

(No Model.)

G. A. WERNER.
FOUNTAIN MARKING PEN.

No. 600,299.

Patented Mar. 8, 1898.

Fig. 1.

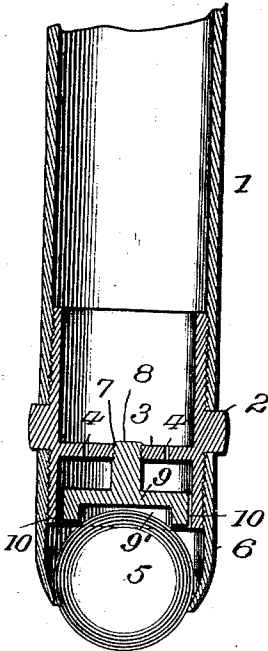


Fig. 2.

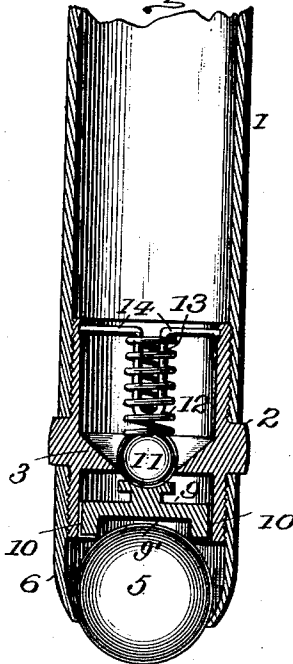


Fig. 3.

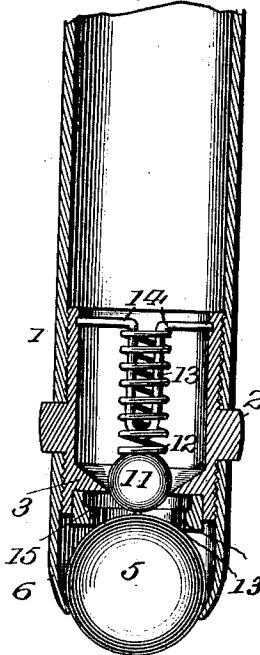


Fig. 4.

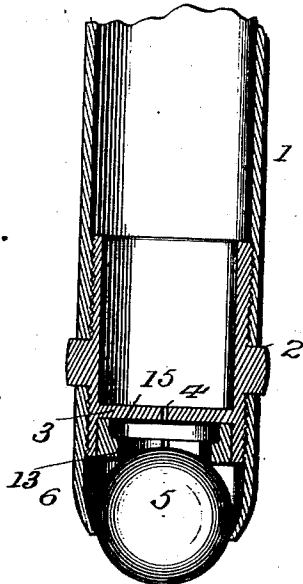


Fig. 6.

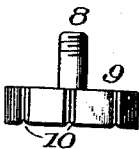


Fig. 5.

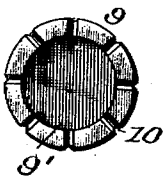


Fig. 7.



Fig. 8.

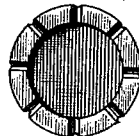


Fig. 9.

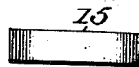
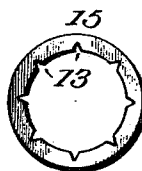


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE A. WERNER, OF HARRISBURG, PENNSYLVANIA.

FOUNTAIN MARKING-PEN.

SPECIFICATION forming part of Letters Patent No. 600,299, dated March 8, 1898.

Application filed February 25, 1897. Serial No. 625,036. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. WERNER, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a certain new and useful Improvement in Fountain Marking-Pens, of which the following is a specification, reference being had to the accompanying drawings.

This invention is an improvement on the pen shown in the Patent No. 538,492, issued to A. W. Askew April 30, 1895, and is designed to allow of the making of much smaller pens and at a cheaper rate than can be made when they are constructed as shown in the aforesaid patent.

To these ends the invention consists in the peculiar construction and arrangement of parts hereinafter more particularly described, and then definitely claimed at the end hereof.

In the accompanying drawings, Figures 1, 2, 3, and 4 are vertical central sections of different forms of the lower parts of pens constructed according to my improvement. Figs. 5 and 6 are reversed plan and side views, respectively, of a bearing for the ball in that form of my improvement shown in Fig. 1. Figs. 7 and 8 are similar views of the bearing shown in Fig. 2. Figs. 9 and 10 are similar views of the bearings shown in Figs. 3 and 4.

Referring now to the details of the drawings by numerals, and more particularly to Figs. 1, 5, and 6, 1 represents the main part of the casing, having its lower end threaded, into which screws a nipple 2, having a diaphragm 3, which is perforated at 4 to allow of the passage of the marking fluid to a distributing-ball 5, of rubber or other material, which is held in place by a thimble 6, screwed onto the lower part of the nipple 2. In the center of the diaphragm is a threaded hole 7, into which is screwed the stem 8 of the bearing 9, against which the ball bears when the operation of marking is being performed. If preferred, the stem may be held in by friction only; but I prefer to screw it in. In the center of the bearing is a recess 9', and around its periphery and on its face are a series of minute grooves 10 to allow the ink or marking fluid to have access to the ball and yet prevent its too rapid flow. The bearing and

its grooves, the ball, and the thimble are all so proportioned to each other that the ball will move easily in its place to carry the marking fluid to the article to be marked, but not so easily as to allow the fluid to flow readily out when not marking.

In that form of my improvement shown in Fig. 2 the stem of the bearing does not enter the perforation in the diaphragm, but is enlarged and rests against a ball-valve 11, similar to that shown in the aforesaid Askew patent, but under a different arrangement of the spring 12, which presses the valve to its seat, said spring being held by means of a loop 13, which passes down in the center of the spring and has arms 14 set in recesses in the upper part of the nipple, as shown in Figs. 2 and 3.

In the forms shown in Figs. 3 and 4 the bearing is formed as a ring 15, having internal grooves 13 for the fluid to pass through; but while there is a valve in Fig. 3 similar to that shown in Fig. 2 there is no valve in Fig. 4, but simply a small hole in the diaphragm through which the fluid will pass directly to the ball. In the form shown in Fig. 4 the bearing, the ball, and the thimble should be (as in Fig. 1) so proportioned to each other that while the ball moves sufficiently free to allow of the marking fluid passing easily to the object being marked it should not be so loose as to allow of the fluid freely running out. As the fluid used is much thicker than ordinary ink it does not flow so readily, and hence this may be readily arranged.

It will be observed that in all these forms there is a chamber formed between the ball and the diaphragm in the thimble which will contain a quantity of the marking fluid distinct from that in the case which can readily percolate through the grooves in the bearing.

By the construction above set forth many advantages are obtained over that form of marking-pen in which balls are used. For instance, if it is desired to make a small pen the antifricition-balls will prevent its being done, as it is impracticable to make a small pen—that is, a pen small in diameter—with such balls, whereas when there is a fixed or annular bearing, such as is shown in the drawings, the pen may be made as small as desired. The use of the small balls entails much trouble, especially when it is desired to clean

the pen, as is frequently necessary, especially when the pen is but seldom used and the parts get caked together, for the balls are apt to be lost when the pen is taken apart, which would render the pen useless. When balls are used, there are too many or too large interstices to properly regulate the flow of ink unless a valve is used, whereas with my arrangement a valve, although useful, is not absolutely necessary, as the grooves in the bearing may be of such a size as to prevent too much ink from passing to the ball.

Besides forming passages for the fluid the grooves serve to diminish the rubbing between the bearing and the ball, and thus diminish friction.

It is obvious that where a valve is employed, as in Figs. 2 and 3, the annular bearing should be an easy fit in the nipple, so as to allow the ball to move backward to open the valve; but in the other two forms of my improvement the bearing may be so tight in the nipple as to be a fixture therein.

I am aware that it is not new, broadly, to provide an annular bearing for the ball, as that is shown in the English Patent No. 21,747 of 1891; but in the pen shown in that patent the bearing approximates the shape of the ball, and thus forms a large surface in contact with it. There are two objections to this: first, the great friction, and, second, the liability of the ball to stick to the bearing after the pen has been used and set aside for a time, the large surface in contact making it very difficult to move the ball when it becomes fast. In my pen the surface in contact is reduced to a minimum, so that there is but little if any chance for the ball to stick fast.

What I claim as new is—

1. In a fountain-pen, the combination with a distributing-ball, of an annular bearing hav-

ing contact on a narrow line around the ball, and a series of minute grooves to regulate the flow of ink to the acting part of said ball substantially as described.

2. In a fountain-pen, the combination of an ink-reservoir, a valve therefor, a spring for closing the same, and a loop entering the spring and having its end connected with the casing, substantially as described.

3. A fountain-pen having a main ink-reservoir, a distributing-ball, an auxiliary chamber between the main chamber and the ball, a diaphragm normally separating the ink in the main chamber from that in the auxiliary chamber, and an annular bearing having contact on a narrow line around the ball, and a series of minute grooves to regulate the flow of ink to the acting part of said ball substantially as described.

4. The combination in a fountain-pen, of a reservoir, a valve at the bottom thereof, a distributing-ball, and an annular bearing in contact with both ball and valve, substantially as described.

5. The fountain-pen herein described, comprising the casing 1, the nipple 2 having diaphragm 3, the ball-valve 11 seated in an aperture in said diaphragm, the spring 12 pressing on the valve, the loop 13 entering the spring, the annular bearing having a head in contact with the ball-valve, the distributing-ball seated in the annular bearing and the thimble for holding the ball in place, all substantially as described and shown.

In testimony whereof I affix my signature, in the presence of two witnesses, this 20th day of February, 1897.

GEORGE A. WERNER.

Witnesses:

EUGENE SNYDER,

CARLTON P. BRATTEN.