

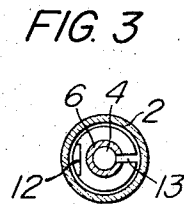
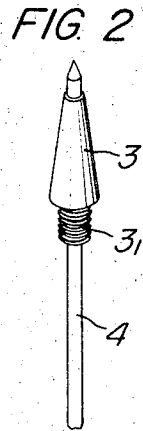
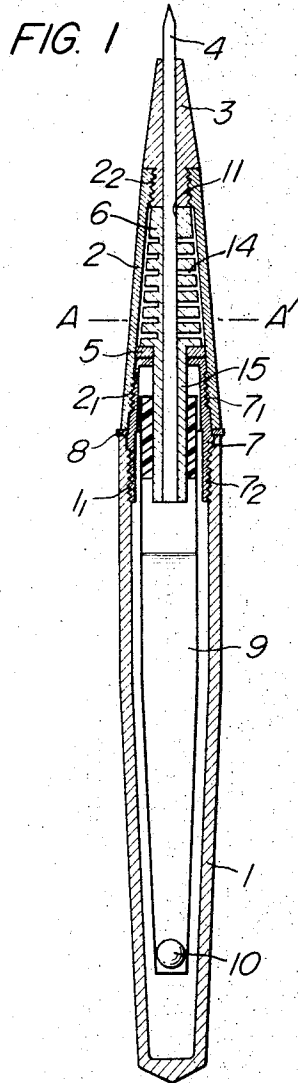
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FIBER TIP WRITING UTENSILS

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FIBER TIP WRITING UTENSILS

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The present invention relates to writing utensils and more particularly to an improvement in the structure of a writing utensil of the type having a writing element of ink-absorptive material such as felt.

In prior writing utensils of the type having a felty writing element, ink is reserved in an ink-absorptive material, such as a spongy matter or cotton, accommodated in a suitable casing, and the root portion of the felty writing element is soaked in the ink-absorptive material so as to be normally wetted by the ink. However, the writing utensils of the type described has been defective in that the felty writing element which tends to wear down in a relatively short time is not easily replaceable and in that ink is insufficiently guided upwardly to the tip of the writing element due largely to drying-up or evaporation of the ink. Thus, this type of writing utensil has become unfit for use relatively soon and has been wasted uselessly in many cases.

Therefore, the primary object of the present invention is to provide a writing utensil of the type of improved structure which is free from the prior drawbacks.

Another object of the present invention is to provide an improved writing utensil which is provided with suitable means for automatically adjusting the flow of ink to prevent the ink from excessively flowing outwardly, drying up and evaporating wastefully.

A further object of the present invention is to provide a writing utensil of the kind described which is provided with a disposable writing tip means easily replaceable by a spare tip means when a writing element therein has become unfit for use due to wear, etc.

According to the present invention, there is provided a writing utensil having a disposable writing tip means consisting of an elongated writing element and a holder having a longitudinal bore therethrough for frictionally holding said writing element therein, a hollow cylindrical body detachably engaged with said holder for securely supporting said writing tip means thereon, and a replaceable ink reservoir disposed in said hollow body, said writing utensil comprising an ink adjusting member disposed in said body, said ink adjusting member having a longitudinal bore for receiving therein a rearward extension of said writing element and having a rear portion formed as an elongated hollow cylindrical extension, said hollow cylindrical extension being snugly fitted in ink-proof relation in a front opening of said ink reservoir for guiding the ink forwardly towards said writing element.

According to the present invention, there is also provided a writing utensil of above character, in which said writing element is an elongated columnar body of ink-absorptive material and its rear end extends into the rearward extension of said ink adjusting member.

According to the present invention, there is also provided a writing utensil of the above character, in which said ink adjusting member comprises a plurality of coaxially spaced parallel discs connected with one another to form a unitary body and is disposed in a manner that every space between the discs are made to communicate with the longitudinal bore engaging with said writing element.

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According to the present invention, there is further provided a writing utensil of above character, in which said front opening of said ink reservoir is first plugged by a ball with the interior of said ink reservoir having been filled with ink, and the ball is forced inwardly into said ink reservoir by the engagement of the rearward extension of said ink adjusting member with said opening.

These and other objects and particularities of the present invention which will become obvious from the following description with reference to the accompanying drawings, in which:

FIG. 1 is a longitudinal sectional view of a writing utensil embodying the present invention;

FIG. 2 is a perspective view of a disposable writing tip means; and

FIG. 3 is a sectional view taken on the line A-A' in FIG. 1.

Now, referring to FIG. 1, the writing utensil according to this invention has a hollow cylindrical outer casing or body of a material such as synthetic resin, which consists of a lower body 1 and an upper body 2. The upper or front end edge of the lower body 1 is brought into abutment with the lower or rear end edge of the upper body 2 with an annular packing 8 of rubber-like material interposed therebetween. The lower body 1 is detachably coupled to the upper body 2 by means of a substantially cylindrical joining member 7 in a manner as described below. The lower body 1 is internally threaded at its open front end as at 1₁ and the joining member 7 is externally threaded as at 7₂ at its end adjacent the front end of the lower body 1. The upper body 2 is likewise internally threaded as at 2₁ at its rear end adjacent the lower body 1 and the joining member 7 has a corresponding externally threaded portion 7₁ for threaded engagement with the internal threads 2₁ of the upper body 2. Therefore, it will readily be understood that the lower body 1 and the upper body 2 can be detachably coupled to each other by the joining member 7 to form a unitary body. The upper or front end of the upper body 2 is internally threaded as at 2₂ for threaded engagement with an externally threaded portion 3₁ of a holder 3. An elongated columnar writing element 4 of ink-absorptive material is firmly held in a longitudinal bore in the holder 3, with the tip portion of the writing element 4 extending slightly outwardly beyond the front end of the holder 3 and the rear portion thereof extending inwardly into the body of the writing utensil. Thus, the writing element 4 and the holder 3 therefor form a disposable writing tip means, as shown in FIG. 2, which can easily be replaced by a new one when the writing element 3 has been worn out.

According to the present invention, an ink adjusting member 6 is firmly held in the upper body 2. The ink adjusting member 6 rests on the upper or front end of the joining member 7 with an annular packing 5 of rubber-like material interposed therebetween and its upper or front end is abutted by a shoulder formed near the bottom of the threaded portion 2₂ of the upper body 2. The ink adjusting member 6 consists of a plurality of coaxially spaced parallel discs unitarily connected with one another and has a rearwardly extending portion 15. A longitudinal passage or bore 11 extends through the ink adjusting member 6 and its rearward extension 15 so as to snugly receive therein the rear portion of the writing element 4. The parallelly defined spaces 14 between the discs act as grooves for automatically adjusting the flow of ink and each groove 14 is made to communicate with the longitudinal bore 11 by means of a capillary groove 13. A longitudinal groove 12 extends through a portion near the outer periphery of the ink adjusting member 6 to serve as an air escape passage. A replaceable ink reservoir

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9 in the form of a cartridge is disposed in the lower body 1 and has its front open end snugly fitted in ink-proof relation on the outer peripheral wall of the extension 15 of the ink adjusting member 6. The front open end of the ink reservoir 9 is normally hermetically sealed before use by a ball 10 of anticorrosion material such as stainless steel to prevent leakage of ink from the open end. When, however, the ink reservoir 9 is positioned in place in the body 1, that is, when the ink reservoir 9 is inserted in the joining member 7, the front end of the ink reservoir 9 snugly fits on the extension 15, which forces the ball 10 inwardly into the ink reservoir 9 to permit free flow of ink into the longitudinal bore 11 so that the ink can be guided towards the tip of the writing element 4 by being adjusted by the ink adjusting member 6.

By virtue of the structural features of the writing utensil of the present invention, the writing element 4 is always suitably wetted by ink, which can smoothly be dispensed from the writing element 4 in writing and thus the writing utensil is free from discontinuity of ink feed, drying-up and evaporation of ink and other defects. Provision of the disposable writing tip means and the replaceable ink reservoir in the present invention offers a marked utility to a writing utensil of the kind described.

What is claimed is:

1. A writing utensil having a forward writing end and a rearward opposite end, comprising: a disposable writing tip means consisting essentially of an elongate columnar writing element of ink absorbing material and a holder having a longitudinal bore therethrough frictionally holding said writing element therein with the rearward end portion of said writing element extending out of said holder and with the forward tip end extending forwardly out of the holder to form a writing point; a hollow cylindrical body having means for detachably engaging said holder for securely supporting said writing tip means thereon; an ink adjusting member mounted within said hollow cylindrical body and having a longitudinal bore for receiving therein said rearward end portion of said writing element; said adjusting member having its rearward portion formed as an elongated hollow cylindrical extension; said ink adjusting member comprising a tubular core and a plurality of coaxially spaced parallel annular discs connecting with one another by and mounted on said tubular core; said adjusting member having a longitudinally extending passageway forming communication paths between said adjusting member longitudinal bore and the spaces between said discs; a replaceable ink

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reservoir disposed in said hollow cylindrical body and having a forward opening snugly fitted in ink sealing engagement on said rearward extension of said ink adjusting member; said longitudinal bore opening into said reservoir; and the rearward end of said writing element extending at least substantially the length of said longitudinal bore for conducting ink directly from said reservoir through said longitudinal bore.

2. The writing utensil according to claim 1, wherein said annular disc form end walls, said core forms inner walls and said hollow cylindrical body forms outside walls to define a plurality of annular chambers.

3. The writing utensil according to claim 2, wherein said annular discs have outer peripheral edges spaced from said hollow cylindrical body.

4. The writing utensil according to claim 1, wherein said annular discs have outer peripheral edges spaced from said hollow cylindrical body.

5. The writing utensil according to claim 1, wherein said writing tip means is forwardly removable as a unit from said hollow cylindrical body; said hollow cylindrical body including abutment means for preventing forward removal of said ink adjusting member from said hollow cylindrical body during forward removal of said writing tip means; said hollow cylindrical body including a forward portion, a rearward portion and means releasably connecting said forward and rearward portions together for removing said rearward portion to allow access to said ink reservoir; said ink reservoir and said forward portion having means releasably engaging them together for removal and replacement of said ink reservoir; and said forward portion having abutment means preventing rearward removal of said ink adjusting member during removal and replacement of said ink reservoir.

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