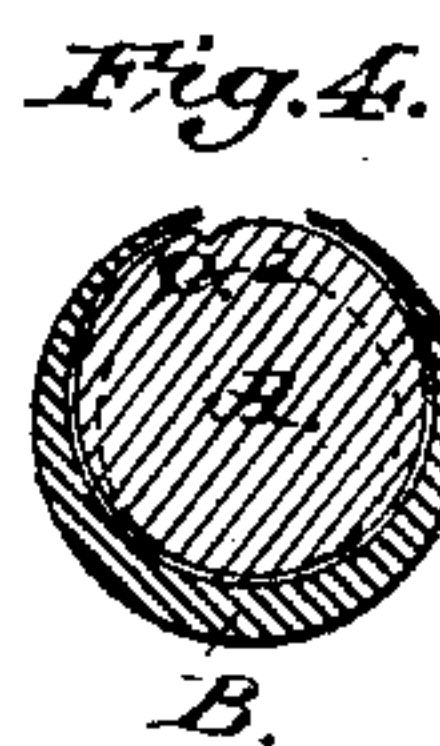
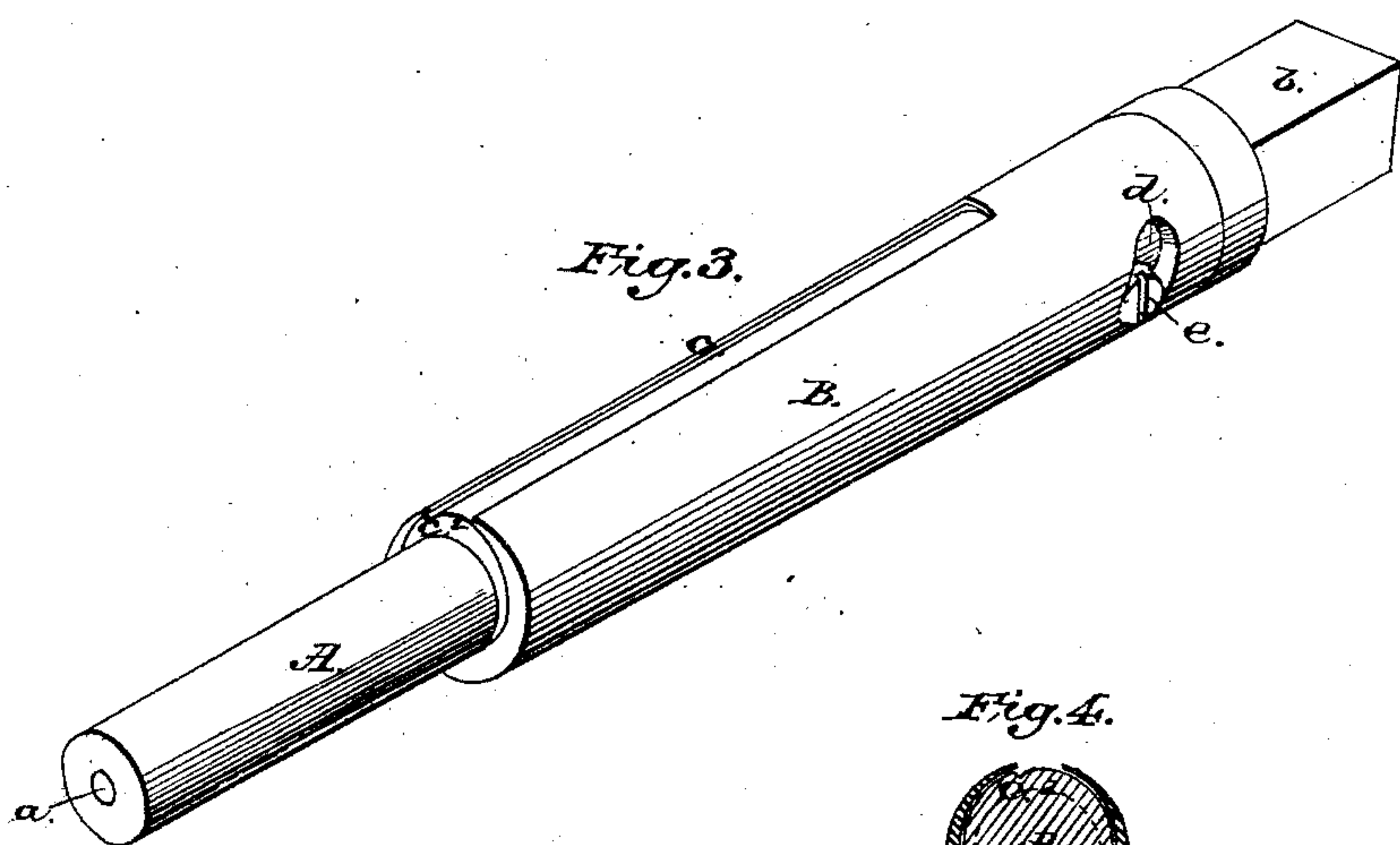
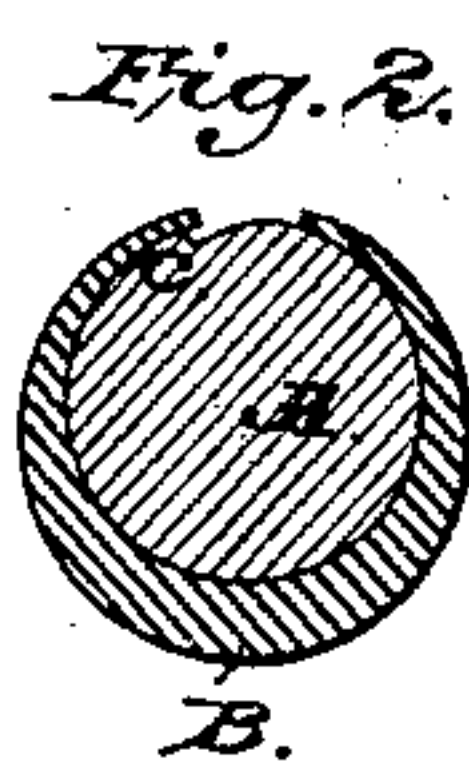
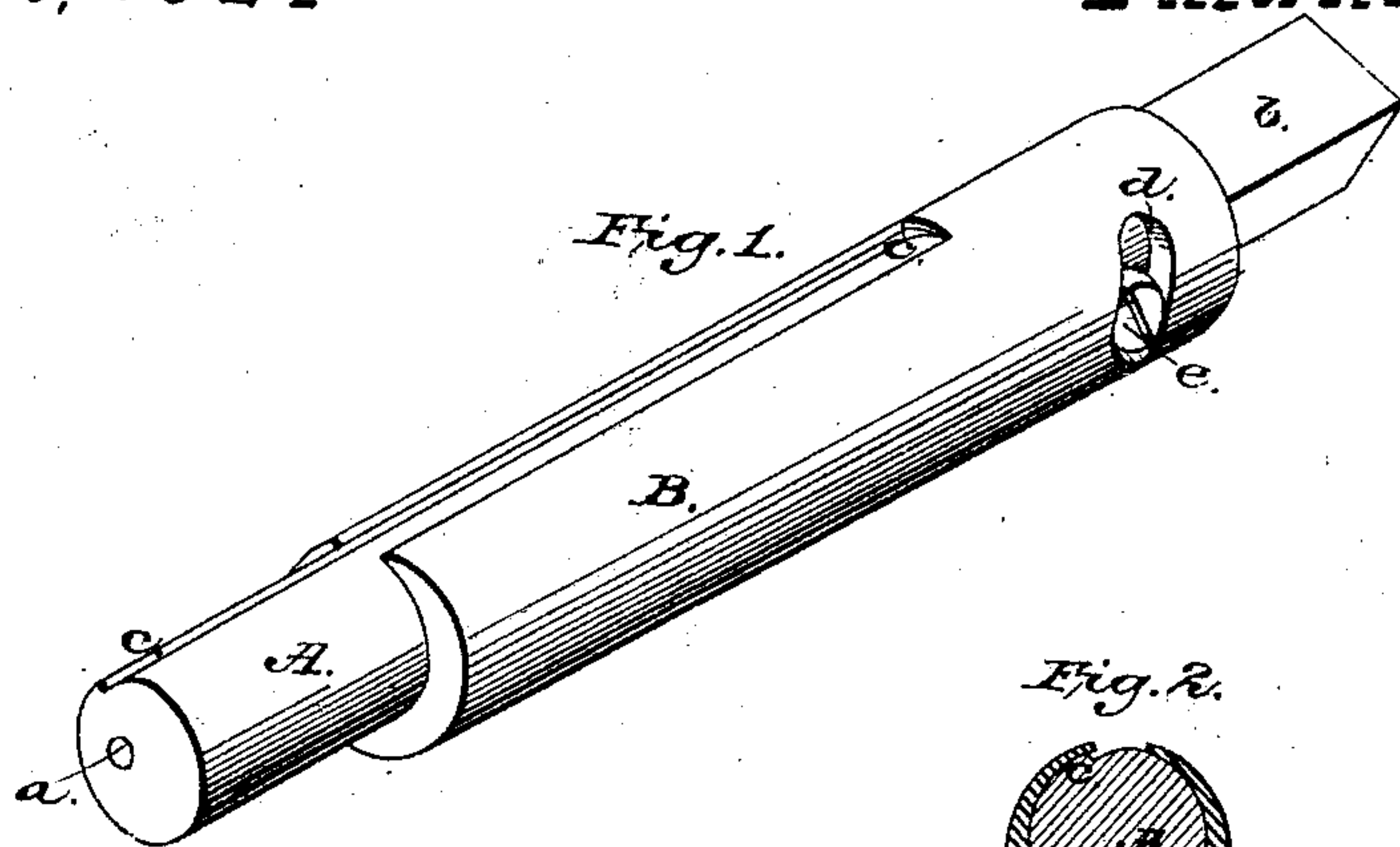


C. French,
Making Springs,

N^o 76,432.

Patented Apr. 7, 1868.



Attest
J. D. Patten
J. M. Pool

Inventor:
Carlos French.
By atty A. B. Stoughton.

United States Patent Office.

CARLOS FRENCH, OF SEYMOUR, CONNECTICUT.

Letters Patent No. 76,432, dated April 7, 1868.

IMPROVEMENT IN BENDING-MANDREL.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CARLOS FRENCH, of Seymour, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Mandrels for Winding and Bending Metals in Coils; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents one form of mandrel, in which the shaft is concentric, and the sleeve or clasp eccentric thereto, in relation to its centres of motion, and

Figure 2 represents a transverse section through the same.

Figure 3 represents another form in mandrel, in which both the shaft and sleeve or clasp are eccentric to the centre of motion, but so put together as to make the perimeter of the mandrel move in a true circle, and

Figure 4 represents a transverse section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention consists in a mandrel composed of an interior grooved or recessed shaft, having an exterior sleeve or clasp upon it, which sleeve or clasp can turn upon the shaft to fasten and unfasten the end of the metal to be bent or wound thereon.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a shaft, which, as shown in fig. 1, is cylindrical, with its centres *a* arranged eccentrically, and a square or sided shank, *b*, thereon, by which it may be seized to revolve it upon its centres. A shoulder, recess, or groove, *c*, is formed on this shaft, in the line of its length, which runs out or meets the external surface of the shaft opposite the shoulder. B is a sleeve or clasp, which is eccentric to the shaft, its thinner portion cut away where it comes over the shoulder or recess *c*, so that the skelp or piece of metal to be bent may be placed against the shoulder, and the sleeve or clasp moved over upon it to hold it to the mandrel. A slot, *d*, in the sleeve, and a stud or set-screw, *e*, passing through it into the shaft, regulate the extent of motion of the sleeve circumferentially on the shaft, and admit of its removal when necessary. When the blank is caught in the mandrel, the latter is revolved to wind the metal upon itself, a presser-bar being held over and on the metal at the bending or winding-line. By making the sleeve eccentric, as in fig. 1, it will be perceived that in revolving the perimeter will not move in a true circle, and this causes the presser-bar to ride up and down, which is somewhat inconvenient; otherwise it works very well. To avoid this riding up and down of the presser or gauge-bar, I make a portion of the shaft (or the whole of it) eccentric, as seen at 2, figs. 3, 4, and also make the sleeve or clasp eccentric, and so put them together, as therein seen, as that the shaft may revolve on true centres, and the perimeter of the mandrel move in a circle concentric therewith. By this mode of construction the gauge-bar rises regularly just as the coils are made in the piece of metal, and for this reason I prefer the mandrel made as shown in figs. 3 and 4. I find, in using this mandrel, that without placing anything between the coils in winding to keep them from close contact, the coils are separated by space enough to allow them free action, without impinging upon each other, or rubbing.

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

A mandrel, composed of an interior shaft, with a shoulder or recess therein, and an eccentric slotted clasp or sleeve on its perimeter, that can move over or past said shoulder, to catch and hold or release the end of the metal bent or wound therein, substantially as described and represented.

CARLOS FRENCH.

Witnesses:

A. B. STOUGHTON,
EDM. F. BROWN.