

(No Model.)

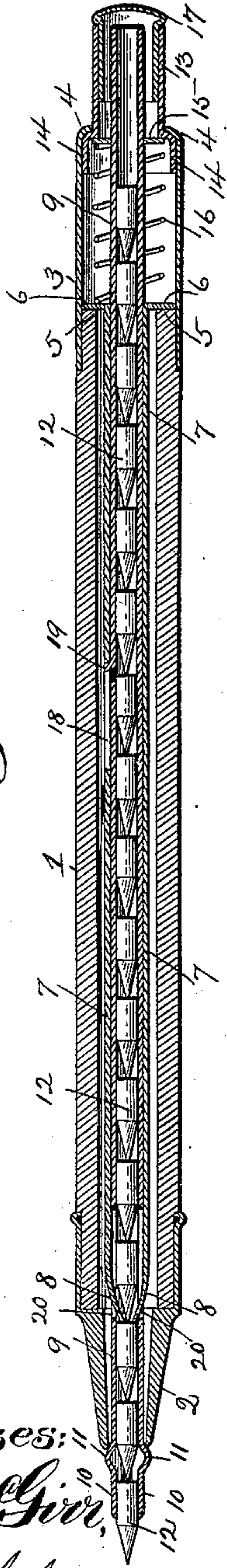
2 Sheets—Sheet 1.

B. B. GOLDSMITH & W. BURT.
MAGAZINE LEAD PENCIL.

No. 584,999.

Patented June 22, 1897.

Fig. 1.



Witnesses:
J. B. McGiv
F. T. Chapman

Fig. 3.

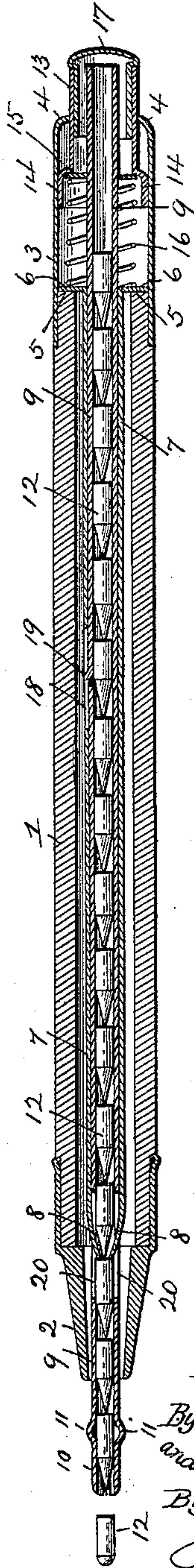
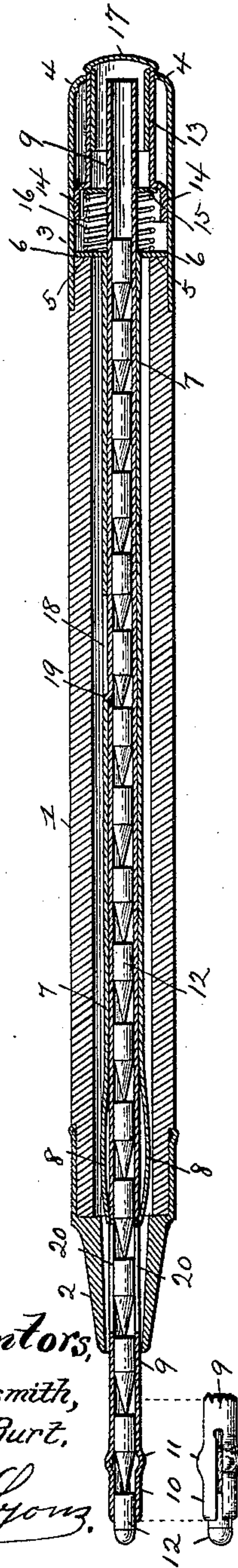


Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

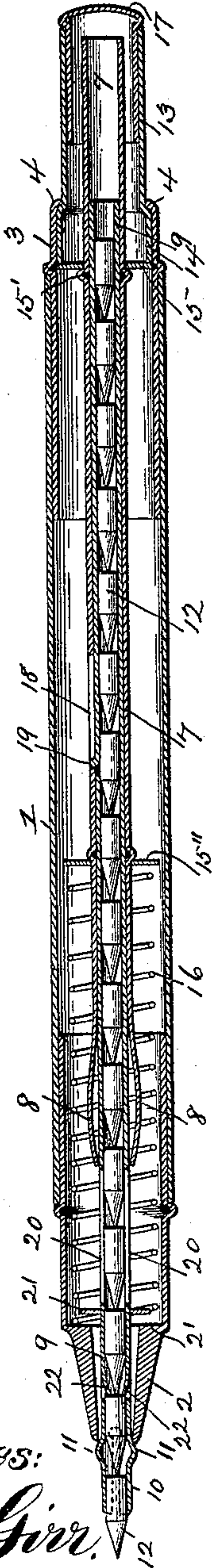


Fig. 5.

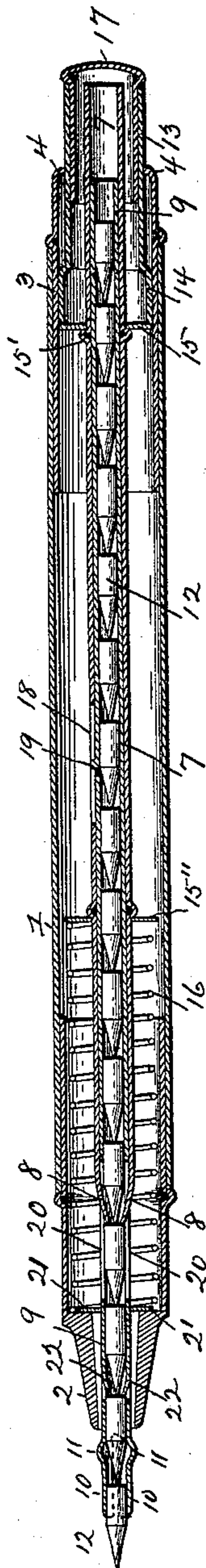


Fig. 6.

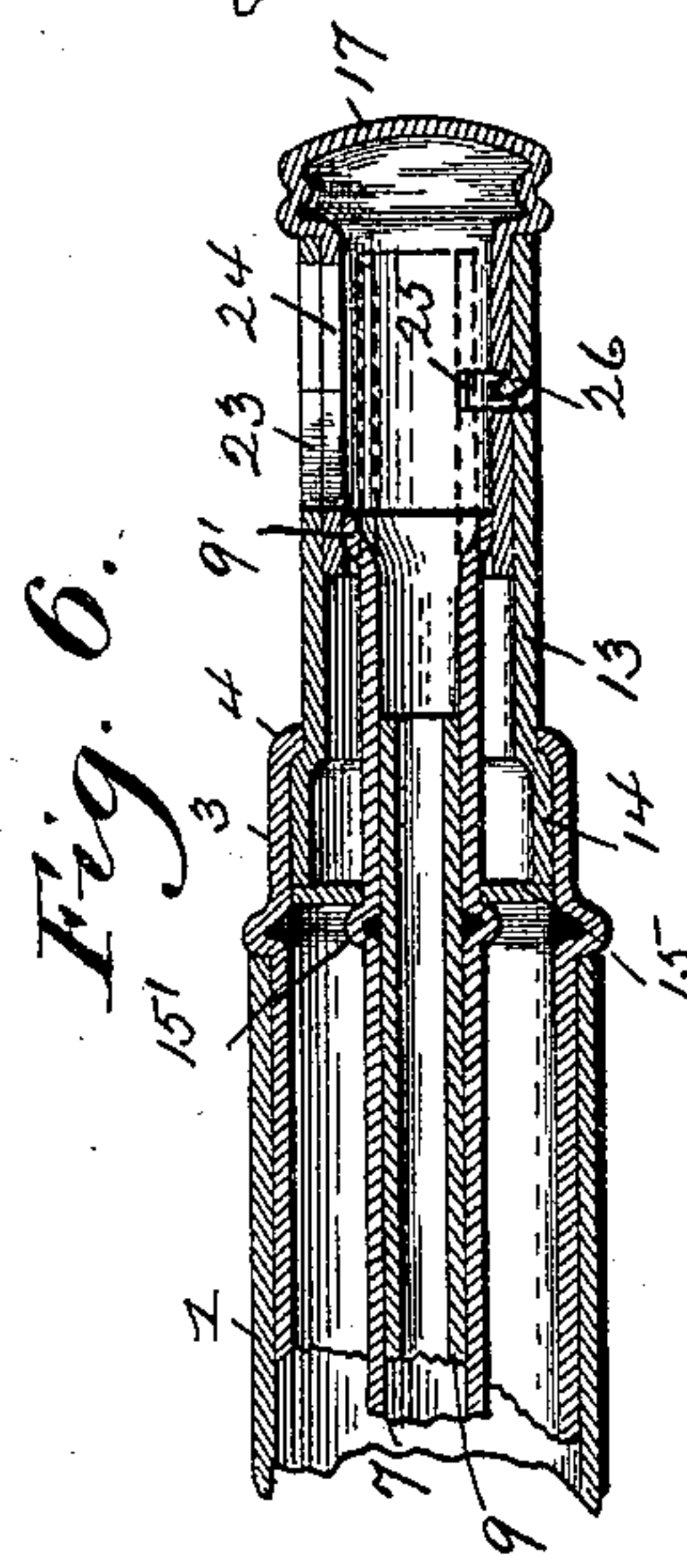
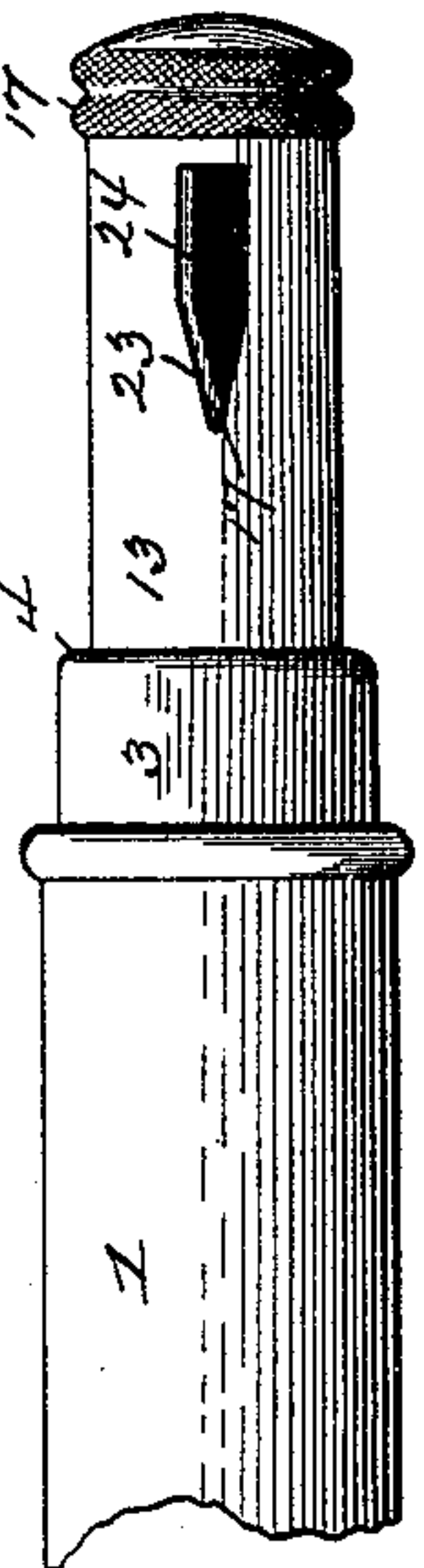


Fig. 7.



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UNITED STATES PATENT OFFICE.

BYRON BENJAMIN GOLDSMITH, OF NEW YORK, N. Y., AND WILLIAM BURT,
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MAGAZINE LEAD-PENCIL.

SPECIFICATION forming part of Letters Patent No. 584,999, dated June 22, 1897.

Application filed December 23, 1893. Serial No. 494,548. (No model.)

To all whom it may concern:

Be it known that we, BYRON BENJAMIN GOLDSMITH, a resident of New York, in the county and State of New York, and WILLIAM BURT, a resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Magazine Lead-Pencils, of which the following is a specification.

Our invention has reference to improvements in magazine-pencils in which a series of individual marking-points are stored in a magazine and by a simple manipulation of the device are forcibly projected in position for use and the used-up or broken marking-points are forcibly ejected.

A characteristic feature of our invention is that the individual marking-points are stored in a magazine-tube which is movable longitudinally with reference to the mantle or holder of the pencil and that the ejector may be either immovable with reference to the magazine-tube or may also be movable with reference to and with the same. The arrangement may be such that the movement of the magazine-tube or of both the magazine-tube and the ejector in both directions is effected positively by the operator, or by preference the arrangement may be such that only the movement in one direction is effected positively by the operator and the movement in the other direction is produced by a spring. These and other improvements will more fully appear from the following detail description, with reference to the accompanying drawings, in which—

Figures 1, 2, and 3 represent longitudinal sections of one form of our magazine-pencil with a movable magazine-tube and relatively immovable ejector. Figs. 4 and 5 represent like views of a modified form of our magazine-pencil in which both the magazine-tube and the ejector are movable with reference to and with each other. Fig. 6 is a longitudinal section of a modified construction of the feeding end of the magazine-pencil, and Fig. 7 is an elevation of the same.

Like numerals of reference indicate like parts all throughout the drawings.

Referring now particularly to Figs. 1, 2, and 3, the main body of the magazine-pencil

is shown as a mantle 1, which may be of wood or metal or other suitable material, and which has mounted at the forward end a nozzle 2 and at the rearward end a sleeve 3, the rear edge 4 of which is turned inwardly, as shown. The nozzle 2 and sleeve 3 are fast on the mantle, so that they may be considered as a portion of the latter. The rear end of the mantle proper thus forms a ledge 5, which serves as a support for a flange 6 on the ejector-tube 7, which extends centrally through the mantle and has formed at its forward end spring-fingers 8 8, which are bent inwardly for a purpose which will presently appear.

Through the ejector-tube 7 extends the magazine-tube 9, formed at its forward end, which projects through the nozzle 2, with spring-jaws 10 10, formed in the rear of the front end with beads 11 11. In the normal position of the parts this magazine-tube is in the location shown in Fig. 1—that is to say, the tube is in its rearmost position, with the beads 11 pressed against the front edge of the nozzle, so that the spring-jaws 10 are thereby compressed and tightly hold an individual marking-point 12. This magazine-tube is so long that with its rear end it projects beyond the sleeve 3. It has a free opening at that end, through which the series of individual marking-points are fed into the magazine-tube.

Loosely fitted into the sleeve 3 is the push-piece 13. This is a tube of a diameter to push through the inturned edge 4 of the sleeve 3, but having the inner end expanded, as shown at 14, so as to loosely fit the inner face of the sleeve. In this manner there is an offset or ledge formed between the wider and the narrower portions of the push-piece, whereby the latter is prevented from being drawn out of the sleeve 3, but can be moved freely to and fro in said sleeve. Upon the magazine-tube there is fixed a disk or washer 15, and between this disk or washer and the flange 6 on the ejector-tube and surrounding the magazine-tube is inserted a helical spring 16, which in the normal position of the parts is expanded, thus holding the magazine-tube in its most rearward position with the beads 11 forced against the front edge of the nozzle and holding the ejector-tube in its most

forward position with the flange 6 against the ledge 5. The ejector-tube is always in this position the same as if it were fixed to the mantle, and it may conveniently be fixed to the same. In the drawings we have shown the disk or washer 15 bearing against the offset between the wider and narrower portions of the push-piece 13, but it may just as well be made large enough to bear against the inner edge of the push-piece. The push-piece is closed by a removable thimble 17, which thus serves as a thumb-piece upon which the finger of the operator presses for forcing the push-piece inwardly. This thimble is removed when the magazine-tube is to be filled.

Midway between the two ends of the ejector-tube there is formed in the latter a longitudinal slot 18, into which projects a tooth 19, struck up from the magazine-tube, as shown. The forward-and-backward movement of the magazine-tube is thus limited by the length of the slot 18.

A short distance behind the beads 11 on the spring-jaws of the magazine-tube there are formed in the latter two diametrically opposite longitudinal slots 20 20, into and through which the spring-fingers 8, formed at the forward end of the ejector-tube, normally project.

Fig. 1 represents the device with the parts in their normal positions. It shows the magazine-tube filled with individual marking-points, but the parts are in the same position as when the magazine-tube is empty. The magazine-tube is filled, as above stated, by removing the thimble 17 and then dropping the marking-points down into the tube with their points forward. The first marking-point dropped into the tube is arrested by the spring-fingers 8 of the ejector, which spring-fingers project through the slots 20 into the magazine. The other marking-points thus become arranged in a series one behind the other, each with its point resting upon the butt-end of the preceding marker. In this condition of the device the magazine-tube is in its rearmost position with the tooth 19 at the rear end of the slot 18, and it is understood that the pencil is held vertically, or nearly so, with the forward end downward. After the magazine-tube has thus been filled, or nearly filled, the thimble 17 may again be put in place, and the user, grasping the mantle, presses with one of his fingers upon the thimble, thus forcing the push-piece 13 inwardly, which carries with it the magazine-tube and compresses the spring 16 between the flange 6 and the washer 15, as shown in Fig. 2, until the tooth 19 is arrested by the forward end of the slot 18. The magazine-tube is thereby projected through the nozzle, and the spring-fingers 8 of the ejector ride upon the solid portion of the magazine-tube and are thus withdrawn from the slots 20 20 and do not impede the further forward movement of the series of marking-points behind the same. These marking-points, therefore,

now drop down into the forward portion of the magazine-tube, without, however, dropping out of the same, since the spring-jaws 10 10 are so constructed as to always close sufficiently to prevent the free movement of the marking-points between the same. The pressure of the finger upon the push-piece is now removed and the spring 16, again expanding, carries the magazine-tube back into the position shown in Fig. 1. Midway between these two positions the parts have the relation shown in Fig. 3—that is to say, the tooth 19 is in about the middle of the slot 18, while the spring-fingers 8, having again passed through the slots 20, bear upon the butt-end of one of the marking-points. As the magazine-tube still further retreats, the marking-points in front of the spring-fingers of the ejector are held stationary and the magazine-tube is drawn back over the same until the foremost marking-point is projected in position for use between the spring-jaws 10 10, which now tightly close upon that forward marking-point by reason of the beads 11 11 bearing upon the front edge of the nozzle. A repetition of the reciprocating movement of the magazine-tube operates, in conjunction with the ejector, to forcibly eject the foremost marking-point and to forcibly project the one immediately behind it in position for use.

It will now be understood how a forward marking-point, after having been used up so as to become dull, can be ejected forcibly and how a new point is projected forcibly in position for use. All that is necessary is that the device be held with the nozzle downward and that the push-piece be pressed down with one finger to the end of its stroke (which is limited by the slot 18 and tooth 19) and that the push-piece be then released.

It is not absolutely necessary that the magazine-tube in its normal position shall project beyond the nozzle, since it may be constructed so as to be normally flush with the nozzle, in which case, of course, the beads 11 11 will or may be omitted. In that case, however, the spring-jaws 10 10 will be made to hold the foremost marking-point, when in position for use, sufficiently tight to prevent this point from falling out. If this construction is adopted without other change in the proportions of the parts, there will normally be only two points in advance of the spring-fingers 8, but the proportions may be slightly changed so as to have only a single marking-point—namely, the one which is in position for use—in advance of the spring-fingers 8; or the magazine-tube may be made to normally project beyond the nozzle, as shown, but without the beads 11, since the function of these beads is only to cause the spring-jaws to more tightly grasp and hold the forward marking-point when the magazine-tube is in the retracted position. This additional tightening may be dispensed with.

Figs. 4 and 5 illustrate another form of our

invention in which both the magazine-tube and the ejector are movable relative to each other, and also movable with each other relative to the mantle or case. In this case the mantle 1 is preferably made of sheet metal, although it may be made of other material. The nozzle 2, which extends rearwardly in the shape of a tube, is held in the mantle either by friction only or is otherwise secured to the same, and the same is true of the sleeve 3, which has also an inturned edge 4, as in the construction shown in Figs. 1, 2, and 3. The push-piece 13 is in this case made rather long and is closed by the thimble or push-button 17. The washer 15 on the ejector-tube 7 may be either soldered to the same or may simply be passed over the same against a small bead 15' on the ejector, and this washer or disk 15 bears against the edge of the expanded portion of the push-piece. A second disk or washer 15'' is held on or secured to the ejector-tube at a point between the forward end of the slot 18 and the spring-fingers 8, and the helical spring 16, surrounding the ejector-tube, bears at one end against this washer 15'' and with the other end against the ledge 2', formed in the nozzle where the same expands into a tube.

The magazine-tube 9 is constructed in this instance precisely like the magazine-tube shown in the other figures of drawings, except that it does not project in the rear beyond the ejector-tube, but, on the contrary, the latter projects beyond the magazine-tube. Immediately in front of the slots 20 in the magazine-tube there is fixed to the latter a small disk or washer 21, by which the forward movement of the magazine-tube is limited, since upon such forward movement the disk 21 strikes against the ledge 2' in the nozzle. The rearward movement of the magazine-tube is limited by the beads 11 striking against the front edge of the nozzle. This is the normal position of the parts and is represented in Fig. 4, while Fig. 5 shows the magazine-tube in its forward position, and consequently the disk 21 bearing upon the ledge 2'.

The slots 20 and the spring-fingers 8 are so proportioned in length and relative position that in the normal condition of the device the spring-fingers are out of the slots and bear upon the solid portion of the magazine-tube, and in this normal relative position the magazine-tube and ejector are held by the helical spring 16. In that portion of the magazine-tube which lies between the disk 21 and the beads 11 there are struck up two spring-tongues 22, which normally project into the magazine-tube and bear against the butt-end of a marking-point, thereby preventing the foremost marking-point from slipping back in the act of writing.

The operation of this form of our magazine-pencil will now be readily understood. Supposing the parts to be in their normal position, as shown in Fig. 4, without leads in the magazine, the latter is filled by removing the

thimble 17 and dropping the leads into the tube with their points downward. The first marking-point will be arrested by the spring-tongues 22, and the others will arrange themselves in series, each with its point against the butt-end of the preceding one. The pusher is then forced down, whereby the spring-fingers 8 enter the slots 20 and project through the same until they bear upon the butt-end of a marking-point. Continued pressure upon the push-piece causes the spring-fingers to press upon the forward series of marking-points, and since the latter are held against free forward movement by the spring-tongues 22 the magazine-tube is forced forwardly until the disk 21 strikes against the ledge 2', as shown in Fig. 5. By this movement of the magazine-tube the spring-jaws 10 are relieved of the compressing action thereon of the nozzle, which now does not bear upon the beads 11. Still further continued pressure upon the pusher causes the spring-fingers 8 to propel the forward marking-points forwardly and between the spring-tongues 22, which close again behind the first marking-point, preventing the rearward movement of the same, while the dropping out of the same is prevented by the spring-jaws 10, which hold it sufficiently tight for that purpose. By this time the spring-fingers 8 have arrived at or near the end of the slots 20, while the tooth 19 is now at the rear end of the slot 18. The forward stroke of the push-piece is thus completed, and the finger being removed from the same the parts are returned by the spring 16 to their original position. (Shown in Fig. 4.) This action is now repeated until the forward marking-point projects from between the jaws 10 sufficiently for use. It will be observed that when the parts are returned to their original position by the action of the spring 16 the foremost marking-point will be grasped very tightly by the spring-jaws by the action of the edge of the nozzle upon the beads 11. It will now be readily understood that when the first marking-point has been used up one stroke of the pusher will at once forcibly eject this marking-point and will project a new marker forcibly in position for use, and that all this is effected by a simple stroke of the push-piece produced by the pressure of a finger of the user thereon. We are not limited to the exact details of construction thus far described, since the same may be variously changed without affecting the utility of our magazine-pencil.

An additional improvement we have illustrated in Figs. 6 and 7. The same has for its object to prevent the user from feeding the individual marking-points into the magazine-tube with their butt-ends forward, which with the construction shown in the preceding figures of drawings might be done and which, if done, would render the pencil in a measure inoperative. This is prevented by the following construction: The ejector-tube is made

shorter than in the construction shown in Figs. 4 and 5, so that it will only slightly project beyond the magazine-tube, and this projecting portion is made flaring, as indicated in solid lines at 9' in Fig. 6, and the cap or thimble 17 is made long enough to project slightly over the flaring portion of the ejector-tube. In the side of the push-piece 13 there is formed a longitudinal slot 23, shaped to the shape of a longitudinal section of a marking-point with the point downwardly, and in the side of the thimble 17 there is formed a similar slot 24, which when the thimble is suitably turned will register with the slot 23. In addition thereto there is in the side of the thimble 17 a short circumferential slot 25, into which is struck a tooth 26 from the side of the push-piece 13, thus allowing the thimble to turn to the extent of the length of the slot 25, but not allowing it to be removed. The parts are so placed that when the thimble is turned in one direction the slots 23 and 24 register and when turned in the other direction the lateral feed-opening is closed. With this construction the individual marking-points are fed into the magazine-tube by holding the pencil in an inclined position with the point downward and dropping the individual points through the lateral feed-openings 23 24, when, as will now be understood, they will slide down into the magazine-tube always with their points downwardly, since they cannot be introduced in the slots 23 24 in the reversed position. An obvious modification of this construction would be to make the ejector-tube as long as in the construction shown in Figs. 4 and 5 and make in the side of that tube another slot similar in shape to the slots 23 24, and this is indicated in dotted lines in Fig. 6. In this construction the thimble must be turned in its bearing, which requires some little force, and it is therefore preferable to make the head of the thimble with milled beads, as shown. Such milled beads may also be used in the other construction shown to facilitate the removal of the thimble 17.

It will be evident that some features of construction shown in Figs. 1, 2, and 3 may be transferred to the form of pencil shown in Figs. 4 and 5, and vice versa. Thus, for instance, while we have shown in Figs. 1, 2, and 3 the actuating-spring 16 placed at the rear end of the pencil and in Figs. 4 and 5 placed at the front end of the pencil, these positions may be reversed. The spring-tongues 22 shown in the pencil illustrated in Figs. 4 and 5 may also be used in the construction shown in Figs. 1, 2, and 3, whereby the spring-fingers 8 would be relieved of the back pressure of the pencils in the act of writing. The lateral feed-opening shown in Figs. 6 and 7 may be used in connection with both forms of pencil, and numerous other variations will suggest themselves readily to those skilled in the art. Thus, for instance, the spring 16 may be altogether dispensed

with, in which case the magazine-tube is moved both forwardly and backwardly by hand. The forward movement would then be effected by the pressure of the finger upon the push-piece, as in the case when the spring 16 is used, and is moved rearwardly by taking hold of the projected magazine-tube at the jaws 10 and sliding it back into the mantle. In that case of course the ejector-tube must be fixed in the mantle positively in any suitable manner, since otherwise, the spring 16 being absent, it would or might move with the magazine-tube, which would render the device inoperative. It will also be seen that when the spring 16 is dispensed with the act of writing will prevent the forward marking-points from receding into the magazine-tube by bringing the butt-end of one of them against the spring-fingers 8 on the ejector or against the spring-tongues 22, as the case may be.

Having now fully described our invention, we claim and desire to secure by Letters Patent—

1. A lead-pencil comprising a longitudinally-movable magazine adapted to receive a series of individual marking-points, free to move within the same by gravity, with contracted spring-jaws at its front end to prevent the dropping out of the points from the magazine, and an ejector at the rear of the jaws for positively ejecting and renewing the points, substantially as described.

2. In a magazine lead-pencil, the combination of a magazine-tube adapted to move longitudinally within a case or mantle and to freely receive a series of individual marking-points, and having means at the front end for yieldingly receiving and holding the front point, with an immovable ejector adapted to engage the butt-end of an individual marking-point, so as to propel the same forward and thereby positively eject and renew a point, when the magazine-tube is moved in one direction, and to resist the rearward movement of the projected marking-points, substantially as described.

3. In a magazine lead-pencil, the combination of the magazine-tube adapted to freely receive a series of individual marking-points and having means at the front end for yieldingly receiving and holding the front point, said tube being movable longitudinally with reference to the mantle, an ejector fixed with reference to the magazine-tube and normally projecting into the latter, so as to bear upon the butt-end of a marking-point, but withdrawing from the magazine-tube when the latter is moved forwardly, the parts being so proportioned that upon the rearward movement of the magazine-tube an old marking-point is forcibly ejected and a new point is forcibly projected in position for use, substantially as described.

4. The combination of a tubular case or mantle, a longitudinally-movable magazine-tube, adapted to freely receive a series of in-

dividual marking-points and having at its front end means for yieldingly receiving and holding the front point, a fixed ejector-tube having spring-fingers normally projecting through longitudinal slots into the magazine-tube, a spring for holding the magazine-tube normally in its rearward position, and a push-piece for moving the magazine-tube forwardly against the action of the spring and thereby withdrawing the spring-fingers of the ejector from the magazine-tube, and permitting the rearward marking-point to drop forwardly, the said parts being so proportioned that upon the rearward movement of the magazine, an old point is positively ejected and a new point is projected in position for use, substantially as described.

5. In a magazine-pencil, the combination of a longitudinally-movable magazine-tube adapted to freely receive a series of individual marking-points, spring-jaws on the tube for clamping a point in position for use, and spring-fingers on the ejector normally projecting into the magazine-tube, at the rear of the spring-jaws for locking the advanced marking point or points against rearward movement, substantially as described.

6. A magazine lead-pencil comprising a longitudinally-movable magazine adapted to receive a series of individual marking-points, free to move by gravity within the magazine, and having its front end constructed to normally impede the passage of the points there-through, and an ejector at the rear of the impeding device for feeding the points into position for use in and for expelling the same through the said front end, substantially as described.

7. A magazine-pencil having a longitudinally-movable magazine-tube adapted to receive a series of individual marking-points, free to move by gravity within the magazine, said magazine having spring-jaws at its forward end for clamping a point in position for

use, a feed-opening at the rear end of the pencil, and means for closing said opening, and an ejector at the rear of the spring-jaws for positively ejecting and renewing the points, substantially as described.

8. In a magazine-pencil the combination of a longitudinally-movable magazine-tube adapted to receive a series of individual marking-points free to move by gravity within the magazine-tube and provided at the forward end with spring-jaws for clamping a point in position for use, a feed-opening at the rear end of the pencil for the insertion of the points, and a push-piece for positively ejecting and renewing the points, substantially as described.

9. A magazine-pencil having a longitudinally-movable magazine-tube adapted to receive a series of individual marking-points, free to move by gravity within the magazine-tube and having spring-jaws at its forward end for clamping a point in position for use, a feed-opening at the rearward end of the pencil, means for closing that opening, and a push-piece for positively ejecting and renewing the points, substantially as described.

10. A magazine-pencil adapted to receive a series of individual marking-points, having a feed-opening at the rear end on the side of the pencil, said opening conforming in shape, size and direction to the shape, size and direction of a marking-point when the same is placed with its sharpened end toward the front of the pencil, and means for closing said opening, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BYRON BENJAMIN GOLDSMITH.
WM. BURT.

Witnesses:

ALBERT G. WEISSENBOERN,
M. STERN.