No. 719,529. PATENTED FEB. 3, 1903.

H. W. STONE.

FOUNTAIN PEN.

APPLICATION FILED APR. 24, 1901.

NO MODEL.

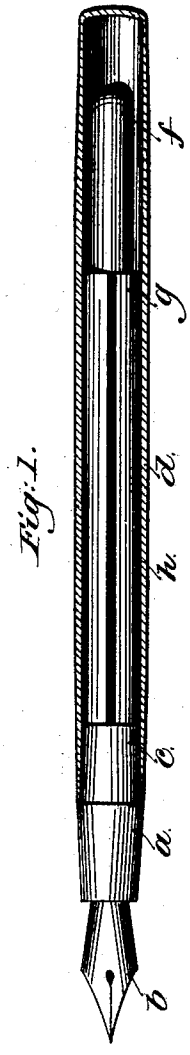

Fig. 1.

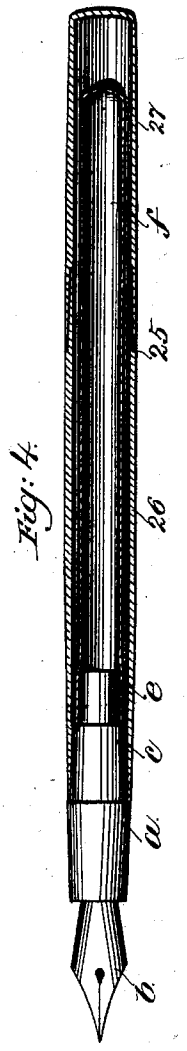

Fig. 4.

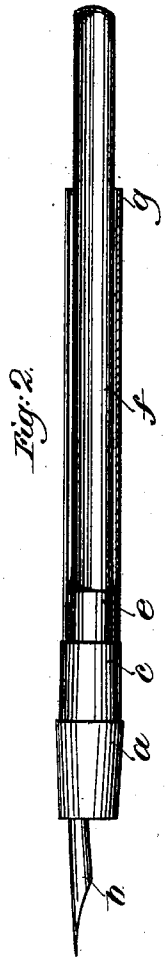

Fig. 2.

Fig. 3.

Witnesses,
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UNITED STATES PATENT OFFICE.

HARRY W. STONE, OF BROOKLYN, NEW YORK, ASSIGNOR TO ARTHUR A. WATERMAN, OF CAMBRIDGE, MASSACHUSETTS, AND ADOLPH ERLEBACH, OF BOSTON, MASSACHUSETTS.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 719,529, dated February 3, 1903.

Application filed April 24, 1901. Serial No. 57,190. (No model.)

To all whom it may concern:

Be it known that I, HARRY W. STONE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Fountain-Pens, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

My invention relates to fountain-pens of the type wherein the ink is contained in a flexible or soft-rubber reservoir, commonly known as a "sac." This sac is usually contained within a closed protecting-barrel that is separable from the pen-carrying or finger section at a point near the lower delivery end of the sac, thus giving access to the sac for its entire length to permit of its removal whenever necessary. Pens of this construction are commonly filled by removing the outer inclosing barrel, flattening the sac between the fingers, commencing at its upper closed end and working gradually down to its delivery end, thereby excluding all air therefrom, immersing the end of the pen in an ink-well, and then releasing the sac, its expansion or resumption of normal shape acting to draw the ink from the well into and to fill the sac. An objection to this mode of filling has been the necessity for holding the sac flattened between the fingers at its delivery end, close to the pen-carrying section, during refilling, as the presence of the fingers so close to the end of the pen prevents dipping the said end into deep ink-wells, or wells wherein the ink is low, without soiling the fingers. Notwithstanding various attempts have been made to fill pens of this sort by mechanical means or devices, few, if any, of these have, so far as I am aware, ever come into commercial use, and the mode of filling by stripping the sac between the fingers, as described, remains the generally-practiced mode among users of these pens.

The aim of my present invention is to eliminate the above-noted objection to this type of pen, while preserving the manipulation of the sac by hand, which seems to be the most practical means for compressing it, although, as will hereinafter appear, my sac is intended to be manipulated by twisting rather than by stripping the same longitudinally.

My invention comprehends providing the sac at or to a point well along its length with an inclosing holder that is attached to the loose end of the sac or to the section carrying the same, so that rotation of the said holder will cause similar rotation of the said sac end. The closed end of the sac protrudes beyond this holder sufficiently to enable it to be seized between the fingers and turned or twisted relative to the holder and lower end of the sac. By thus twisting the sac the air is excluded quite as effectively as by stripping the sac lengthwise, yet the twisting is done wholly by the fingers engaging the upper end of the sac and the end of the holder, thereby leaving the pen for substantially its entire length free for insertion in any ink-well, however deep or however low the ink-level. This holder may be variously constructed and arranged, as will be hereinafter set forth.

In the drawings, Figure 1, in longitudinal section, partial elevation, illustrates a pen made in accordance with one form of my invention; Fig. 2, a longitudinal detail showing the manner of applying the sac and its holder Fig. 1; Fig. 3, a detail showing the end of the holder Figs. 1 and 2, and Fig. 4 a sectional view showing a modified construction illustrating my invention.

In the form of my invention illustrated by Figs. 1, 2, and 3 of the drawings, *a* is the usual finger or pen section, carrying in usual manner a pen or nib *b*. The section *a* has a reduced or neck portion *c*, that receives and holds frictionally the lower open end of the usual barrel *d*. Beyond the neck *c* the section *a* (see Fig. 2) is shown provided with a second and still further reduced neck or portion *e*, over and upon which is slipped the open end of the soft-rubber or flexible reservoir or sac *f*, that contains the ink. A holder surrounds the sac at a point well along its length and sufficiently removed from the section *a*, said holder being here shown at *g* and connected in suitable manner with the section *a*, whereby it may restrain or cause ro-

tation of said section. This holder is conveniently made in the form of a split tube of aluminium or other substance (see Fig. 3) and is sprung upon the neck *e* and the intervening sac end, as best shown in Fig. 2. It thus serves as a means for confining the expanded open end of the sac firmly on the said neck and renders accidental displacement improbable.

To fill the sac, the closed end or closure of the barrel is removed, herein by removing the entire barrel, the holder is seized between the fingers of one hand, the protruding end of the sac is grasped between the fingers of the other hand, and the holder rotated so as to twist the sac for its entire length, and thus expel the contained ink or air. While still holding the sac thus twisted, the open or writing end of the pen is immersed in a body of ink in a well or receptacle and the sac released and permitted to untwist or expand to its normal shape. This acts to draw the ink up from the well into and filling the sac.

The slit in the side of the holder *g* enables the operator to view the inclosed sac for its entire length, and thus make sure that no twist or kink remains in the sac before replacing the cap or barrel. The slit or split holder *g* is also useful in giving the holder a resilience that enables it to adapt itself to variations in diameter or thickness of the sac, yet always fit and hold the latter closely. The holder also acts to support the sac when removed from the barrel and prevents it from collapsing to one side, yet leaves the end of the sac exposed for manipulation.

The holder *g* being rigid as to its length makes it possible to preserve an air-space *h* between it and the outer barrel that aids in preventing heating of the ink and consequent "sweating."

That my invention is susceptible of various modifications is apparent from the example shown in Fig. 4, where the barrel itself is divided at 25, the portion 26 below the divisional line serving as the holder when the top portion 27 is removed.

The point at which the holder terminates—*i. e.*, whether at a greater or less distance from the open end of the sac—may be varied to suit the taste of the maker; but I prefer to extend said holder well along the sac, as to the middle thereof or beyond, while leaving a sufficient portion of the sac protruding for convenient manipulation. With an extended holder of this character the pen may be easily filled in the manner described without soiling the fingers. The length of the slit portion of the holder may be varied at will.

Having described my invention and without limiting myself to details, what I claim, and desire to secure by Letters Patent, is—

1. A fountain-pen containing a sac, and an exterior holder therefor located well toward the closed end of said sac and connected with the open end thereof, the closed end of said sac protruding beyond said holder sufficiently to be engaged for filling.

2. A fountain-pen containing a sac and an exterior extended tubular holder therefor terminating short of the closed end of the sac, leaving said end protruding.

3. A fountain-pen containing a sac, an exterior extended tubular holding-sleeve therefor terminating short of the closed end of the sac, and a removable closure to cover the protruding end of the sac.

4. A fountain-pen containing a sac, and an exterior tubular split holder therefor, an operating end of said sac protruding beyond said holder.

5. A fountain-pen having a pen-section provided with a reduced neck, a sac mounted on said neck, and a tubular holder also carried by said neck, but outside said sac.

6. A fountain-pen having a sac, an extended surrounding holder and an inclosing barrel separated from said holder to leave a non-conducting air-space.

7. A fountain-pen containing a sac, a surrounding holder terminating short of the closed end of said sac and permitting free movement of said sac within said holder, and an outer barrel.

8. A fountain-pen containing a sac, an extended surrounding holder terminating short of the closed end of said sac and permitting free movement of said sac within said holder, and an outer removable barrel.

9. A fountain-pen containing a feed-section sac, an extended surrounding holder terminating short of the closed end of said sac, and an outer removable barrel, the said sac, holder and barrel being respectively supported at or adjacent the lower feed-section of the pen.

10. In a fountain-pen, a tubular barrel open at one end, a detachable feed-section to close the open end of the barrel and having a permanently-attached elastic ink-reservoir, the latter being inclosed and protected by the barrel when the feed-section is in place therein, and a long, relatively inelastic tube mounted on, and extended rearwardly beyond the inner end of the feed-section, and detachably connected thereto, surrounding the reservoir and constituting a long and firm handpiece for the feed-section when the latter is removed from the barrel for the purpose of filling the reservoir.

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

HARRY W. STONE.

Witnesses:
WM. G. FRAZER,
B. T. BAILEY.