C. W. BOMAN.

FOUNTAIN PEN.

APPLICATION FILED OCT. 1, 1912.

1,051,671. Patented Jan. 28, 1913.

Fig. 1.

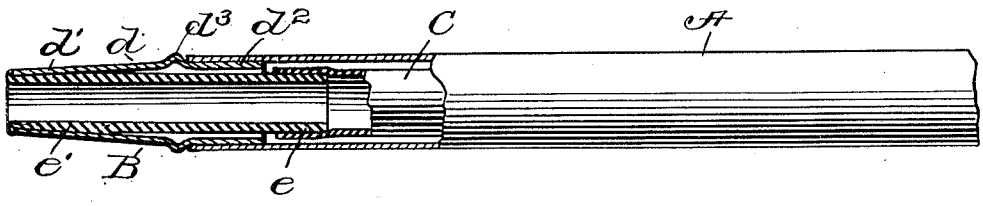


Fig. 2.

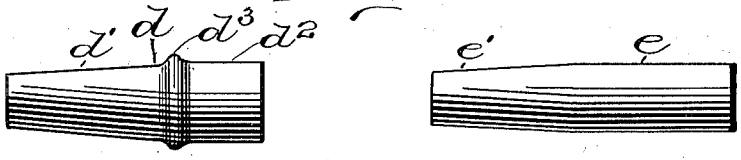


Fig. 3.

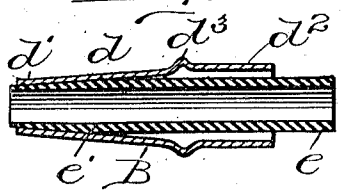
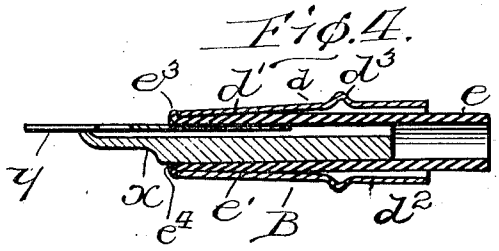


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

1,051,671. Specification of Letters Patent. Patented Jan. 28, 1913.

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To all whom it may concern:

Be it known that I, CLAES W. BOMAN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Fountain-Pens, of which the following is a specification.

This invention relates to tips or nozzles for fountain pens, and more particularly to those tips which have attached to them a bag or tubular receptacle containing the writing fluid—this receptacle fitting upon the neck of the tip, and being removable with the latter. And the invention consists in a certain construction of the tip, designed to cheapen the cost of manufacture, and enhance the efficiency of the tip, which will first be described in connection with the accompanying drawing, and will be more particularly pointed out in the claim.

In the drawing—Figure 1 is a longitudinal axial section, partly in elevation, of a fountain pen embodying my improvement omitting the feed bar and pen. Fig. 2 is a view of the two parts of which the tip is composed. Fig. 3 is a longitudinal section of the two parts fitted together, before being secured together. Fig. 4 is a longitudinal section of these two parts fitted and secured together to form the completed tip and containing the feed bar and pen.

In the drawing, referring to Figs. 1 and 4, A is the tubular handle; B is the tip, fitting closely into and closing the front end of the handle, and containing and holding the usual feed bar x and pen y; and C is an ink bag made of soft vulcanized india rubber contained within the handle and having its mouth fitted tightly upon the neck or rear end of the tip B. The tip is composed of an exterior sheet metal shell d, preferably finished with a suitable varnish coat to resemble hard rubber or vulcanite in appearance, and an interior hard rubber tube e. These parts are shown separately in Fig. 2. The metallic shell has a tapered front portion d' which increases in diameter from front to rear, and a rear portion d^2 of cylindrical or other suitable shape to fit into and close the mouth of the handle A (Fig. 1). The base of the tapered portion d' is less in diameter than the rear cylindrical portion d^2, and the two parts are joined by an annular flange or shoulder d^3 which intervenes between them and defines the rear limit of the tapered part d'. The hard rubber tube e is of cylindrical form, with a tapered exterior at its front end for a portion of its length, as shown at e', this portion e' conforming in taper to that of the portion d' of the exterior metallic shell so as to fit snugly and tightly together, and being of somewhat greater length than d' so that when the two parts are fitted together the front end of the part e' will protrude a short distance through and beyond the front end of the portion d', as shown in Fig. 3. The rear cylindrical portion e^2 of the hard rubber tube is longer than the cylindrical portion d^2 of the shell d, so that when the two parts are tightly fitted together, the rear portion e^2 of the hard rubber tube will extend back through and beyond the portion d^2 of the shell far enough to form a neck on which the mouth of the rubber ink bag C can be fitted, as shown in Fig. 1. It will be noted that owing to the difference between the external diameter of the portion e^2 of hard rubber tube and the internal diameter of the surrounding cylindrical portion d^2 of the shell, there is an annular space between the two, into which the mouth of the rubber bag can extend, if preferred.

In putting the parts together, the hard rubber tube e is inserted and fitted into the shell, being driven forward therein until its tapered portion e' is forced home into the tapered portion d' of the sheet metal shell (as seen in Fig. 3); and then the parts are secured together by turning the protruding end of the front portion e' out and back upon the front end of the shell, forming a flange e^3 by which the parts are held tightly and immovably together, as indicated in Fig. 4. This operation, as will be understood by those skilled in the art to which this invention pertains, can readily be effected by the application of heat and pressure, in conjunction with a suitable die or former; and it is preferred that the die or former shall be so shaped as to outwardly flare or bevel the interior of the front end of the rubber tube, as indicated at e^4, Fig. 4, so as to facilitate the subsequent application to the tip of the feed bar x and pen y.

A tip thus made cannot be distinguished in appearance from an all-rubber tip. The sheet metal shell can expeditiously and cheaply be fashioned into the external shape of a fountain pen tip, thus saving the ex-

pense and time required to thus fashion an all-rubber tip; while the whole interior of the tip is of hard rubber, the construction and arrangement of parts being such that the metal is protected completely from the ink, and consequent corrosion, the hard rubber tube alone having contact with the ink.

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

A fountain pen tip consisting of an external sheet metal shell having a tapered front portion and a cylindrical rear portion, and a hard rubber tube, of a length to project beyond the ends of the sheet metal shell at front and rear, and having a front tapered portion to fit the tapered portion of the shell, and a rear cylindrical portion of less external diameter than the internal diameter of the cylindrical portion of the shell, the front protruding end of the hard rubber tube being fashioned as an annular flange to bear against the front of the metal shell and to lock the parts together and in place, substantially as and for the purposes hereinbefore set forth.

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

CLAES W. BOMAN.

Witnesses:

EDWIN M. BEROLZHEIMER,

SAMUEL KRAUS.