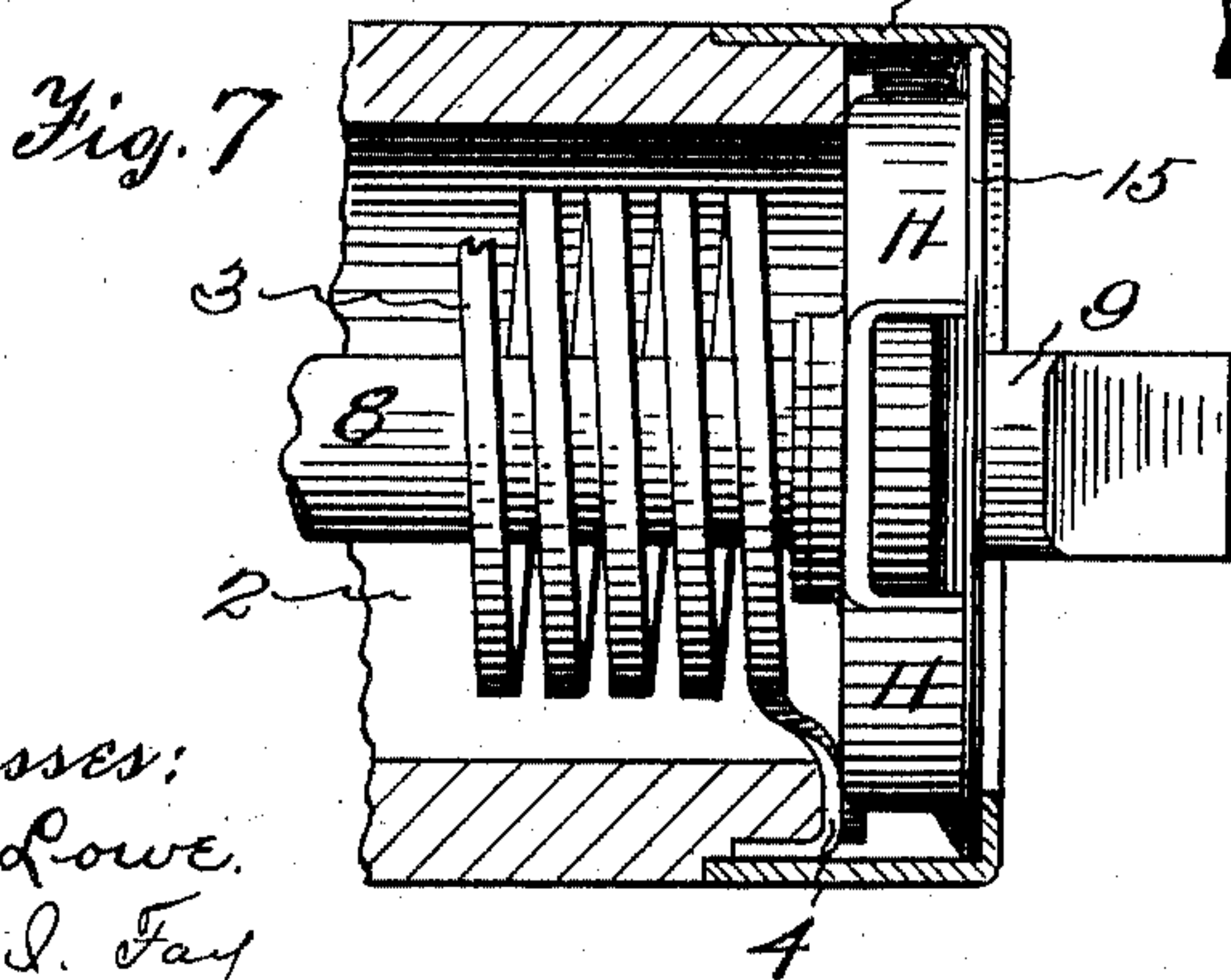
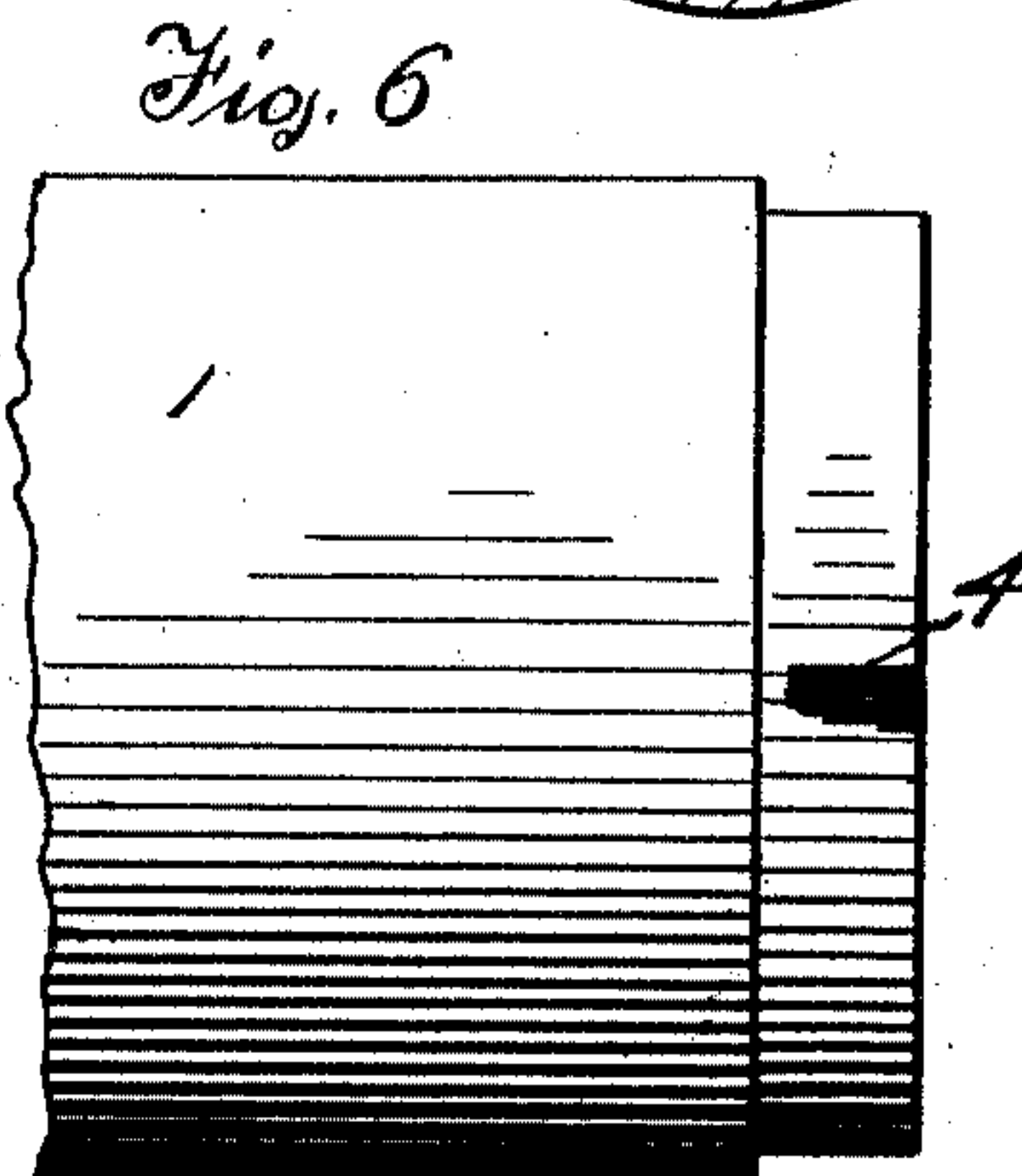
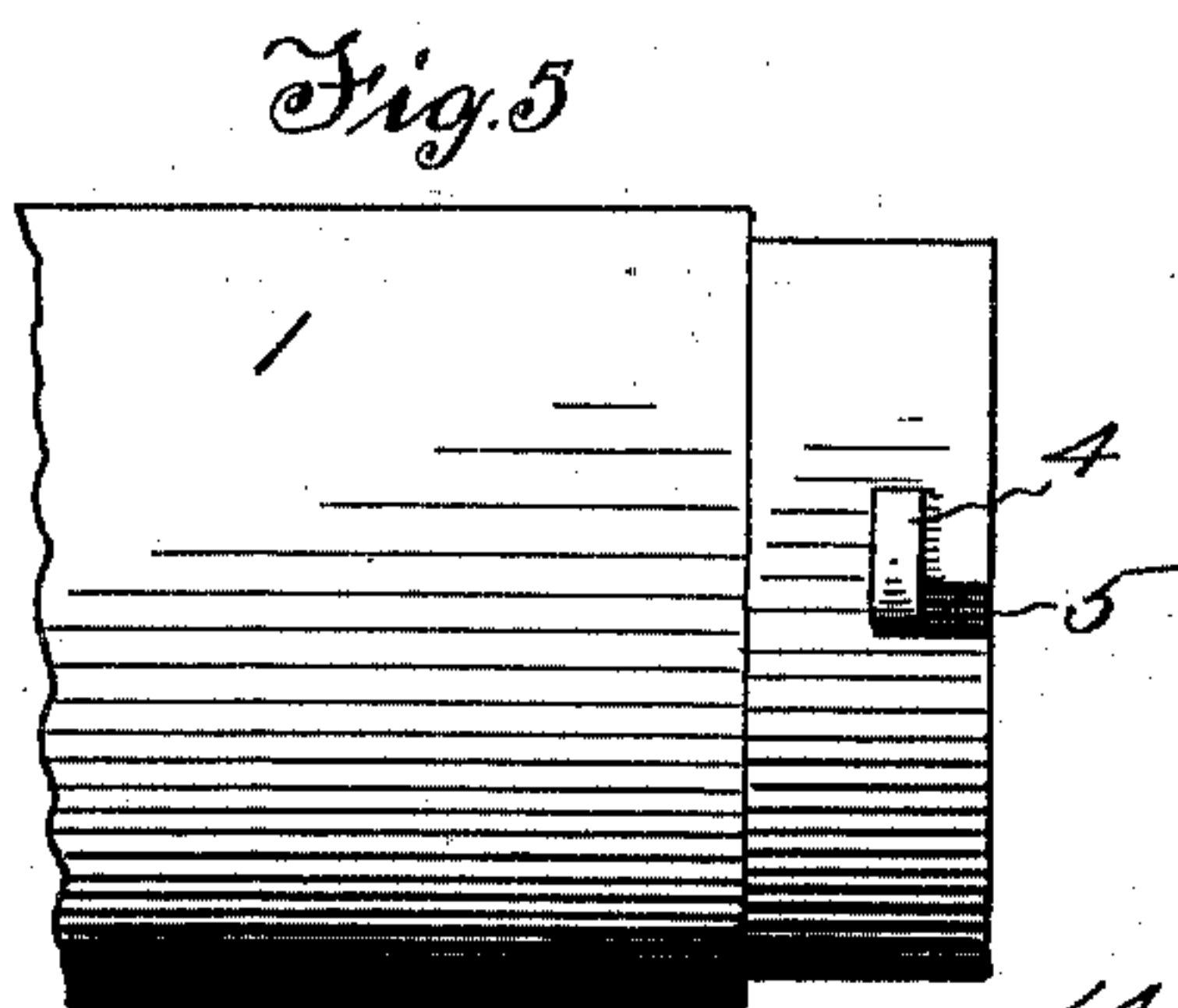
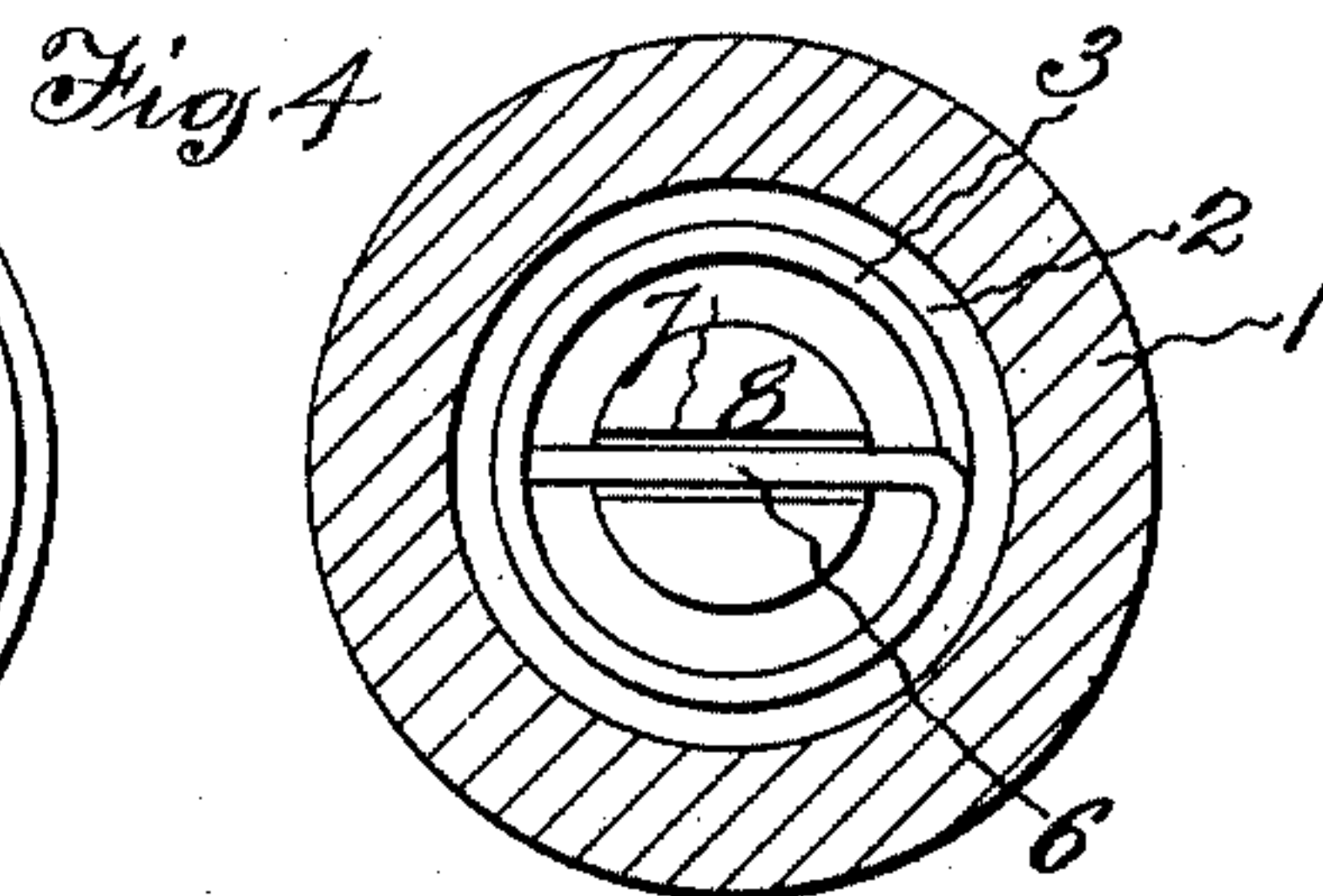
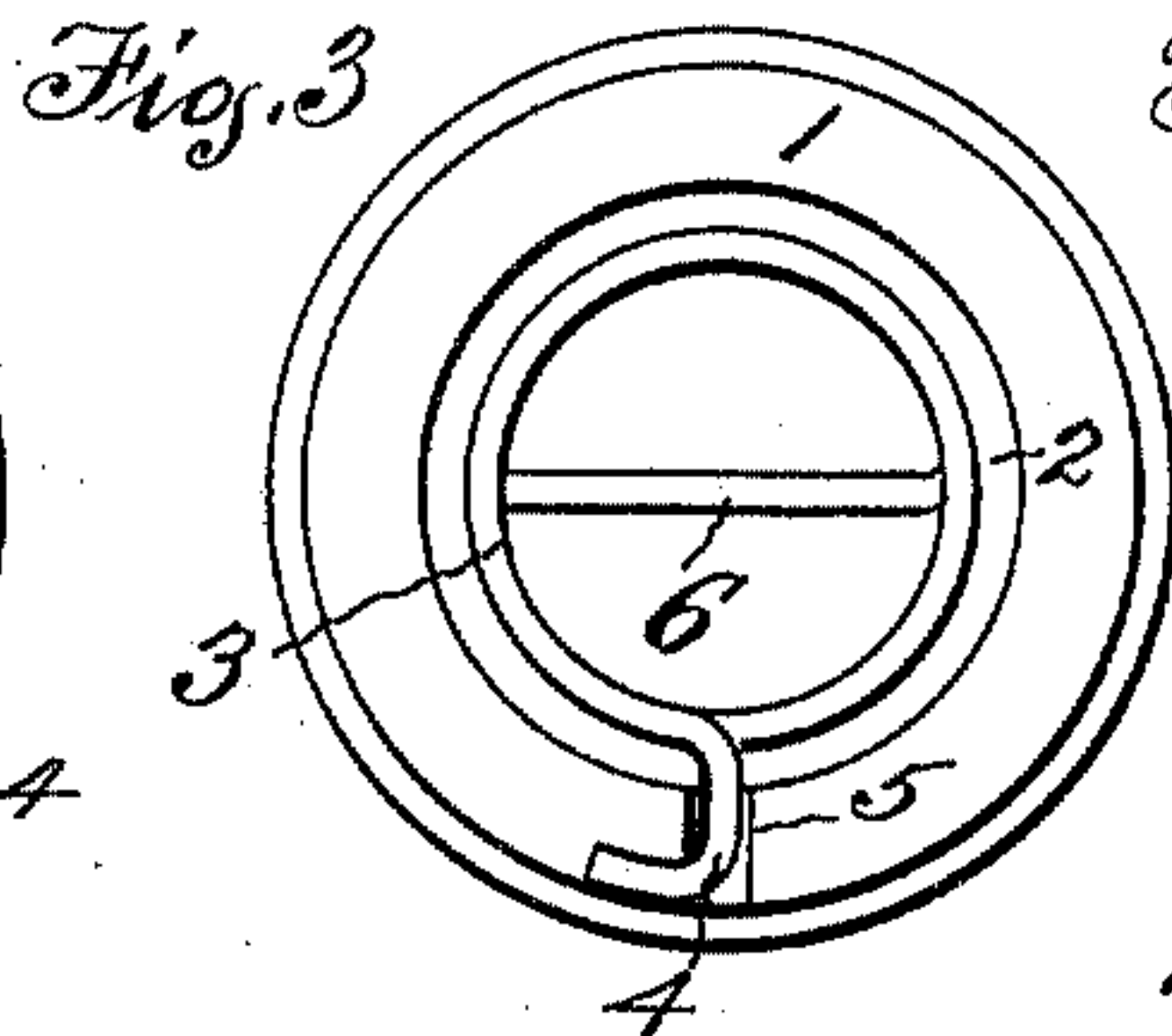
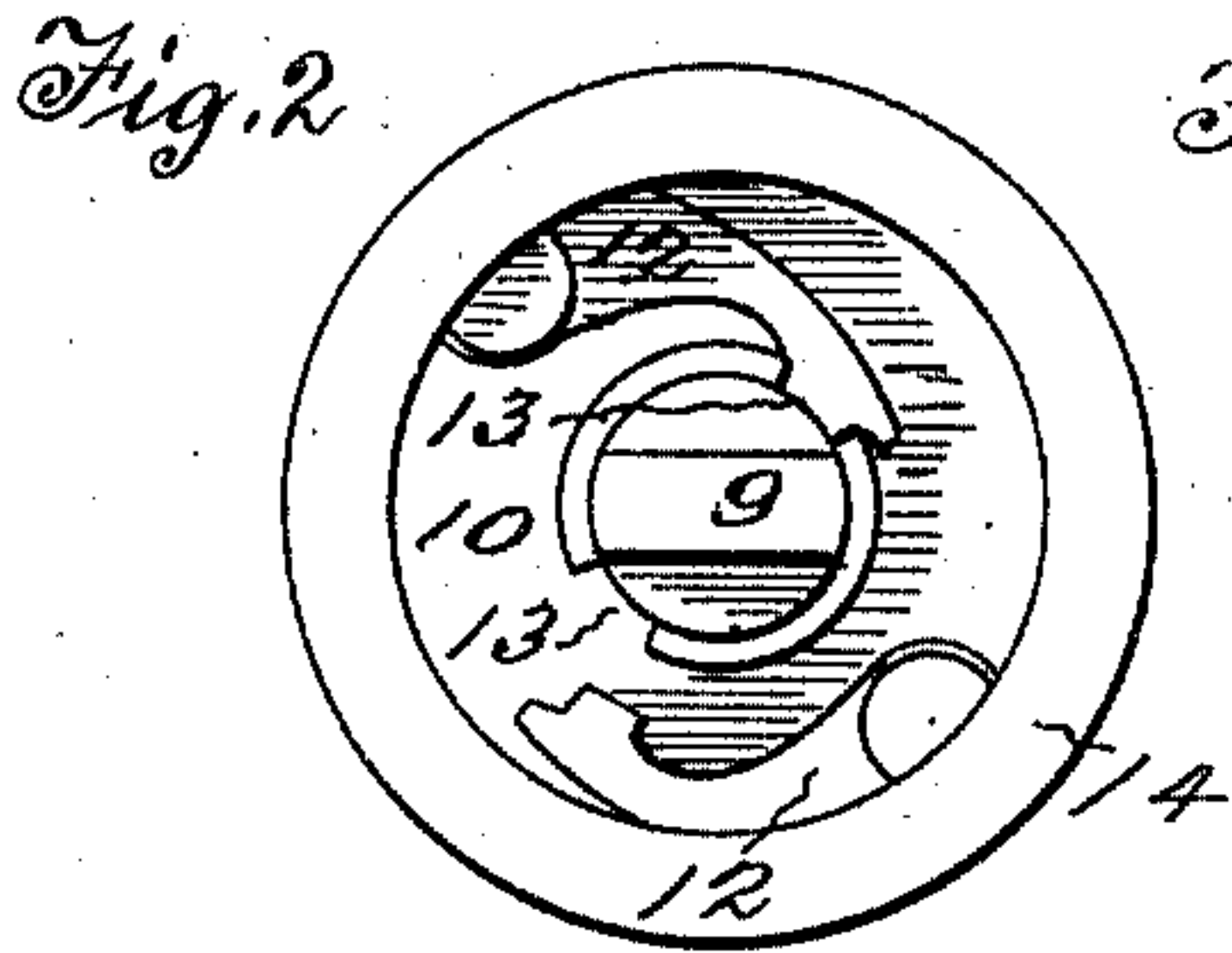
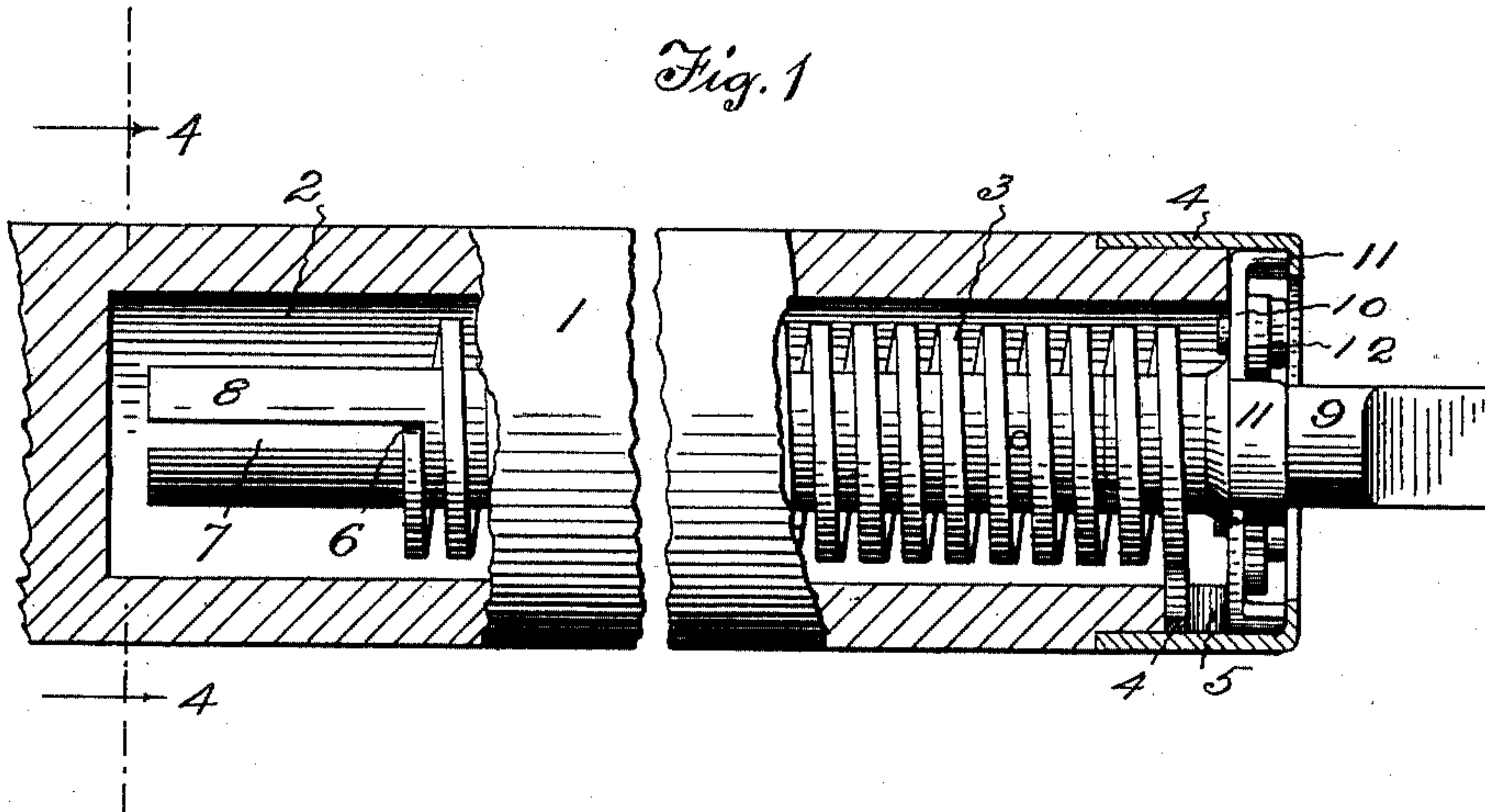


No. 759,883.

PATENTED MAY 17, 1904.

W. D. HARNED.
SPRING MECHANISM FOR SHADE ROLLERS.
APPLICATION FILED MAY 9, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM D. HARNED, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE
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SPRING MECHANISM FOR SHADE-ROLLERS.

SPECIFICATION forming part of Letters Patent No. 759,883, dated May 17, 1904.

Application filed May 9, 1903. Serial No. 156,326. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. HARNED, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Spring Mechanism for Shade-Rollers, of which the following is a specification.

This invention relates to the connection of the spring with the spindle and with the roller of a window-shade.

As at present constructed the inner end of the spring of a shade-roller is attached to the spindle, and the outer end of the spring is attached either to the spool or a lug projecting inwardly from the spool or from the inner side of the pawl-plate. The parts for such constructions are somewhat expensive to manufacture, require skill and patience to assemble, and the organization is such that when together the spring pulls away from one side of the wall of the bore in the roller and presses against the opposite wall of the bore, so as to interfere with its free and full expansion, and thus a part of the power is wasted and an extra amount of wire is required to insure the correct and desirable rolling up of the shade.

The object of this invention is to provide a very simple and compact construction having parts which are cheap to manufacture, easy to assemble, and which when put together permit the full, free, and symmetrical expansion of the spring. To attain this object the inner end of the spring is attached to the inner end of the spindle, and the outer end of the spring is attached to the wall of the roller, as more particularly hereinafter described.

Figure 1 of the accompanying drawings shows a section of a portion of a shade-roller constructed according to this invention. Fig. 2 is an end view of the shade-roller with the spool in place. Fig. 3 is an end view of the roller and spring without the spool and the spindle. Fig. 4 is a sectional view through the roller on the plane of the dotted line 4 4 of Fig. 1 looking in the direction indicated by the arrows. Fig. 5 is a side view of a por-

tion of the end of the roller. Fig. 6 is a side view of an end of the roller, showing a modified manner of connecting the outer end of the spring with the roller. Fig. 7 is a sectional view of the end of a roller with a different form of spool.

The roller 1 may be formed of wood, tin, or other material, as desired, with a spring-bore 2 in one end. The spring 3 is coiled to the desired diameter from any suitable material, preferably from flat steel wire. The outer end of the spring is bent into the form of a hook 4, which may be inserted into a slot 5 in the end of the roller, as shown in Fig. 5, or may be hooked over the end of the roller, as shown in Fig. 7. The inner end of the spring is bent across itself, so as to form a bar 6, that extends diametrically across the coils of the spring and is adapted to extend through the slot 7 in the inner end of the spindle 8, that passes through the coils of the spring. The outer end of the spindle is attached to the spindle end 9 in the common manner. On the spindle end is the spool, consisting of a pawl-plate 10, with outwardly-projecting lugs 11 and pawls 12, pivoted to the outer face of the pawl-plate in position to engage notches 13 in the spindle end. When the spring and spindle are in the bore, a ferrule 14 is thrust over the spool and driven onto the end of the roller. The ferrule holds the spool in place and also secures the outer end of the spring against removal from the end of the roller.

If desired, a cover-plate 15 may be attached to the pawl-plate, so as to inclose the pawls, as shown in Fig. 7. In this case the plate lies against the outwardly-turned lugs on the pawl-plate, and the ferrule bears against the cover-plate. In the first form described the ferrule holds directly against the lugs for retaining the spool in position.

In the production of this invention it is unnecessary to stamp up and perforate lugs on the pawl-plate for the attachment of the outer end of the spring. In assembling these parts it is unnecessary to securely connect the outer end of the spring with the spool or a lug pro-

jecting from the spool, which in view of the nature of the material of which the spring is formed is slow and painstaking labor. It is only necessary in putting this construction
5 together to thrust the spindle through the spring and allow the inner diametrical end of the spring to enter the slot in the spindle. These parts are then put into the bore in the roller and the hooked outer end of the spring
10 dropped into the slot in the end of the roller or hooked over the end of the roller, as the case may be. When the ferrule is driven onto the end of the roller over the spool, all of the parts are securely fastened. The spring
15 inserted in this manner cannot drop down into the bore out of reach, if the bore is too deep; nor does it allow the spindle to drop too deeply into the bore. The spring attached to the roller—that is, a part larger in diameter than
20 the coils—in this simple manner when wound up and placed under tension has no tendency to bend to one side and bind or rub against one wall of the bore and against one side of

the spindle, as is the case where it is attached to a part which is smaller in diameter. 25

I claim as my invention—

A spring mechanism for a shade-roller having a perforated pawl-plate, pawls pivotally attached to said plate, a spindle end extending through the pawl-plate and having notches 30 adapted to receive the pawls, a spindle secured to the spindle end and having a slot in its inner end, a coiled spring with its inner end bent across the coils and extending through the slot in the inner end of the spindle and 35 its outer end bent into a short hook which extends through a slot in and is hooked about a section of the roller near the outer end, and a ferrule encircling the outer end of the roller and engaging and clamping the outer end of 40 the hook, substantially as specified.

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