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SELF-TIGHTENING PEN MEANS

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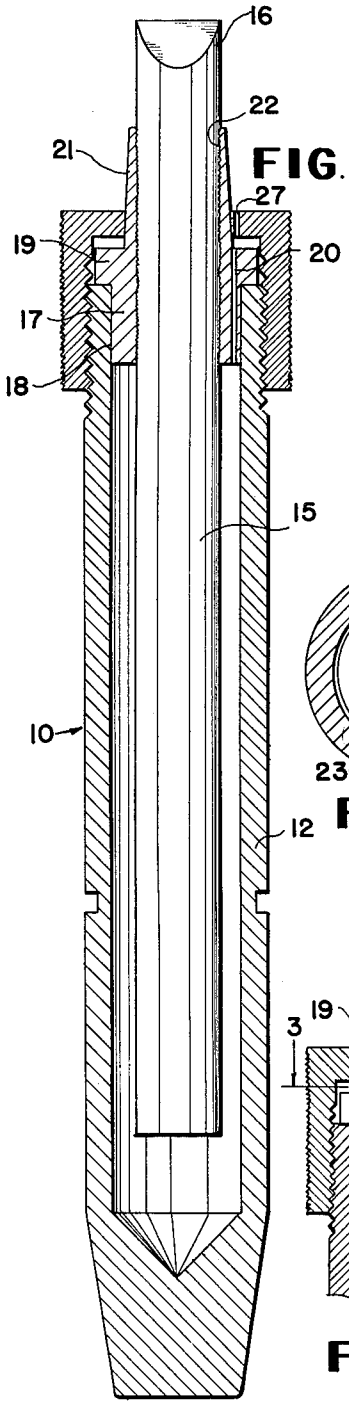


FIG. 1

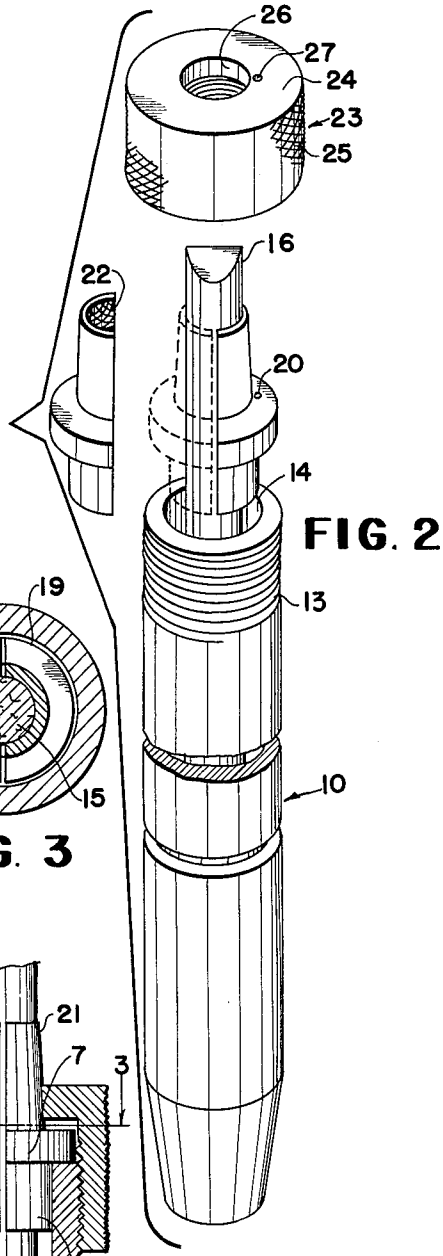


FIG. 2

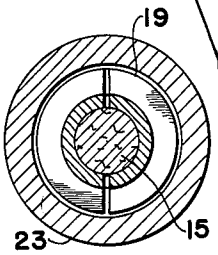


FIG. 3

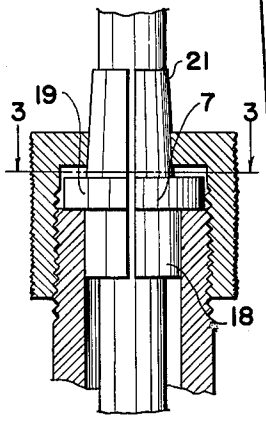


FIG. 4

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SELF-TIGHTENING PEN MEANS

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4 Claims. (Cl. 15—563)

This invention relates to writing and marking. In a more specific aspect this invention relates to a writing and marking instrument in the nature of a fountain pen. Still more specifically, this invention relates to a barrel type fountain pen having a felt point or nib, and which is commonly and desirably used with instant drying ink to make relatively broad lines for writing, marking and printing on such as advertising placards, shipping boxes and crates, packing cases and the like.

Fountain pens have long been known including pens which use a felt nib or point to make broad lines in writing. These pens have a barrel which forms a reservoir for ink or other suitable writing fluid for supplying ink to the felt nib or point. The ink is usually stored for use in some form of absorbent material that is disposed in the barrel of the pen. This absorbent material can be made of the same or substantially the same material from which the nib or felt point is made. By capillary action and/or gravity the ink feeds down to the felt point or nib as the pen is used. The reservoir of absorbent material can be filled with ink by either charging the reservoir with ink or by placing the felt nib or point in contact with ink or other writing fluid. In filling the reservoir, when the felt nib or point is placed in contact with ink or other writing fluid the reservoir is filled by capillary action, the ink moving through the felt point or nib to the absorbent material portion in the barrel. It is necessary at all times both in writing and filling the fountain pens that the nib or point be in direct physical communication with the reservoir absorbent material. Proper contact is often difficult to make and maintain. Failure of some pens in operation occurs because a physical separation between the nib and absorbent material has occurred.

As is the case with all fountain pens using a felt point or nib the nib wears down in use and must be adjusted. Further, the nib must often be trimmed either to restore it to its original shape, or to adapt the pen to draw a different width of line by changing the original shape of the nib point. This adjustment of the nib in the pens of the prior art frequently breaks the physical contact between the nib and the reservoir absorbent material. Loss of contact causes the point to run dry as the pen is used, or makes refilling of the reservoir by capillary action impossible.

One major shortcoming of the pens of the prior art is the absence of a satisfactory holder for adjustably holding the felt point or nib in the fountain pen barrel. The holding means used in the fountain pens of the prior art is unreliable and fails to positively hold the nib in a given position. Often the holding means does not positively secure the nib in the desired position without unduly compressing the absorbent material of the nib. The holder means of the pens of the prior art localize the compression of the felt forming a partial stoppage that seriously hampers the feed of the writing fluid to the point or to the reservoir and also permanently deforms the absorbent material.

Pens of the prior art using a single elongated piece of felt for the nib and reservoir absorbent sometimes give difficulty upon extension of the felt to form a new nib in that the holding means does not satisfactorily hold the felt in its newly extended condition.

Quite troublesome in the pens of the prior is the fact they leak in use and prolonged use in the hands of the writer results in ink running and dripping to ruin the writing, printing and marking produced by the pen. Heat

from the hand of the user raises the temperature and introduces heat into the closed reservoir barrel of the pen that expands the air and fluid in the barrel to increase the pressure therein. Venting of the barrel reservoir through the felt nib or point is not satisfactory, because the increased pressure within the pen barrel forces the ink through and around the nib or point. This causes the pen to drip thus getting the hands of the user, the work and the pen itself very messy. Further, the feed of ink to the nib or point is irregular, resulting in non-uniform work. Various vent means have been suggested but have not been completely satisfactory because of leakage problems, clogging and manufacturing and assembling problems.

I have by a simple structural means overcome the great aforementioned disadvantages of the pens of the prior art. The new pen structure of my invention has proven completely free of these problems in operation. In the fountain pen of my invention I have provided a structure and arrangement that eliminates the problem of contact between the felt nib and the absorbent material in the barrel, a fountain pen holder means that is simple to manipulate and adjust but yet securely holds the nib or point without compressing the material therein, and at any position of the felt in one-piece felt pens, and a venting means for venting the barrel reservoir that prevents increased pressure in the barrel from forcing the ink out from around the nib or point. Pens made according to my invention have proved reliable in use, giving no difficulty over long periods.

The new fountain pen of my invention has a barrel, having an open end. A length of absorbent material is arranged in and projects from the open end of the barrel. The fountain pen has a split annular holder for holding the length of the absorbent material, and a means positioning this holder relative to the barrel when the holder is mounted therewith. The holder has a camming surface. There is provided a means mountable on the barrel and adapted to engage the split annular holder to force it inwardly against the length of absorbent material.

The new fountain pen of my invention overcomes all of the aforementioned problems relating to fountain pens of the prior art. In order to eliminate the problems associated with maintaining a contact between the pen nib or point and the absorbent material in the barrel of the pen, I have provided my pen apparatus with a unitary length of absorbent material which functions both as a pen nib and the absorbent reservoir material. The holder means for holding the absorbent length of material in the barrel of the pen is simple to manipulate, holds the length of material securely in any position no matter what the length, is easy to manufacture and assemble, and does not compress the absorbent length of material in localized areas to hamper the capillary action of the felt nib or point. The venting means of my new fountain pen is simple, easy to clean, reliable and effective.

It is an object of this invention to provide a new writing means.

It is another object of this invention to provide new fountain writing, printing and marking means of the type which uses a nib or point of absorbent material to make relatively broad writing, printing and marking.

Yet another object of this invention is to provide a fountain pen of the type having an absorbent nib or point usually of felt to make relatively broad lines, etc. which is provided with a positive contact at all times between the writing nib or point and the absorbent material in the barrel used to store the ink.

Still another object of this invention is to provide a fountain pen of the type having an absorbent nib or point with a holder means for the absorbent material that is simple, efficient, dependable, and capable of positively

securing the length of material in the desired adjusted position.

Still another object of this invention is to provide a fountain pen having a reservoir with a vent means in this reservoir that is simple, easy to clean, positive in operation, and reliable.

Still another object of this invention is to provide a fountain pen of the type having an absorbent nib or point usually of felt to make relatively broad lines, etc., which will not leak in use in the hand of the writer, marker or printer and which will last a long time without replacement of parts, adjustments, etc.

Still another object of this invention is to provide holder means for a fountain pen of the type having an absorbent length of material which will positively secure the length of material in the desired adjusted position with a minimum pressure generally uniformly applied to the length of material.

Other objects and advantages of the new fountain pen of my invention will become apparent to those skilled in the art upon reading this disclosure.

Drawings accompany and are a part of this disclosure. These drawings depict preferred specific embodiments of the new fountain pen structure of my invention and it is to be understood that such drawings are not to unduly limit the scope of my invention. In the drawings,

FIG. 1 is a longitudinal cross sectional view through the pen structure of a preferred specific embodiment of my invention.

FIG. 2 is an exploded perspective view of same showing the parts in a partially disassembled relationship.

FIG. 3 is a plan view taken on line 3—3 of FIG. 4.

FIG. 4 is a longitudinal view partly in cross section of the pen structure showing specific detail of the cap and holder means.

The following is a discussion and description of the new fountain pen structure of my invention made with reference to the drawings wherein the same reference numerals are used to indicate the same or similar parts and/or structure. The discussion and description is of preferred specific embodiments of the new pen structure of my invention, and it is to be understood that such is not to unduly limit the scope of my invention.

Referring now to the drawings FIGS. 1–4, fountain pen **10** is a preferred specific embodiment of the new pen structure of my invention. It has a barrel **12** having an open end **14** and a threaded portion **13** on the exterior of the open end. An elongated integrally formed cylindrical length of absorbent material **15** for ink is mounted in the barrel and extends out of the open end thereof. The hollow of barrel **12** is of a size to receive the cylinder of the absorbent material substantially throughout its length. The outer and integral end portion of the absorbent material **15** which extends out of the open end of the barrel forms the nib **16** of the fountain pen. A longitudinally split annular holder member **17** is provided for holding the absorbent material relative to the barrel. The holder member **17** has a cylindrical end portion **18** that is adapted to be inserted into the open end of barrel **12**. On an intermediate portion of holder member **17** is provided a flange **19** that is constructed and adapted to abut the end of barrel **12**. A vent hole **20** extends through the cylindrical end portion **18** and the flange portion **19** of the holder member serving to vent the inside of barrel **12**. This has been found to work very advantageously with the new pen structure of my invention to keep ink from leaking from the pen when held in the hand of the user particularly when the pen is being used with the non-viscous instant drying inks. On the end of the holder member opposite the cylindrical end portion is provided frusto-conical portion **21**. The maximum diameter of the frusto-conical portion **21** is preferably less than the diameter of the flange **19**. In order to more positively hold the length of absorbent felt material the split annular holder member **17** is provided with a knurled generally cylindrical interior surface **22** that is adapted to encircle and releasably grip the length of absorbent material. A clamping nut **23** having a threaded portion adapted to engage the threaded portion on the barrel and an end portion holds the holder member in place and also serves as a means to radially adjust the segments of the holder member. Clamping nut **23** has an end portion **24** with an aperture **26** of a size and constructed to encircle and engage the frusto-conical portion of the holder member to force the separate elements of the split annular holder member together and thus clamp the length of absorbent material in a predetermined position. As is evident in the drawings particularly FIG. 1 tightening of the nut **23** on the barrel cams the split sections of the holder member **17** radially inwardly against the length of material. The inside surfaces of aperture **26** engage the tapered conical surface **21** of the holder member thus camming the sections of the holder member inwardly against the length of absorbent material. The clamping nut **23** is provided with a vent hole **27** which cooperates with vent hole **20** to vent the inside of the barrel to the atmosphere.

From the above description and the disclosure in the drawings it will be apparent that the present invention comprehends a novel marking fountain pen comprising a minimum number of parts that may be readily assembled or dissassembled. An adjustment to provide a new exposed end of the nib may be quickly made as the point becomes worn and a new point is required. To make this adjustment all that is required is that clamping nut **23** be partially unscrewed permitting the split section elements of the holder member to expand sufficiently to move or remove and insert a new length of material. The holder members are adapted to positively secure the length of material in a given position, and such has been found to work well. If desired the interior surfaces of the holder members can be knurled to insure even more positive holding. Further, the holder members do not exert any localized pressure on the length of the absorbent material which will cause localized compression of the material and subsequent partial or complete loss of capillary action. The pressure applied by the holder members is applied uniformly around and radially inwardly against the material thus minimizing the deformation of the material. The use of a uniform long length of absorbent material for both the nib and also a storage means eliminates the aforementioned problems due to maintaining contact between two separate units. Furthermore this arrangement provides a more efficient use of the absorbent material since the material is usable along its entire length.

As will be obvious to those skilled in the art various changes and modifications of the preferred pen structure disclosed herein can be made or followed without departing from the spirit of the disclosure or from the scope of the claims.

I claim:

1. A fountain pen comprising, a barrel having an open end, a threaded portion on the exterior of said open end, an elongated integrally formed cylindrical length of absorbent material for ink mounted in said barrel and extending out of said open end thereof, the hollow of said barrel of a size to receive said cylinder of absorbent material substantially throughout its length, the outer and integral end portion of said absorbent material forming the nib **16** of said fountain pen, a longitudinally split annular holder member for said absorbent material, said holder member having a cylindrical end portion adapted to be inserted into the open end of said barrel, an intermediate portion, a flange on said intermediate portion constructed and adapted to abut the end of said barrel, a vent hole extending through said cylindrical end portion and said intermediate portion, and a frusto-conical portion opposite said cylindrical end portion with the base portion of said frusto-conical portion thereof adjacent said abutment portion, the maximum diameter of which is less than the

diameter of said flange, said split annular holder member provided with a knurled generally cylindrical interior surface adapted to encircle and releasably grip said length of absorbent material, and a clamping nut having a knurled exterior surface, a threaded portion on said clamping nut adapted to engage said threaded portion on said barrel, an end portion on said clamping nut, an aperture in said end portion of size and constructed to encircle and engage said frusto-conical portion of said holder member to force the separate elements of the split annular holder member together and thus clamp the length of absorbent material in a predetermined position, and a vent hole in said end portion of said nut, said vent holes in said holder member and said nut when mounted providing for communication between the inside of said barrel and the atmosphere.

2. A fountain pen comprising, a barrel having an open end, a threaded portion on the exterior end surface of the open end of said barrel, an elongated integrally formed length of absorbent material for non-viscous instant drying ink mounted in and extending over substantially the major length of said barrel and projecting out of said open end of same, a longitudinally split annular holder member composed of separated parts for said length of absorbent material encircling and releasably gripping said length of absorbent material throughout the length of the annular holder member parts, said holder member having a first end portion inserted into the open end of said barrel, a flanged intermediate portion with the flange abutting the open end of said barrel, an opposite end portion, and a tapered surface on said opposite end portion, a clamping nut engaging said threaded portion on the exterior of said barrel, a surface on said clamping nut encircling and engaging said tapered surface on said holder member, and vent means positioned to vent the inside of said barrel, said surface on said clamping nut and said tapered surface on said holder member being mounted, constructed and adapted upon retracting said clamping nut to force said parts of said holder member uniformly inwardly against the length of said absorbent material.

3. A fountain pen comprising, a barrel having an open end, a length of absorbent material arranged in and projecting from said open end of said barrel, a split collar for said length of absorbent material, said split collar having a cylindrical end portion adapted to be inserted into the

open end of said barrel, an intermediate portion, a flange on said intermediate portion constructed and adapted to abut the end of said barrel, a vent hole extending through said cylindrical end portion and said intermediate portion, and a frusto-conical portion opposite said cylindrical end portion with the base portion of said frusto-conical portion thereof adjacent said abutment portion, the maximum diameter of which is less than the diameter of said flange, said split collar provided with a knurled generally cylindrical interior surface adapted to encircle and releasably grip said length of absorbent material, a means cooperating with said frusto-conical portion for applying a clamping action to said split collar when said collar is mounted on said barrel.

4. A fountain pen comprising, an elongated barrel having an open end, an elongated length of absorbent material arranged in and extending over the major portion of the length of said barrel and projecting from said open end thereof, an annular holder member having separated parts encircling and engaging said length of absorbent material substantially throughout the length of said parts, means insertably mounted in the open end of said barrel positioning said holder relative said barrel when said holder is mounted therewith, said holder having a camming surface, means mounted on said barrel and engaging said camming surface of said annular holder, and vent means for said fountain pen comprising an open conduit providing unrestricted gaseous fluid communication between the atmosphere and the inside of said barrel, said means mounted on said barrel and said camming surface mounted, constructed and adapted so that upon retracting said means mounted on said barrel said length of absorbent material is engaged substantially throughout the length of said parts of said annular holder to clamp said length of absorbent material in a predetermined position.

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