

[54] PEN

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[22] Filed: **Jan. 8, 1973**

[21] Appl. No.: 321,711

[30] **Foreign Application Priority Data**

Mar. 21, 1972 Japan..... 47-28400

[52] U.S. Cl. 401/30, 401/32

[51] **Int. Cl.**..... **B43k 27/14**

[58] **Field of Search**..... 401/30, 32

[56] **References Cited**

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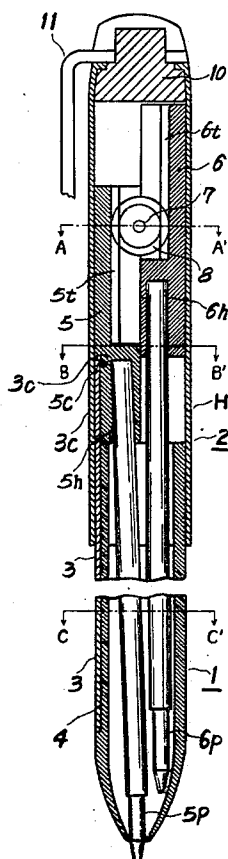
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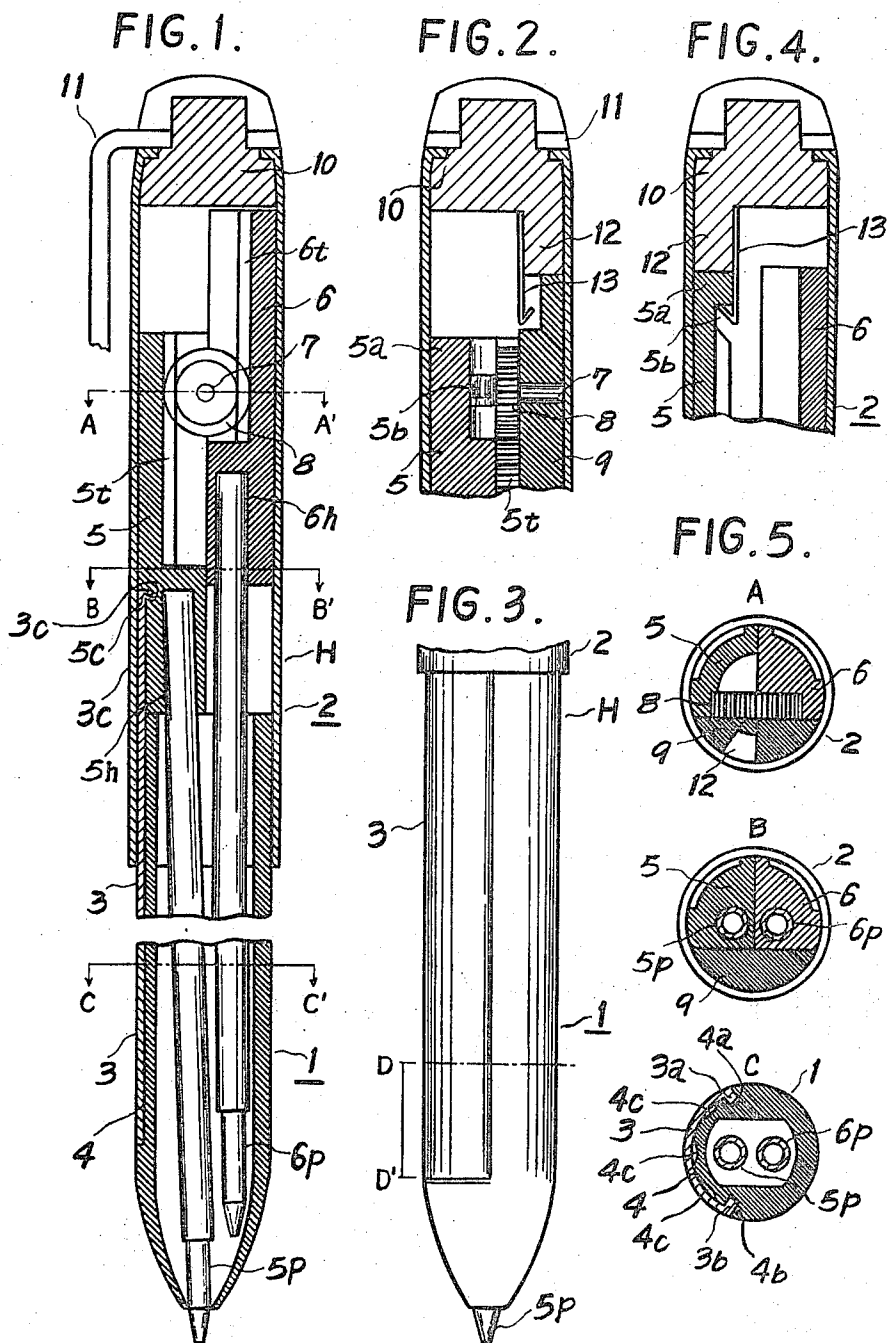
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[57] **ABSTRACT**

A writing instrument, more specifically a pen, having a plurality of individual writing tips which can be moved to project the tips one at a time from the instrument body. This may be accomplished while the writer maintains the same finger grip on the instrument as used when actually writing. The instrument comprises individual writing tips secured in individual movable carriers. At least one of the carriers forms a portion of the instrument outer surface in the area in which the instrument is grasped while writing and is slidably mounted thereon to permit movement of the particular tip secured therein to project it from the instrument body by sliding the carrier along the instrument body outer surface. Another carrier is mounted opposed to the slidably movable one and is coupled thereto by gear means for reciprocating movement. Means are also provided for securing all the writing tips in a retracted position within the instrument body.

7 Claims, 7 Drawing Figures





1 PEN

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a writing instrument having a plurality of writing tips which are easily and quickly projected and retracted from the instrument body. The instrument may be a pen, ball-point or cartridge type fountain, or a propelling pencil, or a combination thereof. More specifically, the invention concerns a pen having a plurality of writing tips of different colors which may be individually projected from the pen body for writing.

2. Description of the Prior Art

Many writing instruments are known in which different writing tips are projected and retracted from the instrument body. The most common comprise a spring loaded push-button inserted in the top portion of the instrument body which must be depressed in order to project or retract particular writing tips. Depression of the button causes a rotor housed inside the instrument to project the desired writing tip. Since the button is located at the top of the instrument, the writer necessarily is required to change his grasp of the instrument while writing in order to effect a change. This results in burdensome writing interruptions which become particularly irksome with an increased frequency of change.

SUMMARY OF THE INVENTION

The present invention overcomes these disadvantages and provides an instrument in which the projection and retraction of writing tips is accomplished quickly and easily without requiring the writer to change his writing grasp on the instrument body. The instrument comprises an instrument body in which are housed a plurality of writing tips secured in individual carriers. The carriers are mounted in opposed positions for reciprocating movement in opposite directions. At least one of the carriers is slidably mounted on, and forms part of, the outer surface of the instrument body. This slidably mounted carrier extends into the surface area of the instrument which is grasped while writing and slidably moves along the instrument body. Means are also provided for retracting and maintaining all writing tips in a retracted position.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be more particularly described by way of example, with reference to the accompanying drawings in which:

FIG. 1 is a longitudinal section of a pen according to the invention;

FIG. 2 is a longitudinal section of the pen illustrated in FIG. 1, as viewed at a right angle thereto, the lower portion being cut away;

FIG. 3 is a side view of the lower forward position of the pen body, particularly showing the sliding carrier on the surface of the pen body;

FIG. 4 is a longitudinal section of the main part of the upper rear of the pen body, showing the writing tips housed therein;

FIG. 5 (A) is a cross section of the pen taken along the line A—A' in FIG. 1;

FIG. 5 (B) is a cross section of the pen taken along the line B—B'; and

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FIG. 5 (C) is a cross section of the pen taken along the line C—C'.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With upper portion 2 of pen body H are provided carriers 5 and 6 carrying writing tips 5P and 6P which may be pen tips, cartridge fountain or ball-point, or pencil tips, or a combination thereof. The carriers are mounted opposed to each other for reciprocating movement in opposite directions. For this purpose, the carriers 5 and 6 are associated with racks 5t and 6t, respectively, meshing with a common geared pinion 8 whose central shaft 7 is held in supporter 9 secured with the upper portion 2 parallel to the sides of the carriers 5 and 6. Lower portion 1 of pen body H has a longitudinally indented portion 4 extending over the surface of less than half the circumference of pen body H to receive slide portion 3 of carrier 5 secured by fixing projection 3c of slide portion 3 in groove 5c of carrier 5. In indented portion 4 are provided longitudinal notches 4a and 4b at respective edges thereof to accept corresponding projections 3a and 3b of slide portion 3. Normally, the projections 3a and 3b are formed by bending the edges of slide portion 3 which is made up of a thin plate having the same curvature as the surface of pen body H. Slide portion 3 is thereby slidably secured in indented portion 4 of pen body H. Preferably, the bottom of indented portion 4 is provided with additional grooves or slits 4c, as illustrated in FIG. 5 (C) to ensure smooth sliding of slide portion 3 thereon. The outer surface of slide portion 3 may be provided with indentations to facilitate holding the pen or sliding slide portion 3. Additionally, the sliding portion 3 may be further shaped for esthetic or functional purposes.

Carriers 5 and 6 are provided with bores or spaces 5h and 6h, respectively, for receiving writing tips 5p and 6p, which may be writing tips of different color. As described hereinabove, writing tips encompass ball point pen tips and cartridge type fountain pen tips as well as propelling pencil tips.

At the uppermost end of upper portion 2 is provided a rotor 10 rigidly connected with a socket clip 11. The rotor 10 has an eccentric projection 12 extending downwards, which functions as a stop, hereinafter referred to as a stop 12, against carrier 5. Stop 12 has a resilient hook plate 13 secured along the inner side thereof. When rotor 10 is rotated by rotating pocket clip 11, stop 12 is caused to shift towards projection 5a of carrier 5 to engage at and thereby prevent upwards movement of the carrier 5. At the same time, carrier recess 5b is engaged by hook 13, as illustrated in FIG. 4, to prevent downwards movement of carrier 5. With recess 5b engaged by hook 13, and projection 5a engaged by stop 12, carrier 5 and carrier 6 through the associated racks and pinion 8, are locked in place.

Operation of the invention, particularly showing its advantages, follows. Initially, writing tips 5 and 6 are locked retracted within the pen body H. Prior to projecting the desired writing tip, the pen is unlocked by rotating pocket clip 11 which rotates rotor 10 so as to displace stop 12 from engagement against projection 5a and hook 13 from recess 5b of carrier 5. This locates stop 12 to the rear of pinion central shaft 7. While writing, a writer normally holds the pen body H with his thumb and index finger. To retract the writing tip in use and project another, the writer, either with his thumb

or his index finger, merely slides the sliding portion 3 in one direction. To use the other writing tip, he merely slides it in the opposite direction. Thus, in the course of use, the writer can replace different writing tips simply by moving the sliding portion 3 in opposite directions with the thumb or index finger without changing his grasp on the instrument. The particular writing tip in use is maintained projected by the writer's grasp around slide 3 and pen body H which prevents movement of slide 3 with respect to pen body H. Sliding portion 3 is displaced by a distance of 8 to 10mm as indicated by D—D' in FIG. 3. After use is completed, the writing tips 5p and 6p are again retracted and the pen locked. This is accomplished by rotating pocket clip 11 to return it to its locking position as described hereinabove. Slide 3 is then moved upwards until projection 5a of carrier 5 contacts the lower portion of hook plate 13. Slide 3 is urged upwards to overcome the spring tension of resilient plate hook 13 until projection 5a contacts stop 12 and recess 5b is engaged by hook plate 13. When carriers 5 and 6 are moved into the locking position, each moves over only one-half of the full distance D—D' over which slide 3 is capable of moving. Moving slide 3 with carrier 5 over one-half of D—D' necessarily moves carrier 6 over the same distance in the opposite direction. When locked, carriers 5 and 6 are housed in opposed positions.

Thus, it is evident that a writer need not change his grasp on the writing instrument to effect a change in writing tips. This results in increased efficiency and is particularly advantageous to artists, secretaries, machine designers, press-men and journalists, etc., where multiple colored inks or different type writing tips are required.

The advantages of the present invention, as well as certain changes and modifications of the disclosed embodiment thereof, will be readily apparent to those skilled in the art. It is the Applicant's intention to cover all these changes and modifications which could be made to the embodiment of the invention herein chosen for the purposes of the disclosure without departing from the spirit and scope of the invention.

I claim:

1. A writing instrument having a plurality of writing tips capable of being individually projected from the instrument, which comprises

a. an instrument body having a generally tubular

shape;

b. a plurality of writing tip carriers, one for each writing tip, housed in said body and to which said writing tips are secured;

c. at least one of said carriers forming a part of and conforming to the general shape of said body and slidably mounted thereon for axial movement therealong; and

d. locking means for maintaining all of said writing tips retracted within said body in a locked position, said locking means comprising means operative to be rotated within said body and having first means operative to prevent movement of said at least one carrier in a first direction and second means operative to prevent movement of said at least one carrier in an opposite direction.

2. The instrument according to claim 1 wherein said at least one carrier extends radially over less than half of the circumference of said body and comprises longitudinal projections at longitudinal ends thereof, and said body comprises longitudinal notches operative to be engaged by said longitudinal projections to thereby slidably secure said carrier to said body.

3. The instrument according to claim 1 wherein said instrument is a pen which comprises two writing tips secured in respective carriers.

4. The instrument according to claim 3 wherein said pen further comprises means for moving said carriers in opposed reciprocating directions, said means comprising racks associated with said carriers and a common pinion operative to engage said racks.

5. The instrument according to claim 1 wherein said means operative to be rotated comprises a cap rotatably mounted at the top of said body, and wherein said first means comprises an eccentric projection on said cap and said second means comprises a resilient plate having a hook at one end thereof flexibly secured to said cap.

6. The instrument according to claim 1 wherein said at least one carrier comprises a projection at one end thereof operative to engage said eccentric projection of said cap and a recess operative to be engaged by said hook on said resilient plate.

7. The instrument according to claim 6 wherein a pocket clip is secured to said cap to facilitate rotation thereof.

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