

Jan. 8, 1963

R. H. CHURCHILL

3,071,952

CANDLE AND HOLDER THEREFOR

Filed March 15, 1960

2 Sheets-Sheet 1

Fig. 3

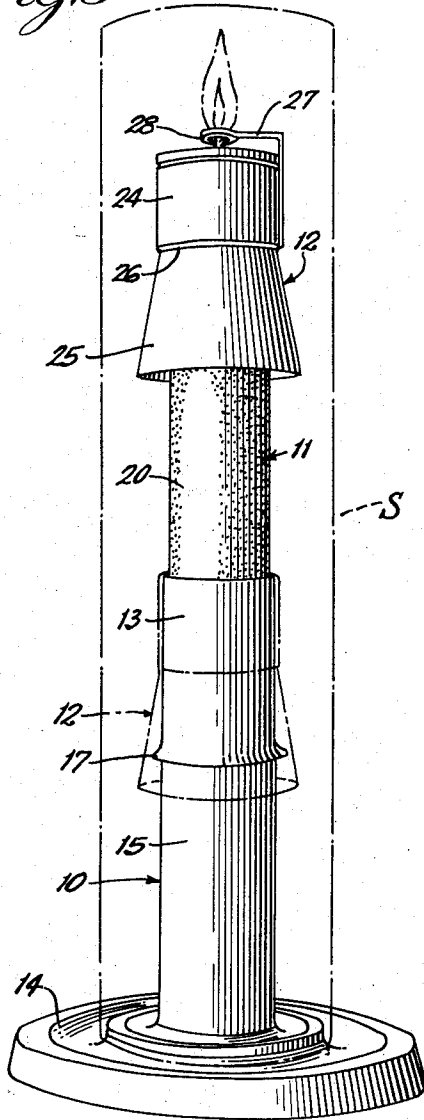


Fig. 1

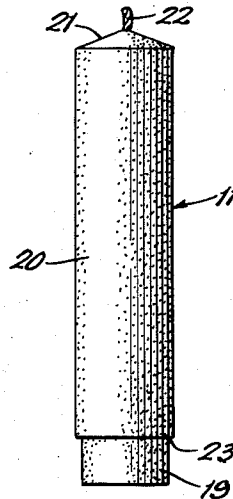
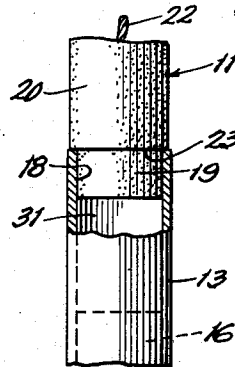


Fig. 2



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Fig. 4

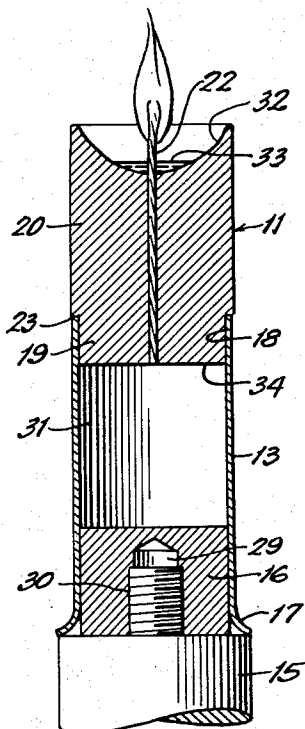


Fig. 5

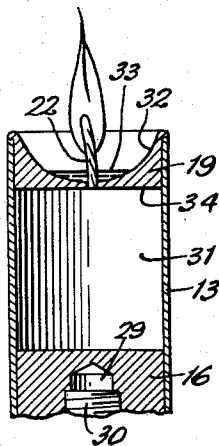


Fig. 6

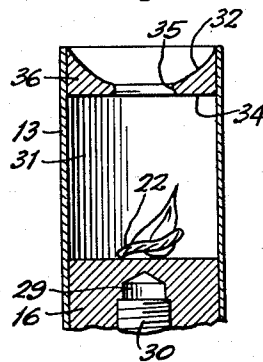
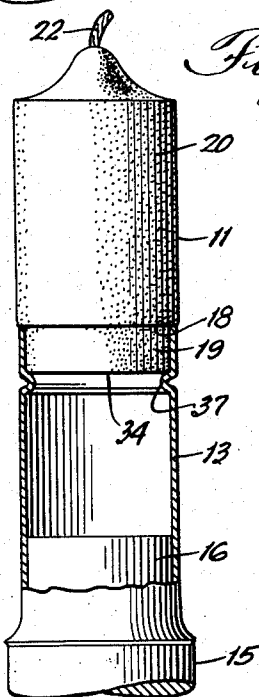


Fig. 7



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3,071,952

CANDLE AND HOLDER THEREFOR

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Filed Mar. 15, 1960, Ser. No. 15,234
12 Claims. (Cl. 67—23)

This invention relates to a candle and holder therefor, and more particularly, to the combination of a pilot-equipped candle and a holder having a socket adapted to receive the pilot therein.

The present application is a continuation-in-part of my copending application Serial No. 710,158, filed January 20, 1958, now abandoned.

Most candle holders are provided with sockets adapted to receive the lower end portions of candles therein, and in order that one holder may serve candles of various diameters, it is customary to taper the lower ends of the candles so that they can be inserted into such sockets to the extent necessary to effectuate a frictional grip therebetween. Arrangements of this type are, in many instances, satisfactory and especially so where, as in home use, a holder is not likely to be moved around a great deal after a candle has been inserted and lighted, and there is usually no problem in cleaning the holders after use because the candle is generally removed and discarded before it has burned its entire length.

There are instances, however, where the conventional socket and tapered candle are not an answer to the requirement of a candle support. An example of this lies in the commercial use of candles, such as in restaurants, where the holder is frequently provided with a transparent or translucent tubular shield extending upwardly about the candle and where the candle-holder combination is frequently moved about. In such a case, it is necessary that the candle be mounted securely in vertical position for, should it become easily dislodged, it may tip against the tubular shield or may drop from the holder. Replacement or straightening of the candle in the holder may be awkward and, in any case, is a time-consuming operation, especially if it must be performed frequently when candles and their holders are moved about.

The tipping of a candle in its holder becomes even more of a problem where the candle is equipped at its upper end with a relatively heavy follower. A follower, it may be noted, is a device supported by a candle at the upper end thereof, and which carries a carburetor which controls the flame characteristics of the burning candle and which maintains the wick in vertical condition. The followers are relatively heavy for they must seat firmly upon the candles if they are to perform their function properly. It will be evident that the likelihood of breaking the frictional grip between the socket and the tapered end of a candle is magnified considerably when the candle is equipped with a follower at its upper end; and in tests that have been made, it was found that it was virtually impossible to move a holder and its candle without disturbing or disestablishing the frictional grip therebetween. Furthermore, since the follower must move downwardly as the candle is consumed, it is arranged to telescope over the upper end of the holder, and such an interrelation can be established only if the candle is perfectly aligned along the vertical axis of the holder. Consequently, it has been found that in many cases the conventional socket-equipped holder and tapered candle is unsatisfactory, and in the latter case described, is wholly inadequate.

In the connection with the institutional use of candles, another problem of equal or even greater magnitude arises. If a candle, mounted in the socket of a conventional holder, is burned down all the way, the wax residue in the socket may be exceedingly difficult to remove. Nevertheless, the socket must usually be cleaned

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out before it will accommodate the base of a fresh candle. As in home use, an attendant might remove and discard the candles before they have burned their entire length but, in addition to wasting material, such an operation requires frequent inspection which is often inconvenient to provide. Furthermore, where the candles are shielded by a translucent tube or other enclosure, the extent to which a candle has burned may be difficult to determine and such a determination may cause even greater inconvenience.

It is, accordingly, an object of this invention to provide a candle and holder combination that overcomes the disadvantages inherent in the prior art. Another object of the invention lies in providing a combination wherein a candle may be burned its entire length without causing any problems or inconveniences in preparing the holder for the insertion of a new candle. Another object is to provide a candle and holder combination wherein the candle may be burned its entire length without leaving a residue of resolidified wax in the bottom of the holder's socket. A still further object is to provide a candle and holder combination wherein the candle is self-extinguishing without the formation of a re-solidified wax residue in the base of the socket and which therefore includes a holder which is easily maintained and cleaned; the entire combination being particularly well suited for use in commercial establishments and in institutions.

Another object of the present invention is in the provision of a candle and holder combination wherein the candle is firmly gripped by the holder and will not become dislodged when the combination is moved or when it is jarred, bumped, etc.; and wherein the candle is automatically oriented with the longitudinal axis thereof disposed along a true vertical line when the candle is mounted in the holder. In this connection, it is a specific object to provide a candle holder having a socket in the upper end thereof, and a candle equipped with a tongue or pilot insertable into such socket and adapted to be frictionally gripped thereby throughout the entire extent of the pilot, whereby a firm anchorage of the candle to the holder is afforded. A further object is to provide a follower-equipped candle having a cylindrical pilot at the lower end thereof with a substantially uniform diameter throughout, and a candle holder equipped with a vertically extending stem defining a generally cylindrical socket at the upper end thereof having a substantially uniform inner diameter approximately equal to the diameter of the pilot, whereby the pilot can be telescoped thereinto and establish a snug frictional interlock therebetween—the outer diameter of the remainder of the candle being substantially equal to the outer diameter of the stem. Additional objects and advantages of the invention will become apparent as the specification develops.

Embodiments of the invention are illustrated in the accompanying drawings, in which:

FIGURE 1 is a side view in elevation of a candle embodying the present invention;

FIGURE 2 is a broken side view in elevation of a candle and a portion of a candle holder embodying the invention, and wherein a part of the holder is shown in section;

FIGURE 3 is a side view in elevation of a follower-equipped candle mounted in a holder therefor, and in which the position of the follower when the candle is completely consumed is shown by broken lines;

FIGURE 4 is an enlarged vertical sectional view illustrating a partially consumed candle mounted in a holder, the holder being illustrated only in part;

FIGURE 5 is an enlarged vertical sectional view similar to FIGURE 4 but showing the combination after the candle is almost entirely consumed;

FIGURE 6 is a vertical sectional view similar to FIG-

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URES 4 and 5 but showing the candle after it has burned its entire length and its wick is being extinguished;

FIGURE 7 is an elevational view, taken partly in section, showing a second embodiment of the present invention.

The structural combination illustrated in FIGURE 3 comprises a candle holder 10, a candle 11 and a follower 12. A shield, shown in broken lines and designated generally by the letter S may also be provided and is a common element for institutional applications. Such a shield is ordinarily, but not necessarily, of tubular shape and may be formed from transparent or translucent glass, or from any other suitable material.

The holder 10 includes a stem 13 supported in vertical condition upon a base 14. In the illustration given, base 14 is provided with a vertical extension 15 which may be removably secured to the base by a screw thread coupling therebetween. The stem itself is removably secured to the base extension 15 by means of a plug 16 fixed to the extension and inserted into the lower portion of the tubular stem.

It is apparent from FIGURE 3 that the base 14 is horizontally disposed and that the stem extends upwardly with its longitudinal axis normal to the plane of the base, whereupon such axis of the stem extends along a true vertical line. The stem is equipped at its lower end with a stop 17 of annular configuration which flares outwardly from the circumferential surface of the stem. As shown most clearly in FIGURE 4, the maximum diameter of stop 17 is substantially the same as the diameter of the base extension 15 therebelow and, if desired, stem 13 may be provided with straight cylindrical side walls and the shoulder at the upper end of the base extension 15 may constitute the stop. In either case, the stop should be oriented a predetermined distance above base 14 and such distance is determined with reference to the construction of the follower 12 for reasons that will become apparent when the follower and its function are described.

As shown most clearly in FIGURES 2 and 4, the hollow stem 13 provides a socket 18 at its open upper end for receiving the offset tongue or pilot 19 at the lower end of candle 11. The remaining length of the candle, as shown at 20, may be wholly conventional and, in accordance with standard practice, has a tapered upper end 21 for initially supplying a restricted quantity of material to the wick 22 so that the candle may be lighted without difficulty.

The penetration of the pilot 19 into the socket 18 is determined by the length of the pilot, and more particularly, by the shoulder 23 forming the line of merger of the pilot with the remaining candle portion 20. It is apparent that the socket 18 is cylindrical, as is the pilot 19; and the outer diameter of the pilot is substantially equal to the inner diameter of the socket. Therefore, a tight frictional grip is provided between the socket and the pilot throughout the entire length of the pilot. It may be noted that the outer diameter of stem 13 approximates the diameter of the candle portion 20 so that a continuous or uninterrupted circumferential surface of uniform diameter extends from stop 17 to the top of the candle.

The follower 12, in the form shown in FIGURE 3, has a substantially cylindrical upper end portion 24 and an outwardly flared skirt 25 therebelow, the lower edge of the skirt being spaced outwardly from candle 11. The follower is a relatively heavy element and may be formed from metals such as brass, lead, etc., and has an inwardly turned upper end (not shown) that bears downwardly upon the upper end of candle 11 and thereby supports the follower thereon. Coaxial with the upper end portion 24 of the follower is an insulator ring 26 having a relatively low coefficient of thermal conductivity, and secured thereto is a carburetor 27 having a coil 28 that surrounds the upper end of wick 22. The carburetor may be a wire bent at its outer end into cylindrical convolutions defining the coil 28 and, since such coil is in inti-

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mate contact with the candle flame, the insulator 26 retards the conduction of heat from the carburetor to the upper end 24 of the follower. The carburetor controls the flame characteristics of the candle and maintains the wick in vertical condition so that the material of the candle will burn evenly at its upper end. Also, since the candle illustrated in the drawings is of the "wet bowl" type—that is, a candle in which a bowl of liquid wax is present at the top of the candle during the burning thereof—the carburetor prevents the wick from flopping over and thereby extinguishing the flame in the melted wax.

As the candle 11 is gradually consumed, follower 12 moves downwardly towards the stem 13 and ultimately the skirt 25 of the follower telescopes over the upper end of the stem. Eventually, the downward movement of the follower will be terminated by engagement with stop 17, and such position of the follower is illustrated by the broken lines in FIGURE 3. Thus, in addition to the primary purpose of accurately guiding downward movement of carburetor 25, the follower indicates, by its position relative to stop 17, the amount of the candle which is yet to be consumed. When the downward movement of the follower is stopped by abutment with the flared stop 17, the upper rim of follower portion 24 will be at substantially the same elevation as the top of stem 13. Accordingly, the location of the stop should be determined with respect to the length of the follower, and unless the follower is provided with specially located stop-engaging abutments, the stop 17 should be located in a higher position when the follower is relatively short and in a lower position when the follower is relatively long. Thus, while the length of base extension 15 may vary considerably, the length of the follower should be considered in providing an extension of proper size.

From the above, it is believed apparent that where the follower is relatively short, or has a lower portion 25 which is substantially cylindrical, or where no follower is used at all, base extension 15 is unnecessary for proper operation of the unit and may either be eliminated or provided for some other reason such as appearance. If it is eliminated, then plug 16 with its threaded bore 29 may be fastened directly to base 14 rather than to the upstanding screw 30 of the base extension 15.

Ordinarily, candles are molded products and, consequently, the body portions thereof will have a slight taper to permit removal thereof from the molds. Preferably, the tongue or pilot 19 will be formed by removing a portion of the candle body after the molding thereof. Such removal may be accomplished in a machining operation and, as a result, the pilot will be perfectly cylindrical. In some instances, however, the pilot may have a slight taper as, for example, less than 4°.

It will be apparent that the circumferential surface of the pilot is frictionally gripped from top to bottom thereof by the inner surface of the socket 18, whereby a positive anchorage of the candle with respect to the holder results. Therefore, the candle will have its longitudinal axis in alignment with the longitudinal axis of stem 13 when the candle is firmly seated in the socket. Since the candle is held firmly in position, it will not topple from the holder when the combination is moved from place to place even though a relatively heavy follower 12 is carried at the upper end of the candle. It is believed apparent that the forces tending to cause tipping of a candle within its holder are quite pronounced when the holder is moved suddenly from one position to another and since such units are used extensively in restaurants and similar places, they are often shifted about by waiters and waitresses in the cleaning and rearranging of tables.

Referring to FIGURES 2 and 4, it will be noted that the length of pilot 19 is substantially less than the length of tubular stem 13 and the socket 18 provided thereby, and that an air space 31 is thus provided beneath the candle within the socket of the stem. Since this space is closed off at its upper end by the tightly fitting pilot

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of the candle and is also sealed off at its lower end by cylindrical plug 16, space 31 is in fact a dead air space.

The length of pilot 19 is closely related to the depth of the bowl 32 of the burning candle 11. As already indicated, candle 11 burns with the formation of a wet bowl 32, the bowl being of concave shape at the upper end of the candle and having a body of liquid wax 33 contained therein. It is the vapor rising from this heated body of wax about the upstanding wick that is burned as the candle is consumed. For a given candle, the depth of bowl 32 will depend upon the diameter of the candle and the material from which it is formed. For example, between candles of the same diameter, a candle formed of wax having a melting temperature of 130° F. will form a shallower bowl than a candle formed of wax having a melting temperature of 150° F. In any case, the length of pilot 19 should be no greater than the depth of the bowl 32 for a candle of any given diameter and composition so as to prevent heating of the socket and of the residual pilot ring, and thus to prevent melted wax from flowing downwardly onto and about the base plug.

While the maximum length of pilot 19 is controlled by the depth of bowl 32, the minimum length of the pilot depends on the pilot length necessary to hold the candle firmly in place within stem 13. The longer the pilot, the more secure is the interconnection between candle 11 and the stem. Thus, it is preferred that the candle be provided with a cylindrical pilot of the same length as the bowl depth or only slightly shorter than that depth. In FIGURE 4, pilot 19 is shown as being slightly shorter than the depth of bowl 32.

As the candle burns down, the lowermost portion of bowl 32 gradually approaches the bottom face 34 of the candle (FIGURE 5). Finally the two merge and an opening 35 is formed in the bottom of the candle through which wick 22 drops. As shown in FIGURE 6, the wick falls downwardly upon the relatively cool top surface of plug 16 and, as the flame continues to burn, the supply of oxygen within the limited air space 31 is quickly consumed. The carbon dioxide from the burning stump of the wick remains within space 32 (because it is heavier than air) and extinguishes the flame before the heat from that flame has melted the wax ring 36 clinging to the top inside surfaces of stem 13. When the flame is so extinguished, the holder may be prepared for insertion of another candle by simply lifting stem 13 off of plug 16, brushing away the stump of wick 22 from the flat top surface of the plug, flicking wax ring 36 out of the upper end of the socket, and then replacing the stem for the insertion of a fresh candle.

The snug frictional contact between the cylindrical outer surfaces of the pilot and the inner surfaces of the stem plays an important part in providing a holder which may be easily cleaned following self-extinguishment of the candle. In the absence of a firm frictional engagement between the parts, the ring 36 of the pilot might tend to slide downwardly within the stem and melt, as the metal stem becomes heated by the flame. Should the wax ring melt, melted wax would tend to flow downwardly into even the smallest crack between the peripheral surface of plug 16 and the inner surface of the stem mounted thereon and, upon re-solidification of that wax, the parts would be tightly locked together. It has been found that where melted wax lodges and solidifies between the closely spaced walls of the plug and stem, a strong bond is formed which is capable of resisting all efforts to separate the parts with the hands unless the parts are heated and the wax re-melted.

The length and width of space 31 are also of considerable importance in providing a combination wherein the flame of a separated wick stump will not melt the wax of ring 36 thereabove. Within practical limits, the greater the vertical dimensions of space 31 (i.e., the distance between the base 34 of the candle and the top surface of

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plug 16), the less likely are the chance of heat from the flame being transmitted to the ring. In any event, the vertical dimensions of the space should be substantially greater than the vertical length of pilot 19. Of even greater importance is the width or diameter of space 31 since it is the lateral dimensions of this space that control the amount of oxygen available for the flame of the burning stump. In the illustration given, the diameter of this space is the same as the internal diameter of stem 13 throughout substantially its entire length. As a result, the limited amount of oxygen in the lower portion of space 31 is quickly consumed by the flame leaving an extinguishing blanket of carbon dioxide which surrounds the stump and puts out the flame.

The embodiment of the invention illustrated in FIGURE 7 is identical to the structure already described except that stem 13 is provided with an annular shoulder 37 about its inner surface. Shoulder 37 is located beneath the upper end of the stem a distance equal to the length of pilot 19. Thus, with the candle inserted in the stem, the under surface of the pilot adjacent the periphery thereof rests upon shoulder 37.

Shoulder 37 serves as additional means for preventing downward movement of the pilot after the candle has burned its entire length and the burning end of the wick has dropped through the central opening thereof on to the top surface of plug 16. However, in both embodiments of the invention, a tight fractional contact between the outer surface of the pilot and the inner surface of the stem is important, not only for the purpose of maintaining the ring of the pilot in place during self-extinguishment of the flame but also for maintaining the candle in place in coaxial relation with reference to the holder as the combination is moved about.

While in the foregoing specification embodiments of the invention have been disclosed in considerable detail for the purpose of making an adequate disclosure and description thereof, it will be apparent to those skilled in the art that numerous changes may be made in those details without departing from the spirit and principles of the invention.

I claim:

1. In a combination of the character described, a vertically elongated wet bowl candle, a candle holder having a vertical tubular stem provided with imperforate side walls and equipped with means for closing off the lower end thereof, said stem having an open top portion providing a socket snugly receiving the lower end portion of said candle, said stem having an internal annular shoulder spaced above said closure means a distance exceeding the length of said lower end portion of said candle for limiting the extent of insertion of said candle into said socket and for defining a confined air space therebelow, said shoulder being spaced below the upper end of said stem a distance no greater than the bowl depth of said candle, whereby, when said candle is consumed to the point that the rim of the bowl thereof is at substantially the same elevation as the upper end of said stem, the wick of said candle will drop downwardly into said space and extinguish itself, leaving a readily removable wax ring clinging to the upper inner surface of said socket.

2. The structure of claim 1 in which said lower portion of said candle is generally cylindrical in shape, said socket also being of generally cylindrical shape and having an inner diameter substantially equal to the outer diameter of the candle's lower portion to effectuate a tight frictional grip therebetween.

3. In combination, a vertically elongated wet bowl candle of cylindrical shape, said candle being provided at its lower end with a generally cylindrical pilot portion of reduced diameter, said pilot portion having a length no greater than the bowl depth of said candle, and a holder providing a generally cylindrical socket of substantially the same diameter as said pilot portion firmly and sealingly

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receiving said pilot portion, said socket defining a sealed air space extending downwardly beneath the undersurface of said pilot portion a distance exceeding the pilot portion's length.

4. The structure of claim 3 in which the space provided by said holder beneath said pilot portion is of a width no greater than the maximum diameter of said candle.

5. The structure of claim 3 in which said holder provides a socket having smooth cylindrical interior walls.

6. The structure of claim 3 in which said holder is provided with an internal annular shoulder supporting said pilot portion within said socket.

7. In a combination of the character described, a vertically elongated wet bowl candle having at the lower end thereof a generally cylindrical pilot portion of reduced diameter, said pilot portion having a length no greater than the bowl depth of said candle, a holder having a substantially vertical stem provided at the upper end thereof with a substantially cylindrical socket, the outer diameter of said pilot portion being approximately equal to the inner diameter of said socket to effectuate a tight frictional grip therebetween and throughout the entire length of the pilot portion, said socket extending downwardly beneath the undersurface of said pilot portion to provide a confined air space beneath said pilot portion, the vertical dimensions of said confined air space beneath said pilot portion exceeding the length of said portion, whereby, when said candle is nearly completely consumed the wick thereof will drop downwardly into said space and extinguish itself, leaving a readily removable wax ring clinging to the upper inner surface of said socket.

8. The structure of claim 7 in which said holder includes a cylindrical plug snugly received within the lower end of said stem, said stem being removably mounted upon said plug.

9. The structure of claim 7 in which the space provided by said socket beneath said pilot portion is of a width no greater than the maximum diameter of said candle.

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10. In combination with a candle holder having a vertical tubular stem provided with imperforate side walls and with means for closing off the lower end thereof, said stem having an open top portion defining a socket, a vertically elongated wet bowl candle having a pilot portion at the lower end thereof adapted to be snugly received within said socket, said pilot portion being no greater in length than the bowl depth of said candle and having a bottom surface spaced above said closure means a distance exceeding the length of said pilot portion for providing a confined air space within said stem when said candle is supported within said socket, whereby, when said candle is consumed to the point that the rim of the bowl thereof is at substantially the same elevation as the upper edge of said socket, the wick thereof will drop downwardly into said space and extinguish itself leaving a readily removable wax ring clinging to the upper inner surface of said socket.

11. The structure of claim 10 in which said candle is provided with an annular shoulder at the upper end of said pilot portion for abutting the upper end of said stem and thereby limiting the extent of insertion of said candle into said socket.

12. The structure of claim 10 in which said pilot portion is of generally cylindrical shape and has an outer diameter substantially equal to the inner diameter of said socket to effectuate an air tight frictional grip therebetween throughout the entire length of said pilot portion and to orient the longitudinal axis of the candle in alignment with the longitudinal axis of said stem.

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