No. 682,188. Patented Sept. 10, 1901.

H. GRASS.

FOUNTAIN PEN.

(Application filed Nov. 3, 1900.)

(No Model.)

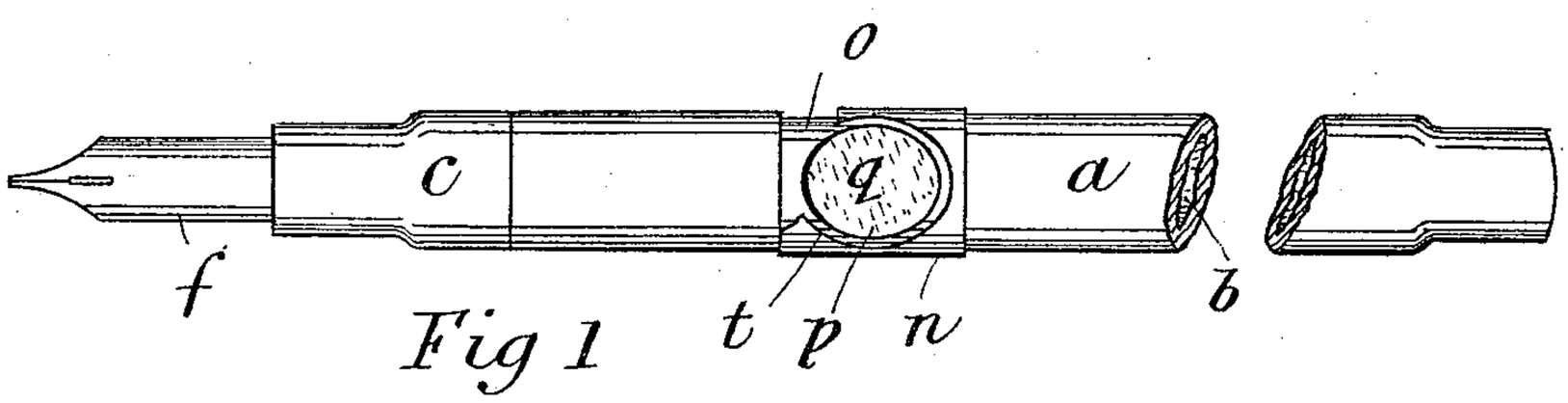

Fig 1

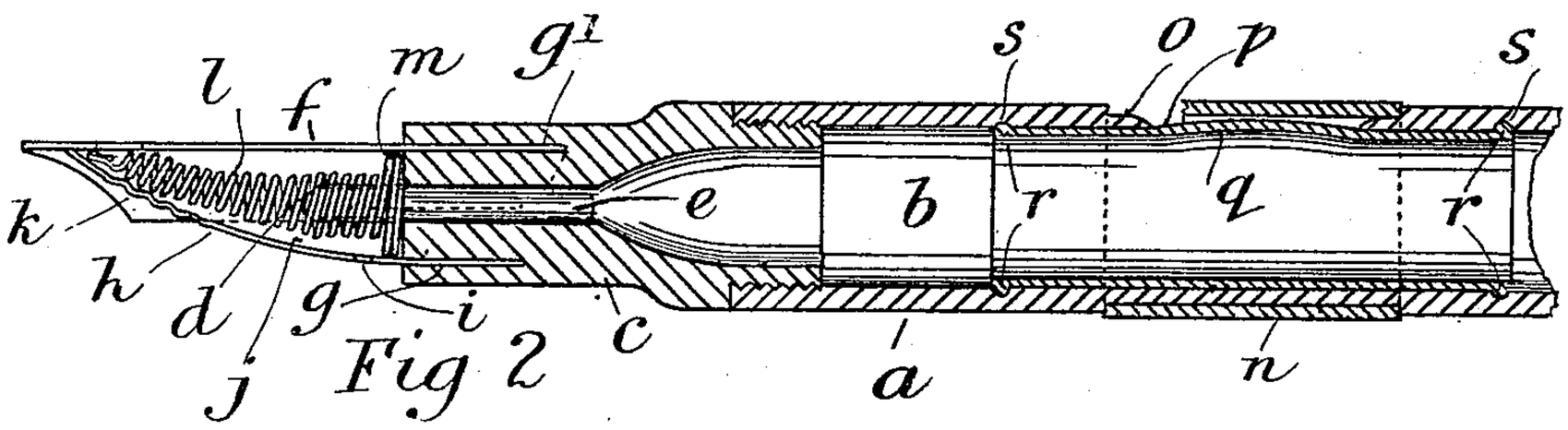

Fig 2

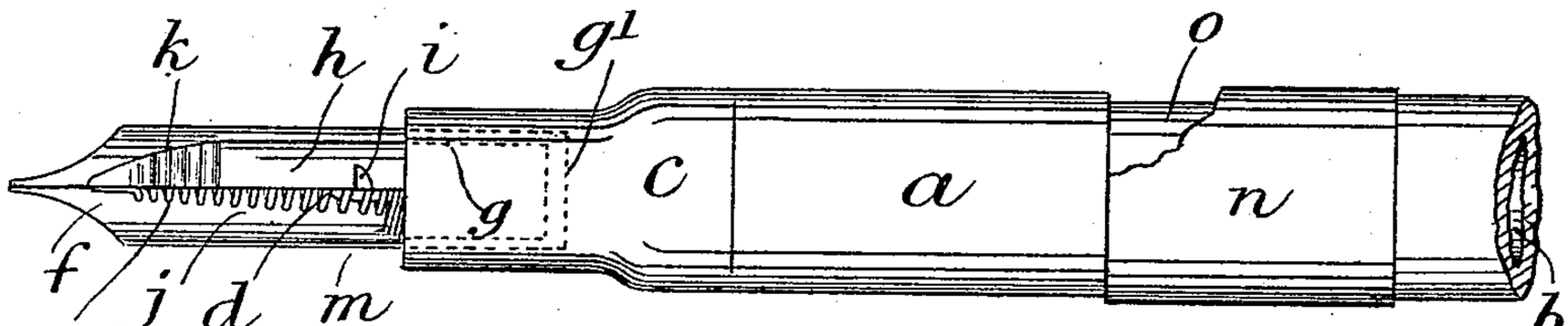

Fig 3

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UNITED STATES PATENT OFFICE.

HENRY GRASS, OF FLOWERDALE, VICTORIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 682,188, dated September 10, 1901.

Application filed November 3, 1900. Serial No. 35,311. (No model.)

To all whom it may concern:

Be it known that I, HENRY GRASS, a subject of the Queen of Great Britain and Ireland, residing at Flowerdale, near Broadford, in the Colony of Victoria, 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.

The object of this invention is to provide improvements in fountain-pens, including devices for feeding ink to nibs.

My pen is of that class in which the ink is not supplied to the nib by capillary attraction, but by a direct compression on the ink-reservoir at intervals during use. In this class of pen there has been a liability to supply the nib with either too much or too little ink. Then in the class of capillary-attraction feeders, or those in which the user does not at any time compress the ink-reservoir, there is the defect that the flow of ink may become scanty, and it is not possible to make for a long time the same heavy ink-charged strokes upon paper which can be made with an ordinary pen dipped as required into an ordinary ink-well. In many such fountain-pens the ink is at times apt to accumulate about the nib and drop, so as to make blots. The above-named scantiness cannot be said to be a bar to the use of fountain-pens, yet as the supply of ink to the nib is comparatively small this feature detracts from the comfortable use of such pens in many hands.

My invention enables the writer to produce continuously bold heavy writing, to employ any nib of suitable size he pleases, and to change the nib at will without difficulty or danger of damaging the pen. To secure these advantages, I attach to the pen-handle a nib section or plug having a separate attachment, which I term an "ink-guide," and near this guide and partly touching it is provided an ink-receiver consisting of a peculiarly-coiled wire, to which wire is supplied a charge of ink, as hereinafter set forth. I also provide the handle of the pen with an ink-reservoir, an ink-feed device for charging the said coil, and other features hereinafter explained. By having the ink-guide completely disengageable from the nib section or plug the ink-receiver may be taken out, cleaned, and replaced when required without interference with the nib, or the cleaning may take place without the removal of the said receiver.

In order now to further explain my invention, reference will be made to the accompanying drawings, in which views of a pen containing the same are exhibited.

Figures 1 and 3 represent, on different scales, (larger than the natural,) plan views of the exterior, Fig. 1 being as seen from above and Fig. 3 from below, while Fig. 2 shows, on the scale of Fig. 3, a vertical longitudinal middle section. Parts are broken away or omitted in these views to exhibit other parts more clearly.

Any usual kind of movable cap protects the nib when the latter is not in use. This is not shown, but will be well understood, and it forms no part of my invention.

In the views, *a* is a hollow holder or stem forming an ink-reservoir *b*, with at the lower end an opening into which is screwed the nib-carrying plug *c*, through which passes an ink-feed tube or duct *e*, the exit of which projects under the back part of the nib and is marked *d*. The plug *c* has a nib-slit *g'* or other known means for the reception of the back end of a nib *f*; but this slit or means does not communicate with the interior *b* of holder *a*. It has also another short slit *g* below slit *g'*, the lower slit being for the reception of the back end of an ink-guide *h*, which is inserted beneath the nib *f* and forms, with it and the plug, a chamber *j*. The ink-guide *h* (only one-half of which is shown in Fig. 3) is curved and has preferably corrugations, as *k*, near its point, as shown.

i is an aperture in guide *h*, at the back end, to enable the guide to be more easily withdrawn should it set firmly.

Into chamber *j*, at the back of which is the exit *d*, I place the ink-receiver, consisting of a piece of springy coiled wire *l*, of some non-corroding metal capable of receiving a charge of ink and of allowing the same to be drawn off by the nib in the action of writing. The body of this receiver is spiral and does not touch either the nib or the guide *h*; but the

back end *m* is enlarged to touch both nib and guide firmly, and it is seated against the plug *c*. The coils at the fore end diminish in diameter, so as to be able to reach close to the nib-point at this (the narrowest) part of chamber *j*.

Referring now to the means of supplying ink to the receiver, the holder *a* is encircled by a band *n*, of metal or rigid material, adapted to be turned around said holder, but not to slide along it, being fitted into a recess *o* in said holder to prevent it from so sliding.

p is an oval aperture through the holder *a* on the upper side of the recess *o*, and *q* is a short tube of rubber open at both ends, each end being provided with a thickening or lip *r*, adapted to fit or spring tightly into a groove or recess *s* around the inside of the holder, into which the tube may, furthermore, be cemented, so preventing leakage. There is also an aperture *t* in the band *n*, by turning which the rubber *q* may be either exposed to view at aperture *p* or may be completely covered in. When the rubber is exposed to view—that is, aperture *t* is over aperture *p*—a writer can when using the pen press down upon the rubber occasionally, and thus force ink out through exit *d* into the receiver *l*. The coils of this receiver do not quite touch, and thus when the pressure on the rubber is released the air will have access to exit *d*, so that only a portion of the ink supplied to receiver *l* will be drawn back to the reservoir *b*. The ink reaching the receiver naturally trickles downward and meets both the nib above and the guide *h* below, the lower end of the receiver being always when in use in a bath of ink; but when the rubber at *p* is pressed in the ink will also be squeezed into and through the sides of the receiver *l* and so will reach the nib comparatively far back, as well as trickle down inside the receiver to the nib-point. To hold the receiver in place, touching the nib near the point, and to prevent its shifting through jolting of the pen, the guide-corrugations *k* are found serviceable.

In using this invention although the ink is intermittently supplied to the nib—that is to say, a charge of ink is forced out at *d* from time to time as required by the writer—yet this is easily done by lifting, drawing back, and then pressing down the point of the forefinger on the rubber in the aperture *p*, the said aperture being so placed that the said action of the forefinger is easily affected.

In Fig. 2 the aperture *t* in the revoluble band *n* at the recessed part of handle *a* is supposed to be located on the side of the observer, and therefore it is not seen in this sectional view.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a fountain-pen of the class indicated the combination with a handle having a reservoir, of the plug having a nib-slit and an ink-guide slit or the like, an ink-feed tube projecting from the said plug and having its exit below the back of the nib, a tapering coil *l* forming an ink-receiver with its rear large end *m* meeting the plug and its front small end touching the nib and touching an ink-guide and the said ink-guide *h* which is inserted in the slit in the plug all substantially as and for the purposes set forth.

2. In a fountain-pen of the class indicated the combination with a handle having a reservoir, provided with a recess *o*, aperture *p*, and grooves *s*, of a rubber tube *q* with a lip *r* at each end and seated in each case in the groove *s* and a revoluble band *n* fitting in the recess *o* and having an aperture *t* all substantially as and for the purposes set forth.

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

HENRY GRASS.

Witnesses:
G. G. TURR,
W. H. CUBLEY.