

J. C. HARING.
POLYPOINT PENCIL.
APPLICATION FILED AUG. 17, 1908.

940,247.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

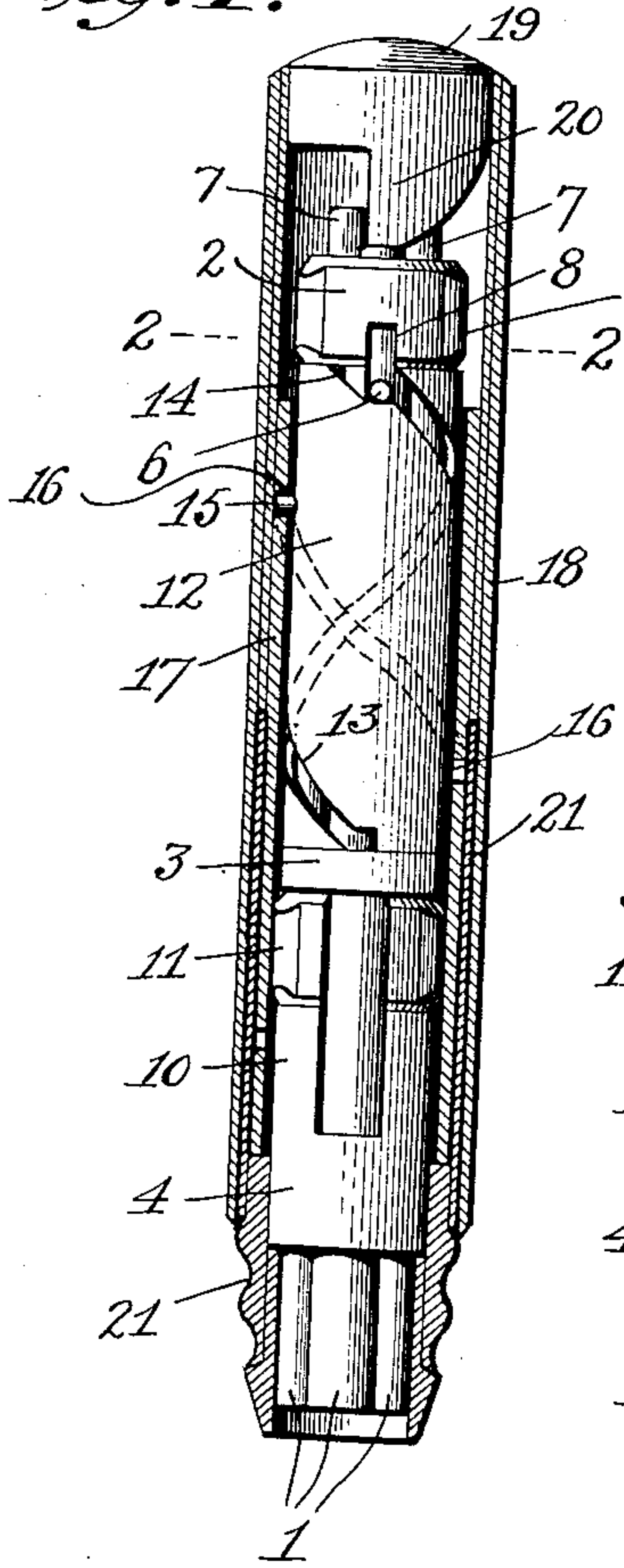


Fig. 3.

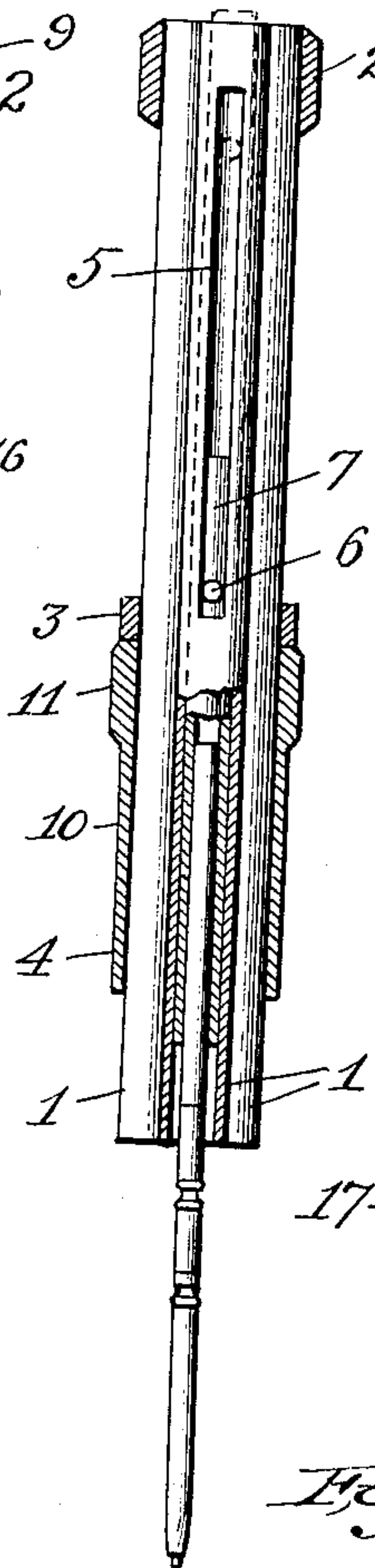


Fig. 4.

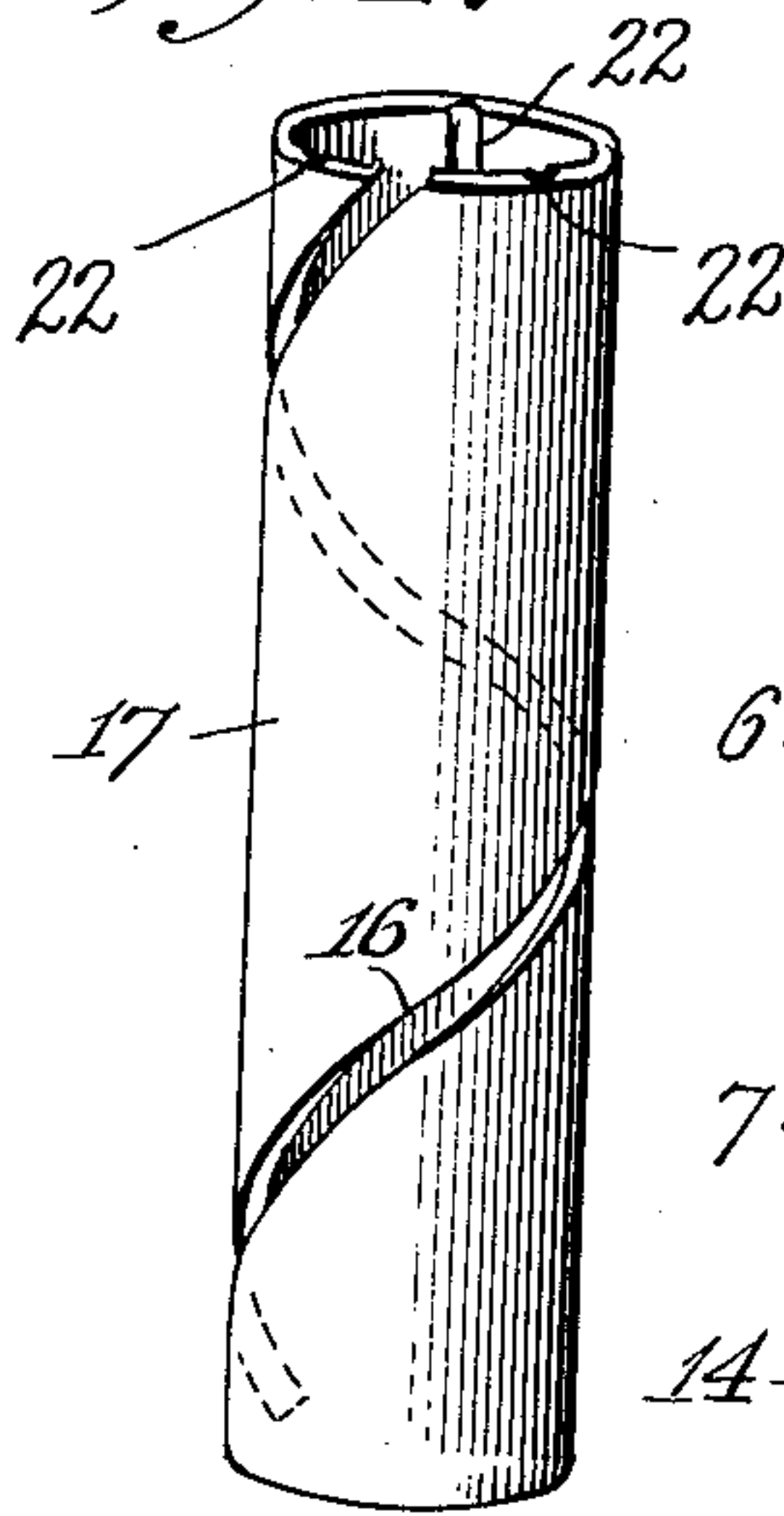


Fig. 1^a.

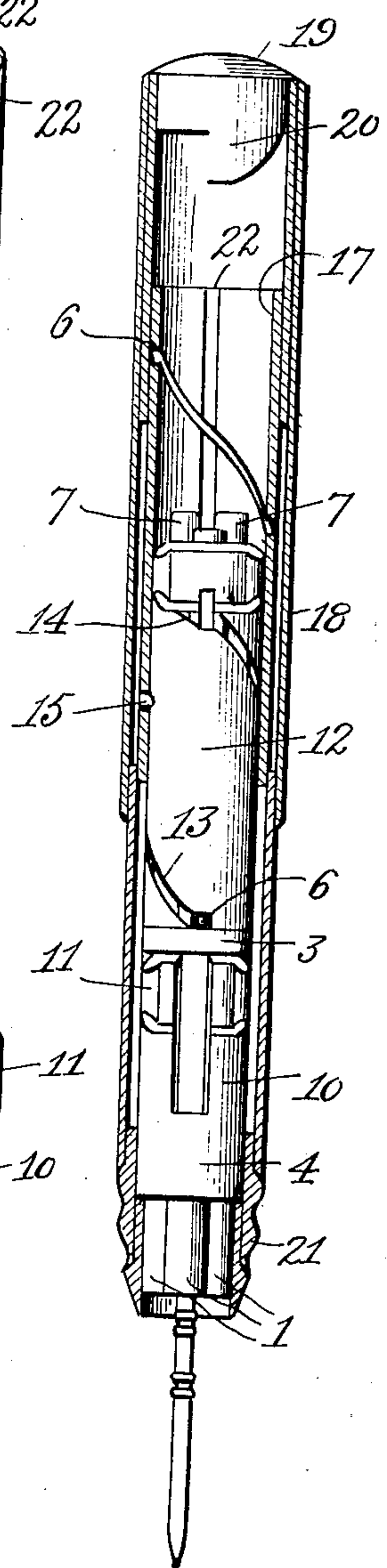


Fig. 5.

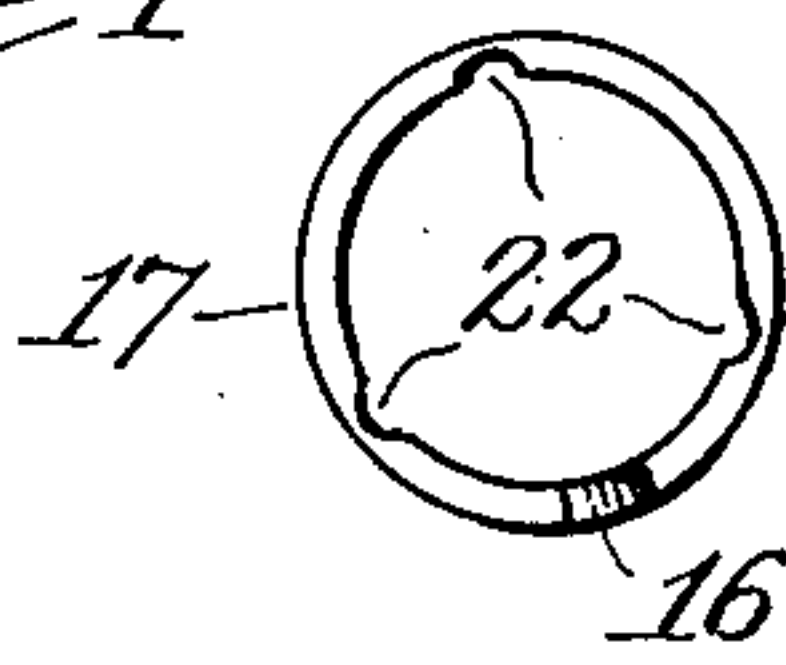


Fig. 7.

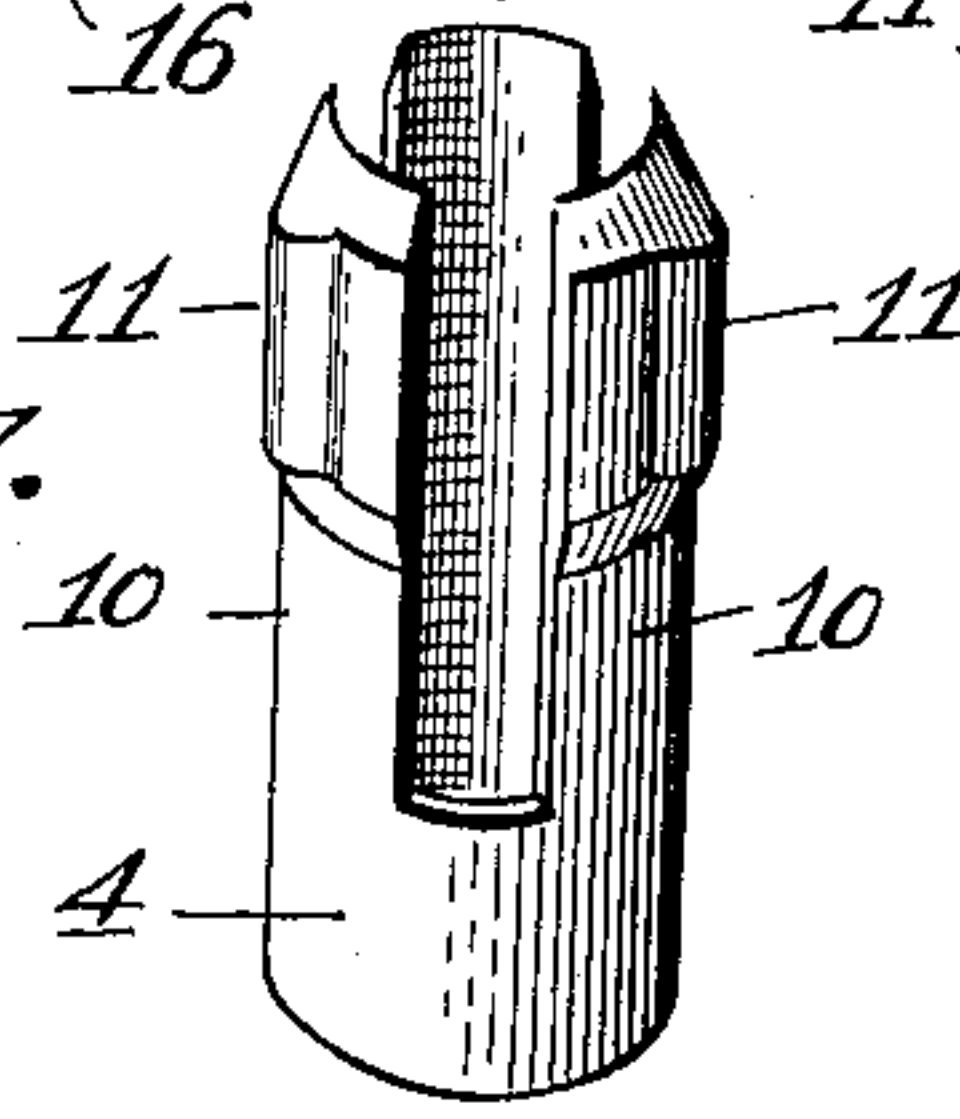


Fig. 6.

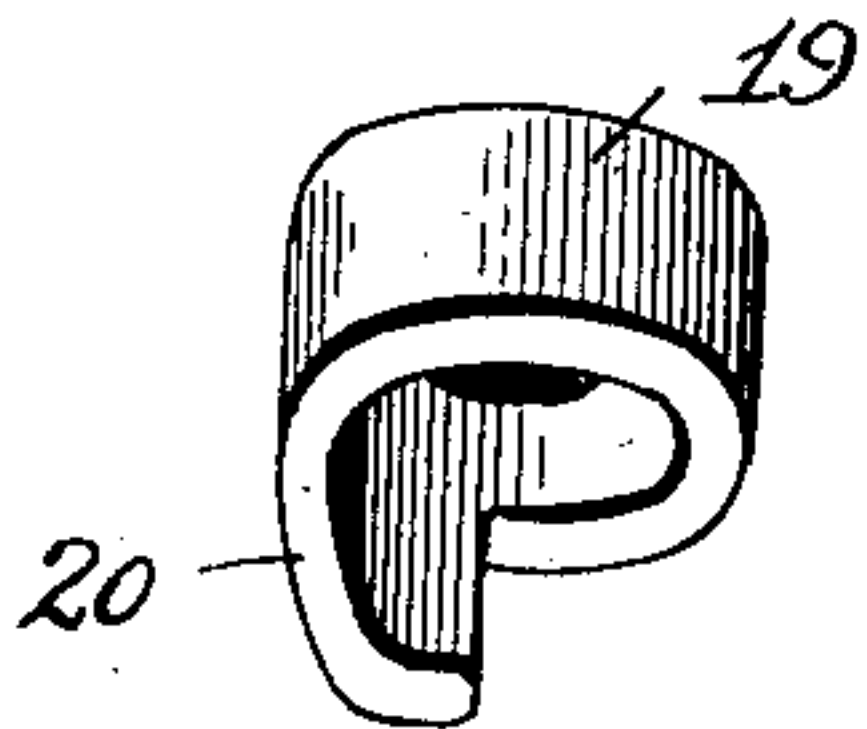
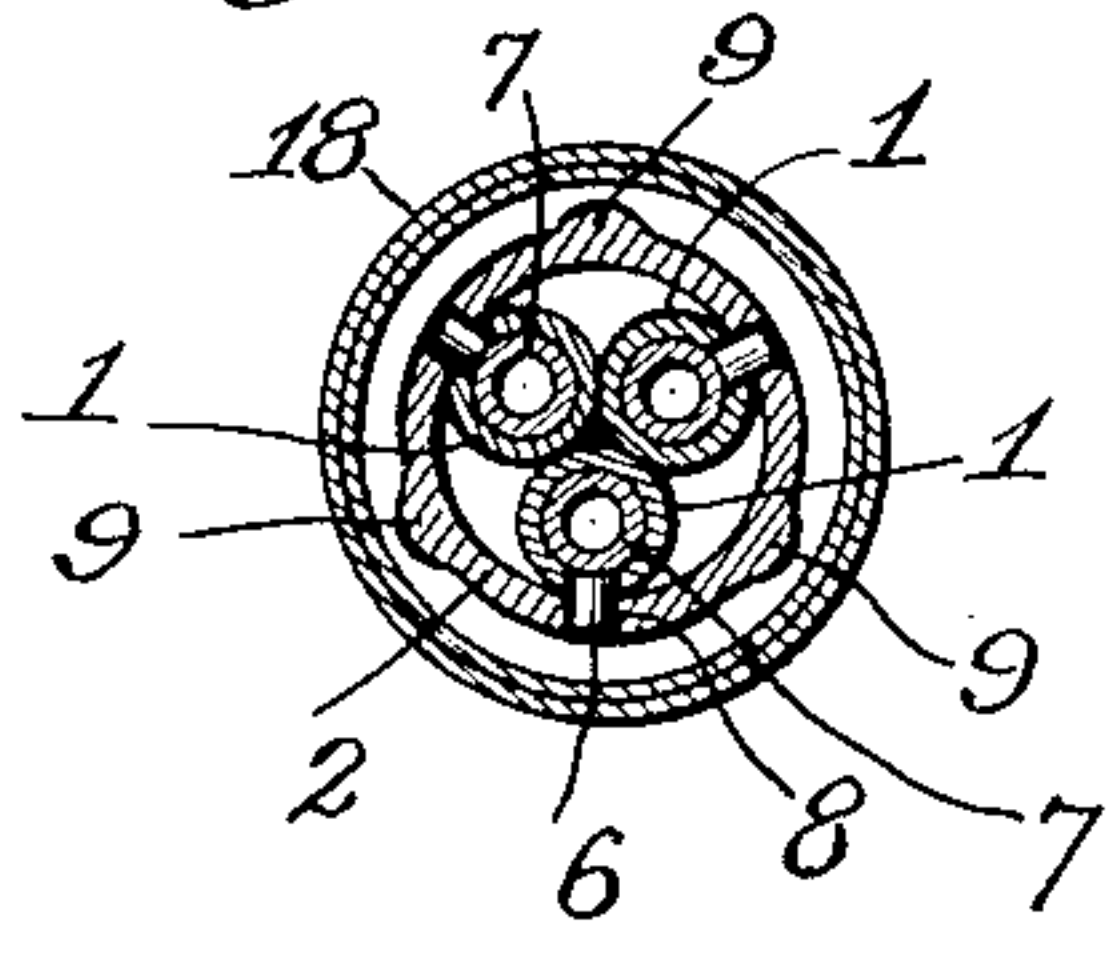


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 8.

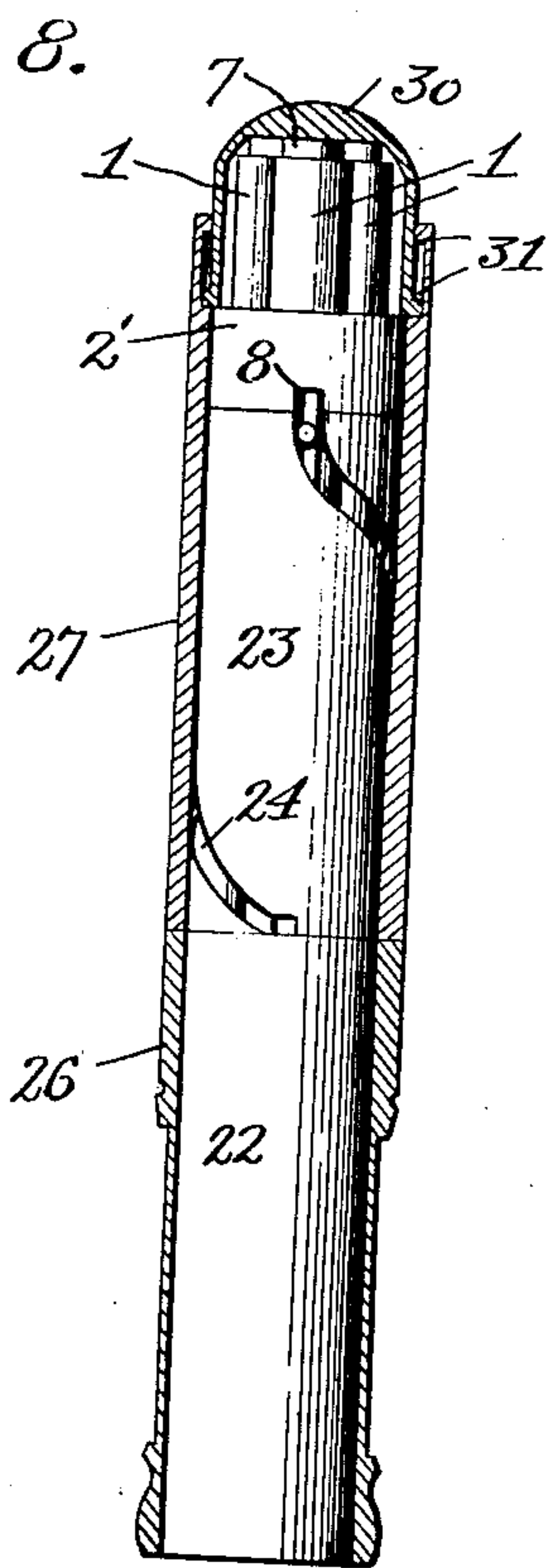


Fig. 11.

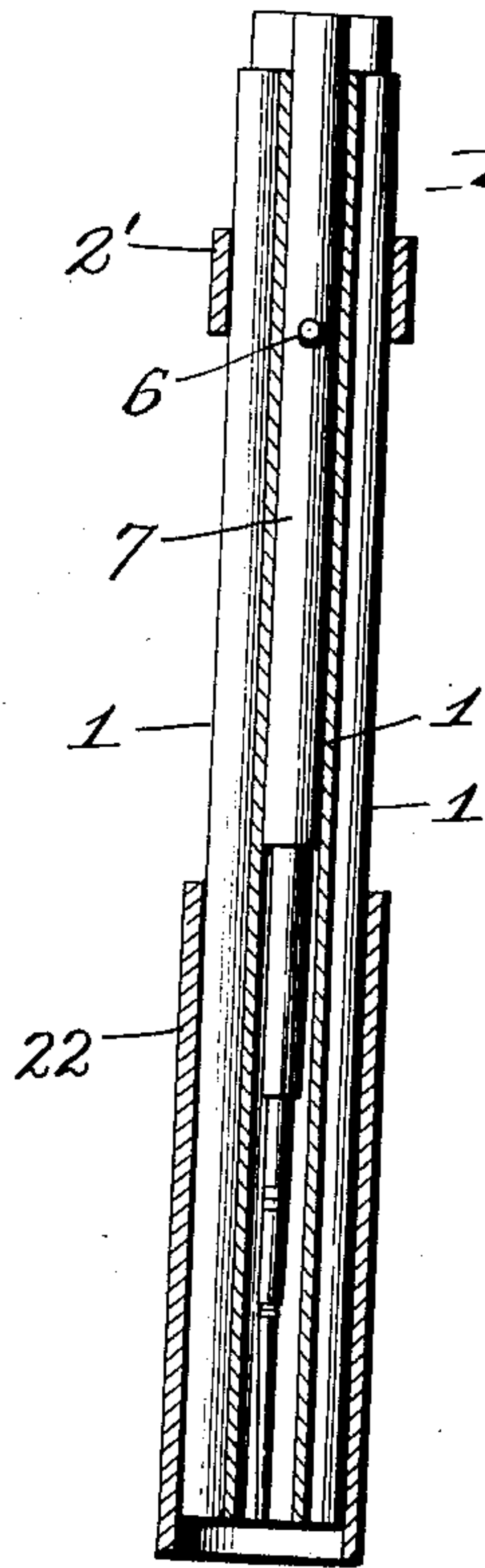


Fig. 9.

Fig. 10.

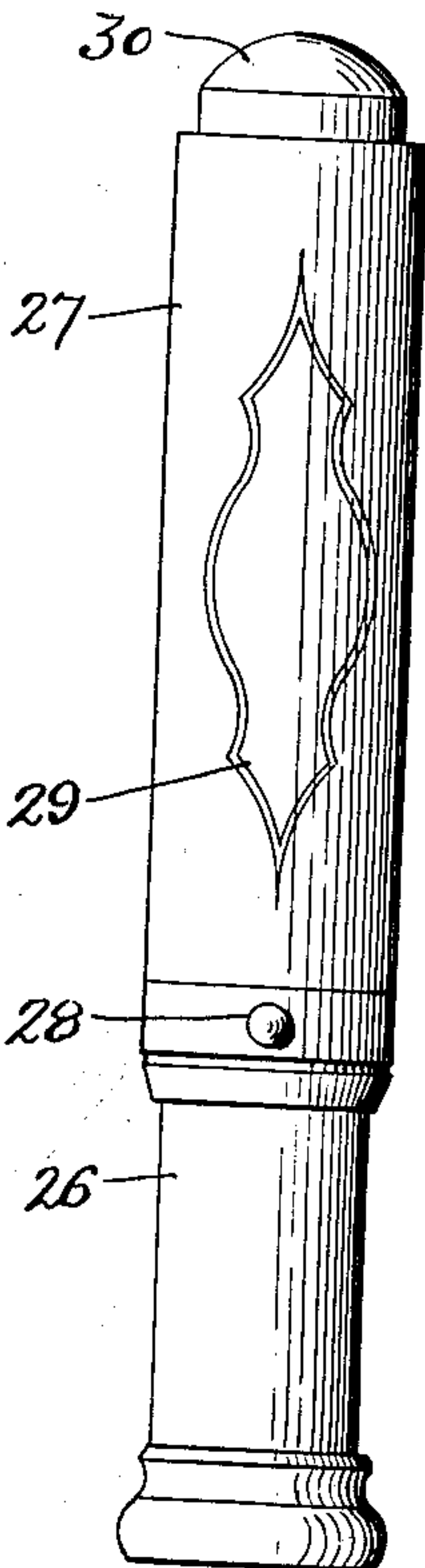
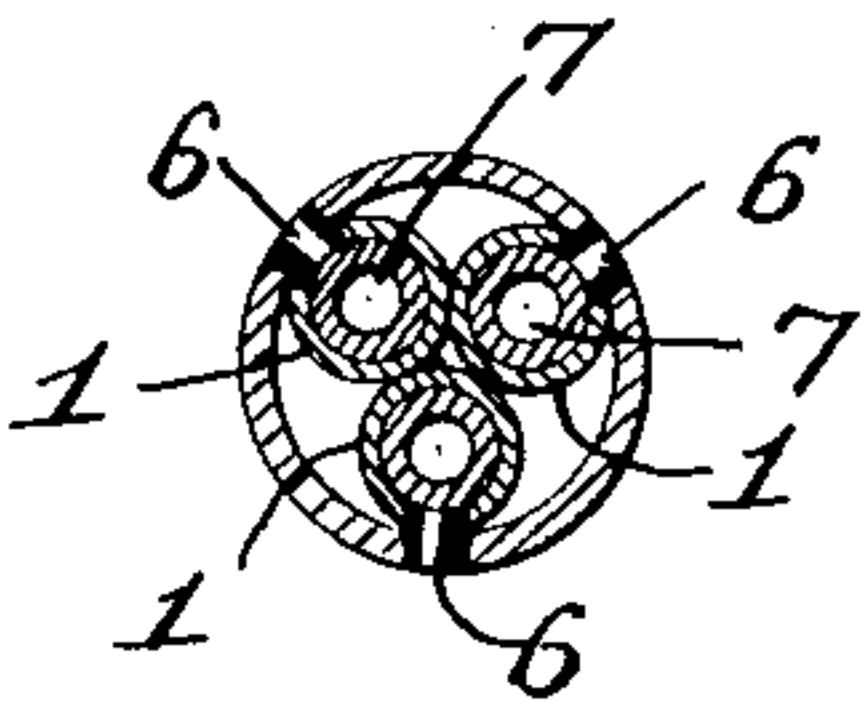


Fig. 12.

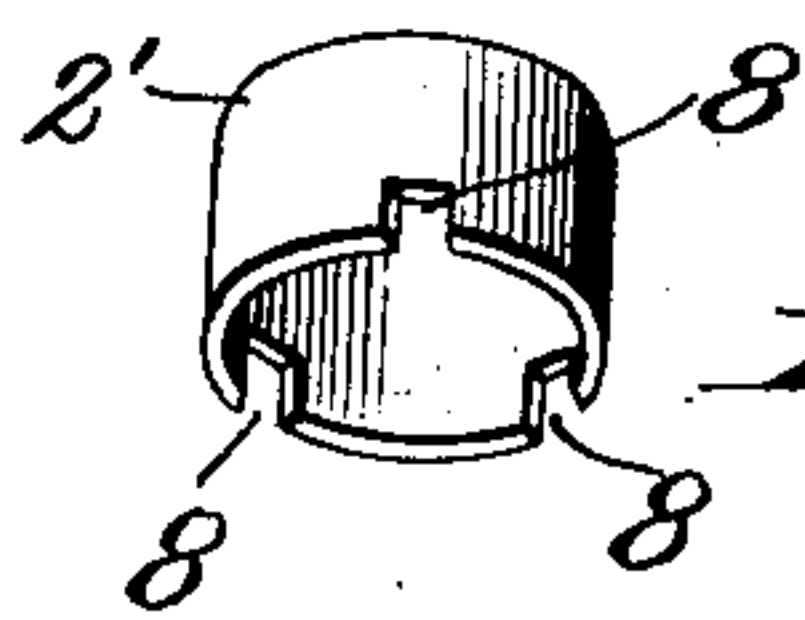


Fig. 13.

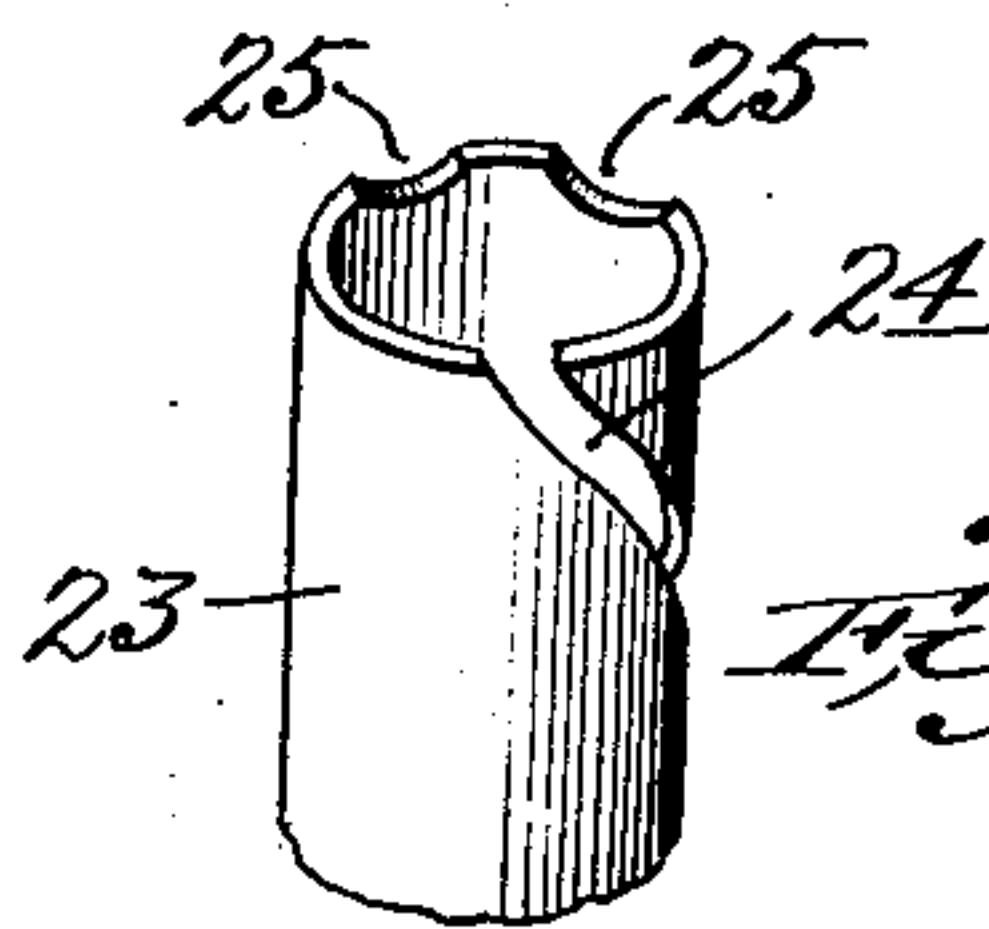


Fig. 14.

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UNITED STATES PATENT OFFICE.

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POLYPOINT PENCIL.

940,247.

Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, JOHN C. HARING, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Polypoint Pencils, of which the following is a specification.

This invention relates to polypoint pencils, and its object is to provide a pencil having a plurality of leads of different colors or degrees of hardness with means for bringing any desired lead into position for use.

To this end the invention consists in certain novel means by which a single operating mechanism can be caused to act upon any selected lead carrier, as hereinafter set forth and particularly pointed out in the claims.

In the accompanying drawing, Figure 1 is a longitudinal sectional elevation of a pencil embodying my invention, the parts being shown exaggerated in size for the sake of clearness. Fig. 1^a is a longitudinal section showing the pencil extended ready for use. Fig. 2 is a cross section on the line 2—2, Fig. 1. Fig. 3 is a sectional elevation of the group of guide tubes, carriers and collars constituting the rotatable magazine. Fig. 4 is a perspective view of the driving sleeve. Fig. 5 is an end view of the same. Fig. 6 is a perspective view of the cam. Fig. 7 is a perspective view of the lower collar on the magazine, with its ribbed spring fingers. Fig. 8 is a sectional elevation of a modification. Fig. 9 is a sectional elevation of the magazine in said pencil. Fig. 10 is a cross section of said magazine. Fig. 11 is an elevation of a guide tube and carrier. Fig. 12 is an elevation of the complete pencil, closed. Fig. 13 shows the notched collar at the upper end of the magazine, and Fig. 14 shows the upper end of the propelling sleeve.

In the pencils illustrated in the drawing, there are three lead-carriers, but it will be readily understood that any convenient number may be used. The three guide-tubes 1 are placed parallel with each other, in contact, and equidistant from a common axis. They are preferably soldered together, and are also attached to encircling collars (numbered 2, 3, 4 in Sheet 1) so as to form a magazine. Each guide-tube has a longitudinal slot 5 in its outer side, to receive a pin 6 projecting from the lead-carrier 7

which is adapted to slide lengthwise in the guide-tube. When housed, the upper ends of the carriers project above the upper ends of the guide-tubes. The word "upper" has reference to the position in which the parts are shown in the drawings, and is used merely for convenience of description.

Referring now especially to the pencil shown in Sheet 1 of the drawings the upper collar 2 has notches 8 registering with the slots 5 in the guide-tubes, so that the pins 6 can enter said notches. Said collar is also provided with one or more longitudinal ribs 9. I prefer to use three ribs spaced equidistant, and to give them rounded surfaces, as shown. The lower collar 4 is provided with three spring fingers 10, spaced equidistant, and each having a rounded longitudinal rib 11, in line with the ribs 9. The collar 3 is located adjacent to the free ends of said spring fingers. Rotatably mounted on the magazine and abutting between the collars 2 and 3, is a sleeve 12 in which is cut a helical slot 13, of rather long pitch. The upper end of said slot is open, so that it can be engaged with any one of the pins 6; the slot being cut away a little at 14 to facilitate the entrance of the pin. The rotation of this sleeve causes the pin to traverse the slot 5 in the guide-tube, thereby ejecting or housing the lead-carrier. For this reason, I shall refer to this sleeve as the propelling sleeve. A pin 15 projects from the propelling sleeve and engages with a helical slot 16 cut in a non-rotatable driving sleeve 17 which encircles the propelling sleeve. When this driving sleeve is moved longitudinally it causes a rotation of the propelling sleeve by reason of the action of the helical slot 16 upon the pin 15. The driving sleeve 17 is secured to the inside of the pencil case or barrel 18, which extends above the upper end of the magazine and is closed by a head 19, the inner surface of which is provided with a cam 20, which stands close to the collar 2 when the pencil is closed; as shown in Fig. 1. The lower end of the magazine projects below the lower end of the barrel, and is inclosed in a sheath 21, to which it is secured. Said sheath preferably enters the barrel between the inner surface thereof and the lower portion of the driving sleeve 17. The cam 20 is adapted to bear upon the upper end of one of the carriers and push it downward until its pin 6 enters the cutaway por-

tion 14 of the slot 13 in the propelling sleeve. This brings the pin into position to be acted upon by said sleeve when the driving sleeve causes it to rotate. In order to lock the parts in this position, the ribs 11 on the spring fingers 10 are allowed to engage with longitudinal shallow grooves 22 in the inner surface of the driving sleeve 17. When it is desired to bring another lead-carrier into line with the slot in the propelling sleeve, the entire magazine can be rotated inside the said sleeve, by grasping the sheath 21 and turning it. The spring fingers will yield and permit the ribs to leave the grooves until said grooves again come in line with said fingers, when the ribs will spring outwardly into said grooves and yieldingly lock the parts in their new angular position. By this rotation of the magazine, a new carrier is brought under the cam and forced downward so that its pin will enter the slot 13. When the sheath is pulled out of the barrel to eject the lead-carrier, the ribs 11 on the spring fingers are drawn out of the grooves 22 in the driving sleeve, but before they leave these grooves the ribs 9 on the collar 2 enter said grooves and thus positively lock the magazine from rotation so long as the pencil is in use. The lead cannot be changed without housing it and thus removing the ribs 9 from the grooves, as shown in Fig. 1. The fact that the magazine has reached the proper angular position to eject a lead-carrier is indicated to the operator by the "feel" as he rotates the magazine; the snapping of the ribs 11 into the grooves being readily detected by the increased resistance to angular movement.

The pencil shown in Sheet 2 of the drawings is simpler in construction than the one shown on Sheet 1, but retains the same features of construction which constitute the novelty therein. There is the same magazine of guide-tubes 1 provided with longitudinal slots 5 of the pins 6 on the lead-carriers 7. At the upper end of the magazine is a collar 2' having the notches 8 in line with the slots 5 but lacking the ribs 9 of the collar 2. The lower portion of the magazine is incased in a long collar or tube 22, between which and the collar 2' abuts the propelling sleeve 23 with its helical slot 24. In the upper end of this sleeve there are two shallow beveled notches 25 which register with two of the notches 8 when the slot 24 registers with the other notch 8. The casing or jacket is made in two sections 26, 27, secured, respectively, to the long collar or tube 22 and the propelling sleeve 23. On the section 26 are marks 28 indicating the location of the guide-tubes, and colored or otherwise distinguished from each other. The rotatable section 27 carries an index 29 to enable the user to bring the helical slot 24 into proper position to engage the de-

sired carrier. A cap 30 covers the upper ends of the carriers which project beyond the guide tubes. Said cap is capable of longitudinal movement in the section 27 of the jacket, being limited in its range of movement by flanges 31 or otherwise. In operation, the section 27 is rotated until its index 29 points to the desired mark 28, thereby bringing the upper end of the helical slot 24 in line with one of the notches 8. The cap 30 is then pushed in, as shown in Fig. 8, forcing all the carriers downward; the pins 6 entering the slot 24 and the beveled notches 25. Upon rotating the section 27 and its attached propelling sleeve, the carrier whose pin has entered the slot 24 will be ejected, while the beveled notches 25 will merely force the other two pins up into the notches 8 so that they will not prevent the rotation of the propelling sleeve. This action also restores the cap 30 to its normal position.

It will be observed that my invention thus enables one to have at his command a plurality of different pencil points compactly housed in a case of moderate size, any desired point being capable of ejection by means of a single mechanism.

Having thus described my invention, what I claim is:

1. A pencil provided with a magazine comprising a plurality of lead-carriers, a single rotatable propelling sleeve surrounding said magazine and normally out of engagement with said carriers, and means for engaging and operating any desired carrier by said sleeve independently of the other.
2. A pencil provided with a magazine comprising a plurality of lead-carriers, a single propelling sleeve rotatable relatively to said magazine and normally out of engagement with said carriers, and means for forcing one of said carriers into engagement with said sleeve.
3. A pencil comprising a group of guide-tubes provided with longitudinal slots, lead-carriers in said tubes having pins projecting through said slots, collars surrounding said tubes, one of which is provided with notches in line with the slots in the tubes, a propelling sleeve having a helical slot adapted to engage one of said pins, and means for forcing one of said carriers longitudinally to cause its pin to leave its notch in the collar and engage in the slot in said sleeve.
4. A pencil comprising a rotatable group of lead-carriers, a rotatable propelling sleeve surrounding said group, and a cam arranged to act upon all of said carriers for forcing each of said carriers in succession longitudinally to engage with said sleeve.
5. A pencil provided with a magazine comprising a plurality of lead-carriers, a rotatable propelling sleeve encircling said magazine and having a helical propelling

slot, a non-rotatable longitudinally-movable driving sleeve surrounding said propelling sleeve and having a helical slot, a pin on said propelling sleeve engaging with the slot in the driving sleeve, and a cam arranged to act on all of said carriers as the magazine is rotated, for forcing each carrier successively into engagement with the slot in the propelling sleeve.

6. A pencil provided with a plurality of lead-carriers grouped into a magazine, ribbed spring fingers on said magazine, a ribbed collar on said magazine, a non-rotatable longitudinally-movable driving sleeve

containing longitudinal grooves to cooperate with the ribbed collar and fingers, a propelling sleeve inside of said driving sleeve and adapted to be rotated thereby and means for causing any desired one of said carriers to engage with said propelling sleeve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. HARING.

Witnesses:

LOUIS PELLOTH,
CHARLES HULL.