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FOUNTAIN PEN DESK SETS

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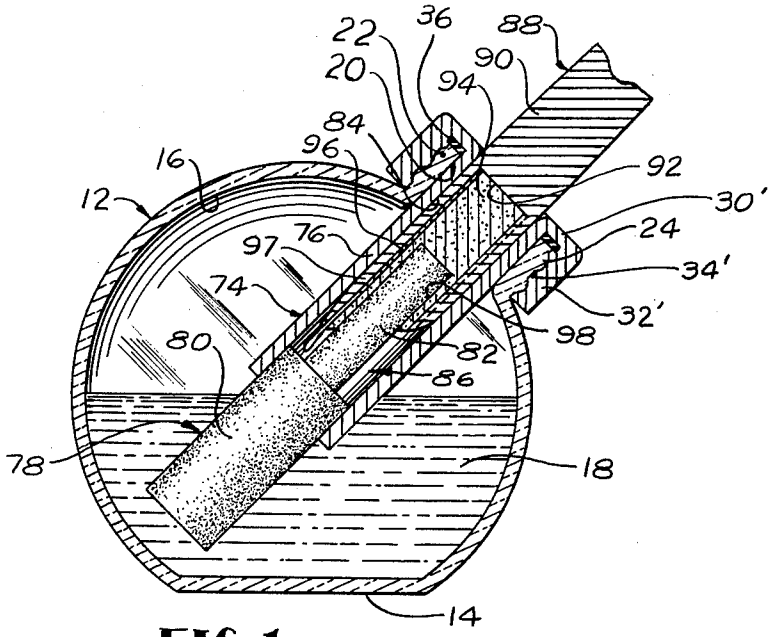


FIG. 1

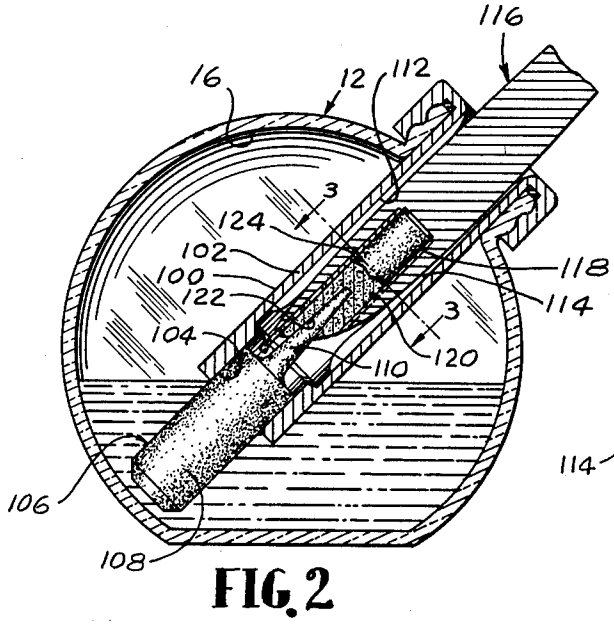


FIG. 2

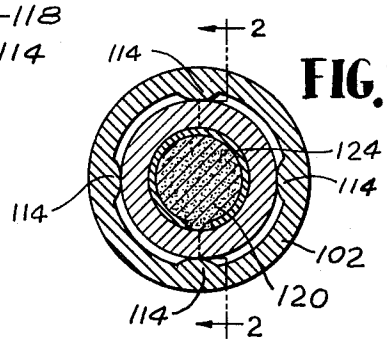


FIG. 3

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FOUNTAIN PEN DESK SETS

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Original application November 6, 1951, Serial No. 255,050, now Patent No. 2,708,904, dated May 24, 1955. Divided and this application December 27, 1954, Serial No. 477,650

8 Claims. (Cl. 120—57)

This application is a division of my co-pending application, Serial No. 255,050, filed November 6, 1951, now Patent Number 2,708,904.

The present invention relates to pen desk sets. It has to do more particularly with pen desk sets of the capillary type including a pen and a receptacle or so-called "base" for receiving and supporting the pen when the pen is not in use in writing, in which the pen and base each has a capillary element arranged so that when the pen is in the base it is filled with ink by capillary action and when the pen is removed from the base the ink is retained in the pen by capillary action except in a writing operation when the ink flows out of the pen by capillary action onto the writing surface.

In desk sets of this general class that were heretofore known, it was necessary that the pen be inserted in the base in a predetermined position about its longitudinal axis in order that the capillary elements of the pen and base be in proper ink feeding interengagement, with the obvious resultant disadvantages.

An object therefore of the present invention is the provision of a pen desk set of novel construction that obviates the objection to previously known sets as noted above.

Another object is the provision of a capillary pen desk set of the character referred to, of such construction as to enable placement of the pen in the base in any angular position of the pen, with full capillary engagement between the capillary units in the base and pen.

Still another object is the provision of a capillary pen desk set of the character referred to, in which the capillary elements in the base and pen have relatively large contact surfaces for mutual engagement for enabling rapid filling of the pen by capillary action when the pen is in place in the base.

Other objects of the invention will be apparent upon reference to the following detailed description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a fragmentary vertical sectional view of a pen desk set constituting one form of the present invention, with the outer portion of the pen omitted;

Figure 2 is a view similar to Figure 1 showing a modified form of the invention, but with the pen shown in a sectional view taken on staggered line 2—2 of Figure 3; and

Figure 3 is an enlarged sectional view taken on line 3—3 of Figure 2.

In each of the forms of the invention illustrated the pen desk set includes a base having a reservoir or well for containing ink, a socket in which the pen is inserted when the pen is not in use, and a capillary ink lifting element for lifting the ink from the reservoir to the pen. The pen includes a capillary ink storage element which contacts the ink lifting element in capillary engagement therewith so that the ink feeds from the base to the ink storage element in the pen. The pen may be inserted in the socket in the base in a

normal manner similar to that in inserting a conventional type pen in a pen holder in a base. When the pen is removed from the base and utilized in writing, the ink stored in the pen is drawn out by capillary action and deposited on the writing surface.

The invention is particularly adapted for use in a capillary dip pen, but it may also be applied to a capillary fountain pen having a capillary element for lifting and storing ink and allowing the ink to be written out, and having the capacity of an ordinary fountain pen.

The desk set of Figure 1 includes a base 12 similar to that illustrated in the above mentioned parent application. The base constitutes a reservoir member or well 16 which may be of spherical contour throughout the greater portion of its surface and have a flat bottom surface 14 for engaging a supporting surface and maintaining the base in the upright position. The particular shape of the reservoir member 16 of course may be varied and need not be generally spherical but may assume other shapes. The reservoir member 16 may be made of glass, as indicated in the drawing, or other desired material that is impervious to the action of the ink. The reservoir 16 is adapted for containing a quantity of ink 18 and in the normal usage of the set the ink level will preferably be at about that illustrated so as not to be disposed above the lower end of the pen when the latter is inserted in the base, as will be referred to later. The reservoir member 16 is provided with an opening 20 surrounded by an outwardly extending tubular neck portion 22 having external threads 24 for securement of the pen retainer 74 to be presently described. The opening 20 is of course disposed above the desired normal level of the ink, but it is preferably displaced from the top of the base so as to be directed outwardly at an inclined angle for ease in insertion of the pen by the user, e. g., when the pen is held in a normal writing position.

The pen retainer 74 includes a tubular element 76 with an opening in its inner end of the same diameter as that of the tubular element itself. The outer diameter of the tubular element 76 is preferably of such dimension as to snugly fit the inner surface of the neck 22 to aid in maintaining the pen retainer rigidly in position in the base. The outer end of the tubular element 28 terminates in a radial flange 30' merging into an annular axially extending flange 32' having internal threads 34' for engaging the threads 24, whereupon the tubular element may be threaded down on the neck 22, the flange 30' engaging a resilient gasket 36 interposed between the flange and the neck for sealing the interior of the reservoir member against the outflow of ink at that point. The gasket 36 may be of any desired material having the desired resiliency effective for sealing purposes, one example of material being "neoprene."

The ink lifting element 78 is preferably rigid and may be of sintered metal of the character disclosed in the Ernst W. Rickmeyer application Serial No. 45,823, filed August 24, 1948, now Patent Number 2,712,299, and includes an inner relatively large cylindrical portion 80 friction-fitted, for example, in the inner end of the tubular element 76. The ink lifting element includes an upper or outwardly extending reduced diameter portion 82 also of cylindrical shape and extending a substantial distance into the socket portion 84 of the tubular element 76 centrally thereof and coincident with the longitudinal axis of the socket. The reduced portion 82 has an exposed surface on its outer end as well as on its periphery, for engagement with the inner surface of the cavity in the ink storage element of the pen. There is a space 86 between the reduced portion 82 and the tubular portion 76 peripherally continuous and surrounding the portion 82.

The pen **88** includes a body **90** provided with a cavity **92** for receiving the ink storage element **94** and the nib **96**. The ink storage element **94** is also preferably rigid, and may be composed of sintered metal of the type above referred to, and is provided with a forwardly opening cavity **98** of cylindrical cross section complementary to the reduced portion **82** of the ink lifting element.

The pen nib **96** may be of any preferred type, such as the nib **64** of the above mentioned parent application, i. e., arcuate in cross section and having a body of substantial circumferential extent forming the greater part of a tube. The cavity **92** may have a cutout portion throughout the appropriate circumferential extent to receive the body of the nib, and a longitudinal rib for insertion between the side edges of the nib body, for retaining the nib in proper position. By reason of such construction the ink storage element **78** frictionally engages the pen nib and the rib in the cavity, so that the ink storage element and the pen nib are retained in the cavity by frictional engagement therewith. The exact details of the pen nib do not constitute an essential of the present invention. The nib is provided with the usual pierce and slit forming a pair of nib sections, the outer ends of both of which constitute a writing tip. The nib preferably is coaxial with the pen body and the writing tip thus is offset laterally relative to the longitudinal axis of the pen and on the side thereof adjacent the hood-like portion **97**, extending longitudinally forwardly beyond the extreme forwardmost portion of the hood, as well as the ink storage element. The nib slit is in capillary ink feeding relation with the ink storage element. The ink storage element has a forwardly directed, exposed surface portion in line with the longitudinal axis of the pen for engagement with the inner end of the capillary ink lifting element **44**, the latter being coincident with the longitudinal axis of the socket and thereby coincident with the longitudinal axis of the pen when the pen is in the socket.

When the pen is inserted in the socket in the position illustrated in Figure 1, it is placed in the position where the forward end of the ink storage element engages the outer end of the ink lifting element, and the writing tip of the nib extends into the space surrounding the outer end of the ink lifting element. This space is peripherally continuous so that the pen may be turned to any angular position about its longitudinal axis and in any such position the writing tip is enabled to extend into the said space. Furthermore, since the ink lifting element and the ink storage element have portions disposed coincident with the longitudinal axis of the pen when the pen is in place in the socket, the two capillary elements will have mutual capillary engagement in all positions of the pen. It is therefore unnecessary for the user to first determine that the pen is in a certain predetermined angular position before inserting it in the socket, but he may insert it in any angular position with full assurance that the desired capillary engagement is established between the ink lifting element and the ink storage element.

When the pen **88** is inserted in the socket **84**, the cavity **98** in the ink storage element therein receives the reduced portion **82** of the ink lifting element and there is accordingly mutual capillary ink transfer engagement between the two capillary elements throughout the inner surface of the cavity **98**.

Accordingly rapid transfer of ink from the ink lifting element to the ink storage element is effeted whereby the ink storage element becomes rapidly filled and it is not necessary that the pen be in the socket for any appreciable time for the ink storage element to be filled.

The embodiment of the invention illustrated in Figures 2 and 3 includes, in common with that of Figure 1, that feature whereby the ink storage element in the pen has a cavity for receiving a portion of the ink lifting element in the base. In Figure 2 the reservoir **16** may be identical with that of Figure 1 and the pen retainer **100** includes a tubular element **102** having a bore portion **104** at its inner end in which the ink lifting element **106** is mounted and may be held as by friction. The ink lifting element in the present instance likewise is preferably rigid and may be of sintered metal, of the character above referred to, and includes a lower or inner portion **108** of cylindrical form and constituting that portion which engages the bore **104**. Extending upwardly or outwardly from the portion **108** is a reduced diameter portion **110**, of tapered shape and diminishing in diameter outwardly of the tubular element **102**. The portion **110** is disposed centrally of the socket **112**, coincident with the longitudinal axis of the tubular element **102** and the socket therein. The socket **112** is provided with a plurality of longitudinally extending, circumferentialy spaced ribs **114** for engagement by the pen **116**, providing for passages between the pen body and the wall of the socket so as to eliminate pumping action of the ink when the pen is inserted in and removed from the socket.

The pen **116** has a cavity **118** opening forwardly of the pen in which is mounted a capillary ink storage element **120** preferably rigid and composed of sintered metal of the nature above referred to. The ink storage element **120** is provided with a forwardly opening cavity **122** of tapered shape complementary to the shape of the extension **110** of the ink lifting element. The pen **116** is also provided with the usual nib **124** which may be generally similar to that above referred to and fitted in the cavity **118** with the ink storage element in such a way that both the nib and ink storage element are retained in the cavity by friction engagement therewith. A rib **125** is formed in the cavity **118** for engaging the side edges in the nib body, in a manner similar to that referred to in connection with Figure 1.

As in the previous embodiment the user need not take any precaution for positioning the pen in any predetermined angular position in order that the desired capillary contact engagement be estabished between the two capillary elements.

The relative dimensions of the pen **116** and ribs **114** are preferably such as to permit the pen to be inserted into the socket to such an extent that the reduced portion **110** is fully received in the cavity **122** without the ribs acting to limit the movement of the pen before that position is reached.

I claim:

1. In a capillary pen desk set, a base having a reservoir and an opening establishing communication from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion adapted to receive a pen, a capillary ink lifting element mounted in the inner end of said tubular element with a portion of reduced dimension extending centrally into said socket, said socket defining an annular space surrounding said reduced dimension portion of substantially uniform axial extent at all points therearound, and a pen having a capillary ink storage element in its forward end and a writing nib in capillary feed relation to the ink storage element offset laterally therefrom and extending forwardly therebeyond, the ink storage element having a forwardly opening cavity adapted to receive the outer end portion of the ink lifting element when the pen is inserted in said socket, whereby the two capillary elements are in mutual capillary ink feeding relation and the writing tip of the nib is disposed in the space surrounding the outer end of the ink lifting element.

2. In a capillary pen desk set, a base having a reservoir and an opening establishing communication from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, a substantially rigid capillary ink lifting element mounted in the inner end of said tubular element and having a reduced outer end of circular cross

section at all points therealong extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element, and a pen having a substantially rigid capillary ink storage element in its forward end with a forwardly opening cavity in line with the longitudinal axis of the pen complementary in size and shape with the reduced outer end of the ink lifting element, and a writing nib in capillary feeding relation to the ink storage element having a writing tip laterally offset from said longitudinal axis and extending forwardly beyond the ink storage element, said pen being adapted for insertion in said socket in a position wherein said cavity receives the outer reduced end of the ink lifting element in capillary ink feeding relation therewith throughout the surface of said cavity.

3. In a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, a capillary ink lifting element mounted in the inner end of said tubular element and having a reduced outer end of cylindrical contour extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element of substantially uniform axial extent, said reduced portion being exposed in said annular space, and a pen having a capillary ink storage element in its forward end with a forwardly opening cylindrical cavity coaxial with the longitudinal axis of the pen complementary in size and shape with the reduced outer end of the ink lifting element, and a writing nib in capillary feeding relation to the ink storage element having a writing tip laterally offset from said longitudinal axis and extending forwardly beyond the ink storage element, said pen being adapted for insertion in said socket in a position wherein said cavity receives the outer reduced end of the ink lifting element in capillary ink feeding relation therewith throughout the surface of the cavity.

4. In a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, a capillary ink lifting element mounted in the inner end of said tubular element and having a tapered, reduced outer end of circular cross section at all points therealong extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element, and a pen having a capillary ink storage element in its forward end with a forwardly opening, tapered cavity coaxial with the longitudinal axis of the pen complementary in size and shape with the reduced outer end of the ink lifting element, and a writing nib in capillary feeding relation to the ink storage element having a writing tip laterally offset from said longitudinal axis and extending forwardly beyond the ink storage element, said pen being adapted for insertion in said socket in a position wherein said cavity receives the outer reduced end of the ink lifting element in capillary ink feeding relation therewith throughout the surface of said cavity.

5. In a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, said tubular element

having a plurality of circumferentially spaced longitudinal ribs in the socket portion thereof, a substantially rigid capillary ink lifting element mounted in the inner end of said tubular element having a reduced outer end portion extending into said socket centrally thereof, said socket defining an annular space surrounding said reduced portion, and a pen having a capillary ink storage element in its forward end and a writing nib in capillary feed relation to the ink storage element offset laterally therefrom and extending forwardly therebeyond, the ink storage element having a forwardly opening cavity adapted to receive the reduced portion of the ink lifting element when the pen is inserted in said socket, whereby the two capillary elements are in mutual ink feeding relation and the writing tip of the nib is disposed in the space surrounding the outer reduced end of the ink lifting element.

6. For use in a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, and a capillary ink lifting element mounted in the inner end of said tubular element and having a reduced outer end extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element of substantially uniform axial extent, said reduced portion being exposed in said annular space.

7. For use in a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, and a capillary ink lifting element mounted in the inner end of said tubular element and having a reduced outer end of cylindrical contour extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element of substantially uniform axial extent, said reduced portion being exposed in said annular space.

8. For use in a capillary pen desk set, a base having a reservoir and an opening from the reservoir to the exterior, a tubular element mounted in said opening defining a socket in its outer portion for receiving a pen, and a capillary ink lifting element mounted in the inner end of said tubular element and having a tapered, reduced outer end of circular cross section at all points therealong extending into said socket centrally thereof, there being a peripherally continuous annular space between said reduced outer end and the tubular element.

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