

UNITED STATES PATENT OFFICE.

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RESERVOIR-PEN.

969,198.

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To all whom it may concern:

Be it known that I, WILLIAM W. SANFORD, a citizen of the United States of America, and a resident of the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Reservoir-Pens, of which the following is a specification.

This invention relates to improvements in reservoir pens, and especially to means for preventing the leakage of ink when carrying the pen in a pocket or other receptacle.

Essentially the invention consists in providing the cap, which covers and protects the pen or needle when not in use, with a valve or auxiliary cap which so seats, when the cap is home to place, as to prevent any leakage of ink, even should the pen be carried with the pen or needle downward; and the said auxiliary cap is preferably swiveled in the main cap; so as to be capable of independent axial rotation as well as of a certain universal wobbling motion.

Referring to the drawings, which accompany the specification to aid the description, Figure 1 is a longitudinal section and elevation, on large scale, of the invention applied to a stylographic pen. Fig. 2 is a longitudinal section and elevation, on the same scale, of the invention applied to a fountain pen. Fig. 3 is an elevation of the needle and end of the pen section of Fig. 1. Fig. 4 is a section on the line 4-4 of Fig. 1. Fig. 5 is a section and elevation of a modification of the plug in which the auxiliary cap is swiveled.

Referring to Figs. 1, 3 and 4, A being the barrel or reservoir of a stylographic pen, B the pen section with the needle *b*, and C the cap, the auxiliary cap or valve is constructed and arranged in the following manner: In the outer end of said cap C threads a plug D, through-bored at *k* to form a socket for the head *h* of the stem *g*, and said through-bore *k* is connected with the enlarged central orifice of a diametrical slot *l* cut through the outer face of said plug D; said stem *g* and head *h* having an easy rotary wobbling fit respectively in said orifice and through-bore. The auxiliary cap E is preferably formed as a shouldered sleeve, in the closed end of which is secured the end of said stem *g*; and the smooth end of the neck *f* of said auxiliary cap, which neck fits within the flanged end *j* of the said pen section B, constitutes

a valve, as clearly shown in Figs. 1 and 3. The space or chamber within said auxiliary cap E serves to cover and protect the said needle and end of the pen section when the parts are assembled and the cap C is in the position of Fig. 1, and I prefer to place in the end of said chamber a disk of rubber *n* to protect and close the tube and needle *b*. The said auxiliary cap E is of such size and shape and so adjusted in the cap C, that when said cap C is screwed home to place over the pen section B in the usual manner, the end of the neck *f* enters said flanged end *j* of the pen section, until the end of said neck contacts with the true flat surface of the end of said pen section B, when friction will prevent the revolution of said auxiliary cap E, and the said cap C, with its plug D will thread fully home to place, pressing said end of neck *f* tightly on said end of the pen section, thereby closing the air feed port *c* in said pen section end, and thus preventing leakage of ink should the pen be carried with point of the needle down. The swiveling of the said auxiliary cap E in the cap C has the great advantage that, as the auxiliary cap does not revolve after it has contacted with the end of the pen section, it does not wipe or suck any ink from or through the air-feeding port; but if said auxiliary cap were mounted immovably in said cap C, then the revolution of said auxiliary cap, as cap C turned fully home to place would be liable to wipe or suck ink from or through said air feeding port. Another advantage of the capability of the said auxiliary cap E for independent rotary and wobbling motion, is that in unscrewing the cap C the said auxiliary cap does not revolve, but remains at rest until separated from the pen section, thereby obviating the danger of unscrewing the pen section as the cap is unscrewed.

Referring to Fig. 2, A' being the barrel or reservoir of a fountain pen; B' the pen section and C' the cap thereof, the end of said pen section is shown with an internal conical bearing surface *o* on which fits, when home to place, the correspondingly beveled end of the neck *f'* of auxiliary cap E', the chamber in said auxiliary cap being arranged to receive and protect said pen B when the parts are assembled and said cap C' is home to place, as indicated in Fig. 2. Said auxiliary cap E' is preferably suspended

ed from plug D' so as to be capable of an independent rotary and wobbling motion, by the headed stem *g* *h*, said plug D being provided with a through-bore *h*, and slot *l* as hereinbefore described. As said cap C' is screwed home to place, the beveled end of the valve neck *f'* contacting with the conical flange of said pen section B', said auxiliary cap E' ceasing to revolve is pressed tight to its seat, and prevents leakage should the fountain pen be carried pen end down. In the case of fountain pens, the independent motion of the auxiliary cap is desirable, but is not indispensable, because as above stated it removes the danger of unscrewing the pen section when the cap is unscrewed, and of course the auxiliary cap of stylographic pens might be provided with a beveled surface adapted to close upon a corresponding surface of the pen section.

Referring to Fig. 5, cap C, and auxiliary cap E are similar to the cap and valve of Fig. 1, but the plug D² is chambered to take a threaded washer *s*, which retains the head *h* of stem *g* in the through-bore *h'* of said plug D², said stem passing with easy wobbling fit through the hole in said washer *s*.

To assemble the valve E and plug D, with the construction of Figs. 1 and 2, the valve stem *g* being secured in the end of said auxiliary cap E, the slot *l* in the plug D is sprung open sufficiently by any suitable tool to permit the insertion of the said stem through the slot to the central orifice. Then the said slot is permitted to close to normal dimensions, and the auxiliary cap will be movably attached to the plug. To assemble the plug and auxiliary cap, with the construction of Fig. 5, the stem is passed

through the hole in washer *s*, and its outer end is then secured in the end of auxiliary cap E. The said washer *s* is then threaded into the plug by means of a suitable tool. Another method of assembling the parts is to heat the plug D and then to force the head *h* therethrough and into its aforesaid socket.

Now having described my improvements, I claim as my invention:

1. The combination with a reservoir pen and pen section, of a cap, a plug therein, and an auxiliary cap swiveled in said plug and adapted to seat on said pen section and prevent leakage of ink, substantially as described.

2. The combination with a cap for reservoir pens, of a chambered plug, an auxiliary cap provided with a stem swiveled in the chamber of said plug and with a part having a valve surface, substantially as described.

3. The combination with a reservoir pen and section provided with an air feeding orifice, of a main cap and an auxiliary cap freely rotatable therein and adapted to seat on the end of the pen section and to close said air feeding orifice, substantially as described.

4. In a reservoir pen, the combination of a pen section, a main cap, an auxiliary cap seating upon the outer end of said pen section and freely rotatable in said main cap, and an ink-holding chamber in said auxiliary cap, substantially as described.

Signed at New York city this 6th day of April 1909.

WILLIAM W. SANFORD.

Witnesses:

H. V. BROWN,
WALTER N. HARRIS.