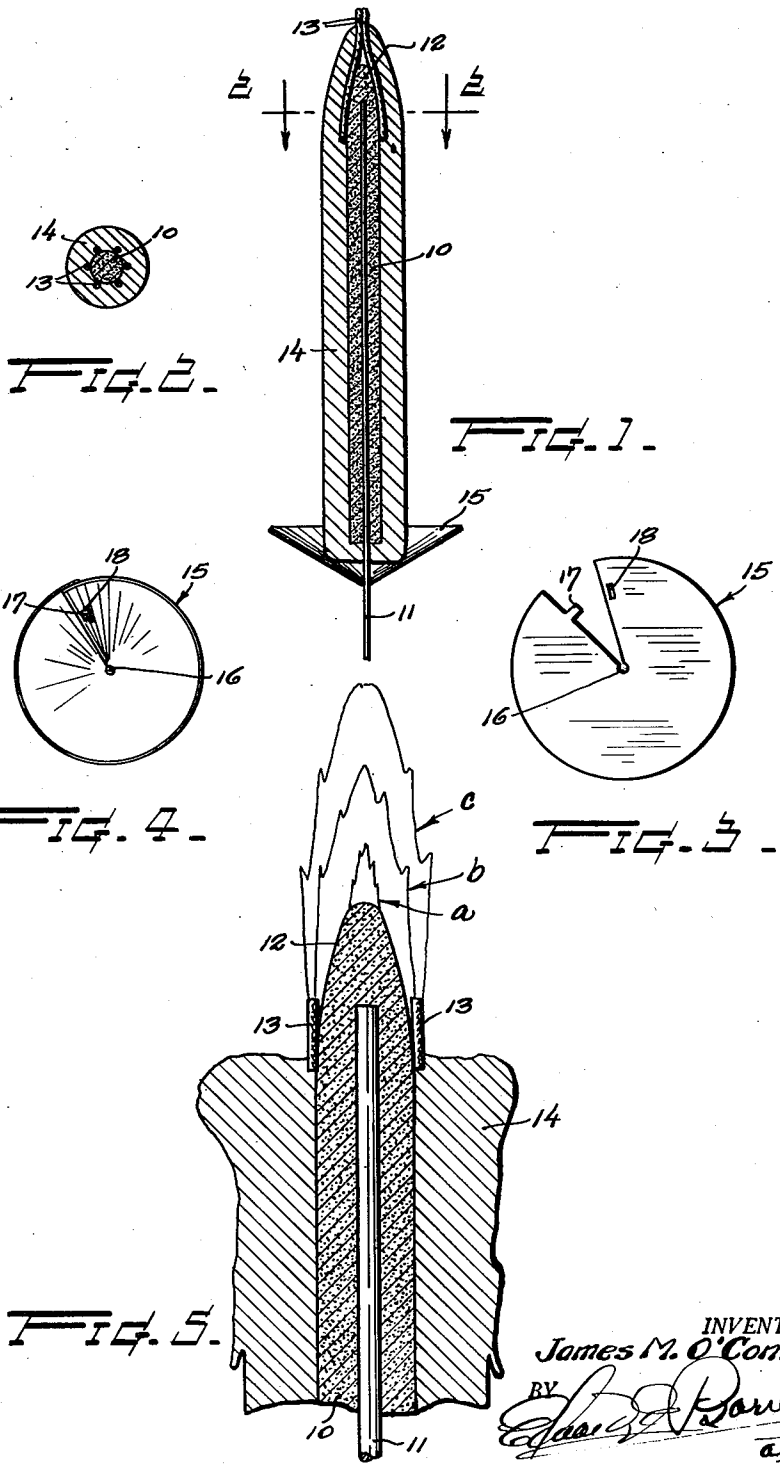


FIG. 2.

FIG. 1.

FIG. 4.

FIG. 3.

FIG. 5.

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FESTIVE CANDLE

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4 Claims. (Cl. 102-31)

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This invention relates to a festive candle, and has for its general object the provision of a candle so made as to give every indication of being an ordinary taper and which, when lit, initially burns with the wavering light typical of the common wax candle but later is caused to flare up with an intense light and give off a scintillating shower of brilliant but entirely harmless fire-like sparks.

The invention consists in the new method of producing a festive candle of this nature, and in the novel construction and in the adaptation and combination of parts composing the same, as will be hereinafter described and claimed.

In the accompanying drawing:

Figure 1 is a transverse vertical sectional view illustrating a festive candle made to embody the preferred teachings of the present invention.

Fig. 2 is a horizontal sectional view on line 2-2 of Fig. 1.

Fig. 3 is a top plan view illustrating the blank from which I form a wax-catching cup arranged and adapted to be used with my candle.

Fig. 4 is a top plan view of said wax-catching cup shown as it is given a cone shape by bringing the marginal edges of the blank's sectoral opening into a tensioning lapped relationship; and

Fig. 5 is a fragmentary partly schematic transverse vertical sectional view of the candle taken to an enlarged view and portraying the same after the tip has been consumed and at the approximate stage of its burning when the sparkler core becomes ignited.

In its preferred embodiment the present invention is comprised simply of a single sparkler member sheathed as a core within a molded body of wax, but quite possibly could be made up of multiple said sparklers, or functional counterparts thereof, embedded in more or less haphazard fashion within an investing body of wax. Describing said preferred embodiment, the core is denoted by the numeral 10 and is formulated from any applicable composition of matter the particles of which are bonded together and molded into the shape of a rod upon a reinforcing stick 11 which may be made either of metal or wood. The stick desirably projects by an end well beyond the bottom end of the sparkler rod. By way of example, a suitable composition of matter, considered proportionately by weight, is one containing 10 ounces of white potassium chlorate, 2 ounces of granulated aluminum, 2 ounces of dextrine, and $\frac{1}{8}$ ounce of charcoal. If it be desired to develop color, say red or green, in the sparks which issue as products of combustion when such

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formulation of matter is ultimately ignited, the mixture can be augmented either by powdered strontium nitrate or powdered barium nitrate, using $1\frac{1}{2}$ ounces of the former or 2 ounces of the latter, as the case may be.

This sparkler rod desirably is formed with a bullet-shaped head 12 and, after the rod sets to shape, there is applied over such head a wick which I have indicated as being comprised of a severalty of individual strands, designated by 13, applied perpendicular to the rod and positioned at equidistantly spaced intervals of the latter's circumference. As a procedural step, it is my finding that the wick-forming strands can be applied with expedition by coating the same with semi-fluid wax and then laying these wax-coated strands in their necessary spaced relationship upon a flat surface, whereupon the tip of the sparkler rod is rolled over the same to pick up the strands by adhesion. Tip ends of the strands are caused to project beyond the bullet head of the rod, and these protruding ends are then pressed together.

The final step of producing the candle is to introduce the rod and its wick within a candle mold, preferably with the bottom end of the rod elevated somewhat above the floor of the mold, and pour into this mold a rod-investing body 14 of molten wax. A suitable wax formula is one containing paraffine (125° melting point) combined with stearic acid and white lead, used in the proportions of 5 lbs. of the paraffine to $\frac{1}{4}$ lb. of the acid and $\frac{1}{8}$ lb. of the lead.

Employed in conjunction with the festive candle of the present invention is a wax-catching cup designated by 15 and which is made from a blank of thin sheet tin, cardboard or the like cut to a generally circular pattern comprehending somewhat less than a complete circle, and this is to say that a re-entrant sectoral throat is provided. The blank is pierced to present a center opening 16. Projecting inwardly from one marginal edge of said sectoral throat is a tongue 17, and there is cut into the material of the blank adjacent the other marginal edge a radial slot 18 arranged, when the two edges are drawn together, to register with the tongue. Upon drawing said edges together under tension, the blank will form itself into a cone-shaped cup, and the same is then held in this condition by passing the tongue through the slot and bending the same rearwardly. As will be clearly apparent from an inspection of Fig. 1, the cup is applied to the candle by inserting the protruding bottom end of the reinforcing stick 11 through the center opening 16.

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I profess no novelty in and to the construction of the cup.

In lieu of using a severalty of strands to produce my wick, the same could, if desired, be a woven product made in the form of a tapering sheath, but whether the one or the other be used it is here pointed out that extensive experiments rather conclusively establish that it is necessary to a practical working of the present invention that the wick substantially encompass the bullet head of the rod. This is to say that a wick passing along one side only of the sparkler rod is ineffective as an assured means of igniting the latter. A single-strand wick might in reason be made effective, however, by treating the head end of the sparkler rod with an ignition-accelerating substance, and in this respect I have experimented with various known preparations for this purpose and such, for example, as a mixture of potassium chlorate, lead binoxide, red lead, antimony trisulphide, and gum arabic, but the results have not been satisfactory. The explanation of the ineffectiveness of a single-strand wick very probably lies in the fact that the head of the rod must be substantially enveloped by a hot flame.

In using my festive candle, the same is lighted in the ordinary manner, and then burns for a short time interval much the same as an ordinary taper. As the wax melts, the bullet nose of the sparkler rod becomes exposed and heated, and ignition of the latter customarily takes place when the level of the wax has dropped to approximately the point at which it is indicated in Fig. 5. Schematically graphed in this view are the three cone-shaped flame bands which rise from the burning wick, the lowermost or primary band *a* being a blue flame which is enveloped by a secondary deep yellow flame-band *b* and which is in turn enveloped by a tertiary flame-band *c* of lighter yellow. It is the effective vesture of the sparkler rod's exposed tip by the secondary cone of deep yellow flame which sets off the combustible ingredients composing the rod, and as this occurs the wick will have been almost entirely consumed. As the candle then continues to burn, no smoke and little if any apparent flame is present, there being only a dazzling light at the point of ignition accompanied by the dispersion of a scintillating shower of sparks. The heat is fairly intense in the ignition locale, and this is of advantage in that it causes the wax to melt well ahead of the ignition point and is, with the absence of a wick, a factor responsible

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for absence of smoke. The showering sparks cool with extreme rapidity and are quite harmless after being projected through a modicum of air travel, producing little more than the feeling of a tiny pin prick even when impinging against a hand held quite close to the incandescent source. Especially when applied to a cake for a birthday party, the instant candles have a captivating attraction for children and when lighted give unusual gayety to a festive occasion of this nature, the suspense incident to waiting for the wax to burn down in the degree necessary to ignite the sparkler being additive to the fascination of the candles.

It is thought that the invention will have been clearly understood from the foregoing description. The particular arrangement of parts which I have elected to illustrate, the compositions of matter which I have referred to as being suitable therefor, and the recited method of manufacture each admit of being changed without sacrifice of the inventive concept, wherefor it is my intention that no limitations be implied and that the hereto annexed claims be given a breadth in their construction fully commensurate with the broadest interpretation to which the employed language fairly admits.

What I claim is:

1. As a festive candle, a body of wax with a contained wick and having embedded within the wax an ignitable core, the wick substantially surrounding the head end of said ignitable core.

2. As a festive candle, an ignitable sparkler rod, a short wick applied in contiguous lapping relation to the head end only of the rod, and a body of wax investing said rod and the lapping portion of the wick.

3. As a festive candle, an ignitable rod containing a pyrotechnic, a short wick sheathing the head end only of the rod and projecting above the latter, and a body of wax investing said rod and the sheathing portion of the wick.

4. The festive candle of claim 1 in which the ignitable core contains a pyrotechnic.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,608,518	Minroth	Nov. 30, 1926