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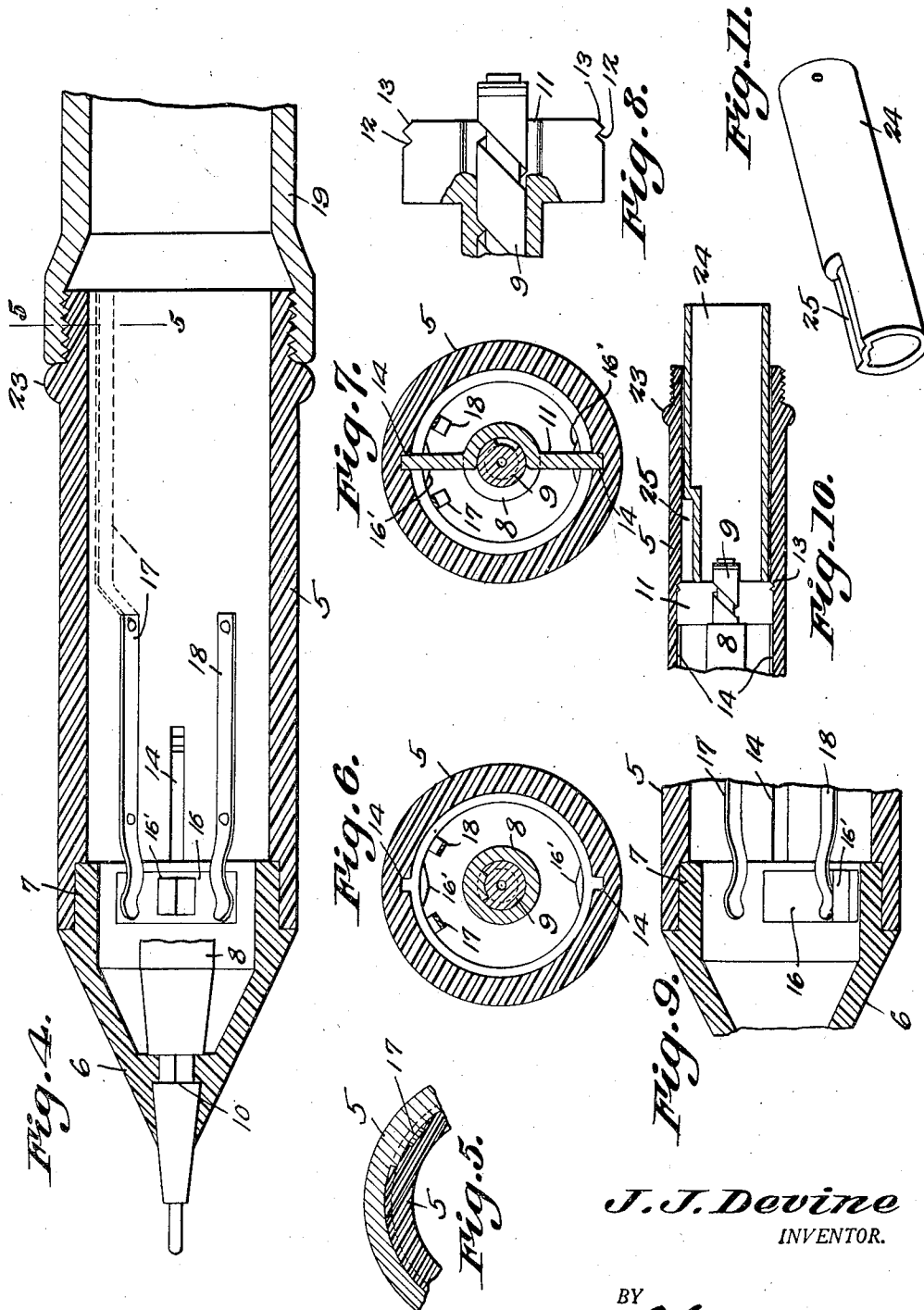
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PENCIL WITH INTERNAL ILLUMINATING MEANS

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PENCIL WITH INTERNAL ILLUMINATING MEANS

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3 Claims. (Cl. 120—18)

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This invention relates to pencils of the type embodying a tubular casing and mechanism whereby removable lead is retracted or extended from the end of the pencil.

The primary object of the invention is to provide a pencil of this character having self-contained illuminating means whereby the surface on which a person is writing and using the pencil, will be illuminated, the casing and cap closing the writing end of the casing, being transparent to allow the light rays from the illuminating means to be projected therethrough.

An important object of the invention is to provide means whereby the lead barrel may be readily and easily removed and replaced should it become necessary to dismantle the pencil for repair and cleaning purposes.

Still another object of the invention is to provide a pencil wherein the casing is constructed of semi-rigid plastic material so that it may expand when the lead barrel is forced into the casing, means being provided on the lead barrel to frictionally contact the inner surface of the casing for securing the lead barrel in position.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Figure 1 is an elevational view of a pencil constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view through the pencil.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a longitudinal sectional view through the casing taken at substantially right angles to Figure 2, a portion of the lead barrel having been removed.

Figure 5 is a sectional view taken on line 5—5 of Figure 4.

Figure 6 is a sectional view taken on line 6—6 of Figure 2.

Figure 7 is a sectional view taken on line 7—7 of Figure 2.

Figure 8 is a fragmental elevational view illustrating the lead projecting and retracting means.

Figure 9 is an enlarged fragmental sectional view illustrating the contact arms and contact

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plate carried by the movable cap closing one end of the casing.

Figure 10 is a longitudinal sectional view through one end of the casing, illustrating the tubular key employed in removing the lead barrel from the casing.

Figure 11 is a perspective view of the tubular key.

Referring to the drawings in detail, the casing or body portion of the pencil is indicated by the reference character 5 and is constructed of plastic material of a transparent character, the plastic material being of a quality to expand and contract, for purposes to be hereinafter more fully described.

Closing one end of the casing or body portion 5, is a conical cap 6 which is also constructed of transparent semi-rigid plastic material, the cap 6 having an extension 7 at its inner end, of a diameter to fit within one end of the casing or body portion 5 in such a way that the conical cap will rotate therein.

The lead barrel, which is supported by the conical cap 6, is indicated by the reference character 8 and is of the type including a stationary tubular barrel in which the screw 9 operates, the screw 9 connects with the feeder 10 which passes through a square opening formed in the cap, the end of the feeder being extended through the apex of the cap. Thus it will be seen that due to this construction, the cap will cause the lead contained in the lead barrel, and particularly the screw 9 thereof, to be extended or retracted, according to the direction of rotation of the cap 6. Secured to the inner end of the lead barrel 8, is a retaining plate 11. This retaining plate is of a length so that its ends extend appreciable distances beyond the sides of the lead barrel 8, as clearly shown by Figure 2 of the drawings, the outer edges of the plate being formed with notches 12 and beveled inner edges 13. Formed in the inner surface of the casing 5, and extending inwardly from one end thereof, are oppositely disposed longitudinal grooves 14 which are of widths to accommodate the ends of the plate 11, there being provided lugs 15 at the inner ends of the grooves adapted to snap into the notches 12 of the retaining plate, securing the lead barrel and screw 9 mounted therein, in position within the casing or body portion 5.

Curved contact plates 16 are embedded in the extension 7 of the conical cap and are adapted to be engaged by the contact arms 17 and 18 which are secured within the body portion 5, completing the electric circuit to the lamp 21. Dis-

posed between the ends of the contact plates, are lugs 16' that provide stops to normally prevent the movement of the cap 6 to complete the circuit accidentally. In order to complete the circuit, it is necessary to rotate the cap to cause one of the contact arms to move over the lug 16', whereupon both contact arms 17 and 18 will be in contact with the contact plate 16, otherwise only one contact arm will be in contact with the contact plate.

The contact arm 17 extends through the casing to a point to engage the dry cell casing 19 which forms a continuation of the casing or body portion, the casing 19 being secured to the body portion by means of the threads formed at the end of the casing or body portion.

The reference character 20 indicates the battery which is held within the casing 19, the battery 20 having contact with the lamp 21 which is held within the casing or body portion 5, by means of the fixture 22. From the foregoing it will be obvious that when the lamp is lit, light rays will be projected through the transparent wall of the casing as well as the conical cap 6, illuminating the writing surface. It will further be seen that by rotating the conical cap 6, the lead will be extended, and the circuit to the lamp simultaneously completed to cause the lamp to illuminate the pencil casing.

As shown, an annular rib 23 is provided at the base of the threads at the rear end of the casing 5, providing a stop against which the casing 19 abuts. This annular rib also provides means for holding the barrel against slipping when it is desired to remove the lead barrel.

The lead barrel is removed by inserting the tubular key 24 into the rear end of the casing or body portion 5, after the casing 9, battery 20 and fixture 22 have been removed. The tubular key is formed with a cut-away portion 25 which is adapted to provide a clearance for the key as it is being moved into the casing or body portion 5 to contact the retaining plate 11. With the inner end of the tubular key 24 engaging the retaining plate, pressure is brought to bear on the tubular key 24, which pressure causes the casing or body portion 5 to expand as the retaining plate is moved over the lugs 15, whereupon the conical cap together with the lead barrel may be removed. To replace the conical cap and lead barrel, it is only necessary to position the ends of the retaining plate in the grooves 14 and force the cap and lead barrel inwardly. As the beveled inner edges of the retaining plate engage the lugs, the body portion or casing will be slightly expanded, allowing the lugs to snap into the notches 12, securely holding the cap and lead barrel in position. From the foregoing it will be seen that I have provided simple means whereby the conical cap closing one end of the pencil, and lead barrel, are connected with the casing to the end that the cost of manufacture will be appreciably reduced.

It might be further stated that since the contact arm 18 is relatively short, the inner end thereof constitutes a stop against which the fixture 22 is forced, so that the fixture 22 may be readily slid into and out of position, when

the casing 19 and battery contained therein have been removed from the body portion 5.

From the foregoing it will be seen that due to the construction of the retaining plate, the light rays from the lamp 21 will be projected towards the writing end of the pencil and will pass through the transparent casing 5 and conical cap 6 to illuminate the surface on which the pencil is writing.

10 What is claimed is:

1. In an internally illuminated pencil, a tubular transparent casing constructed of yieldable material, a rotatable transparent cap closing one end of the casing, a lead projecting and retracting means secured to the cap, extending into the casing, said lead projecting and retracting means including a screw and a member rotated by rotation of the cap, lighting means disposed at the rear of the lead projecting and retracting means, a retaining plate secured to the inner end of the screw directly in front of the lighting means, said retaining plate having notches formed in the ends thereof, and lugs on the inner surface of the casing extending into the notches removably securing the retaining plate and lead projecting and retracting means in position within the casing.

2. In an internally illuminated pencil, a tubular transparent casing constructed of yieldable material, a rotatable transparent cap closing one end of the casing, a lead projecting and retracting means secured to the cap, extending into the casing, said lead projecting and retracting means including a screw and a member rotated by the rotation of the cap, lighting means disposed in the rear of the lead projecting and retracting means, a retaining plate secured to the inner end of the screw directly in front of the lighting means, said retaining plate having notches formed in the ends thereof, lugs on the inner surface of the casing extending into the notches removably securing the lead projecting and retracting means in position within the casing, and the wall of said casing having grooves extending from one end thereof terminating at the lugs on the inner surface of the casing providing a guide for the ends of the plate when positioning the plate within the casing.

3. In an internally illuminated pencil, a tubular transparent casing constructed of yieldable material, a rotatable transparent cap closing one end of the casing, a lead projecting and retracting means secured to the cap, extending into the casing, said lead projecting and retracting means including a screw and a member rotated by rotation of the cap, lighting means disposed at the rear of the lead projecting and retracting means, a retaining plate secured to the inner end of the screw, the ends of the retaining plate being parallel with the wall of the casing, said retaining plate having notches formed in the ends thereof, and lugs on the inner surface of the casing extending into the notches removably securing the lead projecting and retracting means in position within the casing.

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No references cited.