

April 11, 1961

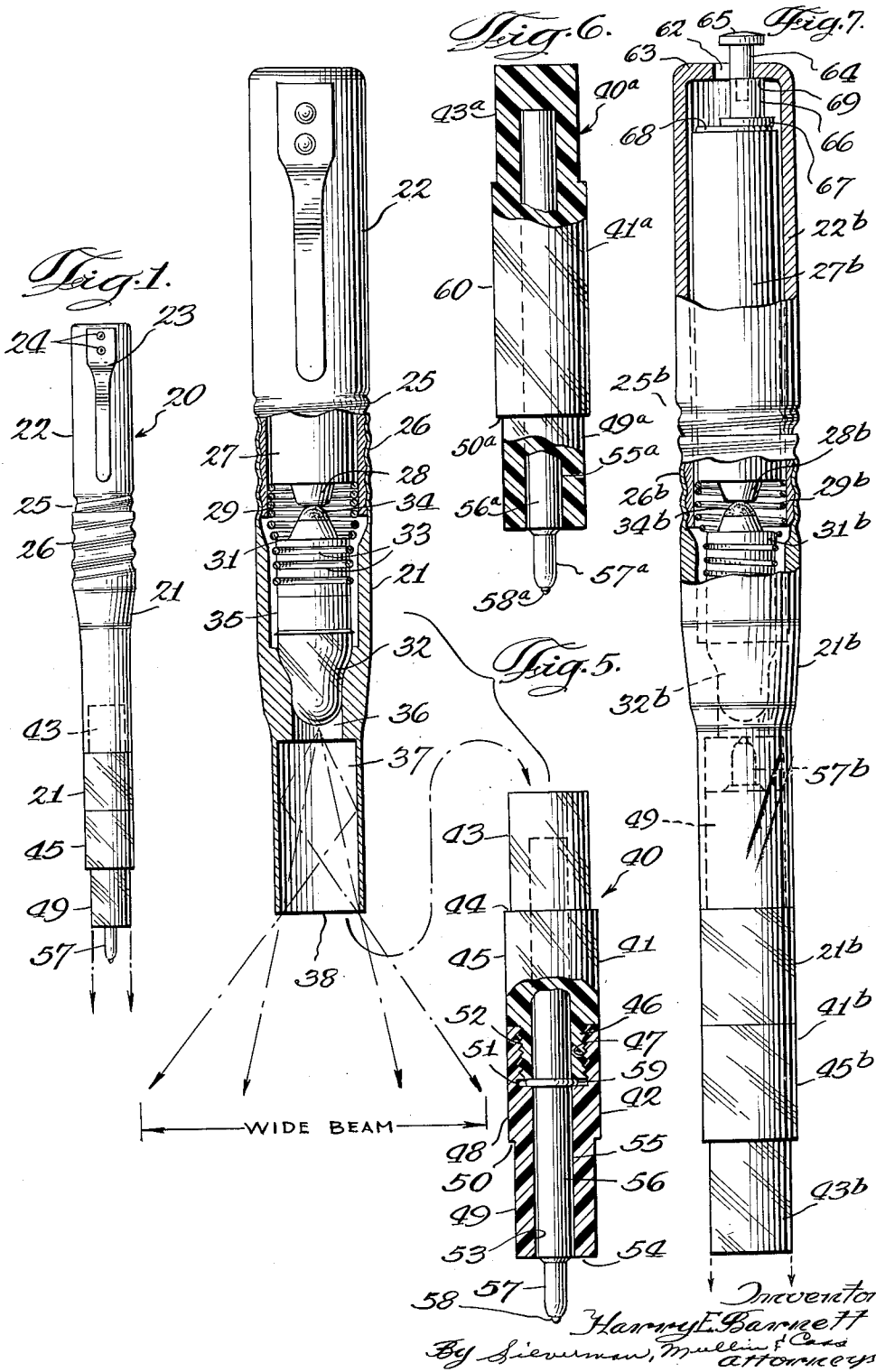
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COMBINATION ILLUMINATED WRITING INSTRUMENT AND FLASHLIGHT

Filed Dec. 26, 1957

3 Sheets-Sheet 1



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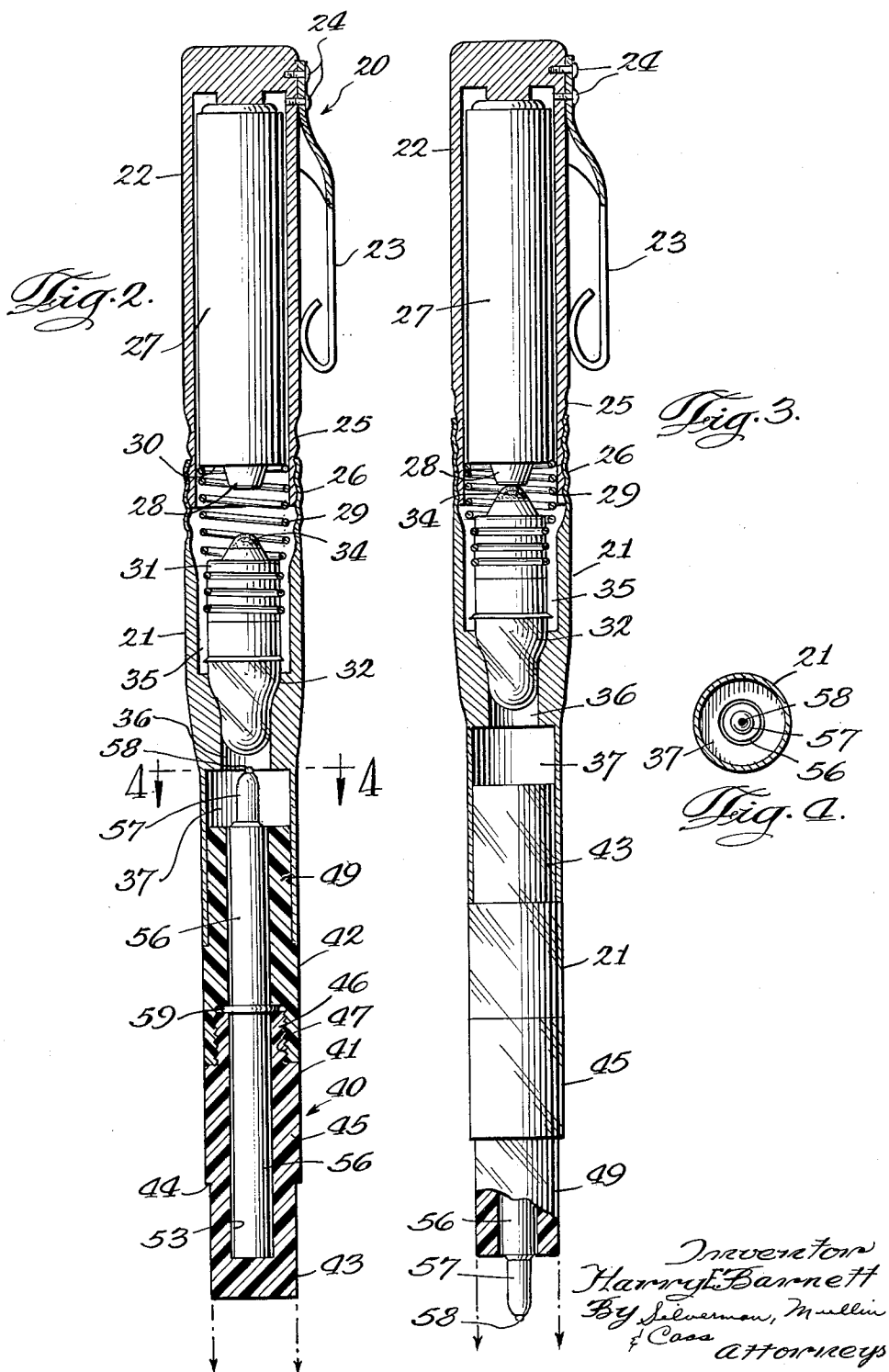
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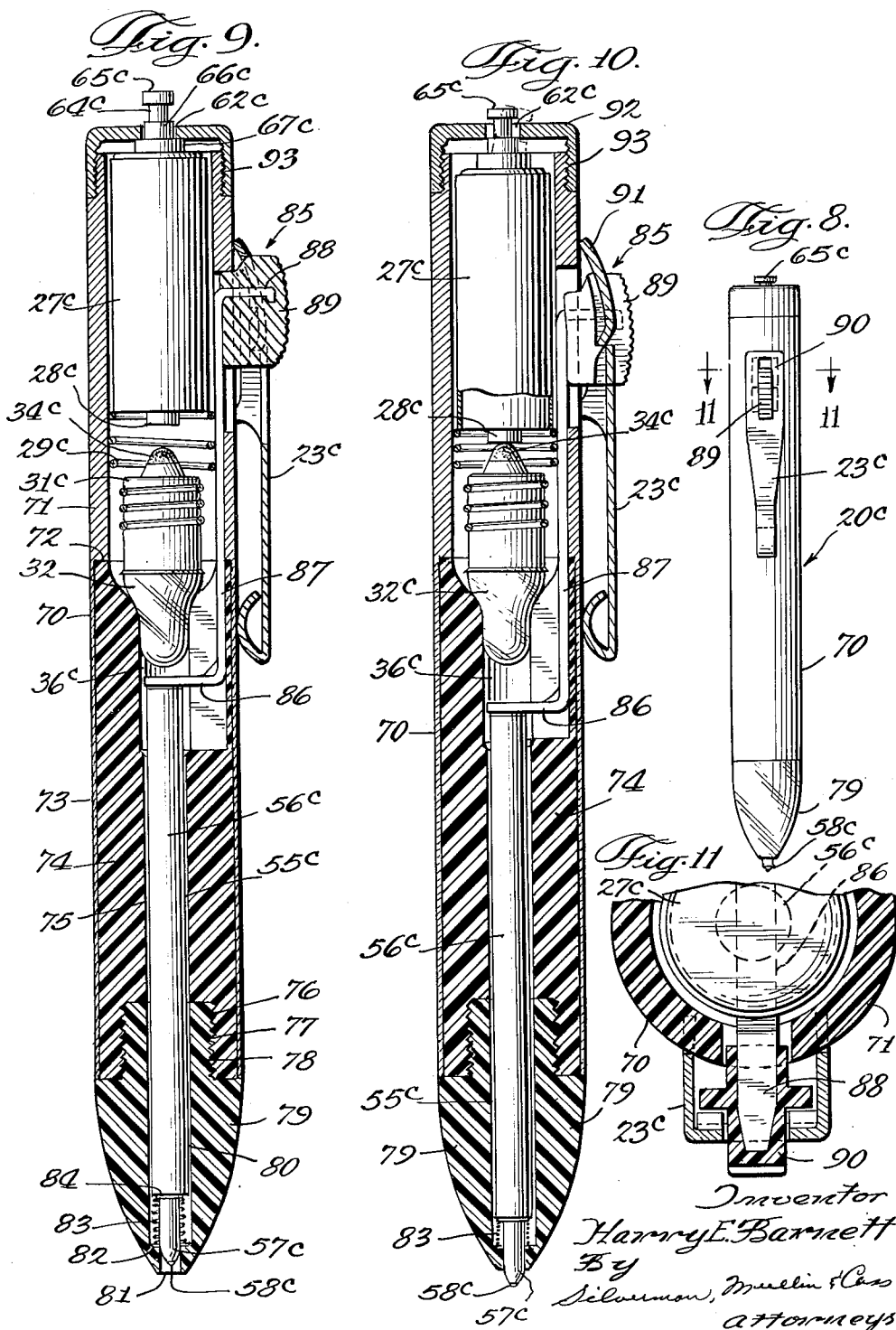
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COMBINATION ILLUMINATED WRITING INSTRUMENT AND FLASHLIGHT

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4 Claims. (Cl. 240—6.46)

This invention relates to an instrument having both illuminating means and writing means and more particularly to improvements in a combination instrument capable of being used as a writing instrument, as an illuminated writing instrument, as a narrow-beam flashlight and as a wide-beam flashlight.

Pocket type writing instruments are, of course, well known and include fountain pens, ball-point pens, automatic pencils and the like. So also fountain pen type flashlights are also well known. However, to my knowledge, no single instrument combining illuminating means with a writing instrument in such a manner as to afford the multiple functions of both the illuminating means and the writing instrument separately as well as combined as an illuminated writing instrument, has yet been introduced. Thus, for example, there has existed a long-felt need for a writing instrument having incorporated therein illuminating means for directing a beam of light on a writing surface whereby the same may be used to write in the dark without necessitating the use of a separate flashlight or equivalent illuminating device. The advantages of such an instrument are manifold and obvious, for it eliminates the need for two separate instruments and permits the use of both hands, one for holding the writing surface and the other for naturally performing the writing operation. In such an instrument the light is beamed directly onto the writing surface surrounding the tip of the writing instrument and is not diffused to distract others, as for example, during lectures employing visual aids which necessitate a darkened room.

It is therefore an important object of this invention to provide a combination writing instrument and illuminating device which will provide all of the advantages mentioned hereinabove.

Another object is to afford a combination instrument of the type mentioned hereinabove which may be readily converted from a mere writing instrument to at least the following devices; viz, a spot-beam flashlight, a wide-beam flashlight, or an illuminated writing instrument such as a ball-point pen.

A further object is to afford a device of the character described having a removable pen point and ink reservoir positioned adjacent an illuminating device, said writing elements encased in a light diffusing member capable of transmitting light to the point of the pen.

Yet another object is to provide a combination instrument of the type described in which the writing point is retractable or capable of being sheathed.

Yet a further object is to afford a combination illuminating and writing instrument having a cartridge comprising a light diffusing casing surrounding a ball point pen and attached ink supply, said ball point pen and ink supply removable from the casing for replacement of the same.

A related object is to afford a combination light diffusing cartridge, ball point and ink reservoir in which the entire unit may be replaced when the ink supply has become exhausted.

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Still another object is to provide simplified switch means for controlling the illuminating means.

Still a further object is to afford a combination ball point pen and flashlight of simple, inexpensive construction, yet attractive, sturdy and highly utilitarian.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings preferred embodiments thereof, from an inspection of which when considered in connection with the following description my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a front elevational view of a combination instrument embodying the principles of my invention;

Fig. 2 is an enlarged longitudinal sectional view showing the instrument in the condition in which it may be used as a narrow beam flashlight;

Fig. 3 is a similar partially sectional view showing the instrument in the condition in which it may be used as an illuminated writing instrument;

Fig. 4 is a cross sectional view taken on the plane of line 4—4 in Fig. 2 of the drawings and viewed in the direction indicated;

Fig. 5 is an exploded view partially in section showing the device as a wide beam flashlight with a pen point light diffusing cartridge separated therefrom;

Fig. 6 is an elevational view partially in section of a modified form of the combined pen and light diffusing cartridge;

Fig. 7 is an elevational view partially in section showing a modified means for actuating the illuminating device;

Fig. 8 is a front elevational view of another embodiment of the invention;

Fig. 9 is an enlarged sectional view of the embodiment shown in Fig. 8 showing the device in non-operational position;

Fig. 10 is a sectional view similar to Fig. 9 but showing the instrument in operational position as an illuminated night writing pen; and

Fig. 11 is an enlarged fragmentary sectional view taken on the plane of line 11 in Fig. 8 of the drawings and viewed in the direction indicated.

Referring now to Figs. 1—5 of the drawings, reference numeral 20 indicates generally a portable pen-type instrument commonly designated as a fountain pen having a barrel portion 21, a tubular cap-type member 22 and having the usual pocket clip 23 affixed thereto by any conventional means as for example, rivets 24. The lower end of the cap 22 and the upper end of the barrel 21 are complementarily screw-threaded as at 25 and 26 respectively for dual function. The first readily apparent function of the complementary threads is for joining the two parts together. The other function will be disclosed as the description proceeds.

It will be noted in Figs. 2, 3 and 5 of the drawings that the cap member 22 is provided with a dry cell battery 27 positioned within the cap cavity with an electrode ter-

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terminal 28 depending downwardly therefrom. A coiled spring 29 is positioned with its upper end abutting the bottom 30 of the battery and surrounding the battery terminal 28. The lower portion of the coil spring 29 is coiled about the base 31 of a flashlight-type electric bulb 32. The base of the bulb has complementary grooves such as 33 formed therein which are adapted to cooperate with the lower portion of the spring 29 to retain the bulb in position. The base of the bulb 32 has a contact terminal 34 which when brought into contact with the battery terminal 28 completes the circuit and energizes the bulb so that the same emits illuminating rays.

The upper portion of the barrel 21 is formed with an enlarged cavity 35 suitable for accommodating therein the base portion 31 of the bulb. The bulb 32 depends from the cavity 35 and is positioned in a narrower shaped cavity 36 formed in a lower portion of the barrel. The top portion of the cavity 36 communicates with the cavity 35 and the lower portion of the cavity 36 communicates with an elongated annular cavity 37 which opens to the bottom of the barrel as at 38. It will thus be noted that in Fig. 5 of the drawings that light rays are emitted from the bottom of the barrel 38 when the light bulb 32 is energized. These light rays are emitted in a relatively wide beam capable of illuminating a fairly large area.

It will also be noted at this point that in the embodiments illustrated in Figs. 1-5 inclusive contact between the bulb terminal 34 and the battery terminal 28 are simply but positively effected by merely screwing the barrel 21 up on the cap 22 until the terminals are brought into contact as shown in Figs. 3 and 5 of the drawings.

Attention is now directed to Figs. 2 and 5 of the drawings wherein there is illustrated a novel combination ball point pen and light diffusing cartridge designated generally by reference numeral 40. The cartridge may comprise a generally cylindrical male portion 41 and a female portion 42 made of a light transmitting and diffusing material, such as for example the acrylic resin plastic Lucite. The male portion 41 is formed with a segment 43 of reduced-diameter affording an annular shoulder 44 adjacent the lower enlarged-diameter portion 45. A still greater reduced-diameter portion 46 depends from the portion 45 and is screw threaded as at 47. The female portion 42 of the cartridge is likewise formed with a top enlarged-diameter segment 48 and a lower reduced-diameter portion 49 affording a shoulder 50 therebetween. The segment 48 is formed with a central annular cavity 51 having complementary threaded annular walls 52 adapted to cooperate with the threads 47 of the male portion for joining together the male and female portions.

Both portions of the cartridge 41 and 42 have centrally formed therein an elongated annular cavity 53 which opens to the bottom 54 of the cartridge. Within this cavity 53 may be positioned a ball point pen cartridge 55 of the usual construction comprising a tube containing an ink supply 56 with a ball point member 57 depending therefrom and protruding from the bottom of the cartridge. At the very tip of the ball point 57 the usual ball 58 is positioned. Intermediate the length of the cartridge tube 56 a collar or ring such as 59 is fitted in immovable position and the same is adapted to bear against the bottom of the cavity 51 for retaining the ball point pen cartridge in position within the light diffusing cartridge 40. Thus it will be noted in Fig. 5 of the drawings that the ball point pen cartridge 55 may be readily removed from the cartridge 40 by merely unscrewing the male member 41 from the female member 42, then removing the cartridge 55 and replacing the same with a fresh cartridge when the ink supply in the pen cartridge has been exhausted.

Referring now to Figs. 2 and 5 of the drawings, the manner in which the cartridge 40 is associated with the barrel 21 will be described. It will be noted that the reduced-diameter portions 43 and 49 are sized so that

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the same may be readily press fitted into the barrel cavity 37. Thus, when it is desired to use the instrument as a pen, the portion 43 is forced into the cavity 37 until the bottom 38 of the barrel bears against the shoulder 44. In this position, the instrument may be used either as a mere pen or as an illuminated pen when the battery and bulb terminals 28 and 34 are brought into contact with each other as shown in Figs. 3 and 5 of the drawings. By merely reversing the cartridge and inserting the reduced diameter portion 49 into the cavity 37, as shown in Fig. 2 of the drawings, ball point 57 is retracted or protected and the instrument may then be used as a narrow beam flashlight again by merely screwing the barrel up on the cap 22 until contact is made between the battery and the bulb.

In Fig. 6 of the drawings a modified version of the cartridge 40 is shown. In this embodiment similar parts are designated by like numerals with the added suffix "a."

Instead of the two piece separable cartridge from which the ball point ink cartridge may be removed, in this embodiment a unitary cartridge is afforded having but a single central enlarged diameter segment 60 and in which the ball point pen cartridge 55a is permanently embedded in the "Lucite" casing 41a. Thus, when the ink supply is exhausted the entire cartridge assembly is replaced. In all other respects, however, the cartridge functions in the same manner as the previously described cartridge.

In Fig. 7 of the drawings, there is illustrated a further modified form of the instrument. Again, similar parts are designated by like numerals, but this time with the added suffix "b."

The instrument is substantially identical to the first described embodiment with the exception that independent means is provided for moving the battery 27b downwardly until the electrode terminal 28b is brought into contact with the light bulb terminal 34b. Thus, the barrel 21b need not be screwed up on the cap 22b in order to effect actuation of the bulb.

For the aforementioned purpose, the cap 22b is provided with an aperture 62 formed in the top wall 63 of the cap. Through this aperture 62 may protrude a stem 64 having a button 65 mounted thereon. Integrally formed to the bottom of the stem 64 is an enlarged diameter stem portion 66 terminating again in a still further enlarged disc 67 adapted to bear against the upper end 68 of the battery 27b. It will be noted that a shoulder 69 is afforded between the two stem segments 64 and 66. Thus, when it is desired to energize the bulb 32b, the button 65 is pressed downwardly until the battery and bulb contacts 28b and 34b are brought into contact one with the other. The battery 27b is moved downwardly against spring 29b so that the same is compressed.

To hold the battery in contact with the bulb, push button stem 64 is moved off center until shoulder 69 engages the bottom of the cap top 63 as shown in Fig. 7 of the drawings. As in the other embodiment, the cartridge 41b may be inserted with the ball point pen 57b protruding therefrom for use as a writing instrument or may be reversed and sheathed as shown in Fig. 7 of the drawings, in which case the instrument may be used as a narrow beam flashlight.

In Figs. 8-11 inclusive of the drawings still another modified form of the invention is illustrated. Again in this embodiment similar parts are designated with like numerals, but this time with the added suffix "c."

In this modified form the barrel and cap are combined in a unitary elongated tubular member 70 having a thickened upper portion 71 affording a shoulder 72 at the top of the lower barrel portion 73.

Within the lower barrel portion 73 may be positioned a cylindrical light-diffusing member 74 made of a material such as the acrylic resin, "Lucite," and formed with a central upper cavity 36c adapted to accommodate therein the bulb 32c, said upper cavity 36c communicating

with a lower smaller-diameter annular passage 75 within which may be positioned the ball point ink cartridge 56c.

The central lower end of the member 74 is recessed with the annular walls of said recess screw threaded as at 76. These screw threads 76 are adapted to cooperate with screw threads 77 formed on a complementary shaped annular member 78 in turn integrally formed at the top of a cone-shaped pen tip 79 likewise made of a light diffusing material such as "Lucite." The member 79 likewise has formed therein a central passageway 80 aligned with the passageway 75 to accommodate therethrough the ball point ink cartridge 56c. The passage 80 does not extend all the way through to the bottom of the tip member 79 but instead communicates with a smaller diameter opening 81 which in turn opens to the bottom of the tip 79. Thus, there is afforded a shoulder 82. Positioned above this shoulder 82 and coiled about the ball point top member 57c is a spring 83 which tends to expand between the shoulder 82 and the shoulder 84 afforded at the top of the ball point pen tip member 57c and the cartridge portion 56c. This tends to raise the ball point cartridge 55c up into the sheathed position as shown in Fig. 9 of the drawings. In order to lower the ball point pen 55c into operational position, as shown in Fig. 10 of the drawings, a lever member designated generally by reference numeral 85 is provided which will now be described in some detail.

The aforementioned pen-lowering device comprises a Z shaped lever having a lower horizontal leg integrally formed at the bottom of a vertical leg 87 and positioned to abut the top of the cartridge 55c. At the top of the vertical leg 87 an outwardly extending arm 88 is provided which in turn is embedded in a moveable button 89 extending through an opening 90 formed in the top portion of the pocket clip 23c. Thus, when the button 89 is forced downwardly the lever arms 86 and 87 are likewise forced downwardly in turn forcing the cartridge 55c downwardly against the action of the spring 83. A catch member such as 91 may be provided for holding the button 89 in its lowered position, as shown in Fig. 10 of the drawings.

In this embodiment the battery lowering device is similar to the one disclosed in the modification illustrated in Fig. 7 of the drawings. Again, a push button such as 65c is provided which protrudes through an opening 62c formed in a relatively shallow cap member 92 which is adapted to screw onto the top of the barrel 70 by means of complementary screw threads such as 93 in Figs. 9 and 10 of the drawings.

Thus, as shown in Fig. 10 of the drawings, the battery 27c has been lowered until its electrode contact member 28c is brought into electrical contact with the bulb base 34c and thereby energizes the bulb 32c. The pen cartridge 55c has been lowered, as shown in Fig. 10 of the drawings so that it is in writing position and illuminated by means of light rays diffused through the "Lucite" members 74 and 79.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while preferred embodiments of the invention have been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a combination flashlight and writing instrument device, a cylindrical barrel having a screw-threaded top portion, a tubular cap having a pocket clip attached to

its wall and having complementary screw threads formed in the lower portion of said wall, the upper portion of said barrel forming an enlarged cavity which tapers downwardly to a narrower cavity, said narrower cavity communicating with a lower enlarged cavity opening to the bottom of the barrel, an electric light bulb having an upwardly protruding contact member removably positioned with the bulb portion wedged in said narrower cavity, a battery having a depending contact terminal member positioned in said cap, spring means positioned to normally urge said contact members apart, means for bringing the battery and bulb into electrical contact, a centrally-apertured light-transmitting cylindrical plastic cartridge removably and reversibly positioned in said lower enlarged cavity, said plastic cartridge having flat ends and having a ball-point pen cartridge positioned in the central aperture thereof with the ball-point protruding from one end thereof, said plastic cartridge having reduced diameter end portions, said reduced diameter end portions being of complementary configuration with the internal configuration of said lower enlarged cavity whereby the device may be used as a writing instrument or illuminated writing instrument when the plastic cartridge is positioned in the barrel with the ball-point protruding therefrom and functions as a narrow-beam flashlight when the plastic cartridge is positioned with the ball-point sheathed in the barrel.

2. In a combination flashlight and writing instrument, a tubular barrel, a top closure member associated with said barrel, an electric light bulb removably positioned in said barrel, an electric power source positioned in normally spaced relationship above said light bulb, said barrel being open at the bottom end thereof, a cartridge formed of a light transmitting material removably and reversibly positioned in said bottom end of said barrel, said cartridge comprising a plastic member having a reduced diameter portion at both ends thereof, said reduced diameter portions being of complementary configuration with the internal configuration of said bottom end of said barrel, a writing device mounted in said cartridge and protruding from one end thereof, and means for bringing the electric power source and light bulb into electrical contact one with the other whereby to energize the light bulb.

3. The combination flashlight and writing instrument of claim 2 in which said cartridge comprises an externally threaded male portion and a cooperating internally threaded female portion, said male and female portions being formed with an elongated central bore, said writing device being positioned in said bore.

4. The combination flashlight and writing instrument of claim 3 in which said writing device comprises a ball-point pen cartridge having an enlarged collar intermediate the length thereof, said male and female portions cooperating with said collar to retain said pen cartridge in operational position.

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