

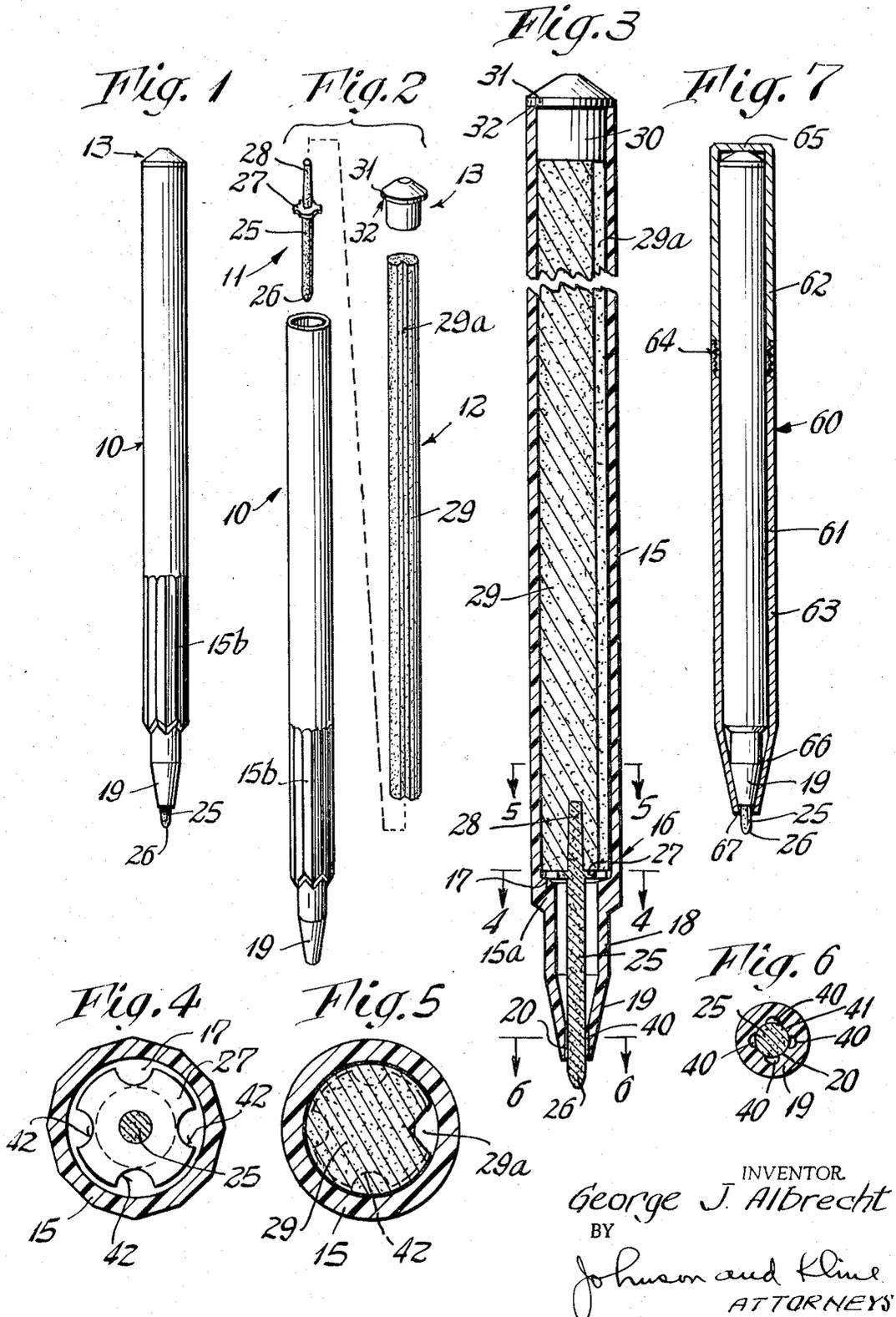
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MARKING DEVICE

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3,355,239

**MARKING DEVICE**

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**ABSTRACT OF THE DISCLOSURE**

A marking device having a nib capable of capillary action is provided with a radial flange which engages and extends over a substantial area of the end of an ink bearing filler to compress the same in response to the writing pressure on the nib to produce a pumping action for controlling the supply of ink to the nib.

It is an object of the present invention to provide a marking device which is simple in construction, and comprises a minimum number of parts which are easily manufactured and assembled and which provide a novel coaction to produce a metering of the ink or the like marking fluid therefrom.

This is accomplished by providing a marking device formed with four readily molded parts which can be quickly assembled and when assembled have a novel coaction whereby the writing pressure applied to the writing point meters the amount of ink provided thereto.

Further, the device of the present invention can be used per se as a marking device or can be used as a cartridge to be enclosed in a holder.

Other features and advantages of the invention will be apparent from the specification and claims when considered in connection with the accompanying drawings in which:

FIGURE 1 shows a side view of the marking device.

FIG. 2 shows an exploded view of the elements of the marking device in the order in which they are assembled.

FIG. 3 is a longitudinal sectional view of the marking device.

FIGS. 4, 5 and 6 are transverse sections taken along lines 4-4, 5-5 and 6-6 of FIG. 3.

FIG. 7 is a view of the marking device disposed in a holder therefor.

As shown in the drawings, the marking device of the present invention comprises four simple parts, namely, a barrel 10, a nib 11, a filler 12 and a closure cap 13.

While the barrel 10 may be made from metal or other like material, it is at present preferred to form it as a molding in part or in whole of suitable plastic material which will not react with or have any effect on the marking material enclosed therein. As used herein the term "ink" shall be used to designate said marking material whether it be ink or other suitable marking or writing fluids. As shown in FIG. 3, the barrel 10 is an elongate tubular body 15 provided adjacent the forward end with an inwardly directed portion which forms a rearwardly facing shoulder or abutment means 16. While this can be formed as spaced lugs, it is herein illustrated as a flange 17 forming a part of the end wall 15a for the barrel. In the preferred form of the invention a cylindrical neck 18 extends from the end wall, as shown in FIG. 3, and terminates in a tapered portion 19 provided with a nib receiving and supporting passage or aperture 20 at the end thereof through which the nib projects and is supported in writing or marking position. If desired a finger gripping surface 15b can be provided adjacent the end wall 15a.

With respect to the nib, while this may be formed of

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various types of material capable of capillary action, such as felt and the like, it is at present preferred to form it of a plastic material capable of feeding the ink by capillary action. Some of these materials are polyethylene, polypropylene, nylon and acrylic resins. In the preferred form of the invention, however, it is formed from tetrafluoroethylene or the like material (Teflon). The nib 11, as shown in FIGS. 2 and 3, comprises an elongate rod 25 having a writing point 26 at its forward or outer end. Disposed on the nib at a point located between the ends thereof is a radial flange 27. While the flange can be a separate part and forced on or otherwise secured to the rod, it is at present preferred to form it integrally with the rod. The portion 28 of the rod extending rearwardly of the flange is preferably slightly tapered so as to assist in its insertion into the filler as will be explained.

The filler material comprises a rod of material forming a porous body capable of retaining a supply of and of releasing therefrom a marking fluid or ink by capillary action and/or by pressure thereon. In the preferred form of the invention the filler comprises a rod 29 of compressed cellulose material impregnated with ink. This filler is resilient and is positioned within the barrel with its forward end abutting the radial flange 27 on the nib with the rear end 28 of the nib extending into the filler a substantial distance as shown in FIG. 3 to provide a sufficient contacting or engaging surface therebetween to effectively transfer ink from the filler to the nib for transmission therealong to the writing point as required.

The rear end of the barrel 10 is closed by the plug 13. This plug is preferably molded from material compatible with the barrel and has a neck 30 to be inserted in the barrel and a flange 31 forming a shoulder 32 thereon. The plug is inserted into the end of the barrel until the shoulder engages the end of the barrel and the neck is in sealing relation with the barrel to close the end thereof. The plug seals the rear end of the barrel and is then fastened in position by suitable adhesive or by heat sealing means.

The forward end of the filler engages the flange 27 and normally presses the flange 27 against the abutment or shoulder 16 and locates and supports the writing point in writing position. In accordance with the present invention the flange is pressed against the abutment with a yielding pressure. While this can be accomplished by inserting a spring between the end of the filler and the plug, in the herein preferred form of the invention the neck has a length, which when the plug is secured in position will place the filler under a slight compression to provide sufficient force to yieldably hold the nib in its projected position; yet permits the nib to move inwardly slightly under writing pressure to control the flow of ink thereto as will be described.

The cylindrical neck 18 of the barrel is of such a length as to sealingly receive a cooperating portion of the usual cap (not shown) which is inserted thereover to enclose the end marker to prevent evaporation of the ink or marking fluid.

From the foregoing it will be seen that the device of the present invention comprises a minimum of parts which can be readily molded or formed from suitable materials. The device can be easily and quickly assembled, as shown in FIG. 2, by merely inserting the nib and then the filler in the rear end of the barrel and applying the closure plug and securing the same to provide a simple yet effective marking device.

In order to permit a ready flow of the ink from the barrel, vent means is provided. While this may take the form of passages in the nib or a flat side on the nib where it passes through the aperture at the end of the taper, in the herein illustrated form of the invention

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venting passages are formed by a plurality of slight grooves 40 formed in and extending longitudinally along the engaging wall 41 of the tapered portion which engages and supports the nib adjacent the writing point thereof as shown in FIGS. 3 and 6. Also, as shown in FIG. 4, the radial flange 27 is provided with notches 42 which provide for venting of the barrel at this point and the filler has a longitudinal groove 29a in the body to complete the venting action.

It has been discovered that with normal writing pressure, ink or marking fluid will flow from the filler by capillary action and be transferred to the end 28 of the nib embedded therein. The nib will then, by capillary action, transfer the ink or marking fluid to the writing point 26 to provide a relatively fine line. However, upon an increase in the writing pressure the nib will move inwardly slightly and compress the end of the filler surrounding the nib portion 28 and adjacent the flange 27. This will, in effect, squeeze and/or pump out the ink from the filler at a greater rate than would be achieved by normal capillary action of the filler. In this manner the nib is then supplied with a greater amount of fluid which it passes to the end and provides for a heavier writing line. However, as soon as the increased writing pressure is removed, the device returns immediately to its normal amount of ink and produces the relatively fine line. Thus, it will be seen that the novel combination of elements produces an accurate metering of the ink from the filler depending upon the writing pressure used.

In some circumstances it may be desired, for example, to provide a more rugged and/or ornate device or one of a higher quality. This can be accomplished by using a holder, preferably a rigid ornamental metal casing 60, and the marker above described may be used as a cartridge 61 for the holder. Such a device is shown in FIG. 7 wherein there is a two-part holder 62, 63 which parts are threaded together as at 64. The holder has a closed end 65 at the rear end and a tapered portion 66 at the forward end adapted to receive the tapered portion 19 of the marking unit with the nib projecting through an opening 67 and beyond the housing. This holder can be of metal suitably plated or treated or otherwise decorated to provide an ornamental appearance so as to produce, in effect, a deluxe marking device. The cartridge can, by separation of the parts 62, 63, be readily assembled with the holder and can be removed and/or replaced to provide a change in color or replenishment of the ink.

From the foregoing it will be seen that the device of the present invention can be formed from readily moldable parts which can be quickly and easily assembled and which provide a unique metering of ink during the writing operation in response to varying writing pressures.

Further, the marking device of the present invention can also be used as a cartridge in connection with an ornamental holder to provide a marking device which is rugged and/or ornamental.

Variations and modifications may be made within the scope of the claims and portions of the improvements may be used without others.

I claim:

1. A marking device comprising a tubular barrel having an elongate nib of a material capable of capillary action mounted therein and having a writing point projecting therefrom, said nib having a radial flange intermediate the ends thereof, and an ink bearing filler confined within the barrel and having the rear end of the nib embedded in the filler, the forward end of the filler abutting the radial flange and yieldingly holding said nib in said projecting position, the filler-contacting area of the radial flange being of substantially the same shape and extent as the end of the filler and said nib and filler cooperating to meter the flow of ink to vary the marking action in response to variation in the writing pressure thereon.

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2. The invention as defined in claim 1 wherein the marking device is disposed in a rigid hollow housing to form a replaceable cartridge therefor having the writing point thereof projecting from the housing.

3. A marking device comprising a tubular barrel having inwardly projecting abutments at one end surrounding an aperture in said end, an elongate nib of a material capable of capillary action having a writing point at an outer end and a radial flange intermediate the ends thereof and disposed in said barrel with the flange engaging the abutment and positioning the outer end of the nib projecting through said aperture, an ink bearing filler in the barrel having one end engaging and abutting the radial flange throughout a substantial area of said one end with the rear end of the nib embedded in the filler, and means closing the other end of the barrel with the filler confined therein and yieldingly holding said nib in said projecting position, said nib controlling the flow of ink thereto in response to writing pressure thereon by causing said radial flange to compress the filler to release more ink to said nib with increased writing pressure.

4. A marking device comprising a tubular barrel having inwardly projecting abutment means adjacent one end and having a tapered extension terminating in a nib supporting aperture, an elongate nib of a material capable of capillary action having a writing point at an outer end and a radial flange of substantial area intermediate the ends thereof and spaced from the inner end, said nib being disposed in the barrel with the flange engaging the abutment means and the outer end projecting from the barrel and supported by the walls of the tapered portion of the barrel forming said aperture, an ink bearing filler in the barrel having one end abutting and engaging the radial flange with a substantial area thereof and having the rear end of the nib embedded in the filler, said filler yieldingly holding said nib in said projecting position, said nib controlling the flow of ink thereto in response to writing pressure thereon by causing said radial flange to compress the filler to release more ink to said nib with increased writing pressure, and means closing the other end of the barrel.

5. A marking device comprising a tubular plastic barrel having an inwardly projecting end wall portion forming abutment means adjacent one end, a cylindrical neck projecting from said end wall portion and merging with a tapered portion provided with an aperture in the end thereof, an elongate nib of a plastic material capable of conducting ink therealong by capillary action, said nib having a writing point at an outer end and an integral radial flange intermediate the ends thereof, said nib being disposed in the barrel with the flange engaging the abutment means and with the outer end of the nib projecting through said aperture, a filler of compressed cellulose material capable of feeding ink therefrom by capillary action, said filler being impregnated with ink and disposed in the barrel with one end abutting the radial flange and having the inner end of the nib embedded therein to normally effectively transfer ink from the filler to the nib by capillary action, and means closing the other end of the barrel with the filler confined therein and yieldingly holding said nib in said projecting position, the filler-contacting area of the radial flange being of substantially the same shape and extent as the end of the filler whereby increased writing pressure on said nib will produce a pumping action by causing said radial flange to compress the filler to release more ink therefrom than by normal capillary action to the inner portion of said nib embedded in said filler to provide an increased flow of ink to the writing point.

6. The invention as defined in claim 5 wherein the nib projecting through the aperture in the end of the barrel engages and is supported by the walls of said barrel surrounding said aperture, said nib and walls having means thereat forming venting passages and wherein the flange

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on the nib is provided with vent openings whereby the barrel is vented to insure the flow of ink.

7. A marking device comprising a plural part housing having a cartridge disposed therein, said cartridge comprising a tubular barrel having inwardly projecting abutments at one end surrounding an aperture in said end, an elongate nib of a material capable of capillary action having a writing point at an outer end and a radial flange of substantial area intermediate the ends thereof disposed in the barrel with the flange engaging the abutment and the outer end projecting through said aperture and beyond an end of the housing, an ink bearing filler in the barrel having a substantial area of one end engaging and abutting the radial flange to produce an effective pumping action in response to pressure on the nib and having the rear end of the nib embedded therein with said filler holding the nib in projecting position, and means closing the other end of the barrel with the filler

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confined therein, said housing having means for releasably holding the parts thereof together whereby access to the cartridge for replacement or renewal is facilitated.

References Cited

UNITED STATES PATENTS

2,416,596	2/1947	Rosenthal	-----	15—563
3,003,181	10/1961	Rosenthal	-----	15—563
3,003,183	10/1961	Rosenthal	-----	15—566
3,048,879	8/1962	Rosenthal	-----	15—563
3,221,360	12/1965	Seeman	-----	15—563 X
3,223,275	2/1966	Hansen et al.	-----	15—581 X
3,278,976	10/1966	Ward	-----	15—563

FOREIGN PATENTS

950,243	2/1964	Great Britain.
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