

Dec. 16, 1952

H. C. KLAGGES

2,621,629

INKWELL

Filed April 30, 1947

2 SHEETS—SHEET 1

FIG. 1

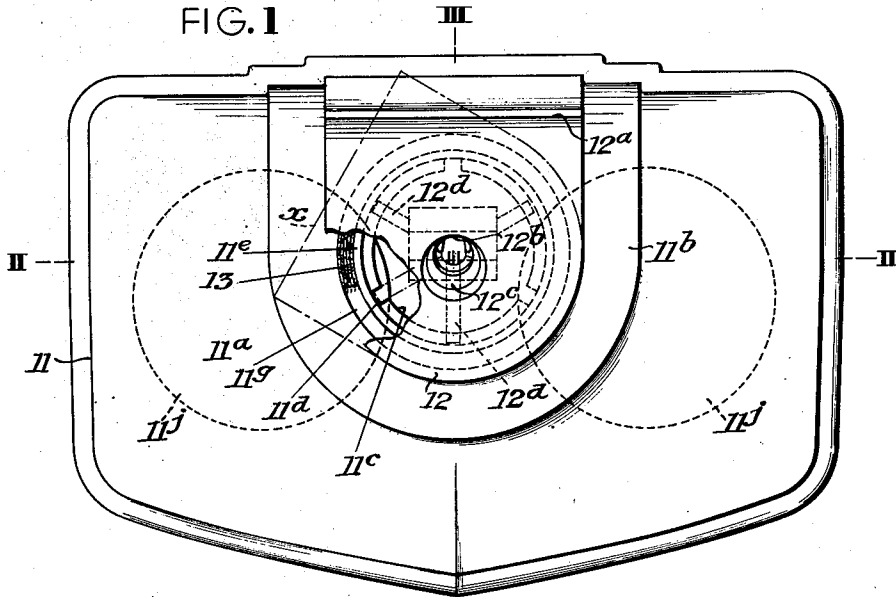


FIG. 2

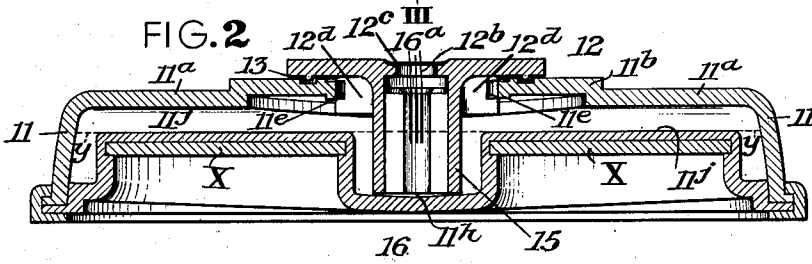


FIG. 3

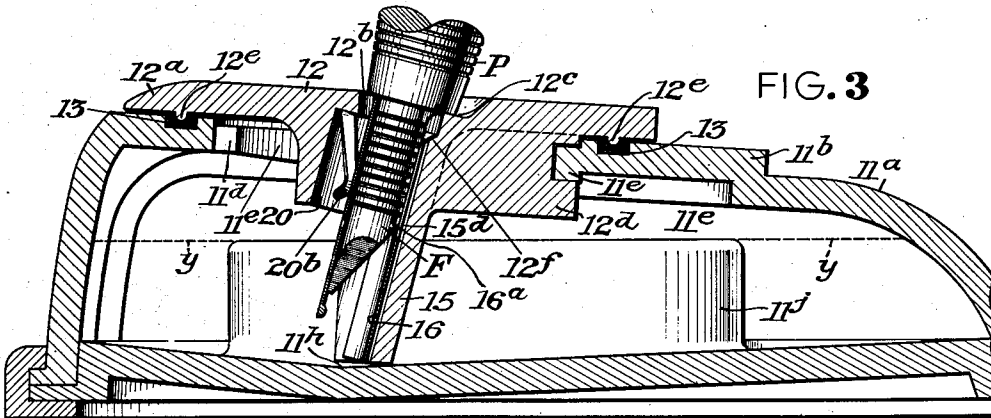
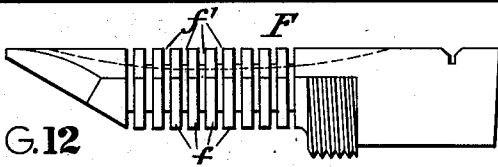


FIG. 12



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2. SHEETS—SHEET 2

FIG. 9a

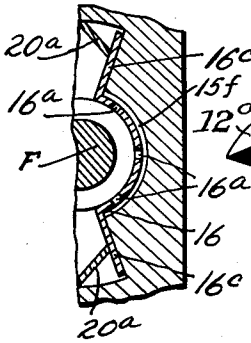


FIG. 4

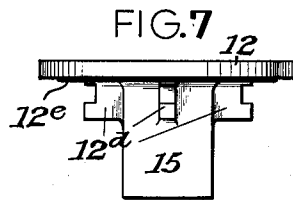
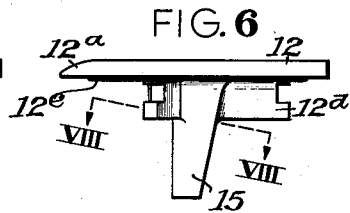
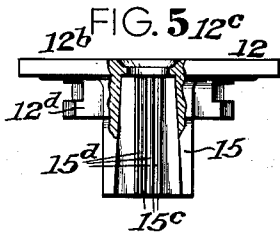
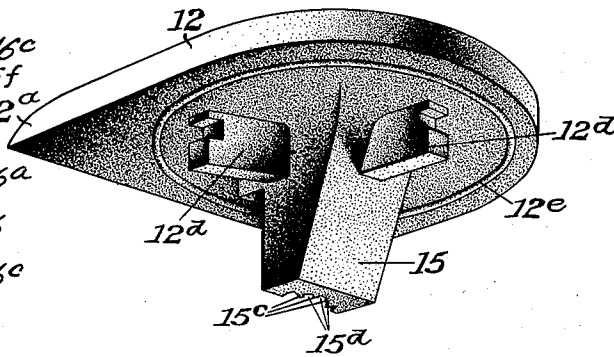


FIG. 10

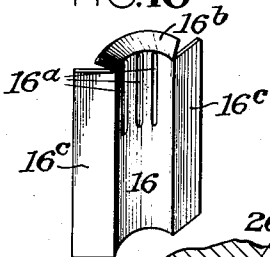


FIG. 8

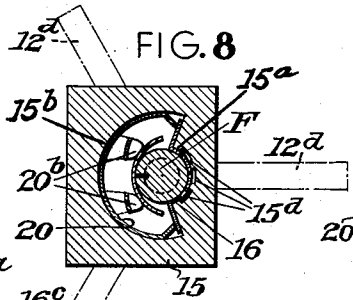
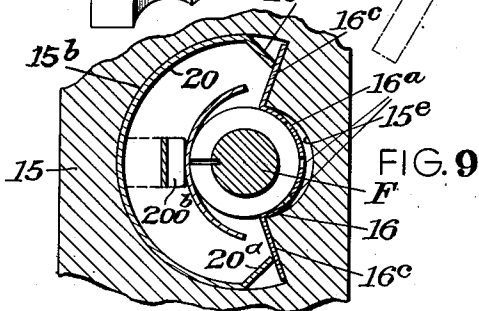
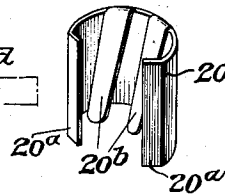


FIG. 11



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UNITED STATES PATENT OFFICE

2,621,629

INKWELL

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Application April 30, 1947, Serial No. 744,863

8 Claims. (Cl. 120—57)

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My invention relates to writing equipment including ink wells and means associated therewith whereby ink may be elevated to keep supplied with ink the fountain feed of a writing pen assembly of the so-called "dip-less" type resting therein, in order that such fountain feed may fill up and carry a supply of ink sufficient for continuous writing over a period of time greatly exceeding that which can be accomplished from the single dipping of an ordinary pen nib. Such fountain feed will be provided with capillary spaces of suitable character; longitudinally or annularly of the same, or otherwise disposed.

My present invention is in the nature of certain improvements over the constructions and arrangements set forth in the patent of H. C. Kofke and H. C. Klagges, No. 2,304,832, dated December 15, 1942, and is based upon the principle of capillary action whereby the ink from a supply within the well is caused to automatically rise and fill or substantially fill the capillary spaces of the fountain feed when the latter, with the pen point or nib associated therewith, is left in the ink well.

A further feature of my invention is to mount upon or associate the ink-elevating means with the cover employed with the ink well, which cover is preferably removable with the elevating means whenever it becomes necessary to replenish the well with ink; such cover being arranged to lock itself in place in the upper wall of the well when restored to its operative and proper position.

A further feature of my invention comprises the special ink-elevating means which I have developed which may comprise or include a depending element carried or supported by the cover for the ink well and having a concavely curved wall surface which, with an arcuate cover plate lying over and closely adjacent to the concavely curved wall surface of the depending element, provides a capillary space in which ink will rise. In lieu of a single space of capillary dimensions, I may provide for a plurality of capillary spaces by grooving the concavely curved wall surface of the depending member; such grooves being separated by ribs or ridges against which the arcuate cover plate may lie. This arcuate cover plate is provided in its upper portion with a series of substantially vertical slots which communicate with the capillary space or spaces behind the same; registering with the grooves when the latter are employed, and ink rising in the capillary space or spaces will pass to and through these slots and into the capillary spaces of the fountain feed-bar lying in contact with the slotted plate. The capillary spaces of the fountain feed-bar receive and store a supply of ink for passage to the

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pen point or nib supported by the feed-bar when the assembly is employed in a writing operation.

A further feature of my invention is the provision of a spring member, which may be of arcuate form and may be carried by the depending portion carried by or associated with the removable cover plate of the ink well opposite the arcuate slotted plate overlying the concavely curved wall surface of the depending portion, whereby said slotted plate may be held in operative position to provide the desired capillary space or spaces in which ink will rise. In addition, the arcuate spring member is preferably provided with means in the form of a spring prong or prongs which lie in contact with the upper surface of the pen point or nib and press the fountain feed-bar underlying the same against the slotted plate of the capillary ink-elevating means.

Other features of my invention will become apparent from a full consideration of the following specification.

These and other features of my invention are more fully pointed out hereinafter; reference being had to the accompanying drawings, more or less diagrammatic in character, in which:

Figure 1 is a plan view of one form of ink well within the scope of my invention and with which my improved ink-elevating means may be employed.

Fig. 2 is a longitudinal sectional view, taken on the line II—II, Fig. 1.

Fig. 3 is a cross-sectional view, taken on the line III—III, Fig. 1.

Fig. 4 is a perspective view of one form of cover plate or closure for the ink well which I may employ; looking toward the underside of the same.

Fig. 5 is a rear elevation of the cover plate, partly in section and on a smaller scale.

Fig. 6 is a side elevation of the cover plate.

Fig. 7 is a front elevation of the cover plate.

Fig. 8 is a sectional plan view, taken on the line VIII—VIII, Fig. 6.

Figs. 9 and 9^a are fragmentary sectional views taken on substantially the same line as Fig. 8, and on a larger scale; illustrating details of my invention.

Fig. 10 is a perspective view of the slotted plate carried by the depending portion of the cover plate to define the capillary space or spaces.

Fig. 11 is a perspective view of one form of arcuate spring member for retaining the slotted plate shown in Fig. 10 in operative position; such view showing also spring prong means designed to engage the pen point to hold the feed-bar against such slotted plate.

Fig. 12 is a view in elevation, on an enlarged

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scale, of one form of fountain or reservoir feed-bar which may be associated with the pen point in the use of my improved ink-elevating means.

As well known, writing pen assemblies of the so-called "dipless" type are provided with fountain feed means or reservoirs designed to hold a liberal supply of ink from a single dipping in an ink supply; such reservoir means being usually in the form of a recessed bar resembling and/or substantially like the feed-bar of a fountain pen, and which may have annular recesses. Such form of feed-bar may have channel means on its upper surface directly underlying the pen point and cutting across the recesses or annular grooves, when present, which receive and retain the ink supply. The ink which enters these recesses or grooves feeds by capillary action to the pen or pen point overlying the same and thence to the writing end thereof when the pen assembly is employed in a writing operation. It will be understood, of course, that a fountain feed-bar having longitudinal grooves may be employed.

The important feature of my present invention comprises capillary ink-supplying or ink-elevating means including a portion which may be carried by the removable cover of the ink well and arranged to dip into the body of ink therein; such means including a capillary space or spaces in which ink rises for subsequent passage to the capillary spaces of a fountain feed-bar in which the ink so raised is stored for subsequent use; such feed-bar lying in contact with one portion of the ink-elevating means. The writing pen assembly comprising the fountain feed-bar and a pen point associated therewith, which parts are carried by a suitable penholder or pen staff, preferably remains in the ink well when not in use and seals the well against ink-evaporation.

Figure 1 of the drawings shows a plan view of one form of ink well or ink container within the scope of my invention; being indicated generally at 11. This form of ink container may be of shallow form and more or less oblong in shape with diagonally arranged front edges which may meet at a substantially median point. The top wall 11^a of the ink container may have an elevated portion 11^b, more or less centrally disposed, which may have a rounded contour toward the front.

Overlying this elevated portion 11^b, is the cover plate 12 for the ink container, whose forward edge may be concentric with the forward edge of the elevated portion 11^b and whose rear edge may be beveled as indicated at 12^a. The cover or cover plate is provided with a dipping opening, indicated at 12^b, which may be axially disposed with respect to the arcuate forward edge of the same, and this dipping opening is preferably provided with a seat 12^c upon which the shouldered end P of the penholder or pen staff P may rest, as indicated in Fig. 3. In this position, which is the position of the penholder when not in use, the pen point and the forward end of the feed-bar may dip into the ink but the storage spaces of the feed-bar are above the level of ink in the container 11.

The raised portion 11^b of the top wall 11^a of the ink container may be circularly apertured at 11^c to provide a filling opening, and the underside of the cover or cover plate 12 is provided with a series of lugs 12^d which initially enter notches 14^d formed in the edge of the opening 11^c. After application; such position being indicated by the

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broken lines x, and when the cover is turned—to the right, for instance—the lugs 12^d interlock with flanges 11^e, preferably having cam faces on their underside, whereby such cover is held in place after being finally positioned, as indicated by the full lines, Fig. 1. By preference, in order to provide a tight sealing fit, the raised portion of the top wall 11^a is annularly recessed around the filling opening, as indicated at 11^e, for the reception of a suitable gasket 13, which may be of any suitable elastic material—rubber, or the like. It is within the scope of my invention to employ a plurality of gaskets, if necessary. The underside of the cover plate may have an annular rib or ridge 12^e engaging the gasket (or gaskets) so as to firmly seal the cover to the top wall of the ink container when such cover is in its final position.

Depending from the underside of the cover plate and dipping substantially to the lowermost point of the ink well bottom, indicated at 11^h, is a portion—which may be integral with the cover plate—forming part of the improved capillary action ink-elevating means. This depending portion, indicated at 15, may be substantially rectangular in cross-sectional contour and is arranged at a slight angle to the vertical. It is provided with a through bore having curved wall surfaces of different radii, indicated at 15^a and 15^b, and is cut away at the rear portion, as illustrated in Figs. 3, 4 and 6 to afford a vent for air expansion. The rear curved face of the front wall portion may be smooth or it may be provided with substantially vertical ribs 15^c indicated in Figs. 4, 5 and 8, defining shallow grooves 15^d providing spaces of capillary dimensions in which ink will rise. Cooperating with the smooth curved wall surface or the grooves defining a space or spaces of capillary dimensions of the ink-elevating means, is a curved plate 16 which lies against the concavely curved wall surface 15^a; in properly spaced relation with respect to the smooth wall construction and in contact with the ribs or ridges 15^c defining the capillary grooves 15^d; such plate 16 having a plurality of slots 16^a, preferably of capillary dimensions, in its upper portion for the passage of ink from the capillary space or spaces behind the same. The plate 16 may have an upper flange 16^b which may rest on a ledge 12^f formed in the wall of the dipping opening and just below the seat for the end of the penholder or pen staff, and flaring side flanges 16^c arranged to hug wall portions formed in the bore of the depending portion 15; see Fig. 10.

In order that the slotted plate may be firmly held in its operative position with respect to the curved wall of the depending member, I provide a retaining element in the form of a curved spring plate 20, arranged to hug the curved wall 15^b and having inturned wall portions 20^a whose free edges engage the side flanges 16^c of the slotted plate, as shown in Figs. 8 and 9.

To hold the fountain feed-bar of the writing pen assembly in proper position with respect to the slotted plate 16 of the capillary ink-elevating assembly whereby such fountain feed-bar may receive the desired supply of ink therefrom, spring prongs 20^b may be employed, carried by the curved spring plate 20; which prongs engage the upper surface of the pen point and press the fountain feed-bar underlying the same into contact with the slotted plate. These prongs may be formed by extensions from the upper edge of the plate 20, and may be bent into such position

that their ends will engage the surface of the pen point when the pen and feed-bar assembly is inserted in the dipping opening of the cover plate 12, as illustrated in Fig. 3.

Instead of grooving the concavely curved wall surface of the depending 15 of the ink-elevating assembly, this surface may be smooth, as hereinbefore noted and, with the aid of the curved slotted plate, form a single capillary space dipping into the ink supply. In noting that this surface may be smooth, it is not to be understood that such surface is polished, but simply that it has no ribs and/or grooves. As the piece in which such smooth surface is formed may be of a suitable plastic material, such part may have what may be termed a "matte" surface so that ink will cling to and rise upon the same. An arrangement showing a surface of this character is illustrated at 15^e in Fig. 9, providing, with the arcuate plate 16 a single capillary space which may have a cross-sectional contour in the form of a lune or crescent. It is also within the scope of my invention to provide a single capillary space between the curved slotted plate and the surface 15^e having the same width dimension throughout its entire extent. A capillary space of this character is shown at 15^f, Fig. 9^a.

The form of the depending portion of the ink-elevating means as illustrated in Figs. 4, 5 and 8 is shown as provided with three substantially vertical grooves 15^d; it will be understood that a greater or lesser number may be provided and that in all instances a suitable number of slots will be provided in the curved covering plate 16. These grooves are, in all instances, of capillary dimensions, and the lune-shaped space illustrated in Fig. 9 is also of capillary dimensions. In all instances, ink will rise in these capillary spaces and pass through the slots 16^a of the arcuate plate 16 to supply ink to the capillary spaces of the fountain feed-bar of the writing pen assembly.

While I have shown the depending portion 15 of the capillary ink-elevating assembly as integral with the cover plate or closure, it will be understood that such depending part may be a separate piece properly secured in place.

In the use of my improved writing equipment, it is desirable to thoroughly clean the well when the ink reaches a low point, and to clean the ink-elevating means at the same time. For this reason it is desirable to have the ink-elevating means associated with the cover plate so that when the latter is removed to permit a cleaning operation, the ink-elevating means comes with it.

It is highly desirable to keep the fountain feed-bar in contact with the slotted plate to insure that its capillary spaces will receive ink therefrom, and a pair of spring prongs may be provided for this purpose, as illustrated in Figs. 3, 8 and 11. It will be understood of course that a single prong may serve the purpose; such arrangement being illustrated in Fig. 9, and the single prong being indicated at 200^b.

As illustrated in Fig. 3, the pen point *n* may dip into the body of ink, whose level after initial filling or any subsequent replenishment is indicated at *y*; thereby wetting the pen point. The capillary spaces of the fountain feed-bar, which receive their ink supply by capillary action from the slots of the concavely curved plate 16, are above the ink level.

One form of fountain feed-bar which may be employed as a part of the writing pen assembly, is shown at F, Fig. 12. The portion underlying

the pen point *n* is annularly recessed; a series of combs *f*, having capillary spaces *f'* between the same in which ink is received and stored for subsequent use in a writing operation.

It will be understood, of course, that the form of ink well shown in the drawings is for illustrative purposes only and not as limiting in any way the improved ink-elevating means employed therewith, which may be associated with any suitable form of ink supply into which the ink-elevating means may dip and extend substantially to the bottom of the well or such ink supply.

In the present instance, the ink well or container shown in the drawings has been designed to hold a certain amount of ink—approximately two fluid ounces—which is the quantity usually contained in the small-size bottles of ink now on the market and selling for ten cents. Any of the well known so-called "Fountain Pen" inks of commerce may be used with my improved ink-elevating means.

In view of the overall size of the ink well or container, illustrated in Figs. 1, 2 and 3, its internal cavity would normally hold a greater amount of ink than two fluid ounces. In order to develop an internal space that will receive such quantity, I may provide the bottom wall with enlarged bosses or projections, indicated at 11^j, preferably with flat tops, which serve the further purpose of indicating the height, as at *y*, to which the ink should rise when the well is initially filled or subsequently replenished.

The ink well has a broad base and is substantially non-tippable. In order to provide additional weight and thereby completely prevent tipping, I may enclose in the upper wall of the projections or bosses 11^j, sections of metal—lead or the like—indicated at X, and these may be embedded in place during formation of the ink well. The bottom wall of the well may slope in two directions toward the point, indicated at 11^h, which is preferably beneath the lower end of the ink-elevating means carried by or associated with the cover plate 12. Any form of bottom having a low point into which the ink-elevating means may dip is within the scope of my invention.

While I have illustrated and have described with some particularity a number of ways in which my invention may be carried into effect, this disclosure is for illustrative purposes only and not as a limitation inasmuch as modifications may be made embodying the spirit of my invention; all of which is deemed to be within the scope of the appended claims.

I claim:

1. Ink-elevating means for association with a writing pen and feed-bar assembly; the latter having a comb providing capillary spaces for the reception and storage of ink, comprising a member dipping into an ink supply and having grooves of capillary dimensions, a plate overlying said grooves and defining therewith capillary spaces; said plate having slots of capillary dimensions registering with said capillary grooves for the passage of ink rising therein to the capillary spaces of the feed-bar.

2. Ink-elevating means for association with a writing pen and feed-bar assembly; the latter having a comb providing capillary spaces for the reception and storage of ink, comprising a member dipping into an ink supply and having a concavely curved wall contour approximating the rounded contour of the feed-bar; said curved

wall member having grooves of capillary dimensions, and a concavely curved plate in engagement with said grooved wall and defining therewith capillary spaces; said plate having capillary slots in its upper portion registering with said grooves for the passage of ink rising in the capillary spaces provided by the grooves to the capillary spaces of the feed-bar.

3. The combination with an ink well of a cover therefor, a member depending from said cover and dipping into a body of ink in the well; said member having a through bore with a wall portion diagonally disposed with respect to the upper plane of the cover and said wall portion having a surface arcuate in contour, an arcuate plate overlying said arcuate wall surface; one of said parts having longitudinal grooves defining capillary spaces and said plate having slots of capillary dimensions registering with said grooves and positioned above the ends of the grooves which dip into the ink.

4. Ink-elevating means for association with a writing pen and feed-bar assembly; the latter having capillary spaces for the reception and storage of ink, comprising a member dipping in an ink supply; said member having a through bore including a wall surface having a concave contour approximating the contour of the feed-bar, a curved plate in close proximity to said concave wall surface and defining therewith an arcuate space of capillary dimensions; said plate being slotted for the passage of ink rising in said capillary space to the capillary spaces of the feed-bar and having side flanges, and a tension member mounted in the bore of the member dipping in the ink supply and in engagement with said flanges to hold the curved plate in operative position.

5. The combination with an ink well containing a supply of ink, of a cover for said well, capillary ink-elevating means carried by said cover comprising a concavely grooved wall portion depending therefrom and a concavely curved plate member having slots in its upper portion overlying said grooved wall portion; said ink-elevating means dipping to the bottom of the ink supply and providing a space in which ink may rise, and spring means supported by the cover opposite the grooved wall portion for holding the parts of the

ink-elevating means in operative relation; said ink-elevating means being especially adapted for association with a writing assembly comprising a pen point and a fountain feed-bar having a comb providing capillary spaces for the reception and storage of ink and said feed-bar having a contour conforming to and overlying the slotted plate member of the ink-elevating means and receiving ink therefrom.

6. The combination, with an ink well, of a cover therefor, ink-elevating means supported by said cover and dipping into a supply of ink within the well; said elevating means comprising elements providing a capillary space in which ink may rise and including a wall member of concave contour integral with said cover and having a grooved surface and a separate wall member of concave contour overlying the grooved wall member and defining therewith the capillary space; said latter wall having openings of capillary dimensions in its upper part through which ink may pass after it rises in the grooves of the capillary space and said ink-elevating means being arranged for association with a pen point and feed-bar assembly wherein the feed-bar has capillary ink storage spaces which lie above the level of ink in the well and in operative position with respect to the capillary openings of the overlying wall member.

7. A structure as set forth in claim 1, wherein the member dipping in the ink supply is provided with a dipping opening for the reception of the writing pen and feed-bar assembly.

8. A structure as set forth in claim 3, wherein the cover is provided with a dipping opening aligned with the through bore member dipping in the ink supply.

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The following references are of record in the file of this patent:

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Number	Country	Date
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