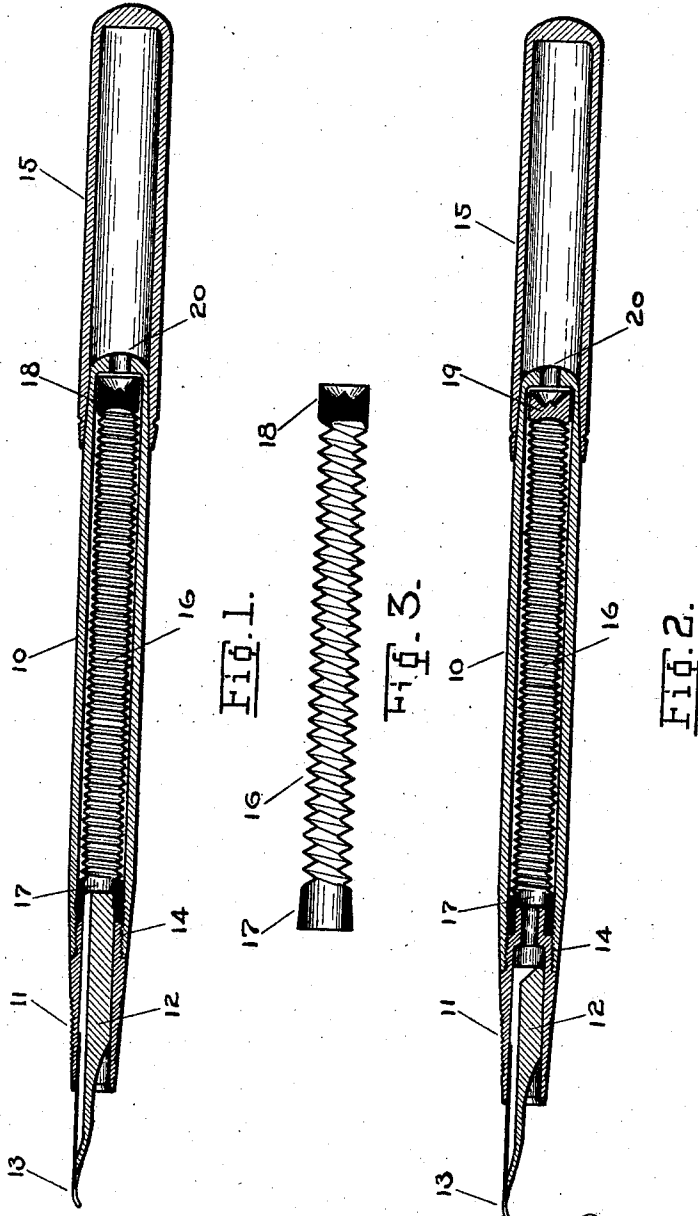


No. 848,023.

PATENTED MAR. 26, 1907.

M Z L FULLER.
SELF FILLING FOUNTAIN PEN.
APPLICATION FILED MAY 16, 1906.



WITNESSES:

E. H. Bremer
J. Ross Huffman

M Z L Fuller
INVENTOR.

UNITED STATES PATENT OFFICE.

M Z L FULLER, OF AKRON, OHIO.

SELF-FILLING FOUNTAIN-PEN.

No. 848,023.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed May 16, 1906. Serial No. 317,132.

To all whom it may concern:

Be it known that I, M Z L FULLER, a citizen of the United States of America, and residing at Akron, county of Summit and State of Ohio, have invented certain new and useful Improvements in Self-Filling Fountain-Pens, of which the following is a specification.

My invention has relation to improvements in fountain-pens, and more particularly to that class of pens known as "self-filling" fountain-pens.

The object of my invention is to provide an improved fountain-pen of the self-filling type which will be simple in construction and effective in operation, and, furthermore, to provide an inexpensive and practicable means for converting into self-filling fountain-pens such pens as are now in use and do not have the equipment of my self-filling device.

Heretofore in the making of self-filling fountain-pens it has been generally desirable to employ a reservoir of some flexible material which is compressed by means of some one of a variety of mechanisms to expel the air therefrom and then allow the natural elasticity of the material of the reservoir to expand it and create suction thereby of sufficient strength to fill the reservoir with ink, into which the pen has been inserted, while the reservoir was in a compressed state.

The object of my invention is to provide an improvement in the compressing devices wherein a very simple arrangement is both efficient and practicable, and it is further the object to provide an elastic ink-reservoir, of spirally-corrugated construction, which permits of longitudinal and torsional contraction and expansion.

The further objects and novel features in construction will be hereinafter fully explained and set forth.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a vertical central sectional view of the complete pen. Fig. 2 is also a vertical central sectional view of the complete pen with some alterations from Fig. 1. Fig. 3 is a vertical central sectional view of the spirally-corrugated flexible ink-reservoir somewhat enlarged.

Referring now in detail to the drawings, 10 is a hollow casing or barrel forming the main body of the pen.

11 is a tip, in the center of which is pressed the plug 12 and the pen 13, which are all of known construction. The tip 11 is secured to the casing 10 by means of the threaded portion 14. A cap 15, of ordinary construction, is designed to fit over the tip 11 and the pen 13 when the pen is not in use. The cap 15 fits over the end of the casing 10, as shown, when the pen is in use.

16 is a flexible spirally-corrugated tube inserted in the casing 10, as shown in Figs. 1 and 2, and of construction as shown in the enlarged view in Fig. 3. 17 is the forward end of the flexible tube, which is designed to fit tightly within the casing 10 and at the same time to fit tightly over the end of the plug 12 in Fig. 1 or to fit tightly over the reduced end of the tip 11 in Fig. 2. 18 is the rearward end of the flexible tube and forms a vulcanized conical recess having a small pivotal point or protuberance projecting from its center.

19 is a vulcanized button or disk having a conical recess with a small pivotal point or protuberance projecting from its center.

20 is a small hole or opening through the rearward end of the barrel or casing 10.

In carrying my invention into effect I provide a fountain-pen of any required size or design which is fitted with the usual tip, plug, pen, and feeding device. Into the casing or barrel of such pen is to be inserted a spirally-corrugated longitudinally torsionally collapsible elastic filling-tube, and the rearward end of this said tube is equipped with a vulcanized disk having in its outer side a conical recess with a small pivotal protuberance extending outward from its center. The rearward end of the aforesaid flexible tube may be either permanently attached to the vulcanized disk above mentioned, as 18, Fig. 1, or the disk may be an independent member, as 19, Fig. 2, serving in either case as a buffer for receiving and communicating pressure to the flexible tube. The opening 20 in the end of the pen-barrel is to be of size sufficient to permit the introduction of a match, small wire, or other convenient common device for the purpose of pressing against the disk or hardened end of the tube, and thereby compressing the ink-reservoir longitudinally and with a torsional movement. This self-filling device is of such construction and adaptability that it may be fitted into any kind of fountain-pen, both new and old, whether of the self-filling type or not, by

such slight variations in the size and construction as the particular case may require.

The opening 20 in the rearward end of the pen-barrel may be easily and cheaply introduced into any style of pen-barrel commonly in use, and the flexible filling-tube 16 is of such construction that it may be inserted into the barrel and be used in connection with any ordinary pen.

The exact construction and attachment of the tube 16 at the point 17 will depend upon the style of the pen into the barrel of which the tube is to be inserted. In some cases the tube 16 will fit tightly into the barrel 10, in other cases it will fit tightly around the end of the plug, as 12 in Fig. 1, or in still other cases it will fit tightly around the reduced end of the tip, as 11 in Fig. 2. By this variation in construction and attachment the connection of the ink-reservoir with the barrel and feeding device is of such a nature as to prevent any possibility of leakage. The peculiar construction of the flexible tube at the attaching-point will be governed by the style of pen into which my invention is to be installed, as it is designed not only to be used in the manufacture of new pens of the self-filling style, but also in the repair and reconstruction of old pens or pens already in use or on the market and into which it may be desirable to install a simple and inexpensive self-filling device.

In the operation of my novel device I set forth herewith more particularly the function of the spirally-corrugated flexible ink-reservoir. A pressure being placed upon the disk or hardened end is communicated to the spiral tube, with the effect of collapsing it in accordance with the natural law of its peculiar construction, which is a longitudinal collapsing combined with a torsional movement. This combined movement results in the most effective expulsion of the air, and thereby providing the maximum of suction when the pressure is relieved and the tube resumes its natural size and shape by means of its natural elasticity. Furthermore, the spirally-constructed flexible tube with its continuous V-shaped groove, together with

the disk or hardened end, which is provided with a small pivotal protuberance, affords a device which operates easily and efficiently in its torsional collapsible movement and in so doing avoids friction and binding against the inner walls of the barrel when longitudinal pressure is applied to produce the desired collapsing. The small pivotal protuberance also affords a device conducive to the minimum amount of friction between the disk and the object used to produce the longitudinal pressure.

I do not limit myself to the arrangement herein described, as various changes in the form and minor details of construction may be made without departing from the spirit of my invention or without sacrificing any of its advantages.

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

1. In a fountain-pen, the combination with a barrel having an opening at its rearward end, of a pen, plug, and feeding device, and of a spirally-corrugated and torsionally-collapsible flexible tubular ink-reservoir having attached to its rearward end a hardened concave disk for the transmission of pressure to the flexible portion of the said ink-reservoir, substantially as described.

2. In a self-filling fountain-pen, the combination with a barrel having an opening at its rearward end, of a pen, plug, and feeding device, a spirally-corrugated longitudinally and torsionally collapsible elastic filling-reservoir, and at the rearward end of said tubular reservoir, of a vulcanized disk movably disposed within the said barrel and having at its outer side a conical recess with a small pivotal projection at its center, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

M Z L FULLER.

Witnesses:

E. W. BROUSE,
J. ROSS HUFFMAN.