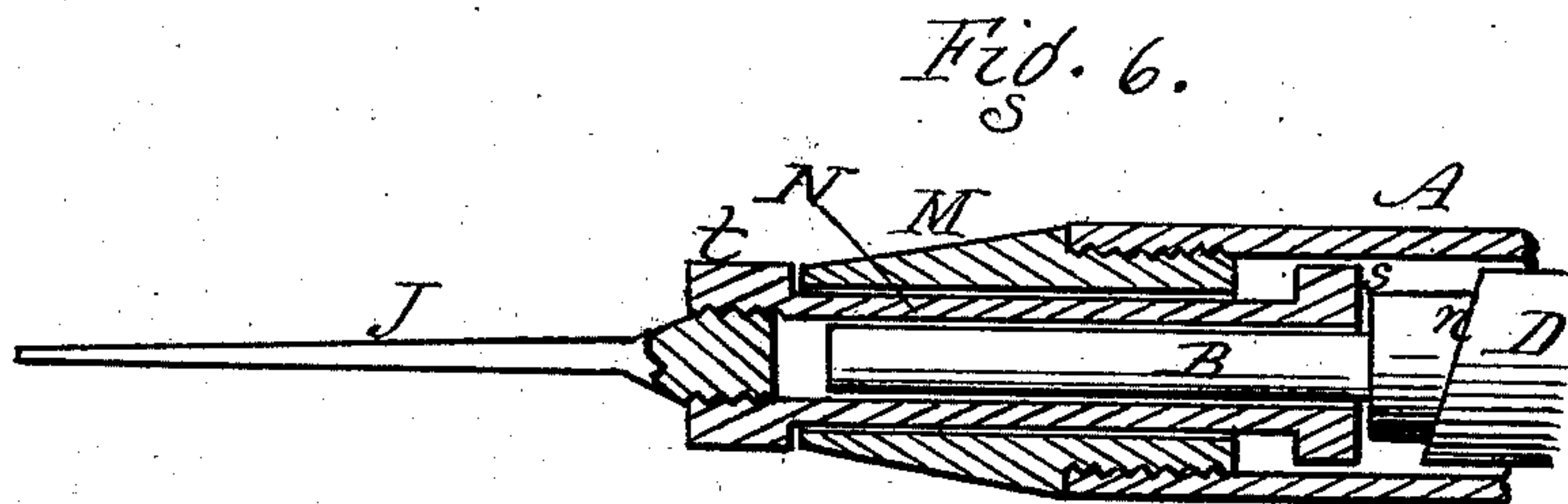
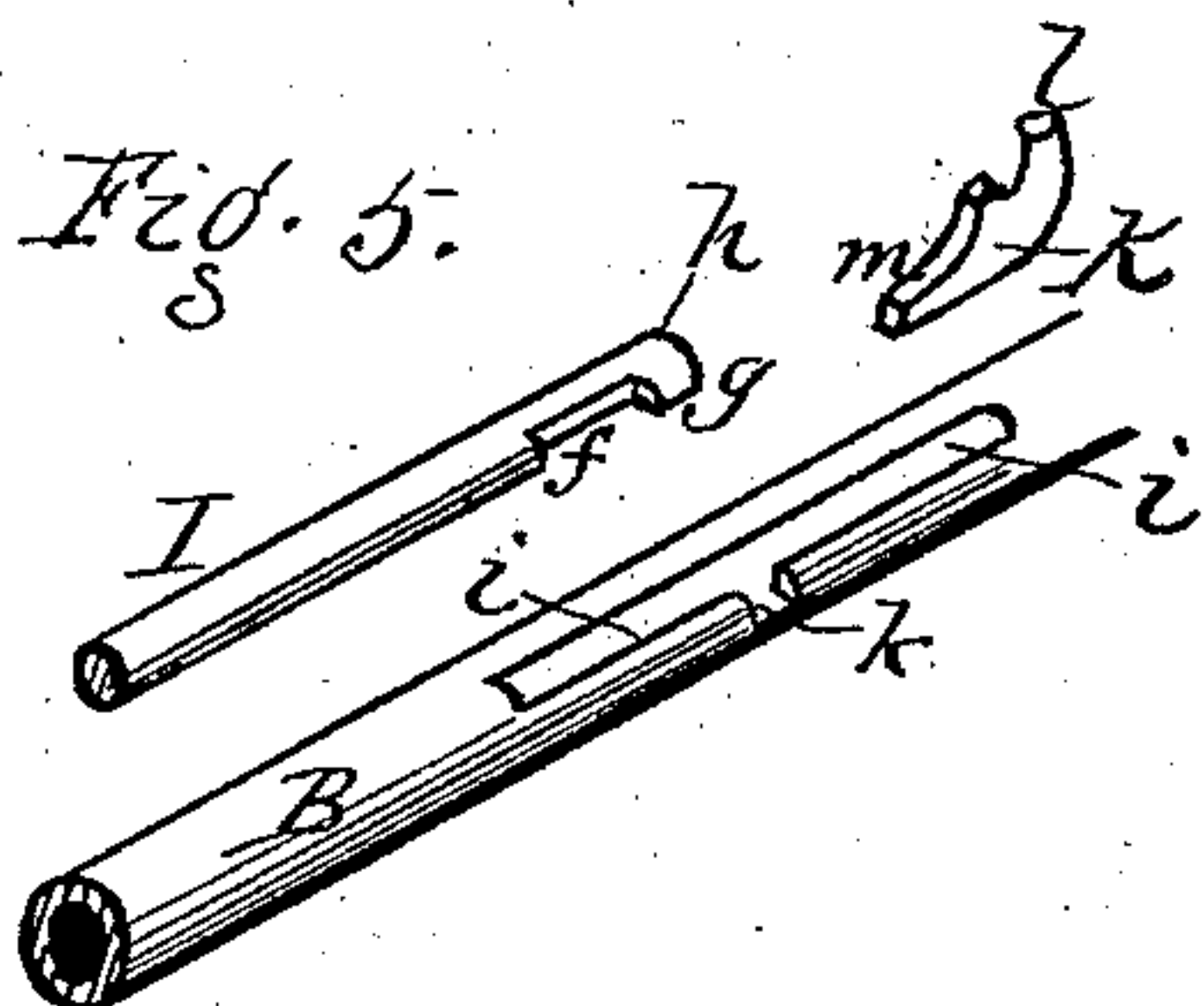
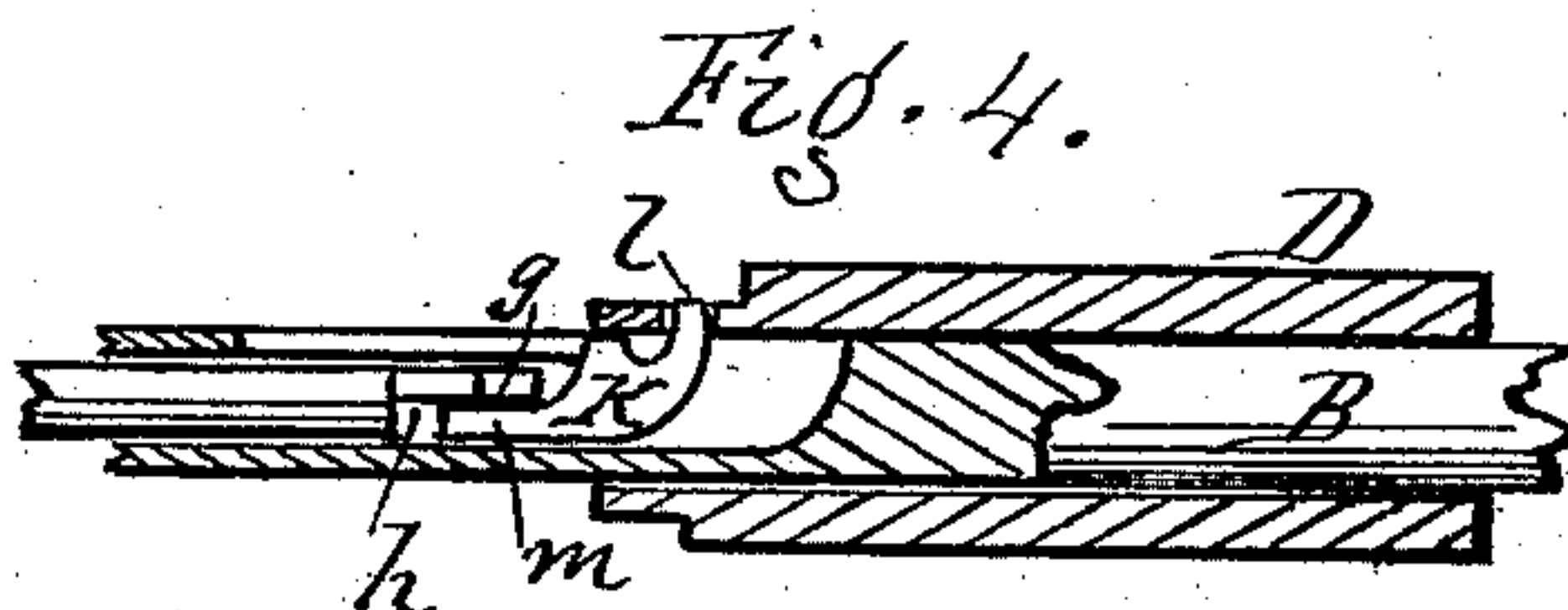
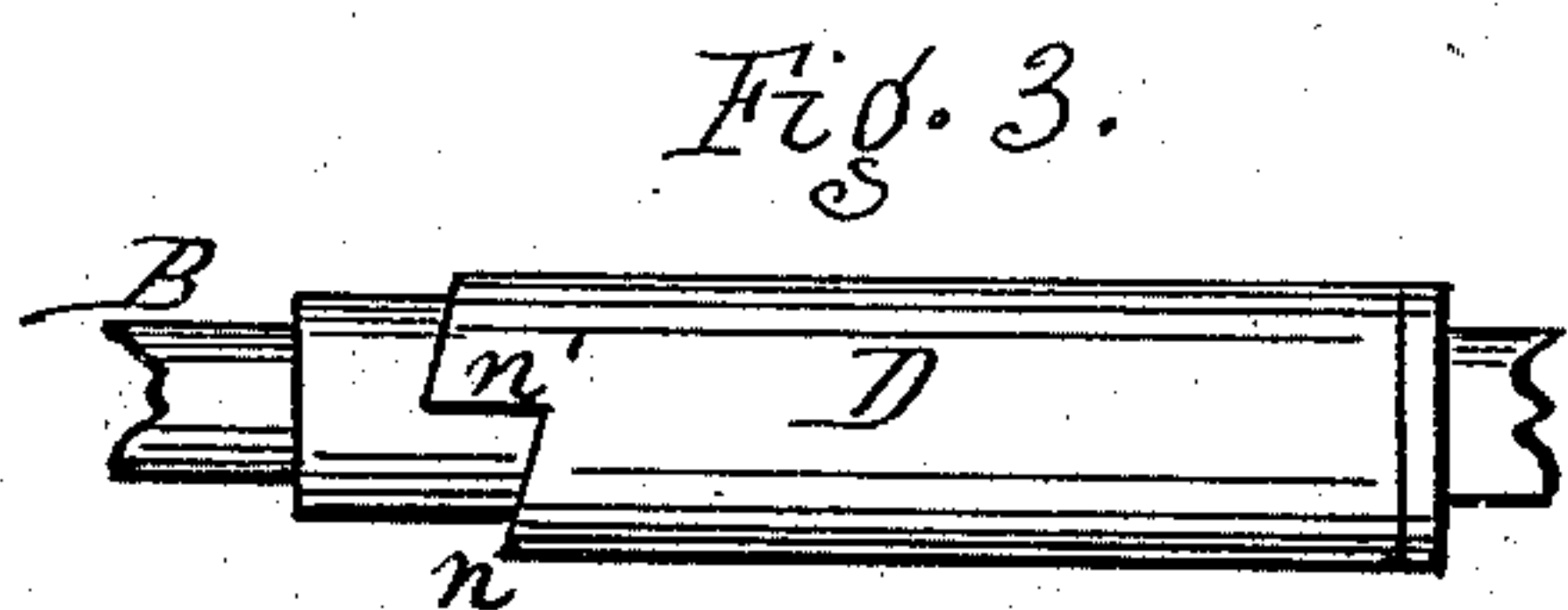
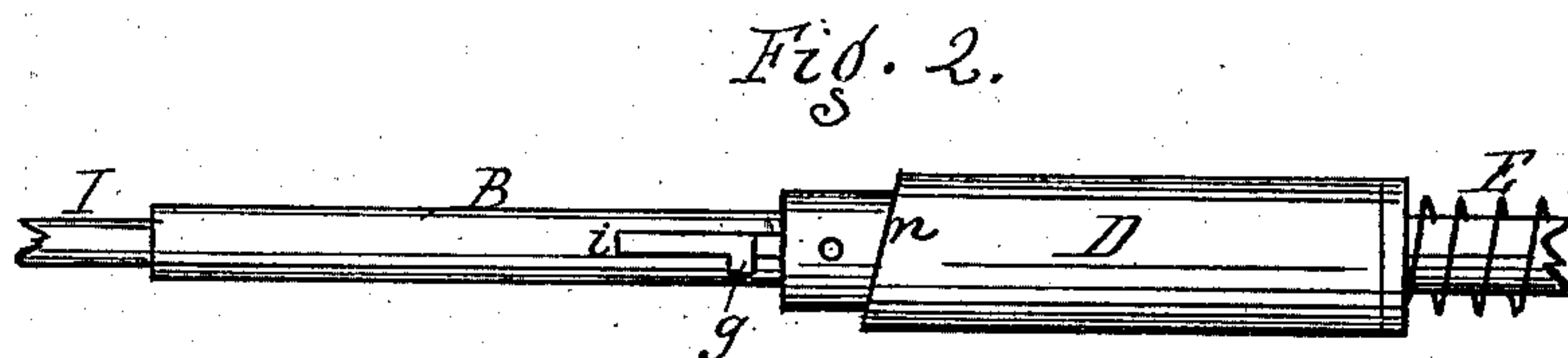
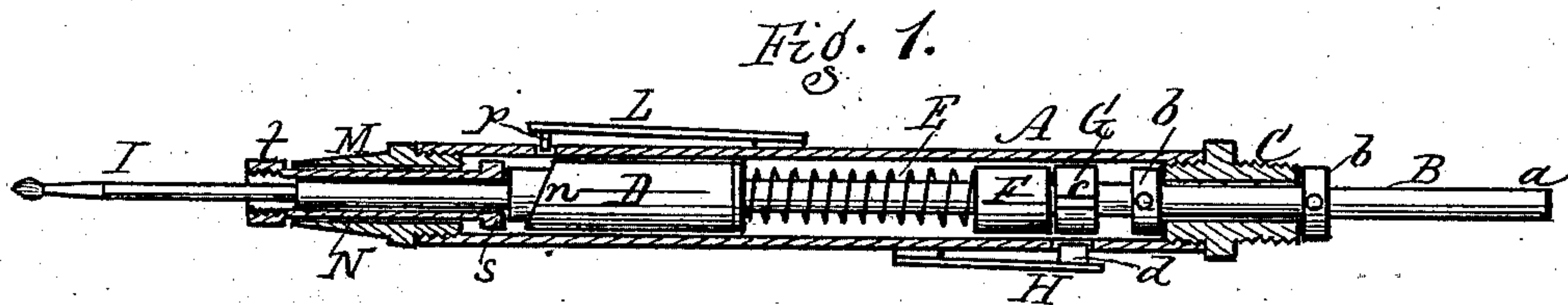


H. S. MILLER.  
Dental Plugger and Burr.

No. 238,950.

Patented March 15, 1881.



Attest:

J. H. Trux,  
Sol. C. Burr.

Inventor:

Henry S. Miller;  
per R. F. Osgood,  
Atty.



# UNITED STATES PATENT OFFICE.

HENRY S. MILLER, OF ROCHESTER, NEW YORK.

## DENTAL PLUGGER AND BURR.

SPECIFICATION forming part of Letters Patent No. 238,950, dated March 15, 1881.

Application filed March 17, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, HENRY S. MILLER, a citizen of the United States, residing at Rochester, Monroe county, New York, have invented a certain new and useful Improvement in Dental Burring and Plugging Instruments; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of the instrument arranged as a burring-instrument. Figs. 2, 3, 4, and 5 are detail views of the same. Fig. 6 is an enlarged section of the operating end arranged as a plugging-instrument.

My improvement relates to combined burring and plugging instruments which can be connected with a dental engine, by which rotary motion is imparted, and which can be converted from one use to the other by the employment of an engaging and disengaging device that is under control of the operator's finger.

The invention consists in the construction and arrangement of parts hereinafter more fully described and claimed.

In the drawings, A represents the cylindrical body of the instrument, which is of usual form.

B is a small shaft or spindle, which extends through the cylinder and projects at the rear end, as shown at *a*, and is connected with the dental engine in a well-known way, so that rotary motion is imparted to the spindle.

C is a plug or bearing screwing into the rear end of the cylinder, and forming the bearing for the spindle at that point, the spindle being retained against end movement by shoulders *b b*.

D is a mallet or hammer, which slides free on the spindle within the case.

E is a coiled spring, which fits around the spindle and bears upon the mallet.

F is a collar, which rests against the spring, and G is a nut forming a follower, which screws up and down upon a thread cut on the spindle and bears against the collar. This nut has a slot, *c*, like a screw-slot, and with this slot engages the bit *d* of a spring, H, which is pressed down by the finger of the operator.

When so pressed down the spring holds the nut from turning, and the spindle turning therein causes the nut to move down on the screw-thread, thereby compressing the spring and increasing the force of the blow of the mallet.

I is the burring-tool, which enters a socket at the end of the spindle, and is secured in place by the following means: The shank end of the burring-tool is notched out, as shown at *f*, Fig. 5, leaving a right-angled offset lug, *g*. The bottom of this end is also squared or flattened, as shown at *h*. The body of the spindle is provided with a longitudinal groove, *i*, and on one side of this is an offset notch, *k*. When the shank of the burring-tool is inserted in the socket of the spindle, the lug *g* comes opposite the notch *k*, and by turning the tool axially the lug strikes into the notch.

K is a locking piece or key which rests in the groove *i*. It has a projecting point, *l*, which enters a hole in the mallet, and it also has a horizontal extension, *m*, of such size and form as to slide under the flattened end, *h*, of the burring-tool shank, and thus prevent it from turning when the lug *g* is locked in the notch *k*, as before described. The locking-piece K rides up and down with the mallet, its end *m* sliding up and down under the flattened end *h*, and the locking-piece also serves to keep the mallet from turning by resting in the groove *i*. When the mallet is raised to its highest point, the end *m* is freed from the tool-shank, and the latter can then be removed by turning it back, so as to free it from the notch *k* and drawing it out. If desired, the mallet may have an additional spline or feather to keep it from turning. This is a simple and convenient device for locking the tool in place and keeping the mallet from turning axially, as the tool is thereby rendered perfectly stiff and solid, and the exterior surface of the spindle is left flush for the passage of the mallet. The locking-piece is easily engaged and disengaged. A cam is formed near the lower end of the mallet, consisting of an inclined shoulder, *n*, and a vertical abrupt offset, *n'*, to same, as shown in Figs. 2 and 3.

L is a finger-piece, having a lug, *p*, which is capable of engagement with or disengagement from the cam. It is preferably made in



the form of a spring, as shown, so that when pressed down by the finger it will engage with the cam, but when released it will rise out of engagement. When the finger-piece is pressed  
 5 down so as to engage with the cam, the latter will ride upon the finger-piece as it rotates, and will alternately rise and fall, thereby producing a sharp blow or concussion.

If desired, the lug of the finger-piece may  
 10 have a small friction-wheel which bears against the shoulder of the cam, and the sides of the mallet may also have small friction-rollers, which travel on the interior of the case A, the object being to decrease friction.

When the instrument is used as a plugger, the burring-instrument is removed and a plugger, J, is employed. It is attached in the following manner:

M is a hollow socket which is screwed into  
 20 the front end of case A.

N is a tube which slides freely but accurately within this socket, and has a stroke sufficient to produce the necessary concussion in plugging. On the inner end of the tube is  
 25 a shoulder, s, which rests in contact with the mallet; and at the outer end is a socket, t, into which screws the plugging-tool J. The socket and tube remain attached to the case at all times, and it is only necessary to change the  
 30 tools or points to change the work.

The operation is as follows: The instrument is connected with the dental engine, and the shaft B receives a continuous rotary movement, carrying with it the nut c, the collar F, spring E, mallet D, and burring-tool I. To  
 35 convert the instrument into a plugger the tools are changed, and the finger-piece L is pressed down to engage with the cam on the mallet, which causes the latter to rise and fall and  
 40 produce blows upon the plugger. The whole is accomplished by a simple rotary movement of the spindle, and saves the necessity of two separate and independent instruments for the purposes. The same effect may be produced  
 45 by making the spindle B in sections, or in two or more separate lengths, and connecting them by slides or other engaging and disengaging connections.

One special advantage consists in the use of  
 50 the engaging and disengaging device L, by which, when the instrument is used as a plugger, the motion of the mallet can be controlled at pleasure, either by pressing said device down to engage and produce concussion, or  
 55 by allowing it to retract, which stops the motion, so that by the use of this device, while the shaft is under constant motion, the operator can apply the concussion to the filling, can stop to insert the filling or adjust the  
 60 same, or can use the plugger simply to produce hand pressure on the filling, as the exigencies may require. This obviates the great objection to those pluggers which are operated directly from the dental engine, but  
 65 have no engaging and disengaging device by which the motion can be controlled. This ar-

range-ment enables the operator to stop the concussions of the mallet, and to pick up and carry the gold to the cavity with the instrument, and to press the gold into the cavity  
 70 and otherwise manipulate it, the plugger remaining stationary while this is being done, although the shaft be still revolving.

It will be noticed that the extension m of the key-piece K is slightly tapering or wedg-  
 75 ing, so that it takes up the wear on the under side of the tool-stock I, and also the wear upon the key itself, by which means the parts will always be kept tight.

I am aware that in Patent No. 162,154 is  
 80 shown a cam-ring operated upon by a spring-plunger. In Patent No. 156,796 is shown a tool-shank having an offset lug, which turns into a side notch, and is secured by a slide; and in reissued Patent No. 7,107 is shown a  
 85 socket or holder at the end of the case for receiving the tool-shank. Such devices I expressly disclaim.

What I claim as new is—

1. In a combined burring and plugging instrument, the combination, with the revolving  
 90 spindle and the mallet resting and sliding thereon, of an engaging and disengaging device under the control of the operator's finger, so arranged, as described, that in its normal  
 95 position it allows the spindle to revolve free and without giving motion to the plugging-tool, but when pressed inward it engages with the mallet and causes the mallet to produce  
 100 concussions to operate the plugging-tool, as herein set forth.

2. In a combined burring and plugging instrument, the combination of a revolving spindle extending through or nearly through the  
 105 case, a mallet resting on and turning with the spindle, but having a free sliding movement endwise, a cam at the end of the mallet, and an engaging and disengaging device outside the case, with which the cam engages when  
 110 said device is pressed inward, as herein shown and described.

3. In a combined burring and plugging instrument, the combination, with the nut G, screwing upon the spindle B and compressing  
 115 the spring E, of a slot, c, formed in the nut, and a spring, H, outside the case, provided with a lug, d, which, when pressed inward, engages with the slot and holds the nut stationary, while the spindle revolves within it to  
 120 move it forward or back, as herein shown and described.

4. The combination, with the slotted spindle B and hollow mallet D, of the separate key-  
 125 piece K, attached to the mallet and sliding in the slot of the spindle, as herein shown and described.

5. The combination, with the tool-shank I, provided with the offset lug g and flattened  
 130 end h, of the corresponding offset notch k in the spindle, to receive the lug g when turned therein, to prevent the tool being drawn out, and the key-piece K, provided with the wedge-



shaped point *m*, sliding under the flattened end of the tool-shank, to keep the latter from turning, as herein shown and described.

5 6. In a combined burring and plugging instrument, the combination, with the sliding tube N, resting in the socket-piece M, which is screwed into the end of the case, the spindle B, extended down so that its lower end rests within said sliding tube, and projects nearly  
10 to its outer end, whereby a plugging-tool may be inserted in the end of the sliding tube, or

a burring-tool may be inserted in the end of the spindle, without the use of extra parts, as herein shown and described.

In witness whereof I have hereunto signed 15  
my name in the presence of two subscribing witnesses.

HENRY S. MILLER.

Witnesses:

CHAS. F. SPENCER,  
R. F. OSGOOD.