(No Model.)

J. K. BITTENBENDER.

FOUNTAIN PEN.

No. 370,599. Patented Sept. 27, 1887.

FIG. 1.

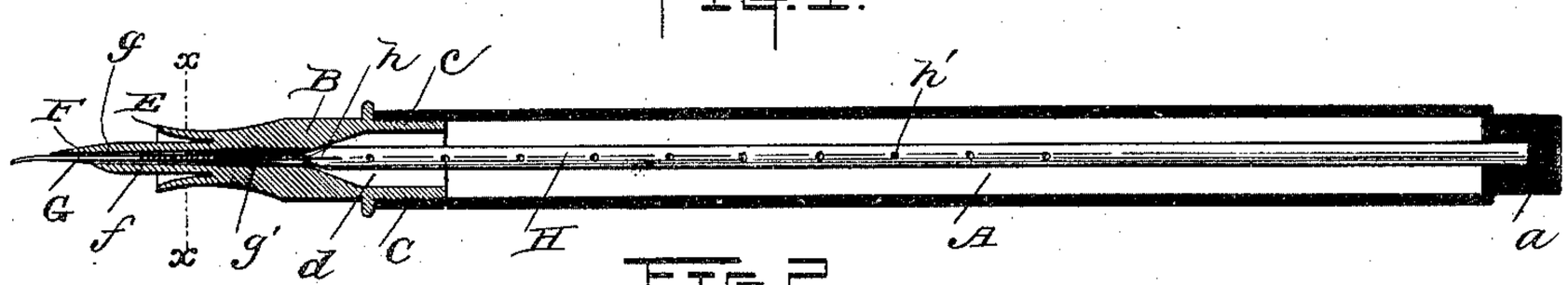


FIG. 2.

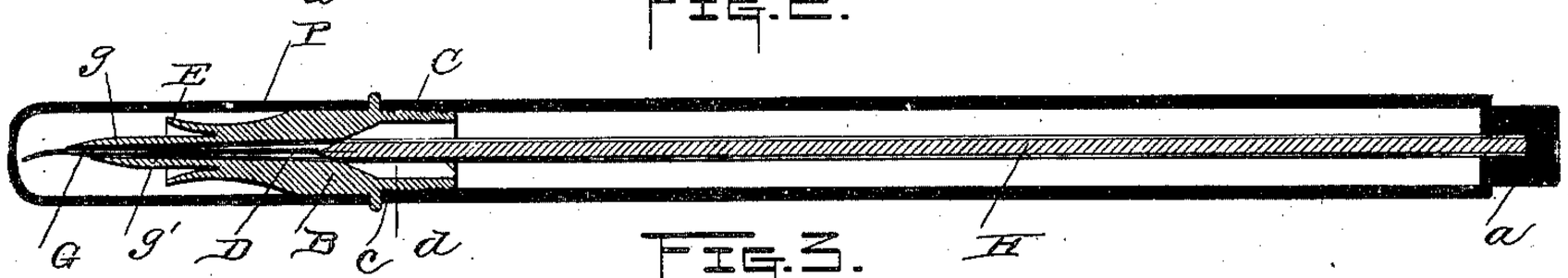


FIG. 3.

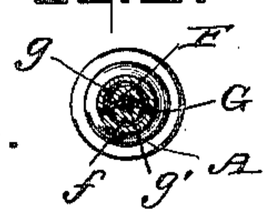


FIG. 4.

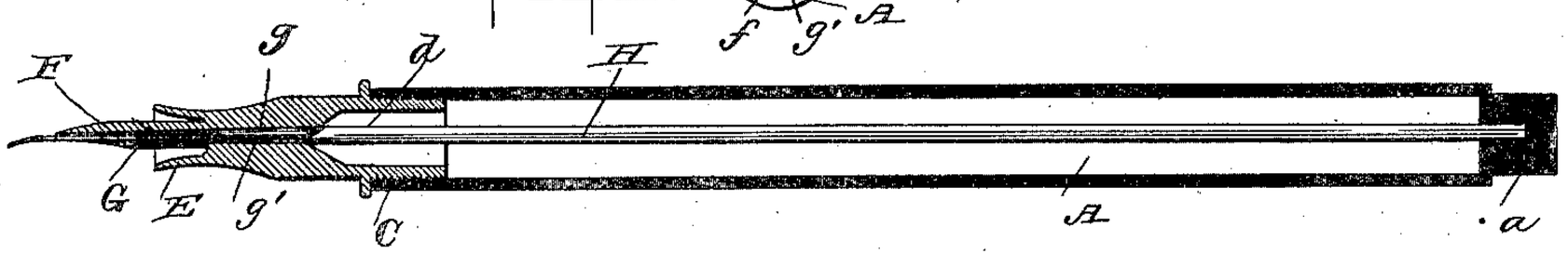


FIG. 5.

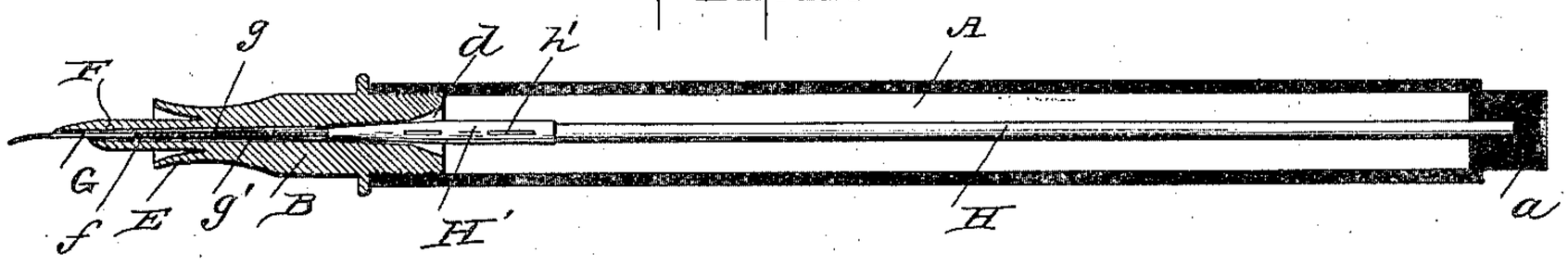


FIG. 6.

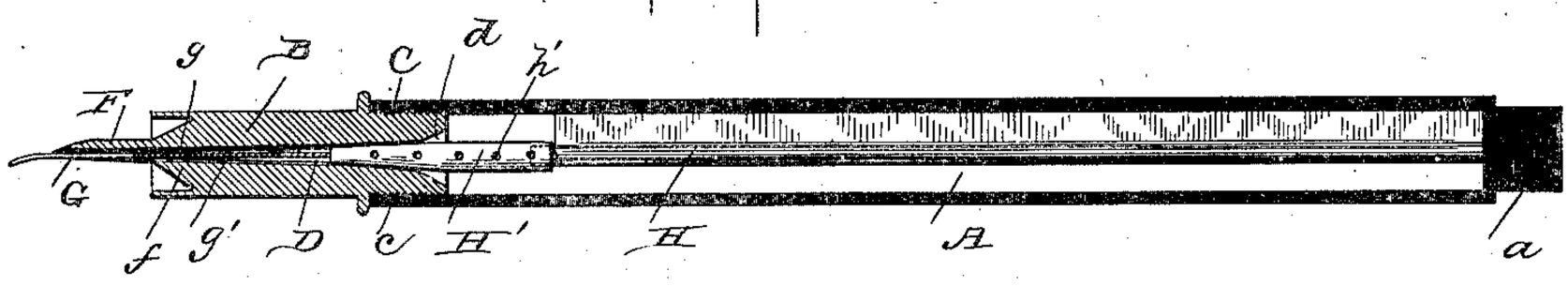
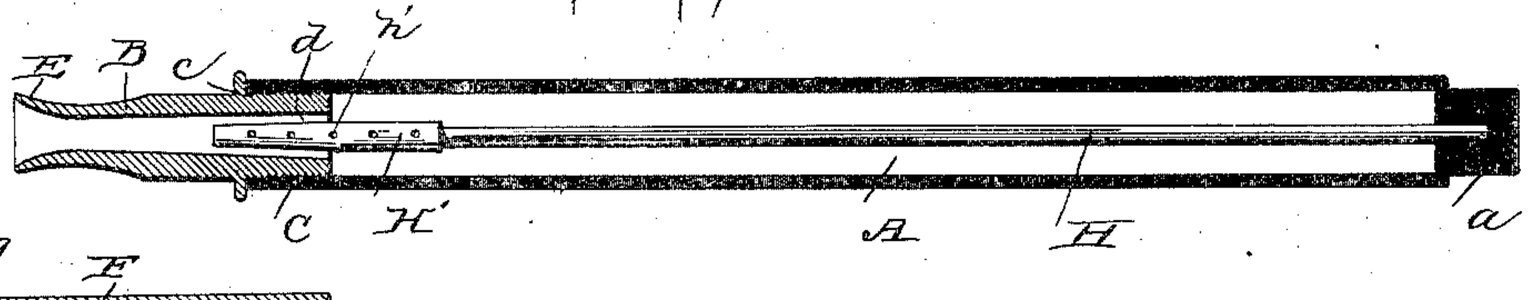
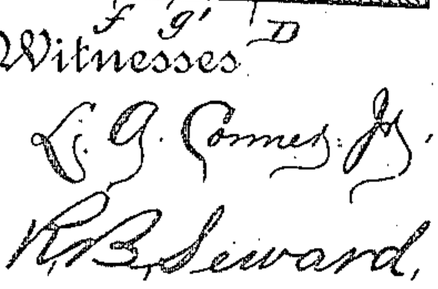


FIG. 7.





Witnesses
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UNITED STATES PATENT OFFICE.

JOHN K. BITTENBENDER, OF BLOOMSBURG, PENNSYLVANIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 370,599, dated September 27, 1887.

Application filed February 18, 1887. Serial No. 228,019. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. BITTENBENDER, of Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in fountain-pens.

Hitherto in that class of fountain-pens in which a reservoir-holder has one of its ends permanently closed, and a pen-holding plug is secured in the opposite end of the reservoir-holder, more or less trouble has arisen in filling the reservoir and in securing a free flow of ink to the pen-point under all circumstances of ordinary writing without rendering the holder liable to waste ink when subjected to a sudden jar. In many instances it has been necessary to use a pen of some particular construction different from those in ordinary use.

The object of my present invention is to provide a fountain-pen which shall be free from the objectionable features above enumerated, and which shall have no small separable attachment in its structure.

A further object is to provide a fountain pen-holder which shall be adapted to use in connection with all ordinary forms of pens, and which shall consist of few parts, and these of such construction as to render them capable of being manufactured at slight initial cost.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the fountain pen-holder and pen in longitudinal section, showing the point of the main feeder in the position relatively to the pen-carrying plug which it occupies when the pen is in use. Fig. 2 is a similar view, showing the point of the main feeder in the position relatively to the pen-carrying plug which it occupies when the pen is not in use; and Fig. 3 is a transverse section through line *x x* of Fig. 1. Figs. 4, 5, 6, and 7 are modifications.

A represents a reservoir-holder, of any suitable size and shape, permanently closed at its end *a*, and open at its opposite end to receive the pen-carrying plug B. The open end of the holder A is preferably provided with an interior screw-thread, C, adapted to register with a male screw-thread, *c*, on the upper end of the plug B. This construction is not, however, necessary, since the end of the plug B might be constructed with a smooth surface adapted to fit within a smooth bore in the open end of the holder A, and be held therein in the desired adjustment by its frictional contact therewith.

The pen-carrying plug B is provided with a slit, D, extending from its lower end to a conical-shaped or flaring opening, *d*, in its end toward the reservoir within the holder A. The slit D is of such size and length as to admit the stock of any ordinary pen—such as is in common use—and allow the upper end of the stock to extend to the point where the opening *d* begins to flare. The pen-carrying plug B is further provided with an outwardly-flaring or funnel-shaped flange, E, around its lower end, and with auxiliary feeders F *f*, projecting from the base of the flange E along the upper and under sides of the pen G when the latter is in its position within the slit D. The auxiliary feeder F, which extends along the top of the pen to a point between and near the extreme points of the nibs of the pen, is provided with one or more capillary channels, *g*, extending along its under side and continuing along the interior wall of the plug B above the pen to the opening *d*. The auxiliary feeder *f* extends to a point beneath the pen about where the nibs unite with the stock of the pen, and is provided with one or more capillary channels, *g'*, extending along its upper face and continuing along the interior-wall of the plug B beneath the pen to the opening *d*. The feeders F *f* are narrow and of slightly tapered form, and are constructed of material which is more or less flexible—hard rubber, for example—to admit of their yielding to the movements of the pen.

H represents the main feeder. It consists of a small rod or tube permanently set in the closed end of the holder and extending along the interior of the reservoir to a point at the neck of the opening *d*, where it preferably

terminates in a slotted or bifurcated point, *h*, adapted to rest in contact with the upper end of the pen-stock.

I find it preferable to employ as the main feeder a small tube provided with transverse perforations *h'*, through which there is a ready communication between its interior and the reservoir, the lower end of the feeder being left open. In the place of the said tubular main feeder a channeled rod—such as is represented in Fig. 2—might be employed, and would give a fair degree of satisfaction; or a simple circular-rod—such as is shown in Fig. 4—might be employed, and could be furnished at a trifle less cost than the perforated tube shown in my preferred construction, Fig. 1.

The main feeder H performs a threefold function, as follows: In filling the reservoir it causes the ink to adhere to it and travel toward the permanently-closed end of the reservoir in a well-defined stream, thereby allowing the air to escape from within the reservoir without abruptly meeting the inflowing ink and producing the objectionable bubbling and scattering of small particles of ink, which is liable to take place as the bubbles of compressed air one after another burst. The said main feeder also serves to feed the ink to the stock of the pen and to the capillary channels *g g'* above and below the pen, preventing any liability of the supply being abruptly cut off by the back-pressure of air, and when the plug B is inserted within the holder A sufficiently far the slot between the branches at the point *h* of the feeder will be closed by the contact of the point of the feeder with the contracting walls of the opening *d*, and the flow of ink will be effectually cut off by the stoppage of one or both of the channels *g g'*.

To adjust the pen for use the plug B is slightly advanced out of the holder to free the end of the main feeder from close contact with the walls of the opening *d*, when the ink will feed along down the capillary channels *g g'*, one or both, and will be carried by the channel *g* down to the nibs of the pen almost to the very points, from which it escapes onto the paper. The supply will in every instance be equal to the demand. The slight lifting of the auxiliary feeder F from the upper side of the pen as its point is bent upwardly, and the slight lifting of the auxiliary feeder *f* from the under side of the pen as its point is bent downwardly, will produce a "suction" of greater or lesser power as the stroke is heavy or light, and will thereby draw the ink to the points of the nibs in greater or lesser quantities, and in no instance will there be liability of blotting from a sudden jar, as the capillary channels are long and narrow, and but a slight surface of the ink is exposed to the open air.

Should the ink under any circumstances tend to creep out onto the stock of the pen and overload the same, the funnel-shaped flange around the lower end of the plug will tend to guide it away from the stock of the pen and prevent any annoyance therefrom.

It will be observed that the fountain-pen as thus constructed consists of two separable parts only—viz., the reservoir-holder with the main feeder permanently attached therein and the pen-carrying plug with its auxiliary feeders and guard-flange formed integral therewith or permanently attached thereto.

A cap, P, is provided to fit over the pen-carrying plug when the pen is not in use. Its operation is so simple that any one can manipulate it with ease, and its construction is such that it can be furnished at a very moderate price.

In the modification shown in Fig. 4 the auxiliary feeder beneath the pen is omitted, the capillary channel *g'* extending from a point beneath the pen at the base of the flange E to the opening *d*, as hereinbefore described.

In the modification shown in Fig. 5 the main feeder is permanently attached to the top of the holder, and is provided with a barrel, H', at its lower end, which is adapted to adjust itself to the opening in the pen-carrying plug.

In Fig. 6 the main feeder is represented as formed integral with the wall of the holder throughout a greater portion of its length, and has a barrel or tubular portion, H', at its lower end, adapted to fit in the opening in the end of the pen-carrying plug; or, as represented in Fig. 7, the auxiliary feeders F *f* might be made in a separate piece and be inserted in the pen-carrying plug.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. The combination, with a hollow holder having one end permanently closed, and a main feeder permanently secured in the closed end of the holder and extending along the interior of the holder toward the open end of the same, of a pen-carrying plug adjustably secured in the open end of the holder and provided with a taper mouth adapted to guide the free end of the feeder into contact with the pen-stock when the pen-carrying plug is adjusted for use, substantially as set forth.

2. The combination, with a hollow holder having one end permanently closed and a pen-carrying plug adjustably secured in the open end of the holder and provided with a flaring opening in its end toward the holder, of a feeder permanently secured in the closed end of the holder and provided with a slotted or bifurcated point in engagement with the stock of the pen at the neck of the flaring opening in the plug, substantially as set forth.

3. The combination, with the hollow holder, of the pen-carrying plug adapted to be secured in its open end, the said plug being provided with a channeled feeder adapted to ex-

tend along the top of the pen to a point near the extreme points of the nibs, and with a flaring ink-guard, the said feeder and ink-guard being permanently secured to the plug, substantially as set forth.

4. The combination, with the hollow holder and the main feeder permanently secured therein, of the pen-carrying plug adapted to be adjustably secured in the open end of the holder and provided with a channeled feeder adapted to extend along the upper side of the pen to a point near the extreme points of the nibs, and with a flaring ink-guard, substantially as set forth.

5. The combination, with the hollow holder and the main feeder permanently located therein, of the pen-carrying plug adjustably secured in the open end of the holder and provided with auxiliary feeders projecting from its lower end and adapted to extend along the upper and under sides of the pen and with a flaring ink-guard, the auxiliary feeders and the ink-guard being permanently secured to the plug, substantially as set forth.

6. In combination, the hollow holder having one end permanently closed, a main feeder permanently secured in the closed end of the holder and provided with a slotted or bifurcated point, and a pen-carrying plug adapted to be adjustably secured in the open end of the holder and provided with channeled auxiliary feeders, and a flaring flange projecting from its lower end and with a flaring opening in its upper end, the channel in the auxiliary feeders being continued on opposite sides of the pen-stock to the point of the main feeder at the neck of the flaring opening, substantially as set forth.

7. The combination, with the hollow holder and the pen-carrying plug adjustably secured in its open end, the said plug being provided with a flaring opening in its upper end, of a tubular feeder permanently secured in the holder, and provided with transverse perforations and with a bifurcated point located within the flaring opening in the end of the plug, substantially as set forth.

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

JOHN K. BITTENBENDER.

Witnesses:
JAMES H. MERCER,
GEO. C. ROAN.