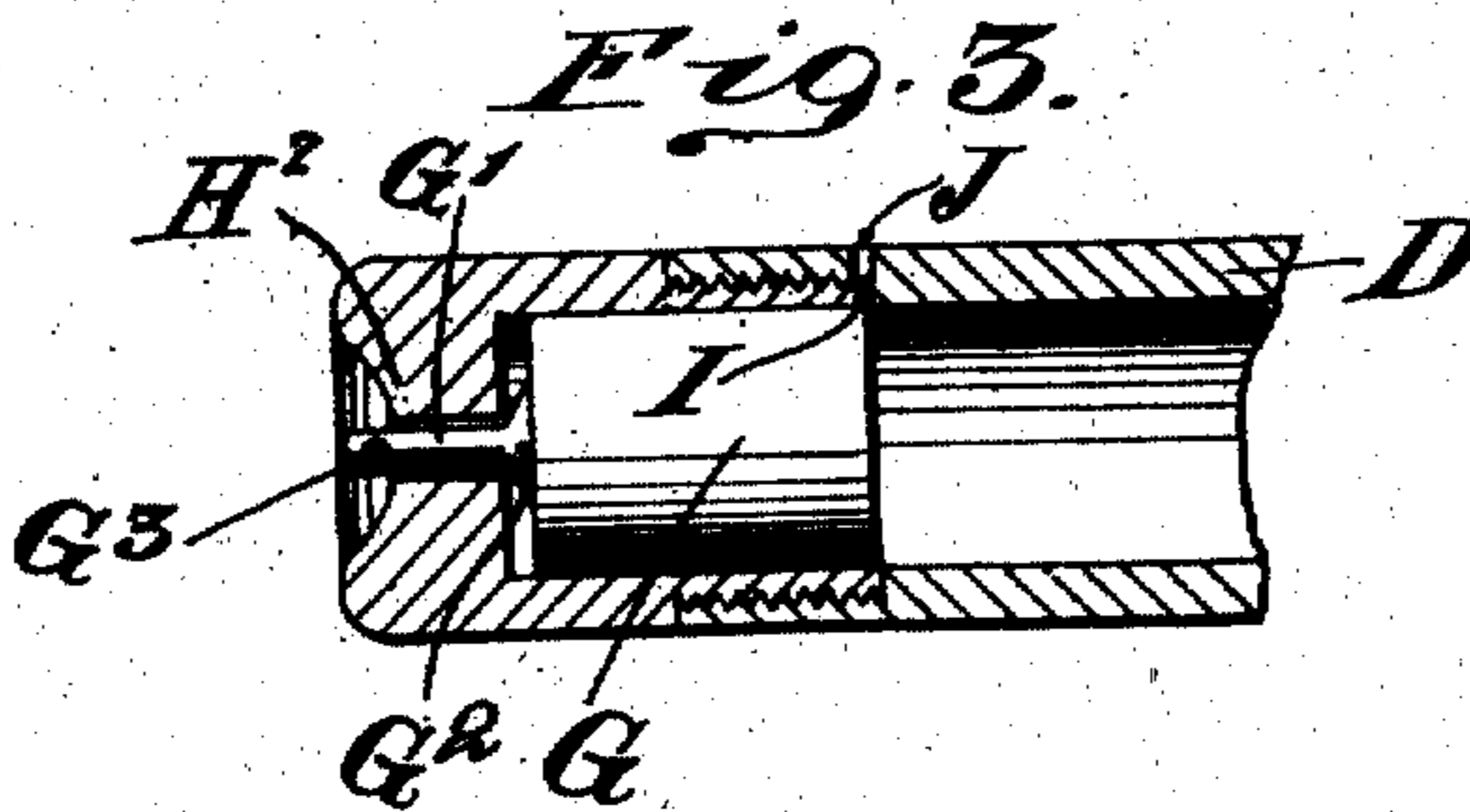
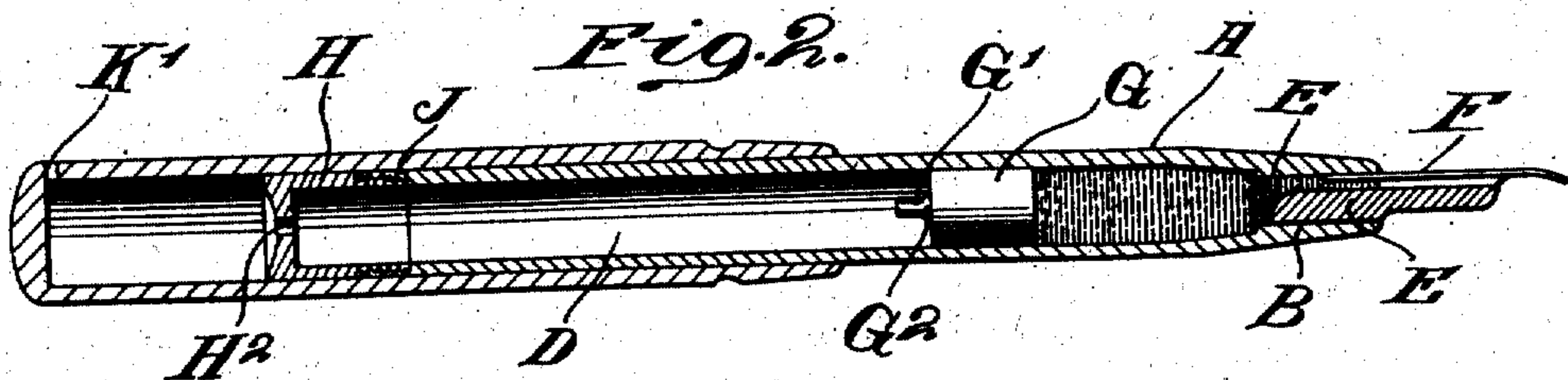
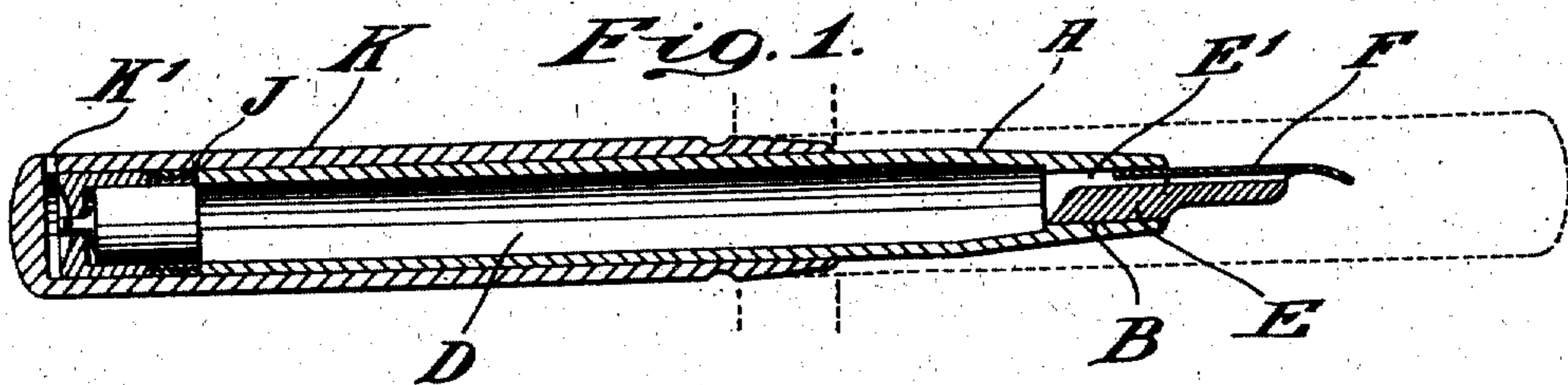


F. M. ASHLEY.  
 FOUNTAIN PEN.  
 APPLICATION FILED NOV. 20, 1909.

Patented Jan. 31, 1911.

982,922.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

FRANK M. ASHLEY, OF NEW YORK, N. Y.

## FOUNTAIN-PEN.

982,922.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed November 20, 1909. Serial No. 529,026.

*To all whom it may concern:*

Be it known that I, FRANK M. ASHLEY, a citizen of the United States, and a resident of New York city, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

My invention relates to fountain pens, and particularly to that class known as self filling fountain pens.

The object of my invention is to provide a pen which will be simple in its construction, durable and easy to fill.

Referring to the drawings which form part of this specification, Figure 1, is a central sectional view of my pen showing the casing with a piston fitted to the interior bore of the casing. Fig. 2, is a sectional view of the rear end of the pen, enlarged. Fig. 3, is a central sectional view of the rear end of the pen, showing a modified form of joint.

A, indicates the casing of the pen, the interior of which is made cylindrical in form and constitutes the reservoir for ink.

B, is a cylindrical opening formed in the front end of the casing A.

Fitted into the opening B, is a pen plug E which is provided with the usual ink duct E', and F, is the pen point which is held by friction between the plug E and the inner wall of the opening B in a manner well known in the art.

Fitted in the rear end of the reservoir D, is a piston G, which is fitted to slidingly engage the inner wall of the casing, and is provided at its rear end with a projecting stem G' which has a cone shaped valve G<sup>2</sup> formed integral therewith. The piston G is fitted in liquid tight relation to the wall of the casing, and does not move therein except as actuated by operating the cap H.

The casing A is provided with a cap H which is joined to the casing by a screw thread I, and the outer diameter of the cap is the same as that of the casing, and the inner diameter is the same as that of the reservoir. The cap is provided with an opening H<sup>2</sup> through which the stem G' may project, and is concave in form at its end so that the stem will not be moved by contact with user's apparel. The stem is provided with a small hole G<sup>3</sup> through which a wire may be inserted to operate the piston if desired.

Making the thread on the outer surface of the cap allows a longer piston to be used and hold the piston entirely within the cap when it is removed from the casing. In the cap or casing, as the case may be, is a small hole J which is normally closed by the joint I, but which may be opened by loosening the said joint. This opening is for the purpose of venting the reservoir so that any rarefaction which might be created therein due to the withdrawal of ink therefrom may be destroyed, thereby allowing the ink to flow to the pen point freely.

Fitted in close sliding engagement to the outer surface of the casing A is a tube K closed at its rear end except for a small perforation K'. The casing A is made of slightly greater diameter between the two dotted lines shown in Fig. 1, so that the end of the tube K will fit fairly tight when it engages the casing at this point. The tube K serves as a cap for the pen point, as illustrated by the dotted lines.

The operation is as follows:—To fill the pen reservoir, withdraw the tube K from the casing and press the piston in as far as possible by pressing on the stem G', and then, after placing the thumb over the perforation K' of the tube K, force the said tube over the casing A. This will trap the air in the tube K behind the piston G, and the air as it is compressed by the movement of the tube relative to the casing, will force the piston to the front end of the reservoir, thus expelling any air or ink therein and by placing the end of the pen plug below the surface of the ink receptacle, and withdrawing the tube K slowly from the casing the piston will be drawn to the rear end of the reservoir and will in turn draw the ink into the reservoir.

The tube K is made of a predetermined length relative to the casing so that the piston will travel the full distance of the reservoir by the movement of the tube over the casing. Should the piston stick in the reservoir, it may be moved by securing an increased pressure of air by trapping a fresh portion of air behind the piston, if it sticks in its forward movement, or an increased rarefaction if it sticks in its backward movement. This is accomplished by manipulating the tube K in conjunction with the opening therein K', as will be easily understood. In case the ink does not flow freely, the cause is usually a rarefaction of

the air in the casing above the ink. To correct this fault, open the vent J slightly by unscrewing the joint I, thus admitting air to the reservoir, and then close again, and the ink will flow freely.

In the prior art, in so far as I am aware, no piston has been used in the reservoir which was fitted in liquid tight relation therewith, which was operated by air pressure. The types of piston heretofore operated by air would more properly be termed a float, which was guided by the walls of the reservoir and was carried through the reservoir by the ink as it moved up and down in the reservoir. Where the piston has been fitted in liquid tight relation with the reservoir, it has been operated by means of a wire or other direct mechanical operation, and this arrangement is objectionable for the reason that the wire may become lost, or the person who desires to fill the pen may not be skilled in attaching the wire to the piston when they desire to operate the same.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination in a fountain pen, of a casing, a liquid-tight piston longitudinally movable within said casing, and means for rarefying or compressing air at one side of the piston and thereby positively operate the latter.

2. The combination in a fountain pen, of a casing, a liquid-tight piston longitudinally movable within said casing, and an elongated tube longitudinally movable in close relation with said casing, and adapted through its movements to compress or rarefy air at one side of the piston, and thereby positively operate the latter.

3. The combination in a fountain pen, of a casing externally enlarged at an intermediate point and having an opening at its rear end, a liquid-tight piston longitudinally movable within said casing, and an elongated tube mounted on said casing and adapted when in full position thereon to be engaged with the casing enlargement and the tube thus held against undesirable movement, said tube operating through its movements to compress and rarefy the air at one side of the piston and thereby positively actuate the latter.

4. The combination in a fountain pen, of a casing containing a reservoir having an opening at its rear end, a cap connected to the casing at the rear end thereof provided with an opening in one end thereof, and recessed to receive a piston, a liquid tight piston longitudinally movable within said reservoir, and an elongated tube longitudinally movable in close relation with said casing, and through its movements compress or rarefy air at one side of the piston and thereby positively operate the latter.

5. The combination in a fountain pen, of a casing containing a reservoir, provided with a perforation in its side near its rear end, a cap screwed to said casing and adapted to close said perforation in the side of said casing, said cap having an opening in its rear end, a liquid tight piston longitudinally movable within said reservoir, and an elongated tube longitudinally movable in close relation with said casing, and through its movements compress or rarefy air at one side of the piston and thereby positively operate the latter.

6. The combination in a fountain pen, of a casing containing a reservoir, a perforated recessed cap at one end of said reservoir, a liquid-tight piston longitudinally movable within said reservoir and adapted to be completely received within the cap recess, and an elongated tube longitudinally movable in close relation with said casing, and through its movements compress or rarefy air at one side of the piston and thereby positively operate the latter.

7. The combination in a fountain pen, of a casing, containing a reservoir, a perforated cap at one end of said reservoir, a liquid-tight piston longitudinally movable within the reservoir and having a stem adapted to pass through and project beyond the cap perforation and close the same, and an elongated tube longitudinally movable in close relation with the casing and through its movements compress or rarefy air at one side of the piston and thereby positively operate the latter.

8. The combination in a fountain pen, of a casing containing a reservoir, a perforated recessed cap at the rear end of the reservoir and controlling a vent opening in said casing, a liquid-tight piston longitudinally movable within said reservoir and adapted to be completely received within the cap recess and close the said opening at the rear end of said casing, and an elongated tube longitudinally movable in close relation with the casing, and through its movements compress or rarefy air at one side of the piston and thereby positively operate the latter.

9. The combination in a fountain pen, of a casing open at its rear end, containing a perforated cap at the rear end of said reservoir and controlling a vent opening in the side of said casing, a liquid-tight piston longitudinally movable within the reservoir and having a stem adapted to close the cap perforation and project beyond the same, and an elongated tube longitudinally movable in close relation with the casing and through its movements compress and rarefy the air at one side of the piston and thereby positively operate the latter.

10. The combination in a fountain pen of a casing containing a perforated recessed

cap at the rear end of the said reservoir and  
controlling a vent opening in the side of said  
casing, a liquid-tight piston longitudinally  
movable within said reservoir and adapted  
5 to be completely received within the cap  
recess, and having a stem for passing  
through the cap perforation to close and  
project beyond the same, and an elongated  
tube longitudinally movable in close rela-  
10 tion with the casing and through its move-

ments compress or rarefy air at one side of  
the piston and thereby positively operate  
the latter.

Signed at New York city in the county of  
New York and State of New York this 19th 15  
day of November A. D. 1909.

FRANK M. ASHLEY.

Witnesses:

MINNIE S. MILLER,  
EMMA T. CARLSON.