



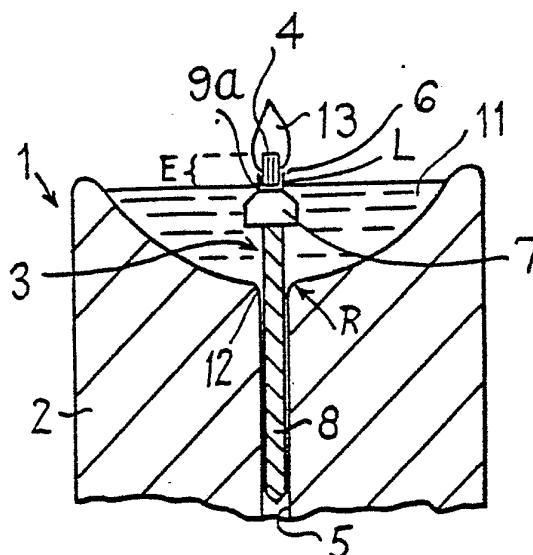
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(54) Title:IMPROVEMENTS IN CANDLES

(57) Abstract

A candle comprises a candle body (2) and a wick (4) and the candle body is provided with a longitudinal bore (5) for guiding movement of the wick relative to the candle body as the candle is consumed. The wick (4) itself comprises a member of wick material and a carrier (3) for the wick material; the carrier being capable of travelling through said bore (5) as the candle is consumed. The carrier is located by the bore and may include a part which rests on and descends with the non-molten candle body material as the candle is consumed. Alternatively, the carrier may include a portion which floats in and descends with the molten candle body material as the candle is consumed.



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IMPROVEMENTS IN CANDLES

The present invention relates to candles and also to parts which can be assembled together to form candles.

The wick of a conventional wax candle in which the wick is embedded along the length of the candle body, burns along its length as the wax surrounding it is burnt away and the length of the wick exposed for burning ordinarily varies through the life of the candle. In order to provide an optimum exposed length of wick for burning, the wick continually needs to be trimmed since the exposed length of wick usually becomes marginally longer as the candle burns down. Such an optimum length of exposed wick should be neither too short and so give a small flame with insufficient light and cause the molten wax to flood the wick, nor too long and so use up wax at a faster rate and give a large smoky flame.

An object of the present invention is to provide a candle having improved burning characteristics and which is economical in use.

To this end the invention consists in a candle comprising a candle body and a wick characterised in that the candle body is provided with a longitudinal bore for guiding movement of the wick relative to the candle body as the candle is consumed, said wick comprising a member of wick material and a carrier for the wick material, said carrier being capable of travelling through said bore as the candle is consumed.

By providing the candle with a longitudinal bore and mounting the wick in a wick carrier or support such that guided relative movement occurs between the candle body and the wick carrier or support as the candle body material is consumed by the candle flame, improved control of the burning



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characteristics of the candle can be obtained.

Thus, by means of the invention, the exposed length of wick and thus the height of the flame can be controlled. Preferably, the exposed length of wick is maintained

5 substantially constant so as to provide a substantially constant height flame. It will be appreciated that since substantially the same section of wick provides the exposed length as the candle burns, the wick may begin to carbonise after a period of time, such as several hours. It may

10 therefore be advantageous that the wick is replaceable, so that after this period of time a fresh wick may be provided. Such substitution also helps to ensure that the exposed length of wick is maintained substantially constant for more of the burning time of the candle. Advantageously,

15 the length of exposed section of wick is chosen so that the flame is of substantially optimum height and does not normally smoke. This results in a significant increase in the burning time of the candle compared to a conventional candle of the kind described above with an embedded untrimmed

20 wick having an exposed length which increases in length during the life of the candle. In other words a considerable economy in the weight of wax consumed per unit of time may be obtained with the candle constructions according to the present invention.

25 The invention also provides a kit-of-parts for making a candle comprising a candle body having a longitudinal bore, a wick carrier or support and a wick for use in assembling candles according to the invention. Preferably, the wick carrier or support is re-usable with replacement candle

30 bodies, and several pre-cut lengths of wick are supplied with the kit. Obviously a plurality of candle bodies may also be supplied in the kit.

In order that the invention may be more readily understood, reference will now be made, by way of example, to the

35 accompanying drawings, in which:-



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Figure 1 is a sectional view through the top of one embodiment of candle according to the invention,

Figure 2 is a perspective view, on a larger scale, of the upper end of the support and the wick employed in the Figure 1 embodiment,

Figure 3 is a sectional view through the top of a further embodiment of candle according to the invention,

Figure 4 is a longitudinal sectional view through yet another embodiment of candle according to the invention, in which the candle body is moved relative to a support,

Figure 5 is a longitudinal sectional view through a further embodiment,

Figure 6, shows a sectional view of the top of a further embodiment of candle,

Figures 7, 7A and 7B show yet another embodiment, and

Figure 8 is a sectional view of the final illustrated embodiment of candle according to the invention.

Referring to Figures 1 and 2, a candle 1 comprises a generally cylindrical wax candle body 2, a carrier or support 3 made of copper or other heat conducting metal and a wick 4 mounted in the support. The candle body 2 has a central bore or passage 5 extending longitudinally therethrough. The support 3 comprises an upper end constituting a wick holder 6 wherein the wick 4 can be held in an erect position, a float part 7, and an elongate lower end part 8 depending from the float part. The wick holder 6 has three fingers 9 which are spaced from each other and extend upwardly from the closed base 10 of the holder. The fingers are spaced from each other and arranged to receive the lower end of the wick therebetween. The float part 7 is of generally cylindrical form and may contain air, balsa wood or other suitable material (not shown) for enabling the support 3 to float in the molten wax 11 of the candle.

In use, the elongate lower end part 8 of the support is inserted into the longitudinal bore 5 in the candle body



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and the underside 7a of the float part rests on the shoulder 12 of the passage 5. The wick 4 which is stiffened with wax is inserted between the upstanding fingers 9 of the holder 6. The component parts of the candle are so arranged with respect to each other that on lighting the wick 4, the flame 13 initially consumes the wick, and then heat from the flame causes the wax at the top of the candle body 2 around the support 3 to melt around the float part 7 and run on to the upper surface 7b of the float part from where wax can be drawn up to the wick 4 via the radially extending gulleys 15 and gaps 14 between the upstanding fingers 9 so as to fuel the wick for further burning.

After a period of time, the top of the candle will take on an appearance similar to that shown in Figure 1 where the support 3 is floating in the molten wax 11. At this stage the lower end portions 9a of the upstanding fingers are beneath the level of the surface of the molten wax indicated at L and the wick 4 is fueled by molten wax 11 reaching the wick through the gaps 14 between the fingers 9.

As the wick burns, heat is conducted from the flame by the metal fingers 9, which are in direct contact with the flame, to a region of the wax at R surrounding the support 3 adjacent the upper end of the bore 5 so as to maintain the wax in that region molten and allow the support and wick to descend with the fall in level of the molten wax as the burning wick consumes wax. Since the elongate lower end part 8 of the support 3 is located in the bore 5 the support is guided longitudinally down through the candle body 2 as wax is consumed. As the candle 1 burns, the support 3 floats down with the level of the molten wax thereby automatically to maintain substantially constant the exposed length E of wick 4 for burning, that is the length of wick above the molten wax. After a further period of time, for example several hours, the wick 4 may have begun to carbonise and may be discarded and replaced by a fresh length of wick.



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In the embodiment of candle 20 shown in Figure 3, the carrier or support 21 comprises an elongate heat conducting part 22 which extends downwardly into an elongate bore 24 extending centrally through the candle body 23, and a flat annular stop member 25 made of either heat resisting material or heat conducting material which extends around the elongate part 22. The stop member 25 engages or rests on the unmolten wax surrounding the top of the bore 24 and the support 21 descends as the level of the unmolten wax falls. As in the Figure 1 embodiment, the heat conducting part 22 of the support 21 keeps the wax surrounding the support adjacent the upper end of the passage 24 molten so as to permit the support to move downwardly in the passage 24 as the level of molten wax 26 falls.

Figure 4 shows a further embodiment in which a candle body 30 having a central elongate bore 31 extending there-through is mounted over a heat conducting tube or rod part 33 of a carrier or support 32 which extends vertically upwardly from a base 34. An annular stop member 35 extends around the heat conducting rod 33 for engaging the unmelted wax material surrounding the upper end of the passage. A resilient means in the form of a spring 36 is located between the base 34 and the underside 31a of the candle body 30 to urge the candle body continuously against the stop member 35 so that as the wax melts, the candle body is moved upwardly on and with respect to the fixed tube 33. The candle body 30 may be slidably mounted in an outer casing 37, if desired. The single candle body 30 may be replaced by a plurality of superimposed smaller candle body elements which may be added around the rod 33 so as to maintain the overall height of the candle generally constant. If different coloured elements are used a striped effect may be achieved.

In the embodiments described in Figures 3 and 4 the wick supporting part is similar to that described with



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reference to Figure 1, and the stop member controls the extent of relative movement between the support and the candle body.

5 Instead of providing a replaceable short length of wick 4 as shown in full lines, the support 21,32 may be made hollow and a longer length of wick used. Holes (not shown) may be provided in the support just below the holder 6 to afford further access for the wax to reach the wick.

10 Also, in Figure 4 if the outer casing 37 is connected with the support 32 or its base 34, a stop means may be formed by one or more projections extending inwardly from the casing and engaging over the peripheral edge of the candle body.

15 Figure 5 shows an embodiment in which the candle body is shown as consisting of a plurality of candle body elements 40,41,42 which are mounted one upon the other and which are threaded by means of central longitudinal bores 43, 44,45 onto a tubular sleeve 46 to provide a rigid candle assembly. Alternatively the candle body could be in
20 one piece. The candle assembly includes a support 3 which is constructed in the same manner as the support described with reference to Figures 1 and 2 and will therefore not be described in detail again. The lower end part 8 of the support is a close sliding fit in the sleeve 46, whilst
25 the upper end of the sleeve is provided with an annular flange 47 which engages with the unmelted candle body wax adjacent the mouth of the bore 43. As the wax melts, the sleeve 46 descends in the bore. During downward movement of the support 3, any relative movement between the support
30 and sleeve is facilitated because of the sliding fit and the absence of molten wax around the outside of the lower part 8 which may cause the floating support to stick.

The lowermost candle element 42 is removably mounted on a base member 49 having a tubular recess 50 to receive
35 the lower end of the sleeve 46 as the latter descends through



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the bottom of this element. Once the sleeve projects through the bottom of the lowermost element it will be appreciated that another element can be threaded onto it to build up the overall height of the candle.

5 Candle elements may also be threaded on the lower end part 22 of the support 21 shown in Figure 3, or on the lower end part 8 of the support 3 shown in Figure 1, if these lower end parts are extended in length or short candle elements are used.

10 Figure 6 shows a further simple embodiment of the invention comprising a candle body 60 having a central bore 61 in which is located a length of wick 62 whose lower end is surrounded by a metal sleeve 63 having a peripheral flange or projections 64 which rest on the
15 unmolten candle wax adjacent the mouth of the bore 61. In use, the wick, and hence the flame 65, sets itself automatically to the correct burning position relative to the molten wax and the sleeve 63 descends in the bore 61 as the candle is consumed. Instead of providing the
20 peripheral flange or projections 64, the sleeve 63 may be plain and be dimensioned to be a frictional fit in the bore 61. In this case, the sleeve may taper slightly from its upper end to its lower end.

Figure 7 shows a further embodiment somewhat similar
25 to Figure 6 and corresponding parts bear the same reference numerals. However in this embodiment the sleeve 63 is plain and the wick is also provided with a flame shield in the form of a ring or collar 66 extending around the wick spaced above the top of the sleeve. With such an arrangement,
30 the flame 65 initially extends from the top of the sleeve 63 and engulfs the flame shield 66. However as the wax melts and is drawn up by the wick 62, the heat of the sleeve causes it to sink in the bore 61 so that the molten wax rises to the flame shield 66 and the flame only burns the
35 portion of the wick above the shield.

Instead of the flame shield 66 being completely separate,



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it may be made in one piece with the sleeve 63 and joined thereto, for example either by narrow strips 67 as shown in Figure 7A or by a perforated region 68 as shown in Figure 7B. Again in these embodiments the wick may be
5 slightly tapered.

The sleeve 63 and flame shield are made of metal and can either be parts into which the length of wick 62 is inserted or they may be metal components secured around a length of wick by a crimping or tagging operation. In the
10 latter case a plurality of such components may be tagged onto a length of wick one after the other along its length and the tagged lengths of wick may then be cropped off to provide individual wick/sleeve/flame shield structures for insertion in the bore of a candle body.

15 The use of a flame shield reduces fluctuations in the size of the candle flame and since the flame burns at a higher position on the wick due to the presence of the collar, it assists more economical burning of the candle as the wax is not melted so quickly.

20 Figure 8 shows a further embodiment in which the candle body 70 has a central bore 71 which receives an elongate portion 72 of a wick support having a peripheral flange 73 which rests on the unmolten wax adjacent the top of the bore 71. The wick support also has an upstanding pin 74 on
25 which sits the hollow end of a wick carrier 75. A length of wick 76 is mounted in the wick carrier 75 and is surrounded by an inverted domed or doughnut shaped collar 77. The collar serves to entrap air in its recess 78 between the collar and the surface of the molten wax, so that the wick carrier floats relative to the upstanding pin 74. The
30 support 72 sinks in the bore 71 as the wax is consumed and the wick carrier 75 floats on the molten wax and is guided by the pin 74 as the molten wax is consumed by the candle flame.

35 From the above described embodiments it will be understood that in candles according to the present invention, the wicking process often used in manufacturing candles is eliminated and replaced by a simple hole drilling or other



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operation to form an axial bore or passage through the candle body.

In all of the above embodiments, when the candle body has been consumed as far as possible, the support
5 may be re-used with a fresh candle body. Alternatively, in certain embodiments, a fresh candle body may be located directly beneath the present one, as already mentioned above, so that the support can descend from the lower end of the upper candle body to the upper end of the lower one.
10 This reduces wastage of wax since each candle body does not leave an unusable stub. It will be apparent that the pace of movement between the support and the candle body is controlled by the rate at which the level of candle body material burns down.

15 Whilst particular embodiments have been described, it will be understood that various modifications may be made without departing from the scope of the invention, for example, the wick holder may comprise, instead of fingers, a cup or cylindrical holder with apertures in its
20 wall for affording access of molten wax to the wick. Further, a plurality of supports and wicks may be associated with a single candle body to provide, for example, a decorative arrangement of flames.

Also the candle may of course have an external
25 configuration other than cylindrical and may be made of other suitable material than candle wax.

The wick carrier may also support a material, e.g. a powder, which acts as the candle burns to perfume the candle or to colour the flame. Such a material may be
30 carried in a holder surrounding the wick carrier or collar, as is indicated in dotted lines at 69 in Fig. 7A. This avoids the necessity of impregnating the wax body of the candle with a perfume or colourant material as has hitherto been necessary.



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C L A I M S

- 1 1. A candle comprising a candle body and a wick character-
ised in that the candle body (2) is provided with a longitud-
inal bore (5) for guiding movement of the wick relative to
the candle body as the candle is consumed, said wick (4)
5 comprising a member of wick material and a carrier (3) for the
wick material, said carrier being capable of travelling
through said bore as the candle is consumed.
2. A candle as claimed in claim 1, characterised in that
said carrier (21, 63) is located by said bore, and rests on
10 and descends with the non-molten candle body material as the
candle is consumed.
3. A candle as claimed in claim 2, characterised in that
said carrier (21) comprises a tail part (22) for extending
into said bore (24) and a flange or collar (25) for resting on
15 the non-molten candle body material.
4. A candle as claimed in claim 2, characterised in that
said carrier comprises a sleeve (63) surrounding the lower
end of the wick (62) and having a peripheral region (64)
which rests on the non-molten candle body material adjacent
20 the bore (61).
5. A candle as claimed in claim 1, characterised in that
said carrier comprises a sleeve (63) surrounding the lower
end of the wick (62) and a flame shield (66) in the form of
a ring or collar surrounding the wick spaced above the top of
25 the sleeve, said sleeve frictionally engaging the wall of the
bore (61).
6. A candle as claimed in claim 5, characterised in that
said flame shield (66) is made in one piece with said sleeve
(63) and is joined thereto by narrow webs (67) or an
30 apertured region (68).
7. A candle as claimed in claim 1, characterised in that
said carrier (3) has a tail portion (8, 72) which extends into



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- 1 said bore (5, 71) and a float (7) which floats in and descends with the molten candle body material as the candle is consumed.
8. A candle as claimed in claim 7, characterised in that said tail portion (72) carries a pin (74) which supports the float portion (75) carrying the wick.
9. A candle as claimed in claim 8, in which the float portion (75) includes an annular member (77) which serves to entrap air between the member and the surface of the molten candle body material.
10. A candle as claimed in claim 1, characterised in that said carrier comprises a sleeve (46) for location with clearance in said bore and having a portion (47) which rests on and descends with the non-molten candle body material as the candle is consumed; and a float (7) having a part which fits with clearance in said sleeve and which is designed to float in and descend with the molten candle body material as the candle is consumed.
11. A candle as claimed in claim 10, characterised in that said sleeve (46) has a flange (47) for resting on the non-molten candle body material and said float part comprises a needle-like tail portion (8) which extends into said sleeve.
12. A candle as claimed in claim 1, characterised in that the candle body (30) is located over a portion (33) of the carrier which extends through the bore (31) and is attached to a base member (34) and in that a spring member (36) is located between the underside of the candle body (30) and the base member (34) to urge the candle body upwards as it is consumed and thereby effect guided relative movement between the wick (4) and the candle body.
13. A candle as claimed in any preceding claim, wherein the wick carrier includes a region for holding a material to serve as a perfume or as a colourant for the candle flame.
14. A candle as claimed in any preceding claims, characterised in that said wick is surrounded by a collar or ring spaced above the top of the carrier.



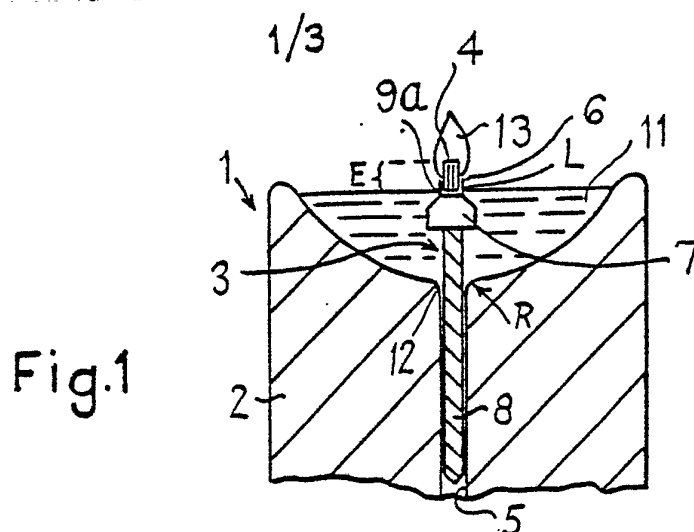


Fig.1

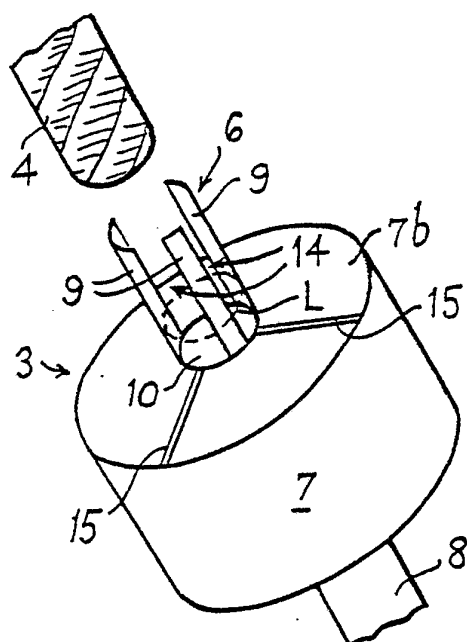


Fig. 2

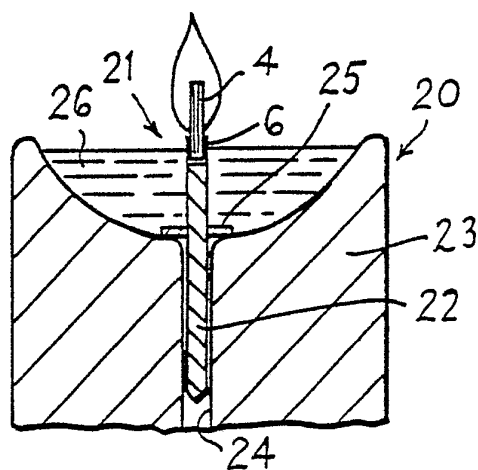


Fig.3

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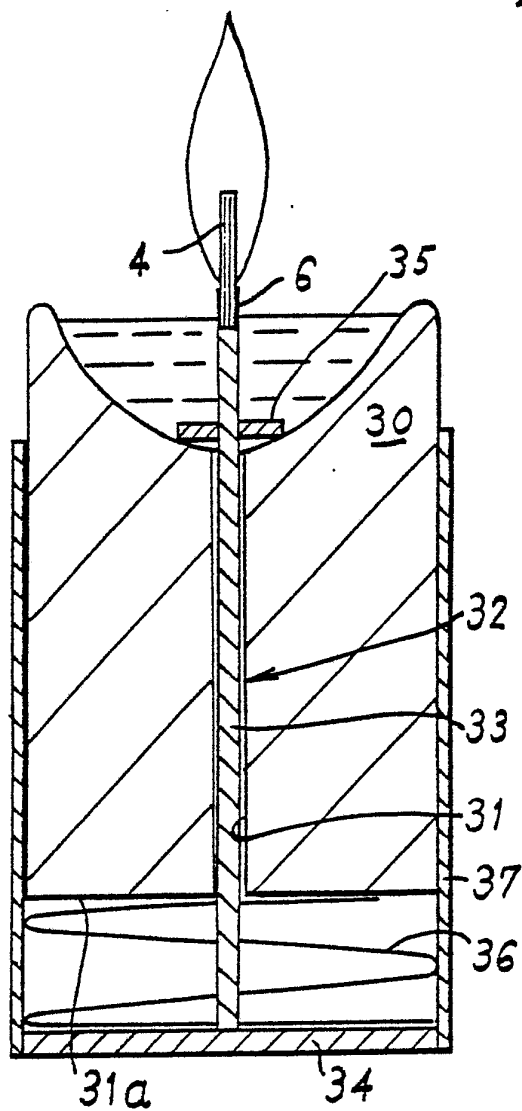


Fig. 4

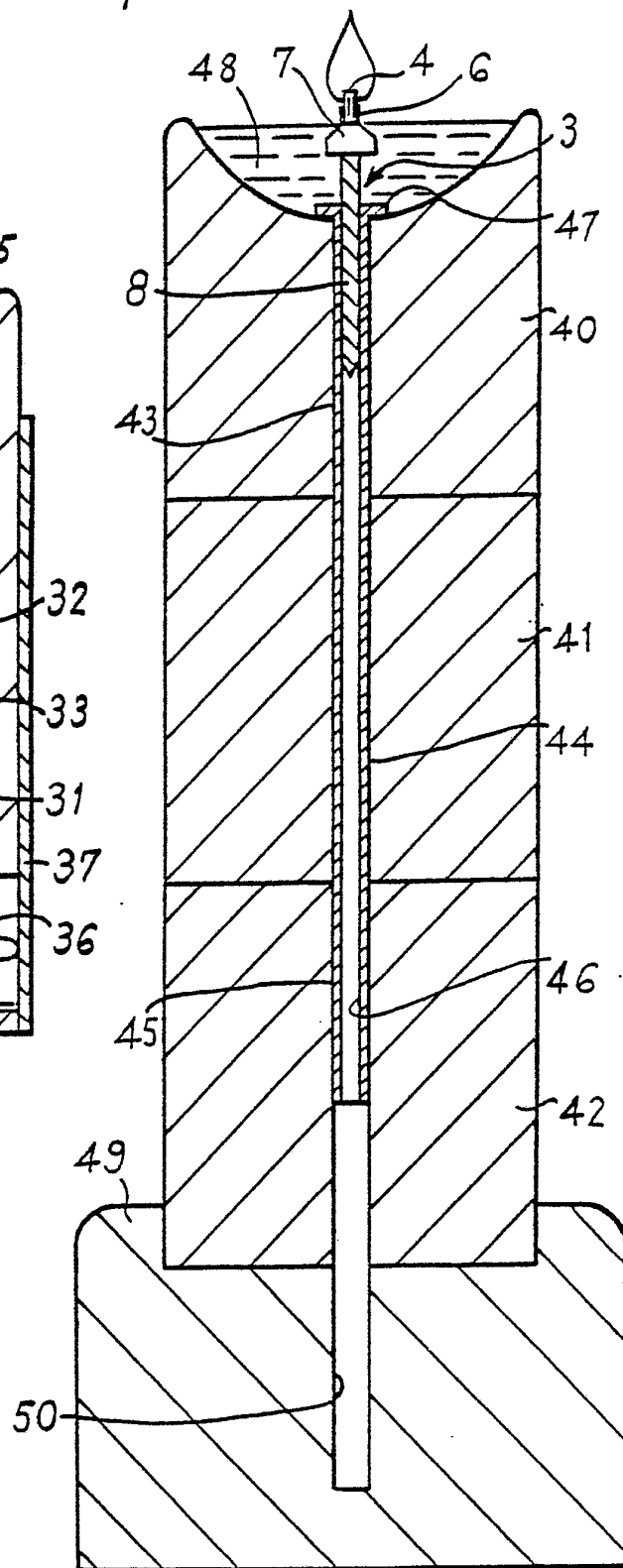


Fig. 5

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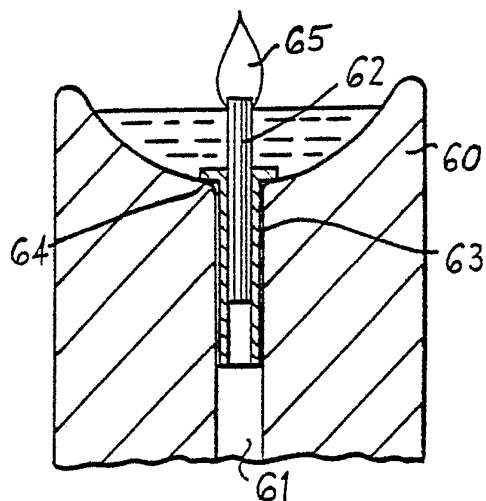


Fig. 6

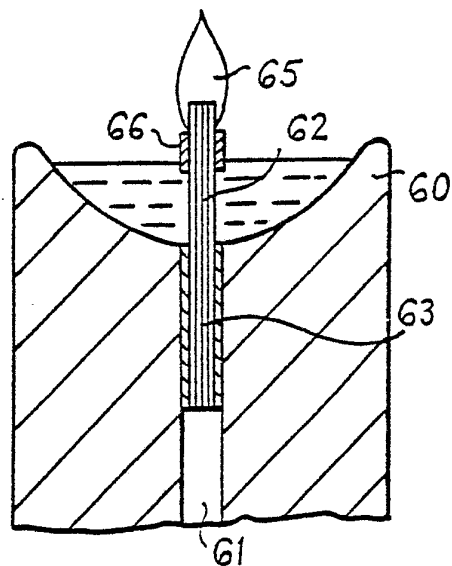


Fig. 7

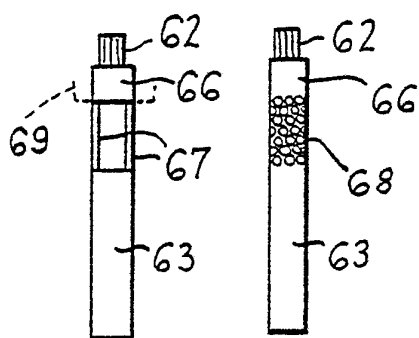


Fig. 7A Fig. 7B

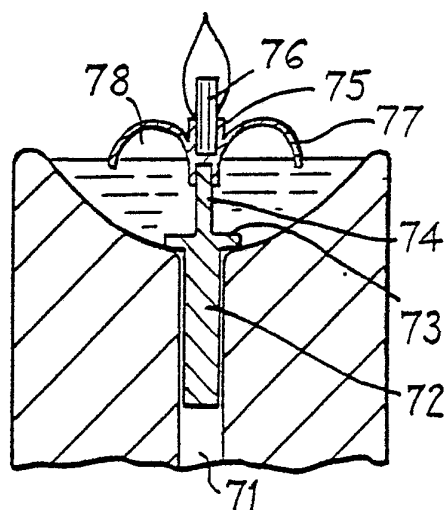
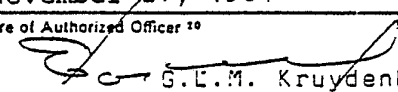
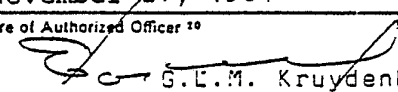
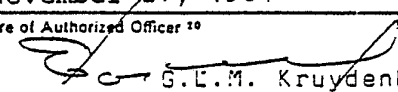


Fig. 8

INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 81/00167

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ¹ According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. ³ : C 11 C 5/00																										
II. FIELDS SEARCHED Minimum Documentation Searched ⁴ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%; text-align: left; border-bottom: 1px solid black;">Classification System</th> <th style="text-align: left; border-bottom: 1px solid black;">Classification Symbols</th> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">Int.Cl.³:</td> <td style="padding: 5px;">C 11 C 5/00; F 21 V 35/00</td> </tr> </table> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵			Classification System	Classification Symbols	Int.Cl. ³ :	C 11 C 5/00; F 21 V 35/00																				
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; text-align: left; border-bottom: 1px solid black;">Category ⁶</th> <th style="text-align: left; border-bottom: 1px solid black;">Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷</th> <th style="text-align: left; border-bottom: 1px solid black;">Relevant to Claim No. ¹⁸</th> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td style="padding: 5px;">GB, A, 1254322, published November 17, 1971, see page 1, lines 21-37 and 59-77, page 3, lines 25-76, figures 7-14, J.R. Summers ---</td> <td style="padding: 5px;">1-2,7</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td style="padding: 5px;">DE, C, 590300, published December 14, 1933, see page 1, lines 43-87, figures 1,2, Siegel & Co. ---</td> <td style="padding: 5px;">1-2,7</td> </tr> <tr> <td style="border-right: 1px solid black;"></td> <td style="padding: 5px;">US, A, 3958917, published May 25, 1976, see column 2, lines 6-19, J.F. Naz ---</td> <td style="padding: 5px;">13</td> </tr> <tr> <td style="border-right: 1px solid black; text-align: center;">P</td> <td style="padding: 5px;">DE, A, 2909687, published August 18, 1980, see page 5, paragraph 1 - page 8, paragraph 3, figures, Stoff, W. ---</td> <td style="padding: 5px;">1-3,14</td> </tr> <tr> <td style="border-right: 1px solid black; text-align: center;">P</td> <td style="padding: 5px;">DE, A, 2908519, published August 18, 1980, see claims, figures, Stoff, W. ---</td> <td style="padding: 5px;">1-2</td> </tr> <tr> <td style="border-right: 1px solid black; text-align: center;">A</td> <td style="padding: 5px;">DE, A, 1467518, published January 16, 1969, Bauer et al. ---</td> <td></td> </tr> <tr> <td style="border-right: 1px solid black; text-align: center;">A</td> <td style="padding: 5px;">DE, A, 2451620, published May 5, 1976, J.G. Wachswarenfabrik -----</td> <td></td> </tr> </table>			Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸		GB, A, 1254322, published November 17, 1971, see page 1, lines 21-37 and 59-77, page 3, lines 25-76, figures 7-14, J.R. Summers ---	1-2,7		DE, C, 590300, published December 14, 1933, see page 1, lines 43-87, figures 1,2, Siegel & Co. ---	1-2,7		US, A, 3958917, published May 25, 1976, see column 2, lines 6-19, J.F. Naz ---	13	P	DE, A, 2909687, published August 18, 1980, see page 5, paragraph 1 - page 8, paragraph 3, figures, Stoff, W. ---	1-3,14	P	DE, A, 2908519, published August 18, 1980, see claims, figures, Stoff, W. ---	1-2	A	DE, A, 1467518, published January 16, 1969, Bauer et al. ---		A	DE, A, 2451620, published May 5, 1976, J.G. Wachswarenfabrik -----	
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[*] Special categories of cited documents: ¹⁵ "A" document defining the general state of the art "E" earlier document but published on or after the international filing date "L" document cited for special reason other than those referred to in the other categories "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but on or after the priority date claimed "T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention "X" document of particular relevance																										
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search ¹ November 11, 1981 </td> <td style="width: 50%; padding: 5px;"> Date of Mailing of this International Search Report ¹ November 27, 1981 </td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"> International Searching Authority ¹ EUROPEAN PATENT OFFICE Branch at The Hague P.O.Box 5818 Patentlaan, 2 2280 HV RIJSWIJK (ZH) The Netherlands </td> <td style="padding: 5px;"> Signature of Authorized Officer ¹⁹  G.L.M. Kruidenberg </td> </tr> </table>			Date of the Actual Completion of the International Search ¹ November 11, 1981	Date of Mailing of this International Search Report ¹ November 27, 1981	International Searching Authority ¹ EUROPEAN PATENT OFFICE Branch at The Hague P.O.Box 5818 Patentlaan, 2 2280 HV RIJSWIJK (ZH) The Netherlands	Signature of Authorized Officer ¹⁹  G.L.M. Kruidenberg																				
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