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S. N. ROSENTHAL

3,048,879

FOUNTAIN PEN

Filed Aug. 3, 1959

FIG. 1

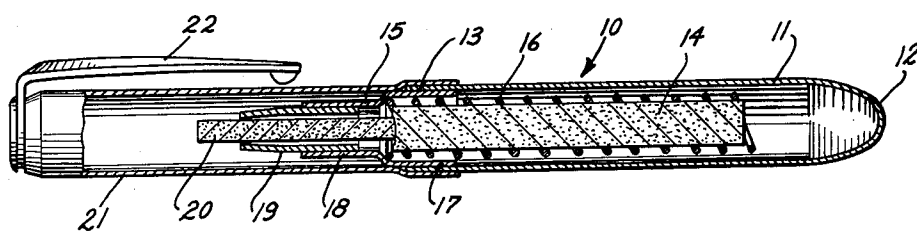


FIG. 2

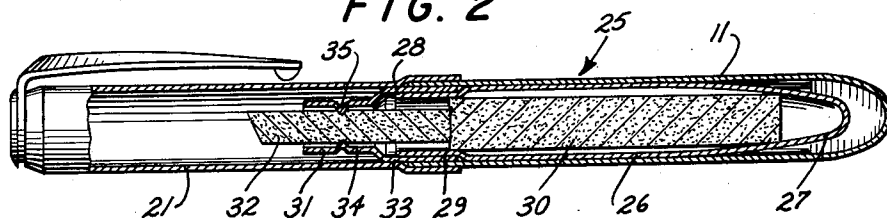


FIG. 3

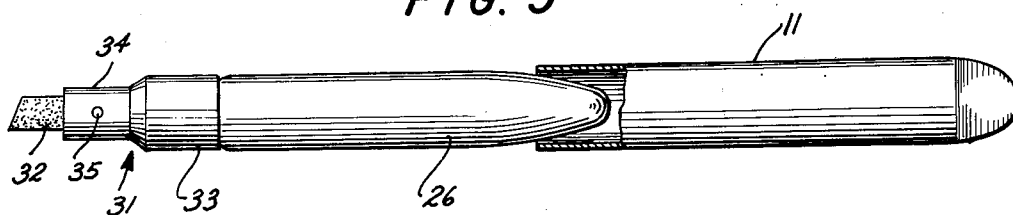


FIG. 4

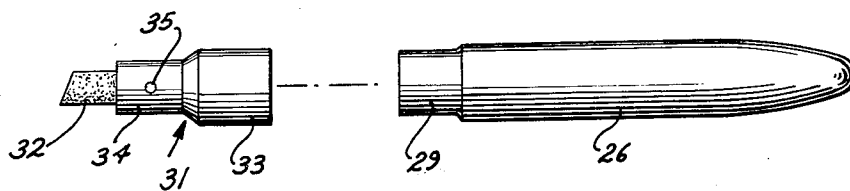
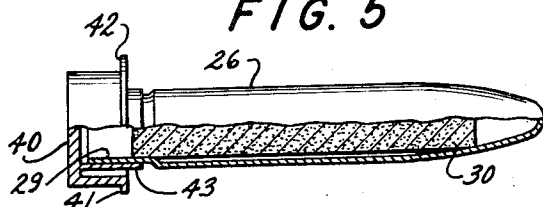


FIG. 5



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3,048,879

FOUNTAIN PEN

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1 Claim. (Cl. 15—563)

The present invention relates to fountain pens and more particularly to fountain pens of the capillary type wherein ink is stored in an absorbent ink carrier and is fed to an absorbent writing nib by capillarity.

In a type of pen that has been on the market for a considerable time and extensively sold, the absorbent ink carrier is attached to a nib holder which is removably secured to the open end of the barrel or casing. Such a device is shown in FIGURE 1 of the drawing. When the ink supply is exhausted from the ink carrier it has been necessary to remove the nib holder and ink carrier as a unit and to insert the carrier in a bulk supply of ink. Such a procedure is untidy and encourages the dripping of the ink and the soiling of the fingers of the user.

The principal object of the invention is to provide a pen of this general type which comprises a casing, an ink cartridge which fits into the casing, a nib, nib holder and cap and which is so constructed that the cartridge may be removed and replaced without the disadvantages of the earlier construction.

Another of the objects of the present invention is to provide a fountain pen of the type indicated with inexpensive cartridge units containing inks of the various colors desired which may be interchangeably mounted in the same barrel and cap.

Another object is to provide interchangeable cartridge units adapted to be mounted in the barrel of pens now in use to extend the use of such pens.

Another object is to provide interchangeable cartridge units of the type indicated on which nibs of different shapes may be interchangeably mounted to adapt the pen for use to make different kinds of marks with inks of different colors.

Still another object is to provide interchangeable cartridge type writing units of the type indicated which are of simple and compact construction, economical to manufacture and reliable in use.

These and other objects will become more apparent from the following description and drawing in which like reference characters denote like parts throughout the several views. It is to be expressly understood, however, that the drawing is for the purpose of illustration only and is not a definition of the limits of the invention, reference being had for this purpose to the appended claim.

In the drawings:

FIGURE 1 is a sectional view of a fountain pen of the type heretofore on the market, and referred to above, to which the interchangeable writing units of the present invention may be applied;

FIGURE 2 is a sectional view of a fountain pen similar to FIGURE 1 showing the interchangeable unit of the present invention mounted in the barrel thereof;

FIGURE 3 is a side view showing how the interchangeable units are applied to and removed from the barrel of the pen;

FIGURE 4 is a side view showing the separable nib and ink holding parts of the interchangeable unit to adapt nibs of different shapes to be applied to and removed from the unit; and

FIGURE 5 is a part sectional view showing an individual ink holder used as a refill for a unit.

Referring now to the drawing, FIGURE 1 shows a commercial form of fountain pen construction 10 as sold prior to the present invention and to which the inter-

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changeable cartridge units of the present invention may be applied.

Fountain pen 10 comprises a cylindrical barrel 11 closed at one end 12 and open at the opposite end 13. An ink holding ink carrier 14 extends into the barrel 12 and is mounted in a collar 15 by means of a helical wire 16 surrounding the ink carrier and attached to the collar. Collar 15 has a cylindrical sleeve 17 telescoped in the end portion 13 of barrel 11 with a close friction fit and a reduced forwardly projecting cylindrical end portion 18 projecting from the barrel. A nib holder 19 has a sliding friction fit with the interior of the reduced cylindrical portion 18 and, in turn, mounts a felt nib 20 having one end projecting from the holder and its opposite end contacting the end of the ink carrier 14. Ink flows from the ink carrier 14 through the nib 20 by capillary action so that the forwardly projecting end of the nib is always wet with ink. A cap 21 is adapted to be mounted on the exterior of the end portion 13 of the barrel 11 with a friction fit to enclose the nib 20, or mounted on the closed end portion 12 when the pen is in use. Cap 21 has a clip 22 for attaching it in a pocket.

The felt ink carrier 14 is supplied with ink by removing the cap 21 and pulling the collar 15 from the open end of the barrel 11. The rearward end of the ink carrier 14 is then dipped in an ink supply of the desired color which is absorbed in the ink carrier. After the ink has been supplied to ink carrier 14, it is inserted in the barrel 11 and the collar 15 pressed into the open end 13 of the barrel 11.

The barrel 11 and cap 21 are usually formed of a base metal and then plated with a precious metal, such as gold. Thus, the pen has an attractive outside appearance, but the finish renders these parts comparatively expensive.

In accordance with the present invention, self contained writing units for inks of different colors are adapted to be interchangeably mounted in the barrel of a fountain pen to adapt the same pen to be used with inks of different colors. As the barrel and cap of the pen 25, FIGURE 2, may be identical with the barrel 11 and cap 21 of pen 10, FIGURE 1, illustrating prior constructions the interchangeable writing units of the present invention may be applied to pens now in use to extend their use.

As shown in FIGURES 2 to 4, the interchangeable unit is in the form of a cartridge having a cylindrical casing 26 adapted to closely engage the barrel 11 with a friction fit and having a closed tapered end 27 and an open end 28. The casing 26 of the cylindrical cartridge unit is reduced adjacent the open end 28 to provide a nipple 29 and contains a mass of porous absorbent material providing a carrier 30 for holding a supply of ink.

A collar 31 is mounted on the reduced cylindrical nipple 29 and constitutes a nib holder for detachably mounting a nib 32 of felt. One end of nib 32 projects from collar 31 and the opposite end engages the ink carrier 30. The nib holding collar comprises an annular sleeve portion 33 surrounding the inwardly offset nipple 29 and a reduced forwardly extending cylindrical portion 34 securely retaining the nib 32 by means of detents 35 struck inwardly from the reduced cylindrical portion 34. The reduced nipple 29 at the forward end of the casing 26 is offset inwardly a distance equal to the thickness of the sleeve 33 of the collar 31 so that the latter has substantially the same outside diameter as the casing 26 of the cartridge. Casing 26 and annular collar 31 constituting, in effect, wall portions of said interchangeable cartridge may be constructed of any suitable thin gauge steel, but preferably are constructed of a soft metal, such as brass or copper, which may yield as it is inserted into and removed from the barrel 11.

FIGURE 3 illustrates the manner in which the inter-

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changeable cartridge units are inserted into or removed from the barrel 11 by merely sliding the cartridge into and out of the barrel. The outside diameter of the casing 26 of the cartridge unit is so dimensioned as to closely fit the inside diameter of the barrel 11 and provide a friction fit while permitting relative movement therebetween. As the casing 26 and collar sleeve 33 have the same outside diameter, the rearward portion of sleeve 33 telescopes into the open end of barrel 11 when the cartridge unit is properly positioned in the barrel. Thus, one cartridge unit may be withdrawn from the barrel 11 and another ink loaded cartridge unit substituted therefor.

As shown in FIGURE 4, the cylindrical casing 26 and nib holding collar 31 also may be disconnected for either substituting a collar having a nib of different shape, or substituting a refill casing 26, containing a new supply of ink. For example, a plurality of collars 31 may be used with each collar mounting a nib 32 of a different shape, such as round, square, or chisel-shaped ends, for interchangeable mounting on casing 26 to form a cartridge unit. Casing 26 also may be interchangeably used with nib holding collars 31 as refill unit when a new supply of ink is required. To this end, the refill casing 26 may be sold as a separate unit, as shown in FIGURE 5, with the ink carrier 30 impregnated with ink and the open end of the casing closed by a closely fitting temporary cap 40 having a press fit with the reduced nipple 29. Cap 40 may be composed of plastic having an outer rim 41 with a projecting tab 42 adapted to be gripped between the fingers and a thin, flexible sleeve 43 overlying the nipple 29 at the open end of the ink containing casing 26. One form of the invention having now been described in detail the mode of operation is explained below.

When a pen of conventional construction, as illustrated in FIGURE 1, is to be refilled with one of the interchangeable cartridge units of the present invention, the cap 21 is removed from the end of the pen and the collar 15 mounting nib 20 and ink carrier 14 is withdrawn from the barrel 11. A cartridge unit containing ink of the desired color is then inserted into the barrel 11 by sliding it therein in the manner illustrated in FIGURE 3. As the casing 26 is of the proper outside dimension, it is retained in barrel 11 with a friction fit. The pen is then ready for use for marking, sketching, writing or the like and the nib 32 is enclosed by the cap 21 when the pen is not in use.

A new pen, as 25, FIGURE 2, embodying the present invention comprises a barrel 11 and cap 21 of previous constructions with a cartridge unit mounted therein. In either the new or old constructions, cartridge casings containing ink of different colors may be easily and quickly substituted by merely withdrawing one cartridge from the barrel 11 and substituting another containing ink of the desired color. When the supply of ink in any particular cartridge is depleted, a new refill casing 26, as illustrated in FIGURE 5, is substituted. To this end, cap 40 is removed from the refill casing 26 and the latter is attached to the nib holding collar 31 by merely telescoping one in the other and the cartridge so formed thereby is then inserted in the barrel 11. When a nib 32 of a different shape is desired, a nib holding collar 31 with the desired nib is substituted.

It will now be observed that the present invention provides a fountain pen with interchangeable writing units containing ink of the various colors desired. It also will

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be observed that the present invention provides interchangeable units which may be used with certain types of pens presently in use. It will further be observed that the present invention provides interchangeable cartridge units to which nibs of different shapes may be applied. It will still further be observed that the present invention provides interchangeable cartridge units in a fountain pen of the type indicated which are of simple and compact construction, economical to manufacture and reliable in use.

While a single embodiment of the present invention is herein illustrated and described, it will be understood that changes may be made in the construction and arrangement of elements without departing from the spirit or scope of the invention. Therefore, without limitation in this respect, the invention is defined by the following claim:

A pen having

- a uniform diameter one piece tubular sheet metal barrel having a closed end and an open end;
- a one piece tubular sheet metal casing therein having a closed end, an open end, a reduced diameter neck at such open end, and a body portion of uniform diameter closely fitted into the uniform diameter barrel with its reduced neck open end at the open end of the barrel, and a shoulder at the intersection of the neck and body of the casing;
- a uniform diameter felt rod pack in the casing having its inner end abutting and stopped by the closed end of the casing and its outer end tightly fitted in the reduced diameter neck at the open end of the casing and its body portion laterally spaced from the body portion of the casing;
- a tubular sheet metal nib holder having a reduced diameter body portion having a nib therein, and an enlarged diameter neck at the inner end of the nib holder fitted into the annular space between the open end of the barrel and the reduced diameter neck of the casing, with the nib in contact with the felt rod pack and the inner edge of the enlarged diameter neck of the nib holder in stopping contact with the shoulder at the inner end of the reduced diameter neck of the casing;
- the outer diameter of the nib holder enlarged diameter inner end being equal to the outer diameter of the body portion of the casing and the inner diameter of the barrel;
- and a cap fitting over the barrel with its open end adjacent the reduced diameter neck of the casing and the enlarged diameter part of the nib holder.

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