June 11, 1940. J. E. KING ET AL 2,204,136

AUTOILLUMINANT WRITING IMPLEMENT

Filed Aug. 29, 1938

Fig. 2

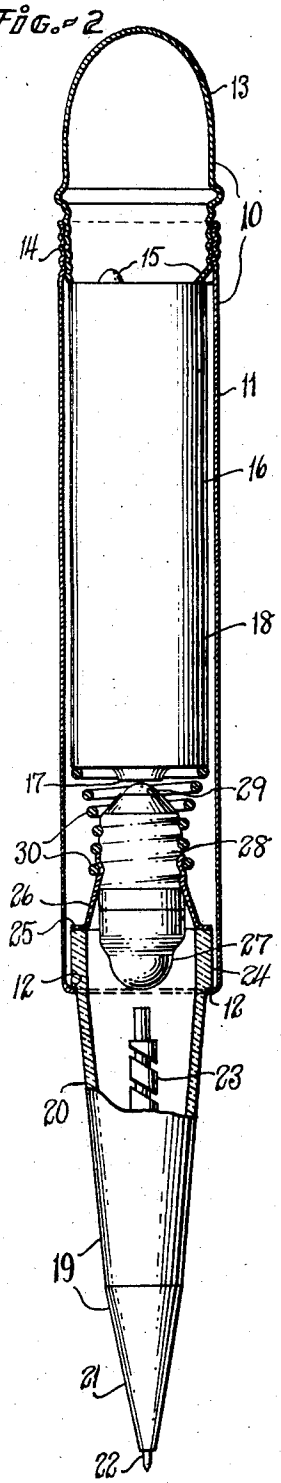


Fig. 4

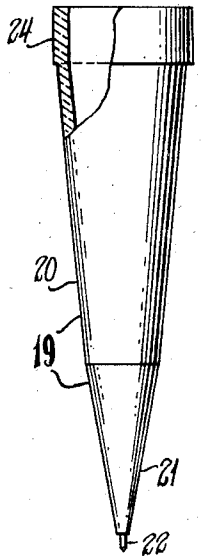


Fig. 3

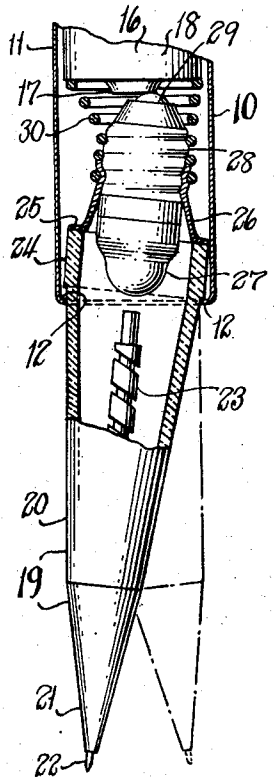


Fig. 5

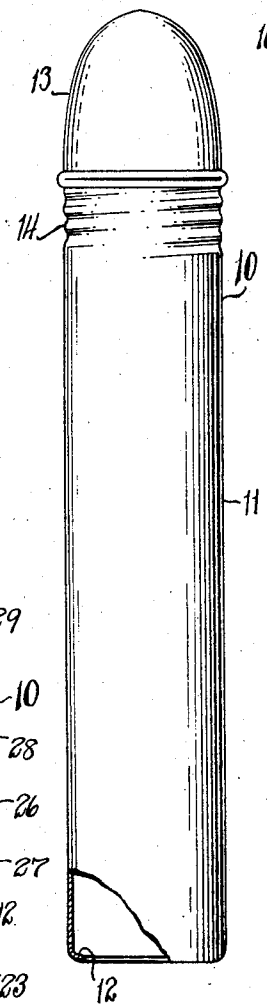
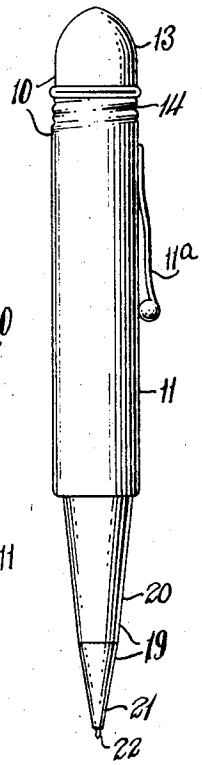


Fig. 1



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AUTOILLUMINANT WRITING IMPLEMENT

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6 Claims. (Cl. 240—6.46)

The present invention relates to an autoilluminant writing implement of improved construction and more especially to a writing implement of this character, suitable for being carried in a pocket of the user.

The primary object of the invention is to provide an improved construction and arrangement of parts in an illuminating writing implement by means of which the lamp-energizing circuit is closed automatically under the pressure applied to the delineating-point of the implement when in use.

Another object of the invention is to provide a simple and effective construction and arrangement of parts in an autoilluminant writing implement whereby the lamp is energized automatically under a direct axial pressure on the delineating-point when, for example, the implement is used for sketching or writing in the dark or by means of a lateral scribing pressure such as that applied to the delineating-point when the implement is used for writing.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawing, in which a certain mode of carrying out the present invention is shown for illustrative purposes:

Fig. 1 is a side elevation of an illuminating writing instrument in the form of a pencil and embodying the present invention;

Fig. 2 is an enlarged -scale view thereof, partly in central-vertical section and partly in side elevation;

Fig. 3 is a fragmentary view similar to the lower portion of Fig. 2 showing the operating positions of the working parts under a lateral scribing pressure;

Fig. 4 is a view partly in side elevation and partly in section of the light-transmitting casing; and

Fig. 5 is a side elevation of the main body casing member, partly broken away to show the internal construction.

According to the embodied form of the invention shown in the drawing, an autoilluminant writing implement is constructed to include a main-body casing-assembly designated generally by the reference character 10. This casing-assembly 10 includes a tubular shell 11 which, if desired, may be provided with a spring-clip 11*a*. The tubular shell 11 is open at its lower end and is provided at that end with an inwardly-turned annular stop-lip 12. At its upper end, the tubular shell 11 is closed by means of a dome-like cap 13 which is connected thereto by means of a threaded connection 14. Battery-stop-indents 15 for limiting the upward endwise displacement of an electric battery 16 disposed within the tubular shell 11, may be provided at peripherally-spaced points by inwardly-displacing marginal-portions of the threaded flange of the cap 15. The said electric battery 16 is provided with a center-electrode having a terminal-contact 17 and a tubular electrode 18 constituted by the outer cylindrical shell of the battery.

The tubular shell 11 is preferably of cylindrical form to permit the employment of a battery of conventional form and the arrangement of the center- and tubular-electrodes 17 and 18 in concentric relation to the said tubular shell 11.

Projecting axially from the main-body casing-assembly 10 is a writing-head-assembly generally designated by the reference character 19. The said writing-head-assembly includes an articulated frusto-conical casing-member 20 constructed of light-transmitting material such, for example, as transparent or translucent glass. Secured to the bottom-end of the casing-member 20 is a metal terminal-fitting 21 from which projects the delineating-point 22 of the writing-implement which is illustrated in the form of a lead which is fed through the terminal-fitting by means of a mechanical feed-member 23.

The light-transmitting casing-member 20 is open at the top and is provided with an annular enlargement 24 arranged within the lower end of the tubular shell 11. The said annular enlargement 24 which constitutes a stop-ring for preventing the downward displacement of the writing-head-assembly from the tubular shell 11, is constructed and arranged to normally rest upon the annular stop-lip 12 at the lower end of the tubular shell 11 and to retain the said writing-head in coaxial alignment with the said tubular shell.

Seated upon the upper edge of the annular stop-ring 24 by means of an annular flange-portion 25, is a lamp-socket 26 which is made of metal to render it conductive to electricity. Mounted in the lamp-socket 26 by means of its terminal screw-plug 28 is an electric lamp-bulb 27 which is provided with a central terminal-contact 29 which is normally retained in spaced relation to and substantially in coaxial alignment with the central terminal contact or electrode 17 of the electric battery 16.

Interposed between the lamp-socket 26 and

the tubular-electrode or terminal 18 of the electric battery 16, is a yieldable spacing medium which may be in the form of a spiral spring 30 preferably having its lower end fixedly secured to the lamp-socket 26 to reduce the number of loose parts in the assembly.

From the foregoing description, it will be understood that before applying the dome-like cap 13 to the upper end of the tubular shell 11, the several parts of the autoilluminant writing implement are readily assembled. For this purpose, the writing-head-assembly 19, with its associated parts pre-assembled therein, is inserted downwardly through the tubular shell 11 until the stop-ring 24 comes to rest on the stop-lip 12. Then the illuminating unit comprising the lamp-socket 26, lamp-bulb 27, and the spiral spacing-spring 30 is seated upon the stop-ring 24. The battery 16 is next placed in position with its center-electrode or terminal-contact 17 presented downwardly and with the terminal 18 in contacting-engagement with the upper end of the spiral spring 30. Finally, the dome-like cap 13 is threaded into the upper end of the tubular shell 11 until the center-electrode-terminal 17 is properly spaced from the lamp-contact 29 under a suitable tensioning of the spiral spring 30.

When the writing implement is not in use, the lower marginal edge of the annular enlargement or stop-ring 24 at the upper open end of the writing-head-assembly 19 rests evenly upon the annular stop-lip 12 at the lower end of the tubular shell 11 where it is normally retained under the constraint of the spiral spring 30. For this purpose, the spiral spring 30 is made of proper strength so that, by advancing or retreating the cap 13 in the upper end of the tubular shell 11, the spiral spring 30 may be placed under suitable tension to maintain the lamp-bulb terminal-contact 29 in properly-spaced relation to the center-electrode or terminal contact 17 of the electric battery 16 in an arrangement that is most conducive to a facile manipulation of the writing implement. The spiral spring 30, when thus tensioned, serves also to counteract to a suitable degree the axial and flexing displacements of the writing-head-assembly 19 while the writing implement is in use. Under these conditions, during the continuance of a drawing- or writing-operation in the dark, the normally-spaced contacts 17 and 29 are readily brought into and retained in contacting-engagement, each with the other, by a direct axial pressure on the delineating-point or pencil 22; by a lateral pressure thereon; or by a combination of these pressures. During a lateral displacement of the writing-head-assembly, the articulated casing-member 20 is caused to pivot about any point on the inwardly-turned stop-lip 12 at the bottom of the tubular shell 11 which happens to correspond to the direction from which the lateral-pressure is applied to the writing-head-assembly in the manner shown in Fig. 3.

Should it be desired to so do, the lamp-bulb 27 may be steadily energized and the writing-head-assembly 19 may be rendered rigid with respect to the casing-assembly 10, by screwing the cap 13 into the shell 11 sufficiently to force the battery 16 into firm engagement with the aforesaid lamp-bulb.

The invention may be carried out in other specific ways than that herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

We claim:

1. An auto-illuminating writing implement comprising: a main-body casing-member; an electric battery carried therein; a writing-head casing-member; an electric lamp mounted on said writing-head casing-member and having a terminal-contact, the said electric lamp being positioned in said main-body casing-member with the terminal-contact thereof normally spaced apart from an electrode of said electric battery; band-means coupling said writing-head casing-member to said main-body casing-member with capacity for lateral-pivoting movement of the former with respect to the latter to angularly shift the terminal-contact of said electric lamp into circuit-closing engagement with the said electrode of the electric battery; the said writing-head casing-member being responsive with respect to its lateral-pivoting circuit-closing movement, to writing pressure applied to the writing implement in the characteristic inclined position thereof.

2. An auto-illuminating writing implement comprising: a main-body casing-member; a writing-head casing-member projecting from and coupled to the said main-body casing-member with capacity for lateral-pivotal movement with respect thereto; a lead or equivalent marking-point projecting from the said writing-head casing-member; spring-means normally yieldingly holding the two said casing-members against lateral movement with respect to each other; an electric battery within one of the said casing-members; an electric lamp carried by the said writing-head casing-member; and contact-means constructed and arranged to be actuated by the lateral pivoting of the said writing-head casing-member with respect to the said main-body casing-member to electrically interconnect the said electric battery and the said electric lamp in response to writing pressure applied to said writing implement in the characteristic inclined position thereof.

3. An auto-illuminating writing implement, comprising: a main-body casing-member; a writing-head member movably connected to the main-body casing-member with capacity for lateral-pivotal movement with respect thereto; an electric battery mounted within the said main-body casing-member and having a central electrode and an outer cylindrical electrode presented downwardly within the said main-body casing-member; a lamp-receiving socket-member arranged below the electric battery within the main-body casing-member in endwise abutment with the said writing-head member and movable therewith in the lateral-pivoting movement of the said writing-head casing-member; an electric lamp mounted in the said lamp-receiving socket-member and having a terminal-contact movable into and out of contacting engagement with the central electrode of the electric battery; a resilient electrically-conductive battery-supporting medium interposed between the said writing-head member and the said cylindrical electrode of the electric battery and arranged to electrically connect the said cylindrical electrode to the lamp-receiving socket-member; and means for fixedly limiting the upward displacement of the electric battery with respect to the said writing-head for locating the central electrode of the electric bat-

tery in a position in which the said terminal-contact of the electric lamp is movable into contacting engagement therewith by means of a lateral-pivoting circuit-closing movement of the writing-head member in response to writing pressure applied to the writing implement in the characteristic inclined position thereof.

4. An auto-illuminating writing implement comprising: a main-body casing-member; a writing-head casing-member projecting from said main-body casing-member and having a mounting-portion at one end positioned in and coupled to the said main-body casing-member with capacity for lateral-pivotal movement with respect thereto; a lead or equivalent marking-point projecting from said writing-head casing-member at the opposite end thereof; spring-means normally yieldingly holding the two said casing-members against lateral movement with respect to each other; an electric battery within one of the said casing-members; an electric lamp carried by the said writing-head casing-member; and contact-means constructed and arranged to be actuated by the lateral pivoting of the said writing-head casing-member and the shifting of the said mounting-portion thereof within the said main-body casing-member to electrically interconnect the said electric battery and the said electric lamp in response to writing pressure applied to the writing implement in the characteristic inclined position thereof.

5. An auto-illuminating writing implement, comprising: a tubular shell provided at its lower end with a lateral portion providing an inner peripheral stop-lip and also providing an upwardly-presented fulcrum-surface for a writing-head; a light-transmitting writing-head provided with an annular portion providing a stop-ring having a downwardly-presented bearing-surface bearing on the said fulcrum-surface of the tubular-shell, the said annular portion having an outside diameter larger than that of the inner peripheral edges of said stop-lip and smaller than that of the inner wall of said tubular shell, the said writing-head being thereby coupled to the said tubular-shell with capacity for lateral-pivotal movement with respect thereto; a lamp-socket seated on and tiltable with the writing-head; an electric lamp arranged in said lamp-socket with its central terminal-contact presented upwardly therefrom; an electric battery arranged within the tubular shell above said electric lamp; said electric battery being provided with downwardly-presented central and cylindrical electrodes; a coil-spring interposed between and electrically connecting the lamp-socket and the said cylindrical electrode, the said central electrode being thereby retained in axially-spaced relation to the terminal-contact of the electric lamp when the writing implement is not in use; and a closure having an extended threaded connection with the upper end of said tubular shell for axial adjustment therein, the said closure being in axial abutment with the upper end of said electric battery for adjusting the said central electrode axially into a position in which it is engageable by the terminal-contact of the electric lamp when the writing-head is tilted on the said stop-lip of the tubular shell in response to writing pressure applied to the writing implement in the characteristic inclined position thereof.

6. An illuminating writing implement, comprising: a tubular shell provided at its lower end with an inturned stop-lip; a light-transmitting writing-head carrying a lead or equivalent marking-point projecting from the forward end thereof and provided with a stop-ring at the opposite end thereof, the said stop-ring being normally spaced laterally inwardly of the body of said tubular-shell and in axial abutment with said stop-lip, the said writing-head having capacity for lateral-pivoting movement with respect to the said tubular-shell; a lamp-socket seated on said stop-ring and movable therewith in the lateral-pivoting movement of the said writing-head; an electric lamp mounted in said lamp-socket and having an upwardly-presented terminal-contact; an electric battery arranged within the tubular shell above said lamp-socket and having downwardly-presented central and circumferential electrodes; a coil-spring interposed between and electrically connecting the lamp-socket and said circumferential electrode, the said central electrode of the electric battery being thereby spaced from the terminal-contact of the electric lamp; and a closure for and adjustable to different axial positions in the upper end of said tubular shell, said closure being at all times in axial abutment with the upper end of said electric battery to effect an axial adjustment of the said central electrode with respect to said terminal-contact of the electric lamp; and the said writing-head being laterally-pivotal to shift the terminal-contact of the said electric lamp into engagement with the central electrode of the said electric battery in response to writing pressure applied to the writing implement in the characteristic inclined position thereof.

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