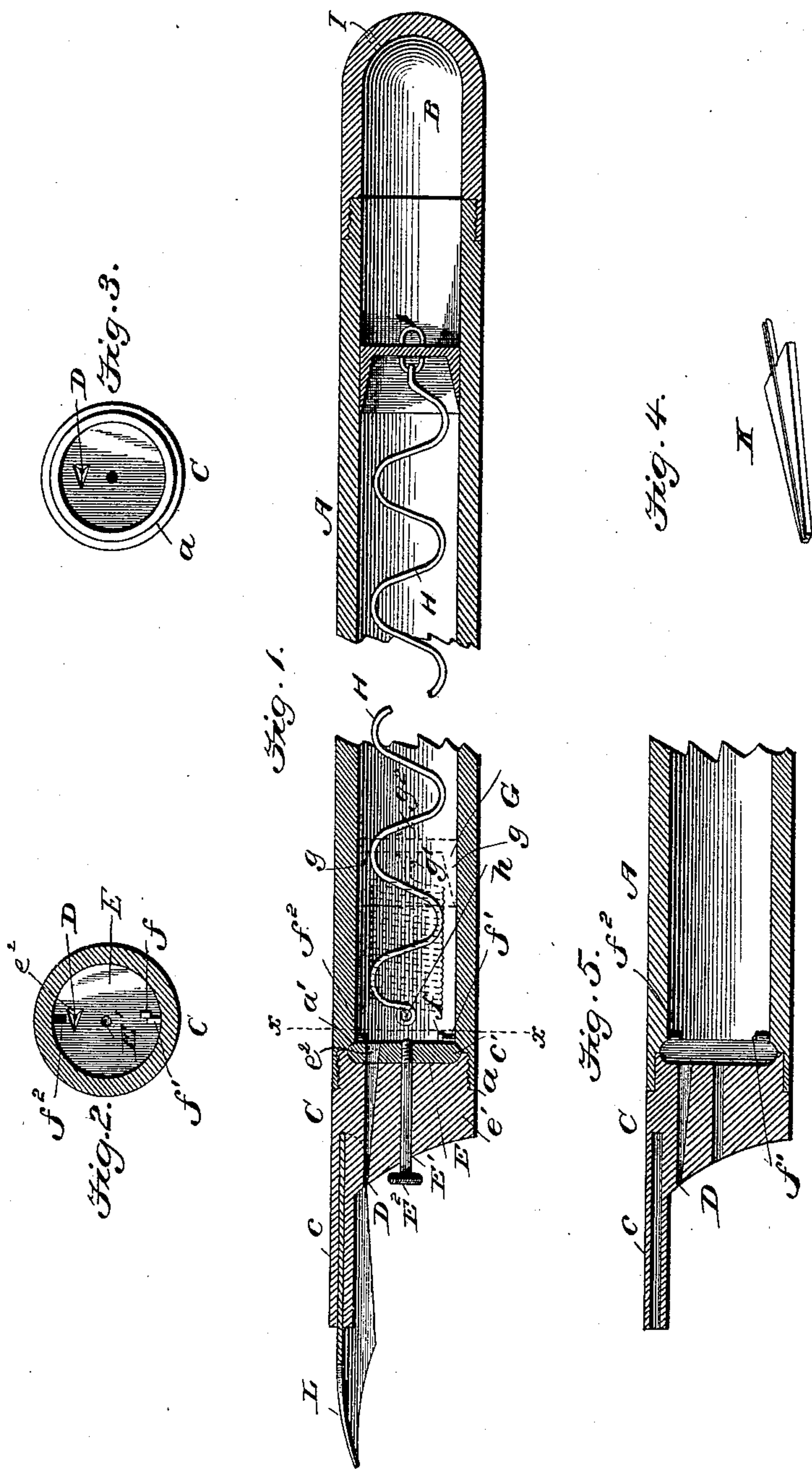


(No Model.)

H. M. CRONKHITE.
FOUNTAIN PEN.

No. 448,939.

Patented Mar. 24, 1891.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY M. CRONKHITE, OF UNITED STATES ARMY.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 448,939, dated March 24, 1891.

Application filed December 3, 1890. Serial No. 373,506. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. CRONKHITE, of the United States Army, and a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved fountain-pen, and has for its object to provide a pen in which a continuous and even flow of ink will be obtained without the aid of atmospheric pressure, and it also has for its object to provide a pen the reservoir of which can be filled with ink without the troublesome operation of filling by means of a syringe or bulb.

With these objects in view my invention consists of a cylindrical reservoir having a disk-valve at the lower end and a spring-actuated piston or follower to force the ink down in ink-reservoir and through the valve.

This invention consists, further, in the construction and arrangement of parts hereinafter fully described, and then specifically pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is an enlarged central longitudinal section through my improved pen. Fig. 2 is an enlarged transverse section taken on the line $x\ x$, Fig. 1; Fig. 3, a detail showing a plan of the inner lower end of the lower head of the pen-cylinder; Fig. 4, a detail view illustrating the charging device; Fig. 5, a section of the lower end of the cylindrical reservoir, illustrating a modification of the manner of securing the lower cap in said reservoir.

Referring to said drawings, A indicates a cylindrical tube or reservoir, to the upper end of which is secured a cap B, preferably by means of a screw-threaded connection. To the lower end of said reservoir is secured a pen-holding and ink-conducting head C. Said head is preferably secured to the ink-reservoir by means of a screw-threaded connection, as indicated at a , but which may simply consist of a sleeve-connection. The head C is formed solid and gradually tapers from the

rear under side to the forward upper side, and terminates in a recessed flange c , which is adapted to receive and hold a pen.

D is an ink canal or duct formed in the head C adjacent to the rim or flange c , said canal being triangular in cross-section at its inner end and gradually tapering toward its outer end. The inner end of the head C is beveled or recessed at c' . The inner lower end of the cylindrical reservoir is beveled, as at a' , and when the said parts are united a seat is formed for a rotary disk-valve E, which is mounted in said seat, said valve having rigidly connected thereto a valve-stem E' , mounted in a bearing e' , formed in the lower head of the ink-reservoir and provided on its outer end with a knob E^2 , by means of which it may be turned. The disk-valve E is provided with an aperture e^2 , which corresponds in size and shape to the inner end of the ink canal or duct with which it is adapted to register, and when said valved aperture and canal do register the ink contained in the reservoir is permitted to flow through the valve and ink-canal to the pen. The aperture in the valve is caused to register with the ink-canal by rotating the valve through the medium of the valve-stem. In order to accurately regulate and control the operation of the valve and thus fully close or open said valve with certainty, I provide the same upon its inner side with a projection f , adapted to engage with a projection f' when the valve opening exactly registers with the ink-canal, and also engages a projection f^2 when the said valve is closed, said projections f' f^2 being located upon the inside of the ink-reservoir and arranged diametrically opposite each other.

By making the ink-duct and valve-aperture triangular in cross-section the supply of ink to the pen may be regulated with great accuracy by turning said valve to the right or left, and thus increasing or diminishing the size of the opening between the valve and ink-duct.

In order to produce an even and continuous flow of ink without the aid of atmosphere, I provide a piston or follower G, which fits snugly within the ink-reservoir and has flanges g , whereby a tight joint is obtained and the piston permitted to have an even longitudinal movement in said cylinder. g' in-

dicates an eye or loop secured to the inner or under side of the piston, and to said eye is secured the upper end of a contractile spring II, by means of which said piston is operated to discharge the ink from the reservoir. The lower end of said spring is secured by means of a pin or rivet *h*, secured in the lower end of the reservoir. To the upper or outer side of the piston is secured an eye *g*², whereby said piston may be drawn back or removed when desired to fill the reservoir. While I propose to use the pen, as described, without the aid of atmosphere-pressure, a vent I may be formed in the upper cap of the ink-reservoir, as indicated in dotted lines in Fig. 1.

When the reservoir is empty, the piston and its actuating-spring rest within the lower end of said reservoir. To fill the reservoir a charging-tube K is inserted in the lower outer end of the ink-canal, the upper cap removed, and the piston is drawn back by means of a hook or other suitable device engaging the eye *g*², thus creating a vacuum within the reservoir and drawing the ink within the same, the charging-tube having been first placed in a suitable supply of ink; or the piston may be entirely withdrawn from the reservoir and said reservoir filled from its upper end in any well-known manner, in which case the controlling-valve is first closed.

When the reservoir is filled, the actuating-spring of the piston is distended. When the controlling-valve is open, a continuous and even flow of ink is maintained through the ink-canal by means of said spring-actuated piston and is conducted to the pen L over the outer inclined surface of the lower head.

What I claim is—

1. In a fountain-pen, the combination of a cylindrical ink-reservoir having an ink canal or duct in its lower end, said duct being triangular in cross-section and tapering toward its outer end, a disk-shaped controlling-valve having a triangular valve-aperture co-acting with the ink-canal, means for operating said valve, and a piston or follower located within the ink cylinder or reservoir and adapted to automatically force the ink into the canal, substantially as shown and described.

2. In a fountain-pen, the combination of a cylindrical ink-reservoir having the lower head curved or tapered on its outer side, the pen-holding flange formed therewith, the ink canal or duct formed therein and being triangular in cross-section, tapering toward its outer end, the disk-valve having a triangular aperture therein and coacting with the ink-canal, means for operating said valve, an inward projection on said valve adapted to engage oppositely-disposed projections on the interior to check the movement of the valve, and a spring-actuated piston or follower located within the cylindrical reservoir and adapted to automatically force the ink through the canal when the valve is open, all constructed, arranged, and operating substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY M. CRONKHITE.

Witnesses:

NATHAN G. STARK,
C. S. BRADDOCK.