(No Model.)

W. T. SHAW.

FOUNTAIN PEN.

No. 466,950. Patented Jan. 12, 1892.

Fig. 1.

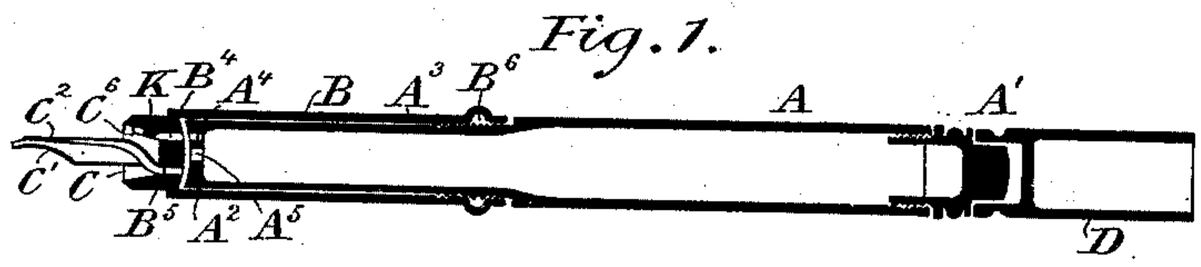


Fig. 2.

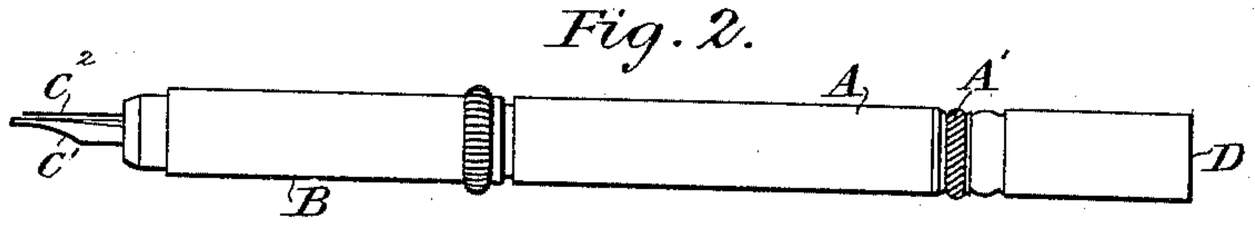


Fig. 3.

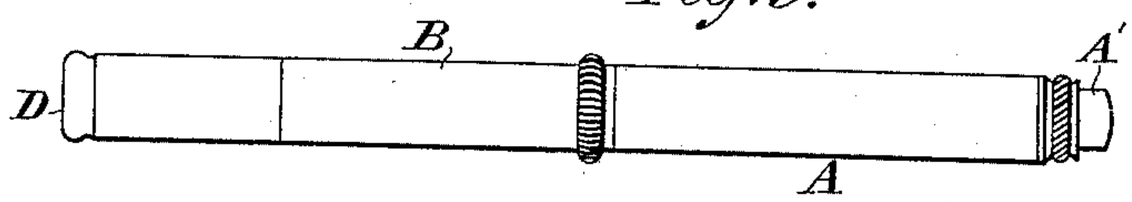


Fig. 5.

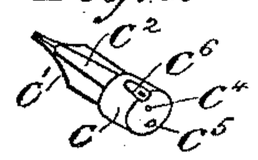
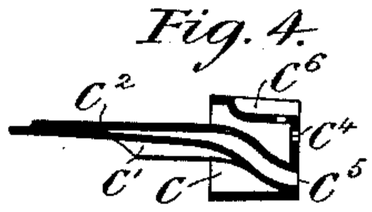
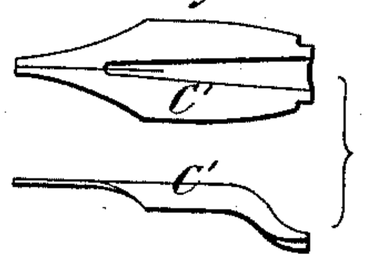


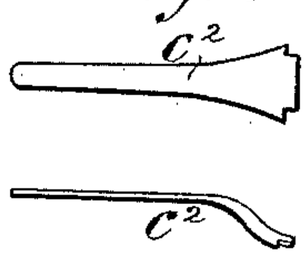
Fig. 4.



Figs. 6.



Figs. 7.



Figs. 8.

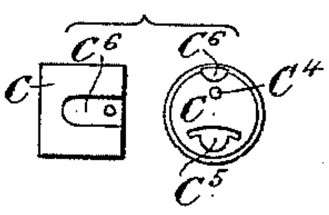


Fig. 9.

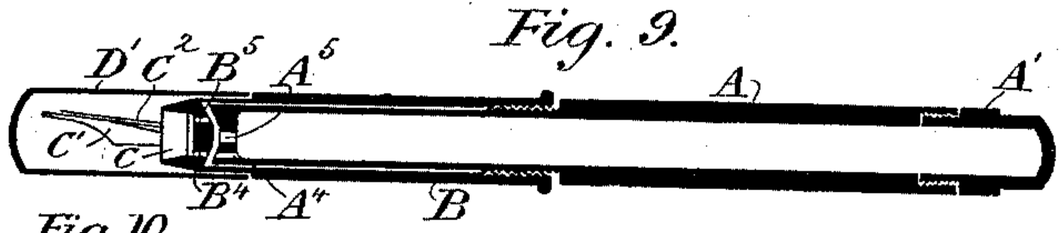
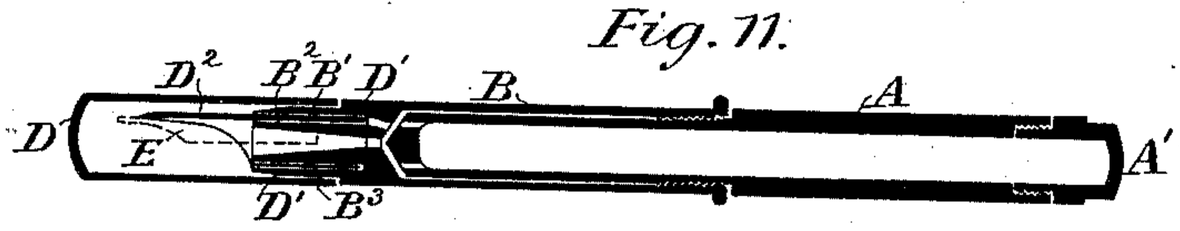
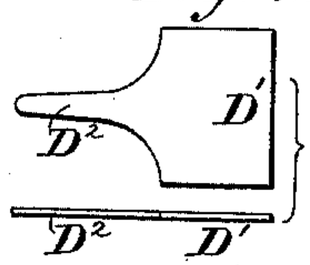


Fig. 10.

Fig. 11.

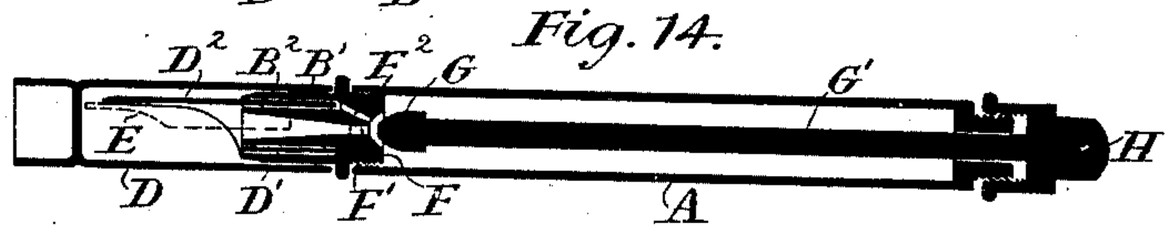


Figs. 12.



Figs. 13.

Fig. 14.



Witnesses
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Baltus & Long.

Inventor:
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By his attys
Baldwin Davidson & Wright.

UNITED STATES PATENT OFFICE.

WILLIAM THOMAS SHAW, OF LONDON, ENGLAND.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 466,950, dated January 12, 1892.

Application filed August 31, 1891. Serial No. 404,320. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOMAS SHAW, a subject of the Queen of Great Britain, of the firm of Thomas De La Rue & Co., manufacturers, 110 Bunhill Row, in the city of London, England, have invented certain new and useful Improvements in Reservoir or Fountain Pens, of which the following is a specification.

According to this invention I construct reservoir or fountain pens with the body of the holder, which serves as the ink-reservoir, formed of a cylinder closed at top with a close-fitting plug and at the bottom with an end having two holes formed through it, one for an ink-outlet, the other for an air-inlet. The pen-carrying portion of the holder I also make cylindrical to fit over and screw onto the lower end of the reservoir. It is also closed at the bottom by an end which fits closely against the concave end of the reservoir when the pen is out of use, and has likewise two holes formed through it, one for admission of air, the other for an ink-outlet. When the two cylinders are screwed together, so that their ends fit closely against one another, the holes formed through both are closed, and when slightly unscrewed the ends of the holes in both become unclosed. The pen is made with a hollow truncated cone on its upper end to fit into a corresponding coned socket at the lower end of the pen-holder, an air-duct and an ink-duct being made through the end of the cone. The pen I form with a second nib or blade above it, and I make an indentation along the top of the pen or along the under side of the upper blade, or along both, leaving a capillary space between them through which ink is supplied from the reservoir. This use of a capillary space or vacuity for feeding ink to a pen has before been proposed and is described in the specification of a British patent, No. 2,858, in the year 1869. The pen and its upper nib I curve downward, so that the end of the space between them may come opposite to the lower duct, which is the ink-supply duct, the upper one being for admission of air,

The drawings annexed show examples of reservoir or fountain-pens constructed according to my invention.

Figure 1 is a longitudinal section of one of the fountain or reservoir pens open and ready for use. Fig. 2 is a side view of the same. Fig. 3 is a side view of the fountain or reservoir pen when closed. Fig. 4 is a longitudinal section of the pen only. Fig. 5 is a perspective view of the same. Figs. 6, 7, and 8 show, separately, the several parts from which the pen is made. Fig. 9 is a longitudinal section of a modification of the reservoir or fountain pen. Fig. 10 is a side view of the modified form of pen used with this modified form of reservoir or fountain pen. Fig. 11 is a longitudinal section of another modification of the reservoir or fountain pen. Figs. 12 and 13 show the form of the blade by which the upper side of the pen used with this holder is covered. Fig. 14 is a longitudinal section of another modification.

In Figs. 1 to 8, A is the cylindrical ink-reservoir; A′, a plug screwing tightly into its upper end, but which can be removed to allow of the reservoir being filled; A^2, its closed lower end, concave on its outer side. B is the cylindrical pen-carrying portion of the holder. Its upper end fits over the lower end of the reservoir A, and a screw-thread within the extremity of the cylinder B screws onto a screw-thread cut around the exterior of the cylinder A at A^3. Its lower end is convex on its inner face to fit to the concave end of the holder. A soft packing-ring of felt is inserted in a groove formed around the interior of the cylinder B at B^6 to insure a tight joint between it and the ink-reservoir A. In place of the end of the cylinder A being concave and the end of the cylinder B correspondingly convex, this may be reversed. A^4 A^5 are two holes formed through the lower end of the cylinder A, and B^4 B^5 two holes formed through the end of the cylinder B. A^4 B^4 serve as air-inlets; A^5 B^5 as ink-outlets. C is a hollow truncated cone fitting into a corresponding socket formed in the end of the cylinder B. C′ is the pen, and C^2 the blade above it. C^4 C^5 are holes formed through the end of the cone C. As will be seen from Figs. 1 and 4, the upper ends of the pen and upper blade are curved downward and fixed near to the bottom of the disk, so that the space between them is opposite to the hole C^5, which forms the ink-supply duct, while the hole C^4 serves as the air-inlet. A longitudinal groove C^6 is formed on the exterior of the cone C, and a small pin K is

made to project inward from the socket in the end of the cylinder B. When the cone is inserted into the socket, the pin K enters the groove C^6 in the cone C, and so insures its being inserted in right position. D is a cylindrical cap divided by a cross-partition into two chambers of unequal length. The shorter chamber serves to fit over the end of the plug A′ when the pen is in use. The longer chamber serves to fit onto the end of the cylinder B and inclose the pen when the pen is out of use.

In the modification shown at Fig. 9 the parts are marked with the same letters of reference as in Figs. 1 to 8, and the construction is the same, except that the air-inlet holes A^4 B^4 C^4 are below the pen when writing and the ink-supply holes A^5 B^5 C^5 are above it. In this case the pen C′ and blade C^2 do not require to be curved downward, as in the construction shown in the preceding figures.

In the modification shown at Fig. 11 the construction is the same and the parts are marked with the same letters of reference, except that the outer face of the lower end of the reservoir A is made convex and the inner face of the end of the pen-holding portion B is made correspondingly concave and the socket in the end of B is adapted to hold an ordinary pen-nib. The socket is formed by an annular space between an outer cylinder B′ and an inner tube B^2, which serves as an air-inlet to the reservoir. Into this annular space is inserted a vulcanite cylindrical stem D′, which carries an unsplit nib D^2 to lie above the upper side of the pen. The cylindrical stem D′ is split longitudinally along its under side like the barrel of pens known as "Magnum Bonums." The pen E may be a pen-nib of any ordinary form and be held by being inserted between the cylindrical stem D′ and the inner tube B^2. The stem may be of such a diameter that the insertion of the end of the pen into it causes its sides to spring outward away from one another, so that the pen will be clasped and securely held by the inward spring of the sides. A shallow groove D^3 may be formed along the inner side of the stem D′ and the unsplit nib D^2, so as to leave a passage for the ink to pass between this nib and the pen. To insure that the pen with its Magnum Bonum sheath shall be inserted in the right position into the pen-socket a small pin B^3 is made to project from the interior of the tube B′ to pass into the longitudinal slit in the under side of the cylindrical stem D.

In the modification shown at Fig. 14 the construction is the same as in Fig. 11, except that the socket for receiving the pen is formed upon a plug F, which closes the lower end of the ink-reservoir A. Through this plug an air-inlet hole F′ and an ink-outlet F^2 are formed, and when the pen is not in use both these passages can be closed by a coned valve G, formed at the end of a stem G′, which extends upward through the center of the ink-reservoir A through an aperture in the upper end of the reservoir, and is secured at its end to a cap H, which screws onto the upper end of the reservoir. By screwing on the cap the coned valves G can be forced against the ends of the air and ink passages F′ F^2, and by slightly unscrewing it the valve will be drawn away from the end of the passages and leave them both open.

What I claim is—

1. A reservoir or fountain pen with the stem which forms the ink-reservoir closed at its top and at its bottom carrying a pen and also closed, with the exception of an air-inlet and an ink-outlet passage, and with a valve for closing or opening both passages secured to a screw-cap fitting over one end of the stem, so that by turning the cap both passages can be opened or closed simultaneously.

2. In a reservoir or fountain pen, the combination of the stem which forms the ink-reservoir, closed at the top and closed also at the bottom, with the exception of two passages, one for an ink-outlet, the other for an air-inlet, the pen-carrying portion of the holder closed at its lower end and fitting over and screwing onto the lower end of the ink-reservoir, the closed end forming a socket for holding a pen and having two passages formed through it, one for ink, the other for air, so that by screwing the one onto the other the end of one can be brought against the end of the other and the passages through both thereby closed, and by slightly unscrewing can be moved away from one another and the passages through both opened.

3. The combination of the stem which forms the ink-reservoir, closed at top and closed also at the bottom, with the exception of two passages, one for ink, the other for air, the pen carried at the lower end of the stem, the blade lying just above the pen and close to it with the slight space which is between them in communication with the ink-passage.

4. The combination of a pen, a truncated cone or cylinder at its upper end to fit into a corresponding socket at the lower end of the holder, a blade lying along the upper side of the pen, also secured to the cone or cylinder, and with a hole through the end of the cone or cylinder opening into the space between the pen and the blade.

5. The combination of a pen whose upper end forms an arc of a circle fitting over the cylindrical end of a holder and grasped to it by a split cylinder of vulcanite or other suitable spring material, which embraces it and which is formed with a projecting blade to lie above the top of the pen.

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