

No. 637,439.

Patented Nov. 21, 1899.

F. R. WOLTER.  
FOUNTAIN PEN.

(Application filed Nov. 28, 1898.)

(No Model.)

Fig. 2.

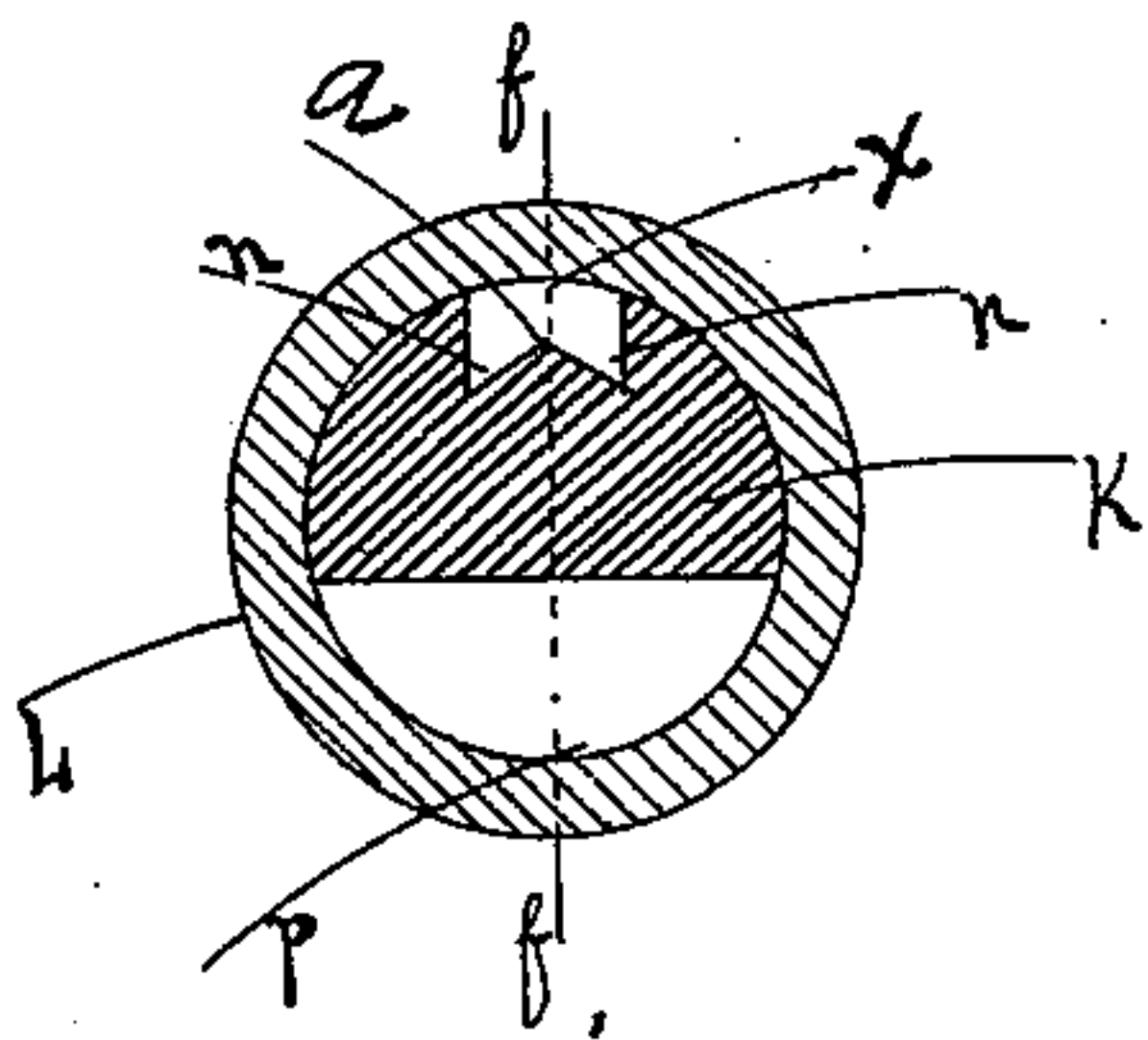


Fig. 3.

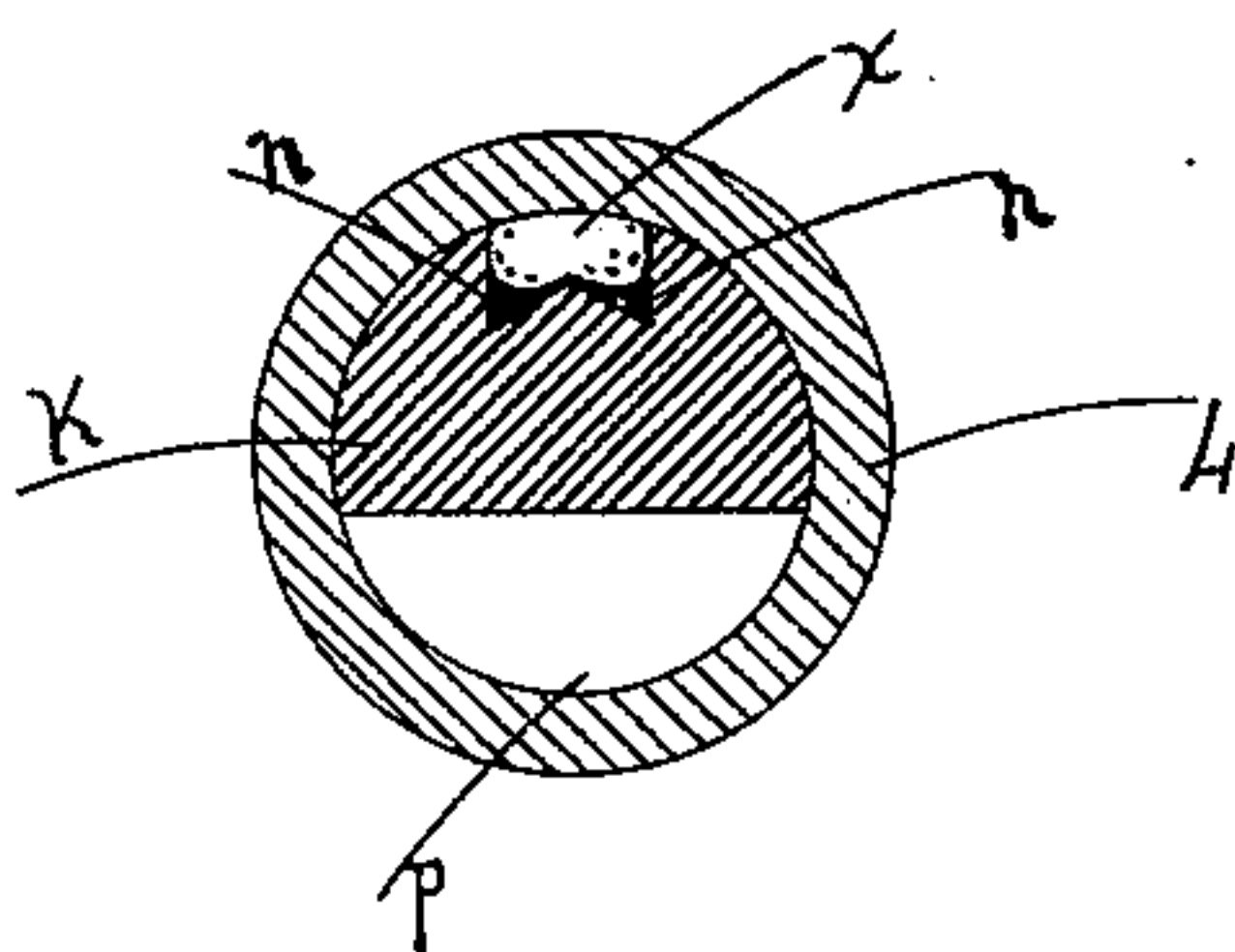
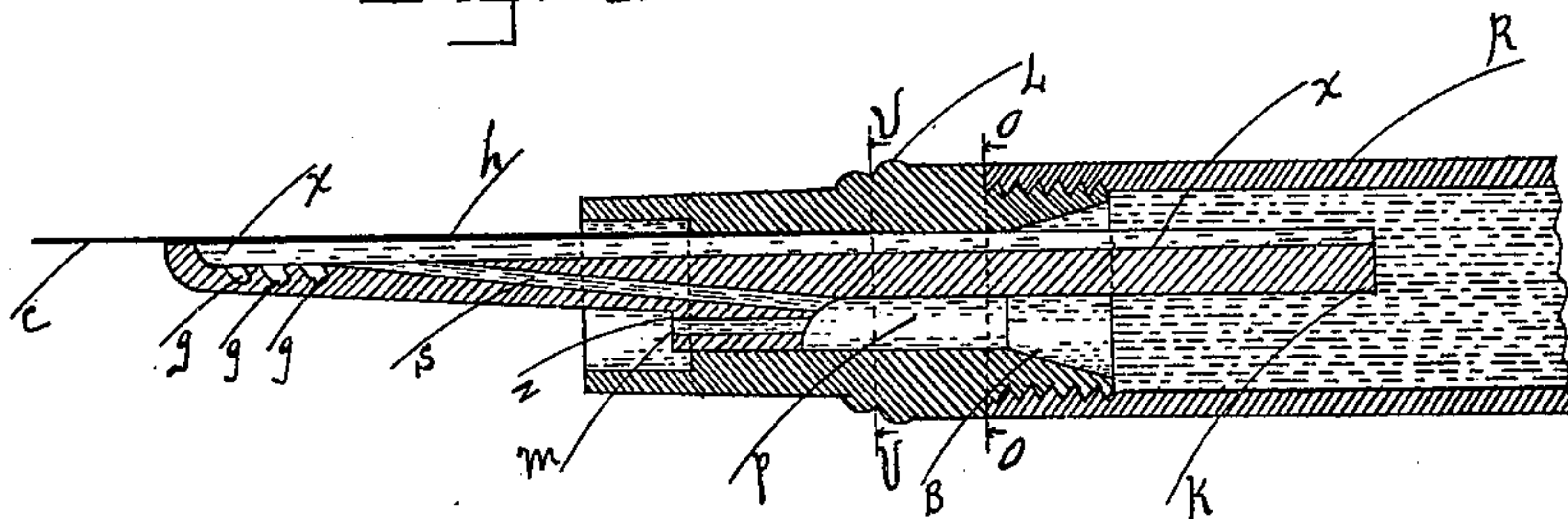


Fig. 1.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 637,439, dated November 21, 1899.

Application filed November 28, 1898. Serial No. 697,720. (No model.)

*To all whom it may concern:*

Be it known that I, FERDINAND R. WOLTER, a citizen of the United States, residing at Kasson, in the county of Dodge and State of Minnesota, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

The object of my invention is to produce a fountain-pen with the parts so constructed and arranged that the passage of air to and ink from the fountain to the pen will be in such proportion as to cause the pen to do ordinary writing and also be capable of doing heavy work, such as shading, without any adjusting of the working parts, to have said working parts so arranged as to keep the pen neat and clean when pen is not in use, to have the construction such that all the parts will perform their functions in the most simple and direct manner necessary to attain the proper end, and to render the feed mechanism free from liability to become obstructed or clogged by foreign matter in the ink and the whole sufficiently simple that it will not get out of working order easily. I accomplish this object by construction of feeder and nozzle illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the feed and nozzle, cut on the line *ff*, Fig. 2. Fig. 2 represents the feed as it appears from the rear, cut flush with the nozzle at the lines *oo* and *rr* in Fig. 1. Fig. 3 is like Fig. 2 and shows how ink and air pass in the channel of the feed-bar.

In Fig. 1, K represents the feed-bar proper. This bar is provided at the upper side with a channel *x*, which is constructed to have centrally located therein a V-shaped ridge or projection *a* throughout its entire length. The height of this ridge is such as to form the V-shaped grooves *nn* on either side of the ridge. As this channel is to furnish the main supply of air to the ink-fountain R, the ridge has to be low enough so as to come below the level of the upper edges of the walls of the channel *x* and come in contact with or close to the walls of the pen-nozzle L, containing the feed; otherwise the ridge would form too much of an obstruction for the proper passage of air. The V-shaped grooves *n* facilitate the passage of ink to the pen-point

when the fountain contains a large supply of ink; but as the ink gets low in the fountain air will press into the grooves to a greater depth, thereby preventing an undue escape of ink when same is low in the fountain. This is one of the advantages V-shaped grooves form over other constructions of this nature. Another marked advantage the V-shaped grooves afford is that they are not liable to become filled up or clogged by any solid particles or foreign substance such as is found in all inks. The flaring walls of the grooves effect that the action of the ink has a constant tendency to loosen up and wash out any particles or foreign matter contained in the ink and which would become lodged in any small groove or fissure with square walls. V-shaped grooves effect that they are always open and clean, which insures prompt and reliable action of the feed.

The feed-bar K, constructed as described, meets all the requirements of a reliable pen-feed as needed for ordinary work; but as some persons have a very heavy hand and others like to do heavy shading it was found desirable to secure means by which an extra supply of ink can be brought to the pen-point in a quick and reliable way to be used in heavy work or shading. To produce this result, the feed-bar K is provided with the channels *s* and *m*, as shown in Fig. 1. Much of the effective working of the parts depends upon proper location and construction, and in order to give the channels *s* and *m* the best possible location the feed-bar K is cut away at the lower and rearward portion for a considerable distance to form the short heel *z* and the elongated space *p*. The heel *z* is cut to have a square shoulder in front, and into this shoulder enters the small channel *m*. It was found necessary to locate this channel in such a manner that it would stand away from the walls of the nozzle sufficiently to prevent the ink from coming in contact with said walls, as in such case it will creep away to the pen, bringing an undue supply to same. The channel *s*, as will be noticed, is located to start almost directly above the channel *m* and then leads well forward in a direct line till it merges into the channel *x* as near the pen-point as it is practical to get it and near the vent *h* in the pen *c*.



The functions performed by the channels  $s$  and  $m$  are as follows: In ordinary work an ample supply of ink is furnished to the pen by the channel  $x$ ; but in heavy work the capillary attraction caused by the pen demands a greater supply of ink, and air will then be admitted to the fountain through the channel  $m$ , and a corresponding bulk of ink will pass through the channel  $s$  to the pen. It is of vital importance that in an arrangement of this kind the construction and location of channels, vents, &c., be in the most direct and practical manner possible in order to obtain practical and suitable results. It will be easily observed and understood that if the air had to pass through long and circuitous channels and cavities it would be impossible to obtain quick and proper results. The action of the parts would be too slow and sluggish to bring ink-supply to the pen promptly and effectually. In the construction shown these objections are overcome as far as it is possible to overcome them. In Fig. 1 it will be noticed that a body of ink is brought as near to the pen-point as it would be practical to bring a larger body. The channel  $m$  is short and air can pass through it readily. The channel  $s$  is always supplied with ink, and as soon as air enters through channel  $m$  ink instantly passes to the pen through channel  $s$ , and thus practical and effective results are achieved here and not in theory only.

The nozzle  $L$  is countersunk at the rear end to form the enlargement  $B$ , so that the walls thereof form a gentle taper and come nearly flush with the walls of the main fountain. By this construction the ink will pass to the feed a little more readily and will also be drained from the feed more readily when the pen is raised point up.

At the pen-point the feed is provided with a series of small holes or cells  $g$ , running obliquely into same. These cells will retain a small portion of ink or moisture when the pen

is not in use, and thereby facilitating prompt action when it is brought into use.

The above-mentioned parts and form of construction have been found necessary in order to produce a fountain-pen capable of acting in the manner described. I do not claim all these features as entirely new and broadly as a whole; but

What I do claim as new and superior in construction and arrangement is as follows:

1. In a fountain-pen, the combination of an ink-fountain  $R$ , and pen-nozzle  $L$ , a feed-bar  $K$ , provided at the upper side with a channel  $x$ , said channel  $x$ , constructed to have centrally located therein, and throughout its entire length, a V-shaped projection or ridge, whereby V-shaped grooves are formed on either side of the ridge, and the upper edge of said ridge  $a$ , standing below the upper edge of the walls of the channel  $x$ , all for the purpose of performing the functions specified.

2. In a fountain-pen, in combination with the fountain  $R$ , nozzle  $L$ , feed-bar  $K$ , having a channel  $x$ , therein, the lower and rearward portion of the feed-bar  $K$ , reduced to form the short heel  $z$ , and the elongated space  $p$ , said heel projecting beyond the end of the reservoir and having passage  $m$ , therein, for the purpose set forth and described.

3. In a fountain-pen, a feed-bar having a lower short heel  $z$ , between its ends, whereby, when the feed-bar is in position, there is provided an elongated space  $p$ ; said feed-bar also having upper and lower channels  $x$ , and  $m$ , and the oblique channel  $s$ , therein; said channel  $s$ , leading from the space  $p$ , upward and forward to the channel  $x$ , near the forward portion of the feed-bar, substantially as described.

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Witnesses:

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