

June 14, 1932.

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1,863,389

WICKING MACHINE

Filed Feb. 17, 1930

3 Sheets-Sheet 1

Fig. 1.

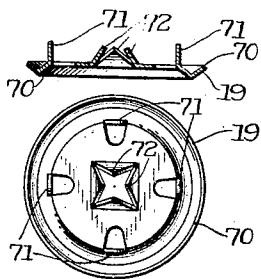
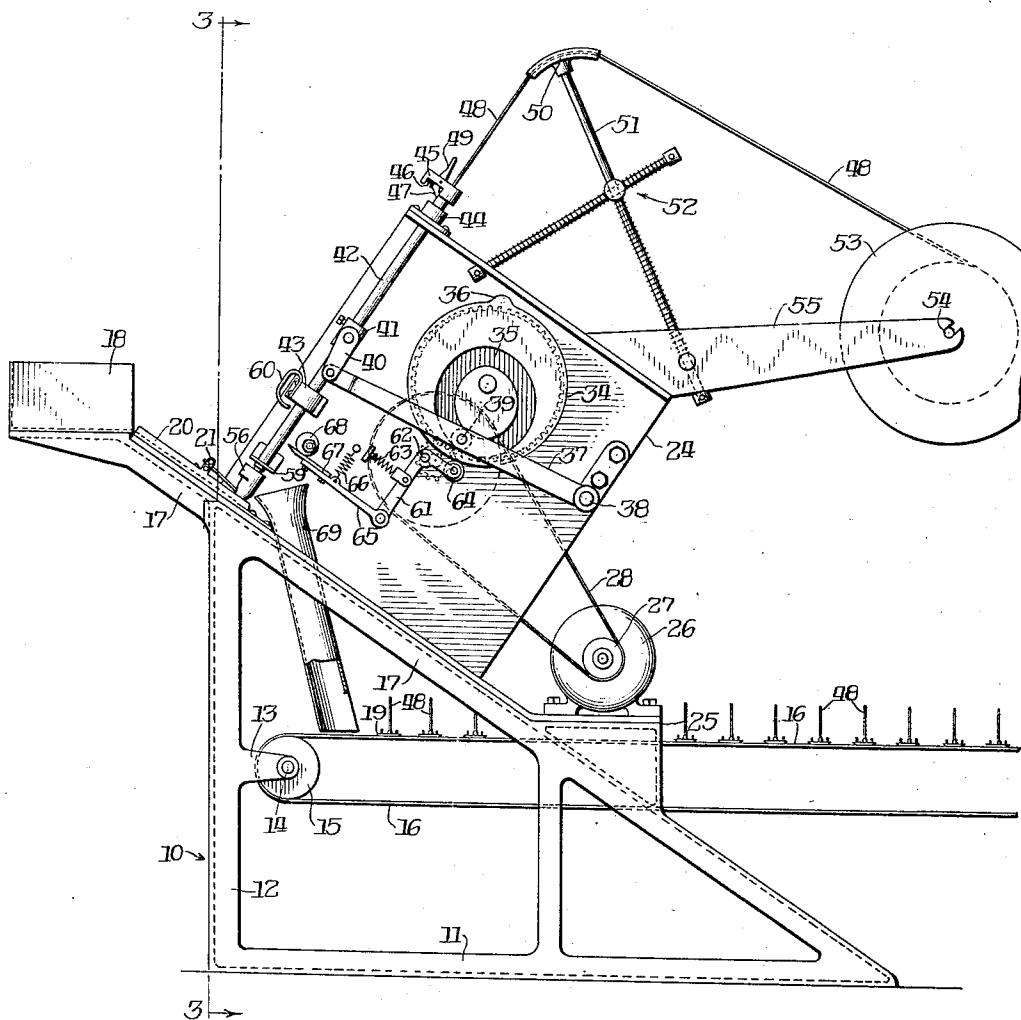


Fig. 2.

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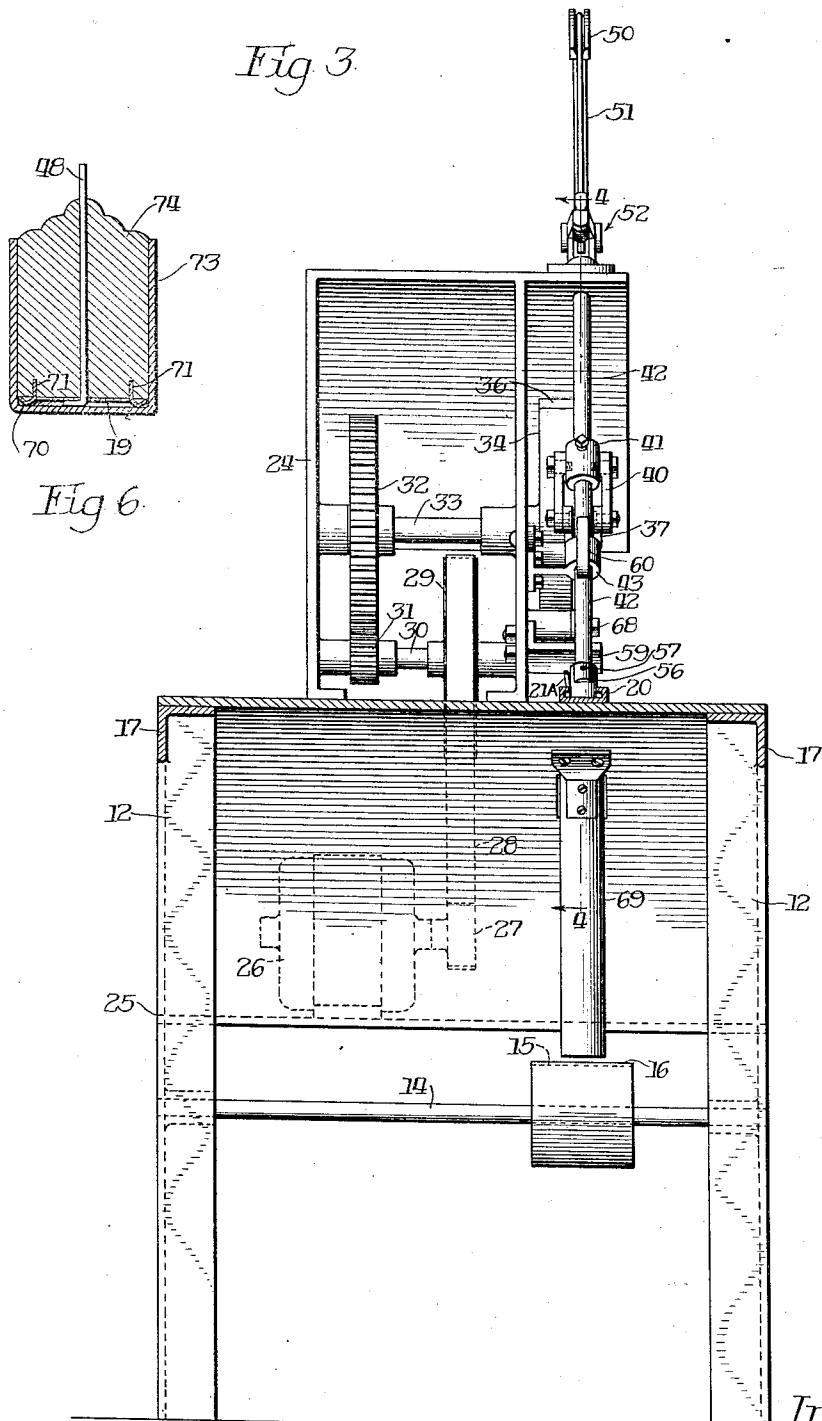
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3 Sheets-Sheet 2



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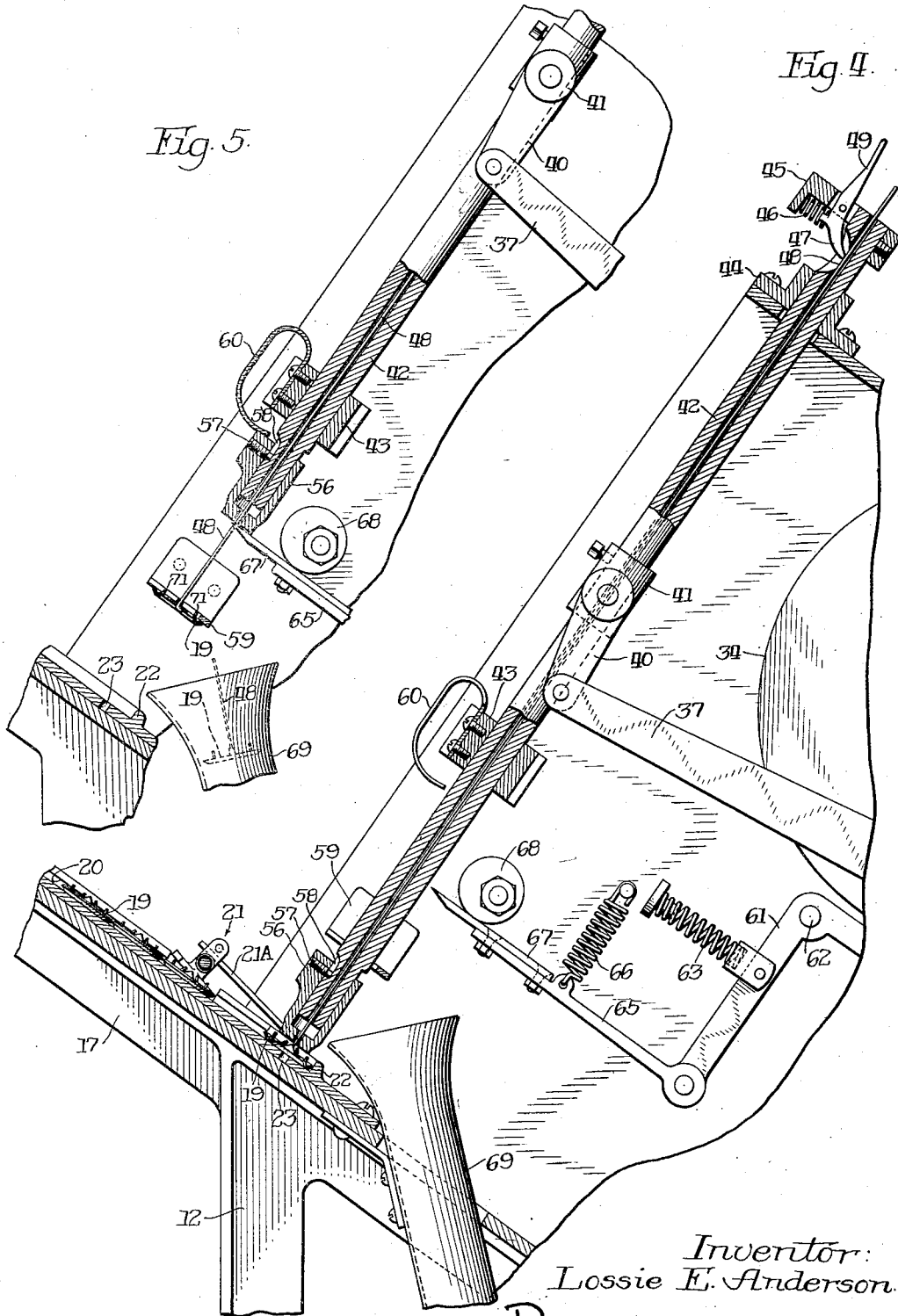
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

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WICKING MACHINE

Application filed February 17, 1930. Serial No. 428,974.

This invention relates to a wicking machine and pertains more particularly to a machine for securing wicks to the disks which form the bases for "Nite-Lite" candles.

10 The object of my invention is to provide a machine for securing a wick or other filamentary element to a disk or plate.

"Nite-Lite" candles are relatively short and usually made by casting the wax in the desired shape, casting a hole through the candle and inserting a wick therethrough. In order to prevent the wick from being pulled out it is necessary to secure the wick to a plate or disk, which is in turn affixed to the candle with suitable lugs. The object of this invention is to provide an improved candle base, to provide improved automatic means for securing wicks of predetermined lengths to said base, and to accomplish this wick ing operation rapidly and continuously by means of automatic machinery.

A further object is to provide a means for automatically inserting the end of a filamentary element into a disk, securing said end in said disk, advancing the element in the machine, severing the element at a predetermined distance from the disk, and leaving the cut end of the element in a position to be inserted and secured into another disk.

30 A further object is to provide a new and improved method of making "Nite-Lite" candles.

Other objects will appear as the detailed description of my invention proceeds.

35 My invention contemplates an automatic machine having a reciprocable shuttle bar which moves toward and away from a die. The end of the shuttle bar is provided with a loosely mounted cap which guides the wick into the aperture of the disk and which contacts with the cutter to leave a free end of the wick insertable into the aperture. It also contemplates a stripper for holding the disk as the shuttle bar retracts, thus drawing the wick into the shuttle bar, and automatic means for positioning and operating the various parts of the machine as will be hereinafter described.

40 The method of wicking candles may be briefly stated as follows:

The wick of the candle is automatically secured to a metal base by my improved machine, the base falls through a chute to a conveyor belt, and operators along the conveyor belt insert the wicks into the "Nite-Lite" candles and pack them into boxes.

My invention will be more clearly understood from the detailed description of the preferred embodiment which is illustrated in the accompanying drawings, wherein similar parts are designated by like reference characters throughout the several views and wherein:

Figure 1 is a side elevation of my improved machine,

Figure 2 shows my improved candle base or disk in plan and section.

Figure 3 is a section through my improved machine taken along the lines 3—3 of Figure 1.

Figure 4 is a detailed section taken along the lines 4—4 of Figure 3 and showing the wick immediately before it enters the disk.

Figure 5 is a similar section showing the shuttle bar in its uppermost position and the cutter severing the wick to permit the candle base to drop down to the chute to the conveyor belt.

Figure 6 is a section through the finished "Nite-Lite" candle.

Referring to Figures 1 and 3, the machine is mounted on a support 10 which may be of angle iron or other suitable material. The support is preferably in the shape of a triangle, one leg 11 being the base, and the other leg 12 being the upright, which carries a bracket 13 in which is journaled a shaft 14 carrying the pulley 15 which supports the conveyor belt 16.

The hypotenuse 17 of the support extends beyond the upright 12, and is provided at the top with a hopper 18 for the candle bases or disks 19. These disks are fed from hopper 18 through a guide 20 past a release mechanism 21 to a die or positioning means 22 which aligns the aperture of the disk with an aperture 23 in the die and with the reciprocating shuttle bar which will be hereinafter described.

A frame 24 on support 10 carries the oper-

ating parts of my mechanism and a shelf 25 mounted on said support carries an electric motor 26 which drives said operating parts. Pulley 27 on the motor shaft drives belt 28, which in turn drives pulley 29 keyed to shaft 30. Gear 31 also keyed to shaft 30, drives gear 32 which is keyed to shaft 33 which drives cam wheel 34. This cam wheel is provided with an internal cam surface 35 and with an external cam lug 36. A lever 37 is pivoted to the frame by pin 38 and is reciprocated by means of cam follower 39 which is fixed to said lever and which co-acts with cam surface 35. The free end of lever 37 is bifurcated and is connected by links 40 to a collar 41 in which the reciprocating shuttle bar 42 is held by suitable set screws or other means.

The shuttle bar spindle or needle 42, as shown in Figures 4 and 5 is a spindle or rod which is hollowed to receive and feed the wick. It is reciprocated by lever 37 through bearings 43 and 44. The upper end of the bar is provided with a friction device comprising a bracket 45 carrying a spring 46 bearing on pivoted dog 47 which is thereby urged against the wick 48 in bar 42. The free end 49 of the dog may be depressed when it is necessary to thread the bar or to remove the wick therefrom.

Referring again to Figure 1, I have shown a wick guide 50 carried by a suitable support 51 which is carried by a resilient mounting 52 adapted to exert a uniform pressure and to yieldingly hold the wick in place. The wick 48 is supplied from a spool 53 mounted on shaft 54 carried by arms 55.

Referring again to Figures 4 and 5, the lower end of the shuttle bar is reduced in size and it carries a loosely movable cap 56, the downward movement of the cap being limited by screw 57 sliding in slot 58. The cap is normally maintained in its lower position by gravity and the distance between the end of the bar and the inside of the cap in its lower position corresponds to the length of wick which must be inserted through the pronged aperture of the disk as will be hereinafter described.

When the apparatus is in the position shown in Figure 4, continued downward motion causes the needle bar to thread the wick through the aperture and to sharply strike the cap 56, which in turn collapses the prongs of the aperture disk and causes said prongs to securely grasp the wick. As the bar is moved upwardly the disk 19 operates bar 21A of the release mechanism to feed another disk into the die, and it is then held by stripper 59 while the needle bar and cap continue their upward movement (the cap being designed to move freely through the stripper). The bar moves upwardly along the wick which slips under pivoted dog 47, until in its upper position the loose cap 56 strikes spring 60

which keeps it in its lower position while the cutting mechanism is brought into operation.

The cutter is actuated by bell crank lever 61 which is pivoted to the frame by pin 62 and urged in a counter clockwise direction by spring 63. A cam follower 64 is actuated at intervals by cam 37 thus turning the lever clockwise and forcing the bar 65 to the left. Bar 65 is held upwardly by spring 66, and it carries at its end a knife 67 which is directed by a guide 68 to co-act with cap 56 and thereby sever the wick 48.

When the wick is severed, the disk 19 with the wick secured thereto falls through chute 69 to conveyor belt 16.

The specific candle base or disk as shown in Figure 2 consists of a tin stamping which has a depressed annular groove 70 around its circumference, a series of upstanding lugs 71 adapted to be inserted in the candle, and a plurality of upwardly extending inclined prongs 72 which, when collapsed, will securely grasp the end of the wick.

The finished "Nite-Lite" candle (see Figure 6) consists of a suitable container 73, which is usually of colored glass, in which is inserted the candle 74 which has been threaded over wick 48 and pressed on to the lugs 71 of disk 19. It should be noted that the depressed annular flange 70 holds the disk away from the bottom of the container thereby leaving room for the end of the wick. This enables the candle to stand level in the container.

The operation of my invention is apparent from the above description, and may be briefly described as follows:

The wick 48 from reel 53 is trained over guide 50 and is inserted by depressing handle 49 into and through the shuttle bar 42 until the end of the wick is even with the end of the loose fitting cap in its lowermost position. A large number of stamped disks are placed in hopper 18 and fed down the inclined guide 20. Release mechanism 21 is actuated to permit one of the disks to slide into the die 22. The electric motor 26 is then started. The shuttle bar 42 is reciprocated by means of lever 37 and cam 35; on its downward movement the loose cap guides the wick into the opening, the bar inserts the thread in the opening, and the end of the bar then strikes the cap and presses it toward the die, thereby collapsing the prongs of the disk against the wick. On the upward movement of the bar the release mechanism 21 is actuated to position a new disk, and the secured disk is caught by stripper 59 thus holding the wick while the bar moves upwardly. This, in effect, feeds the wick into the bar. When the bar reaches its uppermost position, loose cap 56 is held down by spring 60 and cam 36 hits follower 64, turning bell crank 61 clockwise to cause knife 67 to sever the wick (see Figure 5). The sev-

ered wick with the disk to which it is secured falls through the chute 69 to the conveyor belt 16.

Operators along the conveyor belt insert candles, which have been cast and provided with a central opening, over the wicks and on to the upstanding lugs 71, thereby securely fastening the wick to the candle. The candle and the wick may be packed in a box with or without their glass containers 73.

While I have described a preferred embodiment of my invention it is understood that I do not limit myself to the details therein set forth. Instead of securing wicks to candle bases, this machine may be used for securing wire strings or any other filamentary elements to plates, disks or sheets. The term disk, as used in the following claims, is hereby defined as a plate or sheet of any shape or size and of any material which has the malleable properties necessary for use in my machine. The word wick is defined as any filamentary element which may be secured to a disk in the manner above specified. The term loose cap is defined as an element which moves toward and away from the end of the bar for obtaining the added length of wick to be inserted in the disk; it may be a lever or a link instead of a telescopic cap. The pronged opening refers to upwardly bent inclined prongs which are formed by piercing a sheet or by cutting it transversely and bending the cut portions.

I claim:

1. In a machine of the class described, a shuttle bar, means for aligning a pronged opening on a disk with said shuttle bar, and means associated with said shuttle bar for feeding a wick through said opening and for collapsing said prongs to hold said wick in place, said means comprising an element movable toward and away from the end of the bar.

2. In a machine of the type described, a shuttle bar, means comprising an element movable toward and away from the end of said bar for inserting a wick through a pronged aperture and for collapsing the prongs thereof to clamp the wick, and means to cut the wick at a predetermined distance from the disk whereby the free end is ready to be operated upon by said first named means.

3. A machine comprising a die, a shuttle bar reciprocable toward and away from said die, means for holding a wick in said shuttle bar and a loose cap on the end of said shuttle bar having an aperture through which said wick extends whereby the wick may be inserted into a pronged opening and the prongs of said opening may be clamped against said wick by the impact of said shuttle bar against said cap, said cap comprising an element which is movable toward and away from the end of the bar.

4. A machine for securing a wick to a disk comprising a die, a shuttle bar reciprocable toward and away from said die, means for holding a wick in said shuttle bar, a loose cap on said shuttle bar having an aperture through which said wick extends, means for reciprocating said shuttle bar toward and away from said die whereby the motion of the shuttle bar toward the die feeds the wick through the cap and subsequently impinges against the cap, and means for feeding a wick through said shuttle bar, said cap comprising an element which is movable toward and away from the end of the bar.

5. A machine for securing a wick to a disk comprising a die, a shuttle bar movable toward and away from said die, means for holding a wick in said shuttle bar, a loose cap on said shuttle bar, said bar and said cap having aligned holes therethrough for a candle wick, means for reciprocating the shuttle bar toward and away from the die, a stripper above said die and in the path of the shuttle bar, and a friction means for holding a wick in the shuttle bar, said cap being movably mounted toward and away from the end of said bar.

6. A machine for securing a wick to a disk comprising a die, a shuttle bar, means for holding a wick in said bar, a loose cap on said shuttle bar having an aperture through which said wick extends, means for reciprocating said shuttle bar toward and away from said die, means for advancing the wick in said bar, and means for severing the wick in predetermined lengths, said cap being movably mounted toward and away from the end of said bar.

7. A machine for securing a wick to a disk comprising a die, means for feeding a disk with a pronged opening to said die, a shuttle bar having a loose apertured cap thereon, said cap being movable toward and away from the end of said shuttle bar, means for threading a wick through said shuttle bar and said cap, means for moving said shuttle bar toward said die whereby said apertured cap is positioned against said disk in alignment therewith so that said wick is inserted through said pronged aperture and whereby the prongs are clamped to said wick by the impact of the bar against said cap, means for moving said bar upwardly, means for holding the disk during a part of the upward motion whereby additional wick is drawn into the bar, and means for severing the wick at a predetermined length whereby the severed end of the wick in the bar is ready to be inserted into another disk.

8. In a machine of the type described, a shuttle bar adapted to carry a wick, a loose cap freely movable thereon, said cap having an aperture through which said wick extends, means for forcing said bar against said cap in one position, and means for maintaining

the cap and the end of the shuttle bar separated in another position of said bar.

9. A base for "Nite-Lite" candles comprising a stamped disk having a depressed annular flange, a pronged opening, and upwardly extending lugs.

10. The method of making candles which comprises securing a wick to a disk, and inserting said wick into a precast candle.

11. The method of making candles which comprises securing a wick to a disk, threading a disk into a precast candle and securing said disk to said candle.

Signed this 28th day of January, 1930, at
Whiting, county of Lake, State of Indiana.

LOSSIE E. ANDERSON.

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