

May 21, 1935.

L. H. JUSTER
INKWELL

2,002,092

Filed Aug. 9, 1934

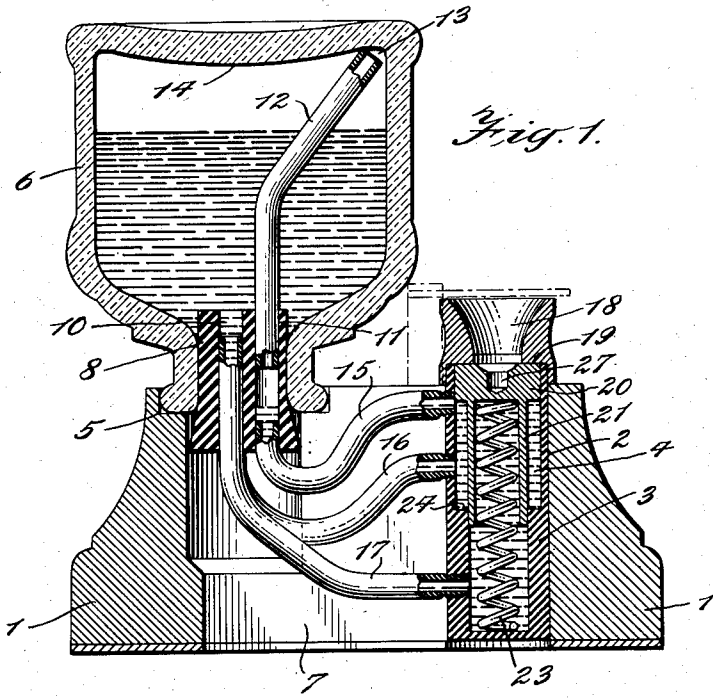


Fig. 1.

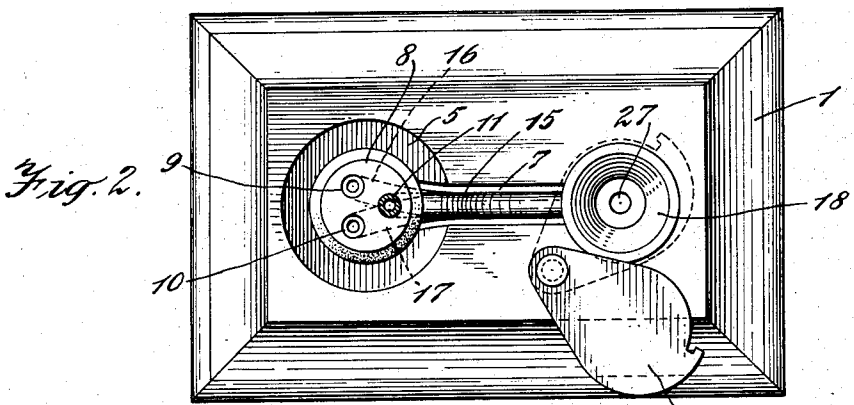


Fig. 2.

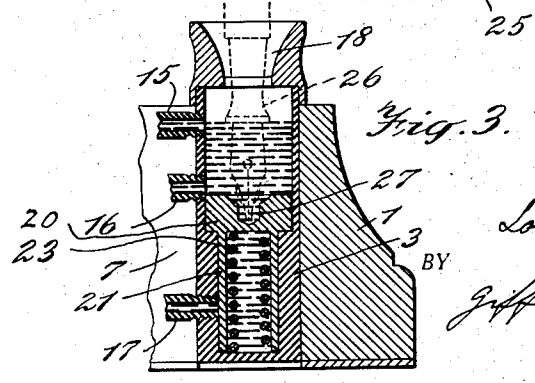


Fig. 3.

INVENTOR.

Louis H. Juster

BY
Gifford, Scull & Bengen
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,002,092

INKWELL

Louis H. Juster, St. Lambert, Quebec, Canada, assignor to L. E. Waterman Company, New York, N. Y., a corporation of New York

Application August 9, 1934, Serial No. 739,063

9 Claims. (Cl. 120—59)

This invention relates to a novel and improved form of ink well, the novel features of which will be best understood from the following description and the annexed drawing, in which I have shown a selected embodiment of the invention and in which:

Fig. 1 is a vertical sectional view through a device embodying the invention;

Fig. 2 is a top plan view of the device showing the bottle removed;

Fig. 3 is a fragmentary view similar to Fig. 1 showing certain of the parts in a different position.

In the illustrated embodiment, the device comprises a suitable base 1 having therein a vertically extending bore 2 in which may be placed a bushing 3 within which is formed a chamber 4. The base is likewise provided with a suitable seat 5 for the neck of an ink bottle 6 to support such a bottle in inverted position. The base is likewise cut out as indicated at 7, to furnish room for a plurality of tubes connecting the chamber 4 with the ink bottle 6. The bottle will, of course, be provided with a stopper 8 having therein a plurality of holes 9, 10, and 11.

Inserted in the hole 11 is a vent tube 12, which is preferably bent at its upper end to extend to a point adjacent the corner 13 of the bottle. As is well known, bottles are usually provided at the bottom thereof with a convex surface 14, and by having the tube 12 extend to a point adjacent the periphery of such convex portion, it is possible to more nearly fill the ink bottle before it is used and still the end of the vent tube 12 will be disposed in the air space present at the corner 13. Of course, as the ink is used, the air space will grow in volume.

In the illustrated embodiment, I have shown the chamber 4 having communication with the reservoir formed by the ink bottle through three tubes 15, 16, and 17 which are spaced apart vertically where they communicate with the chamber. Each of these tubes is also received in one of the holes 9, 10, and 11 of the stopper 8, and the tube 15 is received in the hole 11 in which the vent tube 12 is also disposed.

The top of the ink well chamber is provided with a dipping well 18 providing a shoulder 19 against which seats a valve 20. This valve is slidably mounted in the chamber 4 and has a sliding fit with the walls thereof. As shown herein, it has a hollow, cylindrical stem 21 within which is received a compression spring 23 bearing against the bottom of the chamber and normally urging the valve 20 against its seat 19.

The chamber wall is also provided with a shoulder 24 against which the bottom of the valve 20 may contact and which limits the downward movement of the valve. As shown in Fig. 3, when the valve is in its lowermost position, the end of the tube 16 which communicates with the chamber is uncovered.

If desired, the top of the well may be closed by means of a pivoted cover 25 which may be swung into and out of position wherein it covers the well.

In operation, the entire assembly formed of the bushing 3, stopper 8, and tubes 12, 15, 16, and 17, together with the dipping well 18, may be treated as a unit. While they are normally received in the base, nevertheless they may be easily moved vertically out of the base because of the various openings in the base in which they are received and which are all open at the top. After removal from the base, the stopper may be inserted in an ink bottle and then the assembly may be returned to its normal position in the base, at which time the bottle will come to rest upon its seat 5.

The device is intended primarily for use for filling fountain pens, and the nib of a pen 26 may be placed in the recess 27 of the valve and this valve forced downwardly to some such position as indicated in Fig. 3, where the end of the tube 16 is uncovered, it being understood that the parts 20 and 21 have a sliding fit in the bushing 3 which will nevertheless permit ink to flow past them. Ink may then flow through the tube 16 into the chamber 4, and the pen may be filled and removed from the well, after which the spring 23 will raise the valve 20 to its seat 19. During this operation, the vent tube 12 in conjunction with the tube 15 will permit air to enter the air space of the bottle and provide the necessary pressure to force the ink out into the chamber 4, as the valve moves upwardly.

When the stopper with the tubes assembled with it is first placed in the bottle, of course a certain amount of ink will enter the tubes 12 and 15 and help to fill the chamber 4, but after the device has been used for a short time, the ink in the chamber must be replenished through the tubes 16 and 17.

By providing the two tubes 16 and 17, a much quicker feed of ink to the chamber 4 is provided. If, for example, the tube 16 were omitted, the downward movement of the valve under the pressure of a pen nib thereon would require more pressure than might be desirable to place upon a pen nib. At the same time, the tube 16 may

be entirely uncovered by the valve 20, as shown in Fig. 3, and thus permit a ready flow of ink from the bottle into the chamber.

As seen in Fig. 3, when the valve is depressed, the space above it is deep enough and contains enough ink to fill a fountain pen, and this ink may be supplied entirely by the tube 16 or by that tube and the tube 17. If a pen having a large capacity is to be filled, a plentiful supply of ink is assured. Looking at Fig. 3, it will be seen that as the ink above the valve 20 is sucked into a pen, more ink will readily flow into the chamber above the valve, through the tube 16 and possibly the tube 15.

As the valve rises from the position of Fig. 3 to that of Fig. 1, it will suck ink from the bottle into the chamber 4 beneath the valve, and simultaneously any ink above the valve will pass into the tube 15, thus keeping the dipping well 18 clean and normally free of ink. Any ink that may at any time get into the dipping well will flow down into the chamber 4 upon the next downward movement of the valve. Normally, therefore, there is little chance for the formation of sediment, either by dust getting into the ink, or by oxidation, since under usual conditions the ink is not exposed to air and dust, and the dipping well is kept clean.

It is not uncommon in the prior art, when a bottle is subjected to relatively high temperatures, for the air to expand enough to force the ink in the well upwardly to an undesirable amount, there even being danger that the ink will overflow from the well. This trouble is avoided by the arrangement which I have adopted. If ink should get into the dipping well, a single depression of the valve normally will remove it. It is even possible to add ink to the supply in the bottle by placing it in the chamber and/or dipping well and pumping it into the bottle by reciprocating the valve.

Another advantage of the arrangement shown is that the bottom tube 17, in addition to its function of aiding the tube 16, also insures a fresh supply of ink at the bottom of the chamber 4, thus preventing caking of ink at that location.

While I have named above some of the advantages of my invention, still other advantages will be apparent to those skilled in the art. While I have shown the invention as embodied in a specific form, it is to be understood that various changes in details may be made without departing from the scope of the invention, and I therefore do not intend to limit myself except by the appended claims.

I claim:

1. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and the uppermost one of said tubes communicating only with said air space therein, and a valve vertically movable in said chamber and adapted in its lowermost position to uncover one of the other tubes.

2. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and the uppermost one of said tubes communicat-

ing only with said air space therein, and a valve vertically movable in said chamber and adapted in its uppermost position to close said uppermost tube and adapted in its lowermost position to uncover one of the other tubes.

3. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and the uppermost one of said tubes communicating only with said air space therein, a valve vertically movable in said chamber and adapted in its lowermost position to uncover one of the other tubes, and a spring urging said valve towards its uppermost position.

4. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and the uppermost one of said tubes communicating only with said air space therein, a valve vertically movable in said chamber and adapted in its uppermost position to close said uppermost tube and adapted in its lowermost position to uncover one of the other tubes, and a spring urging said valve towards its uppermost position.

5. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and one of said tubes communicating only with said air space therein, and a valve vertically movable in said chamber and adapted in its lowermost position to uncover one of the other tubes.

6. In combination, an ink well having a vertically extending chamber, a plurality of tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, all of said tubes communicating with said reservoir and one of said tubes communicating only with said air space therein, and a valve vertically movable in said chamber and adapted in its uppermost position to close said uppermost tube and adapted in its lowermost position to uncover one of the other tubes.

7. In combination, an ink well having a vertically extending chamber, three tubes communicating with said chamber at vertically spaced apart points, an ink reservoir normally having an air space adjacent the top thereof, the uppermost one of said tubes communicating with said air space in the reservoir and the others with the ink space therein, a valve vertically movable in said chamber and adapted in its lowermost position to uncover the middle one of said tubes, and a spring urging said valve towards its uppermost position, in which it is above said middle tube.

8. In combination, a base having means for supporting thereon an ink bottle in inverted position and also having means for supporting an ink well, said ink well having a vertically extending chamber, a plurality of tubes extending from said chamber at vertically spaced points and communicating with the interior of said bottle, a valve movable in said chamber and in its uppermost position covering the uppermost one of said tubes, and a vent tube forming an extension of

the uppermost one of said tubes and extending into the air space adjacent the top of said inverted bottle.

5 9. In combination, an ink bottle and an ink well, a stopper for said bottle, a plurality of tubes having their ends inserted in holes in said stopper and their other ends communicating with said ink well and secured thereto, a base having a ver-

tically extending bore into which said ink well may be set and likewise having a cut-out portion to receive the tubes connected to the ink well, and a seat on the base adapted to receive the neck of said bottle when the stopper is placed therein and when said tube ends are in said holes in the stopper. 5

LOUIS H. JUSTER.