

No. 698,882.

Patented Apr. 29, 1902.

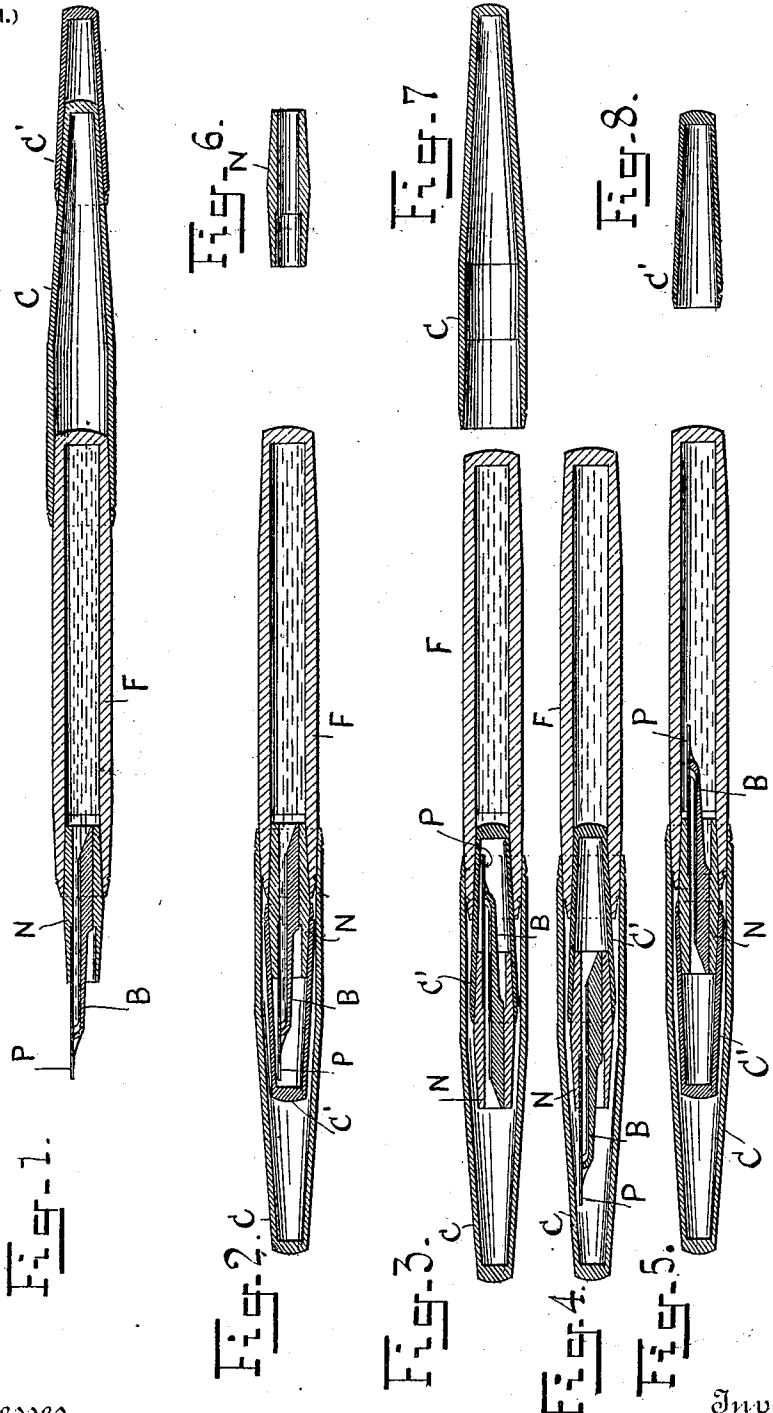
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SAFETY FOUNTAIN PEN.

(Application filed May 14, 1898.)

(No Model.)



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SAFETY FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 698,882, dated April 29, 1902.

Application filed May 14, 1898. Serial No. 680,681. (No model.)

To all whom it may concern:

Be it known that I, LEWIS E. WATERMAN, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Safety Fountain-Pen; of which the following is a specification.

My invention relates to improvements in fountain-pens which are provided with a barrel or fountain and to which the other parts of the pen are attachable, consisting of a nozzle, a cap to cover the writing-pen, a writing-pen, and feeding devices by which ink is supplied to the writing-pen from the fountain; and the invention is a safety fountain-pen.

The objects of my improvement are, first, to provide a cap or cover stopper by which the projecting or exposed end of the nozzle may be positively and absolutely closed to prevent the escape of ink when the complete fountain-pen is carelessly handled or carried in a traveling-bag, the vest-pocket, or in any other manner, or placed in a drawer without first taking pains to keep the open end of the fountain uppermost for the purpose of retaining the ink in the barrel, reservoir, or fountain, or in the holder; second, to provide a nozzle-cap which may be used as a reservoir or barrel plug by reversal; third, to provide a chamber or receptacle within the larger barrel or reservoir cap for the nozzle cap or cover or barrel-plug, in and by which the open end of the fountain, the writing-pen, and the capped nozzle may be covered and protected; fourth, to provide means for attaching or securing the nozzle cap or cover when the fountain-pen is arranged for use as a writing instrument and so as to make and retain the nozzle-cap as a proper integral part of the complete organized fountain-pen. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figures 1, 2, 3, and 4 represent the fountain-pen with the nozzle cap or cover and barrel-plug in the different positions and relations to the other parts of the pen called for during its normal use as a fountain-pen. Fig. 5 is the same as Fig. 4, except that the nozzle and the cap are reversed. Figs. 6, 7, and 8 are sectional views, respectively, of the nozzle, the larger cap, and the plug-cap.

Similar letters represent similar parts throughout the several figures.

F is the fountain, reservoir, or barrel.

N is the nozzle.

P is the writing-pen.

C is the larger or barrel cap.

C' is the nozzle cap or cover and barrel-plug, and B is the feed-bar for conducting ink to the writing-pen.

The nozzle and the barrel, as well as the cap C and the barrel, are joined by means of the taper joint made without screw-threads and a shoulder. (Shown in Letters Patent No. 604,690, granted to me May 24, 1898.) The cap C is tapered and diminished in size toward its top or closed end to receive the nozzle-cap and plug thereon, and when the fountain-pen is not in use as a writing instrument and is laid aside temporarily or carried in the pocket the nozzle-cap C' has its proper position upon the cap C, held there by the same joint that holds the larger cap to the barrel, as shown in Fig. 1. When the safety-cap C' is being used as a safety device and cap, it is to be placed upon the exposed end of the nozzle, as shown in Fig. 2, or, being used as a safety device and plug, it is to be reversed and inserted as a plug in the mouth of the barrel or reservoir, as shown in Fig. 3, and in that position may still hold the nozzle, feed-bar, and writing-pen. The nozzle N is shaped at both ends so as to be capable of forming a proper joint with the chamber in the open end of the fountain or barrel, whichever end of the nozzle is placed therein, both of which joints or either of which joints should be non-capillary or so made as to prevent the escape of ink, as also should be the plug-joint referred to. The joints between the safety-cap and the inner end of the nozzle and between the plug and the barrel are of a similar kind—i. e., non-capillary or ink-tight—and by the combination of the two joints, one between the fountain and the nozzle and the other between the nozzle and the safety-cap or between the plug and the barrel, the ink will be retained and prevented from escaping either into the cap C or abroad in any way.

When the writing-pen is to be used, the safety-cap C' is in either case to be removed

from the nozzle and from its relation to the barrel and may be placed for safe keeping or detention upon the small end of the cap, and the nozzle being reversed when required with the writing-pen projecting outwardly, as shown in Fig. 1, the pen is in condition for writing, whether the cap C is placed upon the closed end of the barrel or fountain or not, and even if the cap C is lost, displaced, or in any other way absent the pen may be used as a safety-pen by placing the safety-cap C' upon the nozzle or inserting it as a plug in the barrel. If desired, the cap C may be omitted entirely and provision may be made for placing the safety-cap C' on the closed end of the fountain or barrel when the pen is arranged for writing. It is convenient, however, to use the cap C, for a number of reasons, among others because it makes a double or triple sealing or capping device to the barrel or fountain.

The non-capillary closure-joints, the union-joints, and the progressive non-capillary joints shown in this application are generically of the type shown and claimed in my Letters Patent No. 604,690, dated May 24, 1898; but they are formed between different members having different functions or performing their functions in different ways, with new and valuable results accomplished.

The joint between the cap C' and the nozzle and also that between C' and the mouth of the reservoir is the joint shown and claimed in my patent of May 24, 1898, hereinbefore mentioned. Applied to and united with the extreme end and outer surface of the nozzle adjacent to the writing-pen, the cap C' protects that part of the outer portion of the fountain-pen with which the fingers of the user when writing make contact from ink-smearing and the soiling of the fingers with ink and confines the ink that escapes by evaporation and is retained in a condensed form in the cap to the extreme end of the nozzle, where it can do comparatively little harm, although the ink may penetrate the inner end of the joint between the cap C' and the nozzle for some little distance. The non-capillary joint at and near the mouth of the cap limits the further progress of the ink. In other words, the union of the cap C' with the removable nozzle furnishes the cap with the capability of use for other purposes—as, for instance, for closure purposes, as shown in this application, to which the cap C or the cap shown in the patent of May 24, 1898, could not be adapted without markedly changing the construction and operation of the fountain-pen.

When the safety-cap C' becomes a device for closing the mouth of the fountain, it may be called a "safety-plug." As such it acts in an entirely different way to perform its functions. When used as a safety-cap, it makes the conical elastic progressive joint at or by the inside of its open mouth and chamber and with the outside of the nozzle at

either end at will or with the outside of the closed end of the cap; but when used as a safety-plug it makes the joint with the inner surface of the chamber in the open end of the fountain upon the outside and in front of its closed end, and, as shown in Figs. 3 and 4, it can make the two joints—the inside and the outside joints—both union or non-capillary at will and at one and the same time.

The joints between the nozzle and the safety-cap may be mere union-joints, particularly if the joint between the safety-cap and the fountain or barrel is a non-capillary joint or a joint which seals. These joints are, however, preferably all of them progressive non-capillary joints and also progressive stops. Such joints and stops are fully explained in my Letters Patent issued on May 24, 1898, application filed August 12, 1895, and need not be further described.

The joint between the hollow plug or reversed cap and stopper is a progressive non-capillary joint and stop; but it has a new or additional element or elements and characteristics. Being hollow and therefore yielding, and preferably, also, elastic, it contributes as the inner member to the formation of the non-capillary and progressive and stop features of the joint, and in addition it is both a reversed cap and a stopper capable of hermetically closing the barrel or fountain or any vessel for holding fluids or gas. As a hollow plug it may furnish at and near its mouth and at or within the mouth of the barrel or fountain the conforming and resisting elements necessary to effecting and maintaining the non-capillary features of the joint.

In another and pending application I have shown a non-capillary joint made at or near the inner end of the nozzle and at the inner end of the chamber in the barrel or fountain. In that as in this invention the non-capillary joint-making element of the inner member is found at the outer and open end of the hollow plug or stopper as well as at the outer and open end of the barrel or fountain. This form of stopper introduces not only new features, but new possibilities that cannot be fully described in this application, although they approach if they do not reach generic departure from the old inventions or my prior inventions. Being hollow instead of solid, the inner member will yield and form the joint, even when the outer member is made inelastic and unyielding, and still its closed inner end in that position closes the vessel and retains or prevents the escape of its contents. If desired, a socket for either end of the nozzle may be provided in or at the upper and closed end of the barrel or fountain, over which the cap C may be used to protect the nozzle and writing-pen. It should be noted also that, as shown in Figs. 3 and 4, the nozzle acts or may be used as a conical plug to expand the open end of the hollow plug and also that part of it located in the mouth of the barrel or fountain, so as to aid

in making a solid non-capillary joint by and between the two.

I claim as my invention—

5 1. In a fountain-pen, a reservoir, a nozzle adapted to fit within the reservoir, and a cap adapted to fit either end of the nozzle and form a non-capillary joint therewith.

10 2. In a fountain-pen, a safety-cap provided with a chamber adapted to fit and form a non-capillary joint with the outer surface of either end of the nozzle, and a barrel or reservoir, in combination with the outside cap of the barrel or reservoir, in the chamber of which the safety-cap and the nozzle are receivable, 15 and also in combination with the nozzle.

20 3. In a fountain-pen, a safety cap or cover provided with a chamber, and a barrel or reservoir, in combination with a nozzle with both ends of which it is capable of forming a non-capillary joint, and also in combination with a reservoir or barrel cap, with the outer closed end and surface of which it is capable of forming a union or holding joint.

25 4. In a fountain-pen, a safety cap or cover provided with a chamber, and a barrel or reservoir, in combination with a nozzle, with either exposed end of which it may form a non-capillary joint, and also adapted, when reversed and placed with its closed end inward, to form a non-capillary closure-joint 30 within the mouth of the reservoir or barrel.

35 5. In a fountain-pen, a safety cap or cover in combination with a nozzle, with the rear end of which it forms a non-capillary joint, and also in combination with a barrel or reservoir, with which, and on its outer side, it also and at the same time forms a non-capillary joint-closure within the mouth of the barrel or reservoir.

40 6. In a fountain-pen, a safety reversible cap-plug reversible for use as a cap for the nozzle and a closing device for the fountain or holder, in combination with the nozzle and the fountain, the cap forming a non-capillary joint-closure within the chamber in the mouth 45 of the fountain on and by the outside of its closed end, and with the nozzle on and by the inside surface of the chamber in the mouth of the cap.

50 7. In a fountain-pen, a hollow tapered reversible cap and plug the inner end of which is closed, in combination with a fountain and a nozzle, the plug forming on its outer surface a non-capillary closure-joint with the chamber-surface in the mouth of the fountain for 55

closing the same, and also a non-capillary joint with the outside of the nozzle at either end of the same.

8. In a fountain-pen, a nozzle, a barrel and a safety-cap and hollow plug, in combination, 60 the nozzle being externally conical at both ends, each end thereof being adapted to form a progressive non-capillary closure-joint with the mouth of the barrel, and also adapted to form a progressive non-capillary closure-joint 65 at either end with the cap.

9. In a fountain-pen, a double-conical nozzle, a barrel and a cap or cover, in combination, the double-conical nozzle being adapted to form, at either end, a progressive non-capillary closure-joint with the open end and 70 mouth of the barrel, and the cap or cover adapted to fit and form a progressive non-capillary closure-joint with and upon either end of the double-tapered nozzle, the cap also being adapted to form a progressive non-capillary closure-joint with the same chamber in 75 the mouth of the barrel.

10. In a fountain-pen, a double-conical nozzle, a barrel and a cap or cover, in combination, 80 the double-conical nozzle being adapted to form, at either end, a progressive non-capillary closure-joint with the open end and mouth of the barrel, and the cap or cover adapted to fit and form a progressive non-capillary closure-joint with and upon either end 85 of the double-conical nozzle, the cap also being adapted to form a progressive non-capillary closure-joint with the same chamber in the mouth of the barrel, and hermetically seal 90 the mouth of the barrel.

11. In a fountain-pen, a reversible cap and a reversible externally-tapered hollow plug, an externally-tapered nozzle, and a barrel of a fountain-pen, in combination, the reversible 95 cap and reversible hollow plug being adapted to form a progressive non-capillary closure-joint with the nozzle and also with the mouth of the barrel, and to hermetically seal and close the mouth of the barrel. 100

12. In a fountain-pen, a cap, a nozzle and a reservoir or barrel, in combination, the cap covering and protecting the writing-pen, hermetically closing the mouth of the reservoir or barrel, and forming a non-capillary and a 105 union joint with the nozzle.

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