No. 692,440. Patented Feb. 4, 1902.

B. B. GOLDSMITH.

MAGAZINE LEAD PENCIL.

(Application filed June 17, 1901.)

(No Model.) 2 Sheets—Sheet I.

Fig. 1.

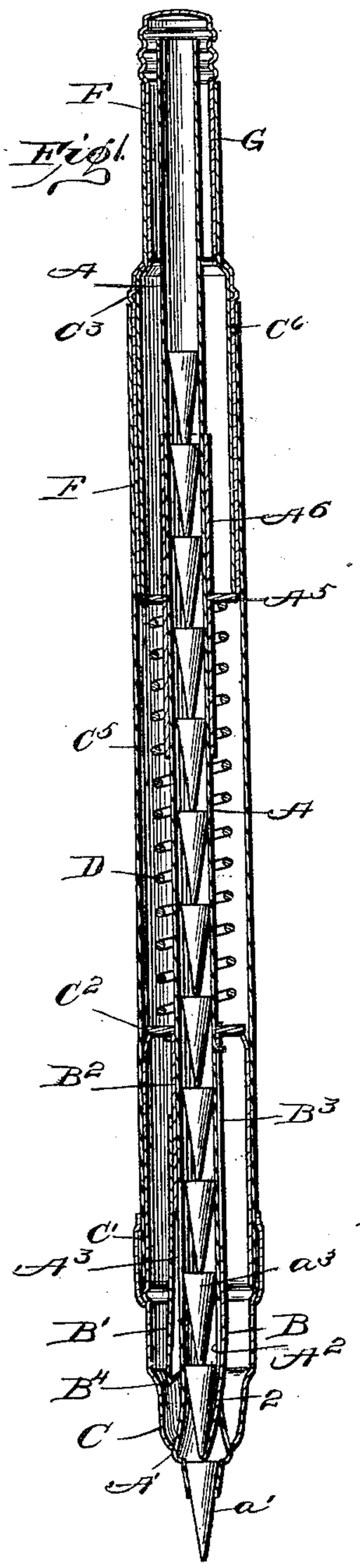

Fig. 3.

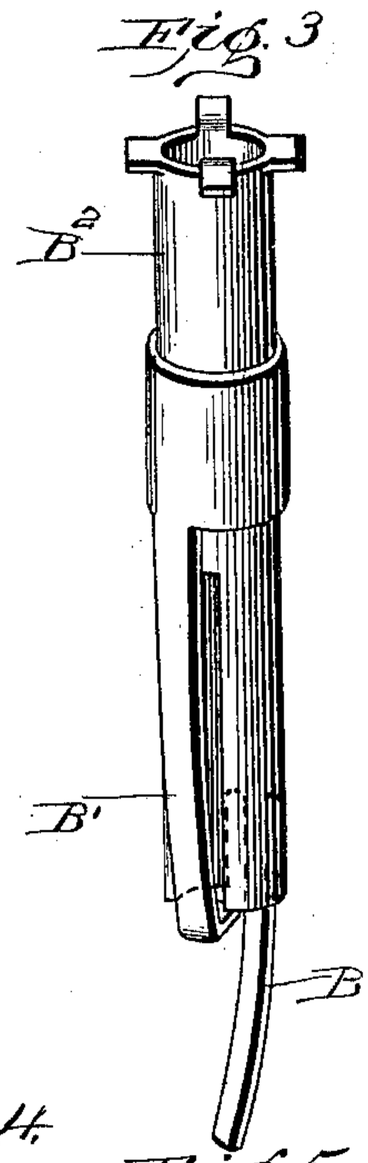

Fig. 2.

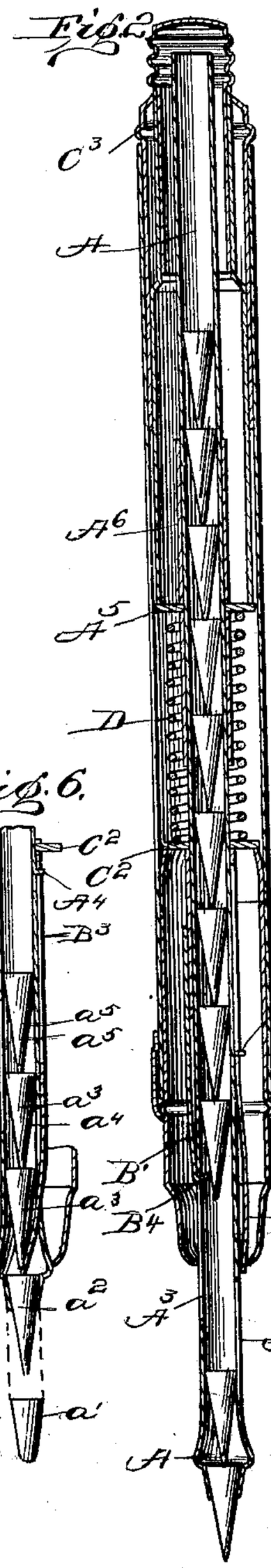

Fig. 4.

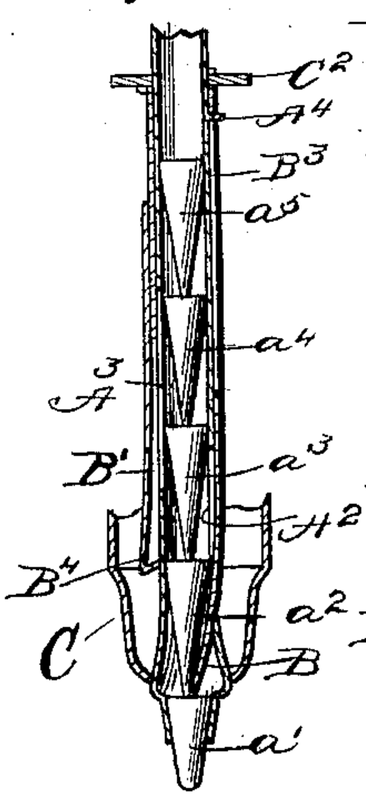

Fig. 5.

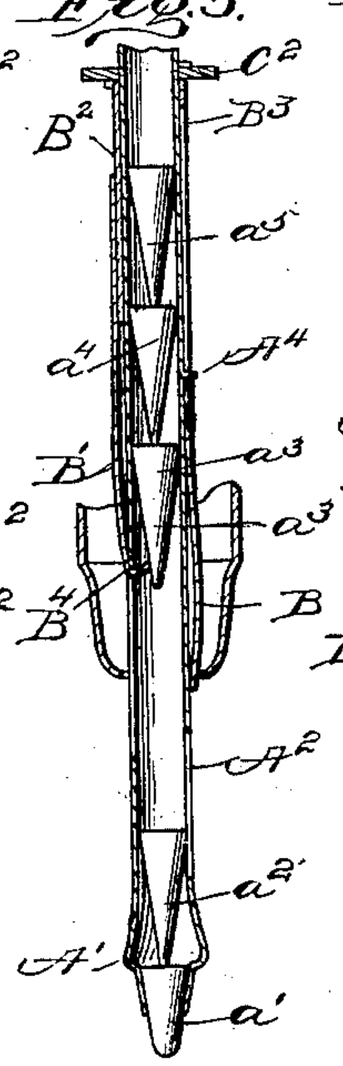

Fig. 6.

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No. 692,440. Patented Feb. 4, 1902.

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MAGAZINE LEAD PENCIL.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 8.

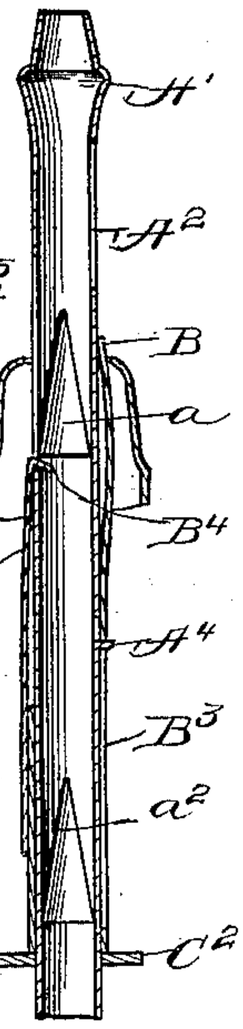


Fig. 7.

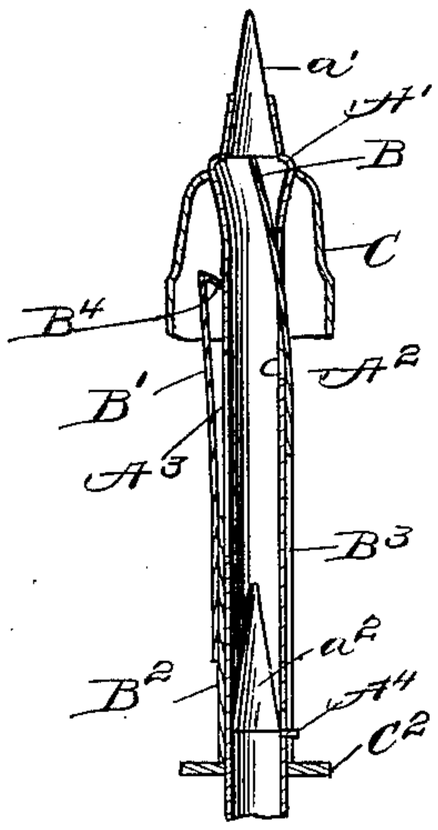


Fig. 9

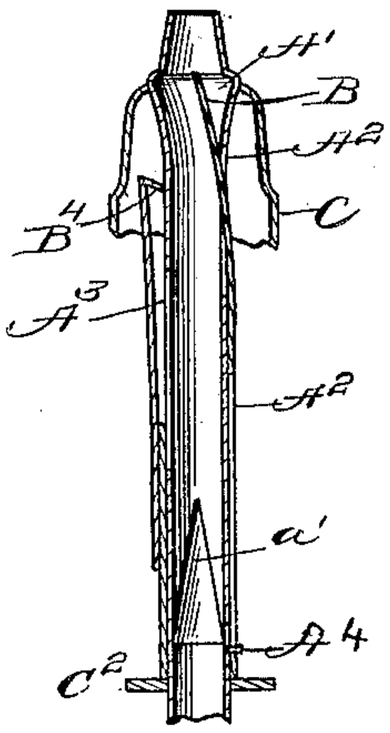


Fig. 10

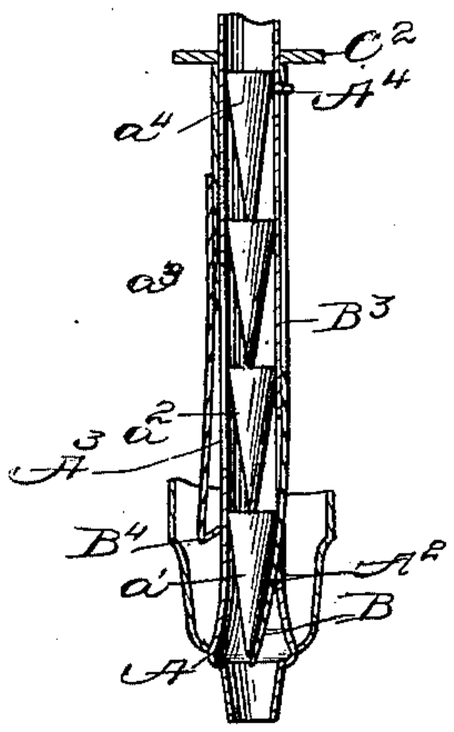


Fig. 11.

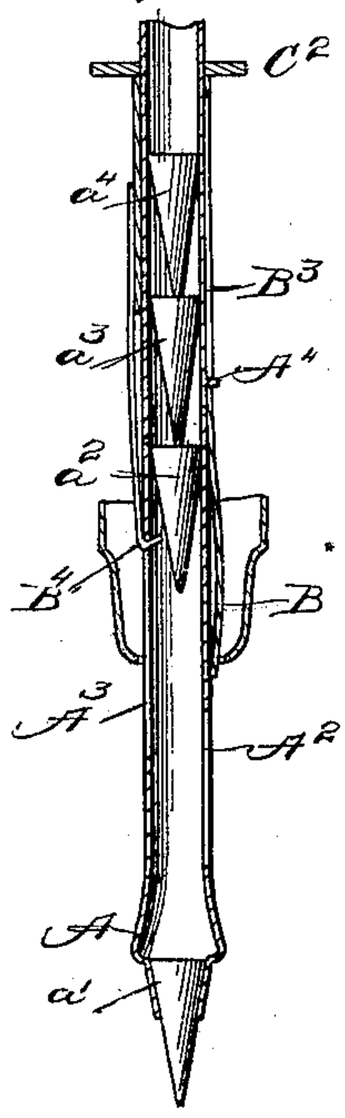


Fig. 12.

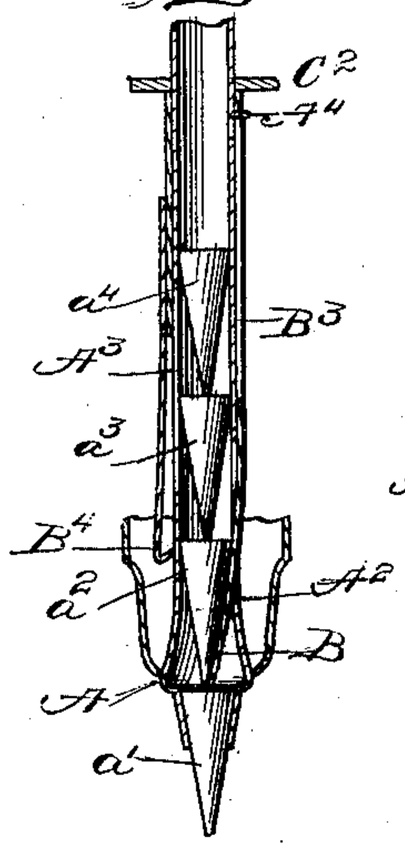
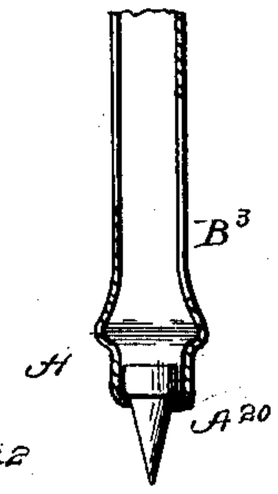


Fig. 13



Witnesses:
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F. T. Chapman.

Inventor:
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UNITED STATES PATENT OFFICE.

BYRON B. GOLDSMITH, OF NEW YORK, N. Y.

MAGAZINE LEAD-PENCIL.

SPECIFICATION forming part of Letters Patent No. 692,440, dated February 4, 1902.

Application filed June 17, 1901. Serial No. 64,858. (No model.)

To all whom it may concern:

Be it known that I, BYRON B. GOLDSMITH, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Magazine Lead-Pencils, of which the following is a specification.

My invention relates to magazine lead-pencils of that class in which a number of marking-points are stored within the magazine and suitable mechanism is provided for projecting the marking-points one by one into position for use; and the object of my invention is to provide a construction which shall render the lead-pencil substantially automatic in each of its several operations—that is to say, the object of my invention is to provide a magazine lead-pencil of the type specified by which the simple pressure of the finger against a part shall cause a marking-point to be fed into position for use, or shall cause a worn-out marking-point to be ejected from the pencil, or shall cause a marking-point which has been placed in position for use, but which has not yet been used up, to fall back into the magazine, each as the particular circumstances may require.

To this end my invention comprises a magazine lead-pencil comprising a magazine with jaws which of themselves are partially open or non-gripping for receiving and holding the marking-point which is to do the writing, a compressor, generally the mantle of the pencil, for compressing the partially-open or non-gripping jaws and causing the jaws to grip or clamp the marking-point in position therein, and a feeding-finger which is moved in relation to the pencil-holding jaws by a spring which acts to press the feeding-finger upon the marking-point with a uniform pressure in the operation of feeding and holding the marking-point in position. By this construction an important object is attained. The pencil-holding jaws, which are partially open or non-gripping of themselves, for holding the working marking-point must naturally be of a shape to prevent the marking-point from falling bodily through the jaws point first and escaping. Otherwise all the marking-points in the magazine would escape at the time a new point was being fed into position for use. Nor can they have cylindrical walls and hold the marking-point by mere friction, since otherwise the marking-point would not drop back into the magazine-tube by gravity. The jaws are thus made to extend inwardly in a geometrical sense, being usually frusto-conical in form, with slits between the jaws, and with a bias which permits them to be compressed upon a marking-point by the compressor, but which also permits them to be further expanded if a marking-point were to be forced between them by excessive pressure, thus causing them to bind upon a marking-point even when the compressor is out of action. When, then, the feeding-finger forces the working marking-point between the partially-open jaws, there would be great liability, in the absence of the spring which I use, for such marking-point to be pressed into position with such force as would cause it to still further spread the partially-open jaws. This would cause the marking-point to become bound in the jaws, so that when the lead-pencil is held in a vertical position, with its point uppermost, and the jaws are freed from the action of the compressor, in order that the working point may fall back into the magazine under the action of gravity, it will be so tightly stuck in the jaws as to fail to fall back. It is, however, as above indicated, an important object of my invention to provide a lead-pencil of the class specified in which the marking-point shall be free to fall back into the magazine and shall not become stuck in the jaws when the pencil is held upright with the point uppermost and pressure on some part causes the pencil-holding jaws to move away from the compressor which compresses said jaws upon the marking-point. Such binding of the working marking-point in the pencil-holding jaws by reason of being forced between the jaws by too great pressure would prevent the automatic operation of the pencil and cause a corresponding annoyance to the user. Now in my construction the marking-point is always fed into the position which it occupies between the pencil-holding jaws by the force of a spring. This can be exactly regulated and made the same at all times under all conditions of use. I thus secure a construction in which the marking-point is fed between the pencil-holding jaws with such uniform pressure as just

to cause the marking-point to take the right position between the jaws without binding it in such position by any undue expansion of the normally non-gripping jaws, which would cause them to really become gripping-jaws even without the aid of the compressor. There results, then, from the construction which I have specified above as defining my invention and which includes a spring the useful function that any marking-point which is in position for writing—that is, any working marking-point—always finds itself in position between the pencil-holding jaws with just sufficient pressure to hold it in proper position, but not with sufficient pressure to further expand the jaws, which would make them grip even without the compressor, and thus prevent the working marking-point from falling back into the magazine under the action of its own gravity at the desired time. This being the case, it will at once be seen that the pencil can be carried around in the pocket of the user without having a lead marking-point projecting from the point. When the pencil is in the pocket of the user, the marking-point will have withdrawn into the magazine and the lead point will be completely protected from injury; but, what is perhaps more important still, there will be no projecting lead to soil the pocket and the finger of the owner when he seeks to withdraw the pencil from his pocket. Instead of being compelled to place the pencil in the pocket in a given position it can be dropped into any pocket in any position. No care is required in putting it in the pocket, in carrying it in the pocket, or in taking it out of the pocket. This is a most important advantage. Now in such a construction of lead-pencil, in which a marking-point can always fall back into the magazine when the pencil-point is held uppermost and pressure is applied to the proper part, it follows, as a converse, that the marking-points in the magazine are at all times ready to drop forward when the pencil is held with its point undermost. Furthermore, my invention contemplates a construction in which the working marking-point can, when dull, be ejected by the action of the feeding-finger on the marking-point behind the working marking-point, which drives the working marking-point out of the clamping-jaws and out of the pencil and drives the marking-point behind it in position for use between the clamping-jaws. Now while the feeding-finger and compressor are relatively immovable, the clamping-jaws, which are at the end of the magazine, are movable with relation to both these parts, the construction preferably being one in which the compressor and feeding-finger are held still and the magazine carrying the pencil-holding jaws is forced outward against the tension of the spring away from these parts. This carries with it the fact that when the clamping-jaws are pushed to the position farthest removed from the compressor, the spring being most tightly compressed, the feeding-finger must be in position to get behind the marking-point which is in contact with the working marking-point in the pencil-jaws. In other words, the feeding-finger at the point of greatest excursion of the pencil-holding jaws and greatest compression of the spring must have two marking-points ahead of it, so that by action on the second point it can force the first or working point out of the pencil-jaws and can force the second marking-point into position between the jaws. When, now, we consider what happens when the pencil is taken out of the pocket with all the marking-points in the magazine and none between the clamping-jaws, it follows at once that by holding the pencil-point downward and moving the pencil-jaws away from the feeding-finger, so as to enable it to get at its work of feeding a pencil-point in position, the feeding-finger will necessarily get behind two marking-points, so that when the pressure on the spring is released and the clamping-jaws move back toward the feeding-finger we find one of the marking-points entirely ejected from the magazine and wasted, while the second marking-point is fed into position for use. The construction as thus outlined would therefore have the disadvantage of wasting a marking-point every time the pencil is taken out of the pocket and a marking-point is fed into position. To overcome this defect, I provide a spacing-finger which has a substantially immovable relation with the feeding-finger, but which is situated behind the feeding-finger by a distance equal to the length of a marking-point. This finger is so constructed as to be withdrawn from the general path of the magazine when the feeding-finger is within the magazine and remains within the magazine when the feeding-finger is withdrawn therefrom. When, therefore, the pencil is held point down after being taken from the pocket, the foremost marking-point engages with the side face of the feeding-finger and the second marking-point lies on top of the first marking-point. The clamping-jaws and magazine being pressed downward, the feeding-finger gradually lets go of the first marking-point, which drops into position between the clamping-jaws. The spacing-finger, however, at this time contacts with the second marking-point and keeps it from falling forward. When, now, the clamping-jaws are drawn back toward the compressor and fingers, the spacing-finger gradually moves out of the path of the magazine and the second marking-point and those behind it are allowed to fall forward, so that if occasion required the feeding-finger by another compression of the spring can now act on the second marking-point to drive the working marking-point from the clamping-jaws when it shall have become sufficiently dulled by use.

Having thus described the broad feature of my invention, I have now to describe the specific embodiment in an actual lead-pencil.

In the drawings, Figure 1 represents a complete cross-section of the pencil with the clamping-jaws retracted and in position for use. Fig. 2 represents a complete cross-section of the pencil with the clamping-jaws and magazine projected to its full extent from the compressor, the spring being under maximum tension. Fig. 3 shows a perspective view of the feeding and spacing fingers. Figs. 4, 5, and 6 show sectional details of the operation of ejecting a worn-out point. Figs. 7, 8, and 9 show sectional details of the operation of retiring a marking-point within the magazine; and Figs. 10, 11, and 12 show the operation of feeding a single new marking-point into position for use after all the marking-points have been withdrawn into the magazine. Fig. 13 shows a modified shape of pencil-holding jaws.

The magazine A, which carries the marking-points, is shown in the shape of a long cylinder or tube extending from end to end of the pencil. It carries at one end the inwardly-extending or frusto-conical clamping-jaws A′, which, as has been above explained, are partially open when not acted on by the compressor. It has soldered or otherwise secured to it at an intermediate point tubes A^6, having a flange or disk A^5 held therebetween.

The mantle C^5 of the lead-pencil is cylindrical and carries at one end the compressor C in the shape of a nozzle. This compressor or nozzle is telescoped into the end of the mantle C^5 and is rigidly secured thereto by solder, a rivet, or the like. The ring or band C′ is placed or spun upon the mantle and compressor to hide the solder or rivet and to add to the ornamentation of the pencil. Manifestly, however, other means of securing the compressor C to the mantle C^5 may be adopted. The flat disk C^2 is also secured in a fixed position inside of the mantle. As shown, this disk C^2 is pressed against a contracted end of the part of the compressor which extends inside the cylindrical mantle C^5 by the spring D. This is a convenient means of securing the parts in position, since they may be assembled and automatically held in place, as it were; but other means of rigidly securing the disk C^2 in a fixed position on the inside of the mantle C^5 may naturally be employed.

Soldered to the disk C^2 is a tube B^2, which has stamped in one piece with it the feeding-finger B. The spacing-finger B′ might also be stamped out of the metal of the tube B^2, but is preferably formed by making it in one piece with a separate collar B^3 and by slipping the collar over the tube B^2 and soldering it or otherwise securing it thereon. The spacing-finger B′ has a projection B^4 making a reëntrant angle with the finger B′ for a purpose to be described later on.

The magazine-tube A is normally in the position shown in Fig. 1, with the clamping-jaws A′ in their retracted position—that is to say, with the clamping-jaws in contact with the compressor C and as near as they ever get to the feeding-finger B and the spacing-finger B′. This normal position of the parts is brought about by the action of the helical spring D, which at one end rests on the fixed plate C^2 and at the other end presses against the plate A^5, rigidly secured to the magazine-tube A by the collars or tubes A^6. It is, however, necessary to force the clamping-jaws away from the compressor C and the feeding and spacing fingers B B′ to the position shown in Fig. 2. To this end I provide a tube F, which is reduced in diameter at its outer end, as shown, and which telescopes within a tube C^3, rigidly secured to the outer mantle C^5 by a bolt C^6, by solder, by spinning, or any other suitable means. The tube F has a cap G, constituting a push-piece, telescoped therein at its outer end, and at its inner end it presses against the plate A^5, secured to the magazine-tube A. The marking-points are fed into the magazine-tube from the rear by removing the cap G.

It will be apparent that by holding the mantle C^5 of the pencil in the hand and by pressing with the thumb upon the push-piece or cap G motion is conveyed to the telescoping tube F and through it to the plate A^5 and to the magazine-tube A, thus compressing the spring D. At the same time the other end of the magazine-tube A is forced to slide through the tube B^2, carrying the feeding and spacing fingers, and the clamping-jaws on the extreme end of the magazine-tube are forced away from the compressor or nozzle C at the end of the mantle. When the pressure of the thumb on the cap G is released, the expansion of the spring D drives the parts back to the position shown in Fig. 1. In order to prevent any rotation of the magazine-tube A within the mantle, I have adopted the simple expedient of stamping out of the material of the tube an outwardly-extending stop or tongue A^4 and causing the same to travel in a slot B^3 of definite length formed in the finger-carrying tube B^2. The coöperation of the stop A^4 on the movable magazine-tube and of the ends of the slot B^3 on the relatively stationary finger-carrying tube prevents any rotary motion of the magazine-tube. It is also to be noticed that in the position shown in Fig. 1 the feeding-finger B lies within the magazine-tube and holds the working marking-point in position. The spacing-finger B′, however, lies on the outside of the magazine-tube. In the position shown in Fig. 2 the feeding-finger B has been withdrawn through its slot in the magazine-tube and lies entirely on the outside of the magazine-tube. The spacing-finger has, on the other hand, entered its slot in the magazine-tube, its upwardly-extending point lying within the path of the lead. It will further be noticed that the reentering angle which the projection B^4 makes with the spacing-finger B′ has a useful function. As seen in Fig. 2, the projection B^4 lies

on such a slant with reference to the forward edge of the slot in the magazine-tube with which it registers that when this projection B^4 comes against the forward edge of the slot it will be forced outward and away from the inside of the tube onto the metal on the outside of the tube, to the position, in fact, which it is shown as occupying in Fig. 1.

The construction of the pencil having thus been made clear, there will be no particular difficulty in understanding its operation, especially when the functions of the pencil as a whole, which have been explained at the outset, are borne in mind. We shall consider first the operation of ejecting a worn-out point in Figs. 4, 5, and 6. We shall then consider the operation of retiring the working marking-point to a position within the magazine-tube, as shown in Figs. 7, 8, and 9. Finally we shall explain the operation of feeding a marking-point into position after the pencil has been taken from the pocket, all the marking-points being supposed to be retired within the tube.

In Fig. 4 the pencil-point is supposed to be held downward, a marking-point a' being held within the clamping-jaws, and the feeding-finger B acting to hold it in its foremost position. Pressure is now applied upon the cap-plate G, and the clamping-jaws are projected to a considerable distance below the compressor. The feeding-finger B being withdrawn from the interior of the magazine-tube by the action of the rear edge of the slot A^2, the second marking-point a^2 is allowed to drop down on the working marking-point a'; but the spacing-finger B′ now having its reëntering projection B^4 within the magazine-tube it acts to hold the marking-point a^3 away from the marking-point a^2, as shown in Fig. 5. When now pressure upon the push-piece or cap G is released and the spring D drives the magazine-tube upwardly, the feeding-finger B presses upon the top of the marking-point a^2 and forces this through the magazine-tube. The pressure of the marking-point a^2 upon the marking-point a' ejects the marking-point a' from the clamping-jaws. At the same time the marking-point a^2 is forced into position between the clamping-jaws, as shown in Fig. 6. The result is that the marking-point a' has been ejected and that the next fresh marking-point a^2 has been forced into position between the clamping-jaws with a uniform amount of pressure, determined by the tension of the spring D. It is now desired to withdraw a marking-point which finds itself in working position between the clamping-jaws to the interior of the magazine-tube. This action is fully illustrated in Figs. 7, 8, and 9. The pencil is held point uppermost. The marking-point a' is held in its uppermost position by its contact with the feeding-finger B and by the compressor C. Pressure is now applied to the push-piece or cap G, thus driving the clamping-jaws upwardly away from the compressor C and also away from the feeding-finger B. The marking-point a' not having been crowded into position between the clamping-jaws, and these of themselves being non-gripping in character, this marking-point a' may now drop down a little. It so drops upon the projection B^4 of the spacing-finger B′. The position of the parts is as shown in Fig. 8. Pressure upon the cap-plate being now released, the spring D draws the clamping-jaws down toward the compressor. The marking-point a' remains stationary by reason of the fact that the projection B^4 is under it. The clamping-jaws come down toward it; but some time before the clamping-jaws reach it the reëntering projection B^4 of the spacing-finger is driven out of the magazine-tube by the action of the slope of the projection B^4 against the upper end of the slot A^3. At this moment the marking-point a' drops completely down into the magazine. It will thus be noticed that while the spacing-finger B′ takes part in the operation of retiring a pencil-point into the magazine, as is shown in Figs. 7, 8, and 9, it has in this operation of retiring no useful purpose. If the spacing-finger were entirely out of action during this part of the operation, the only difference would be that the marking-point in position between the clamping-jaws, as shown in Fig. 7, would drop directly back into the magazine-tube to the position shown in Fig. 9 without going through the intermediate steps shown in Fig. 8. At the same time it is equally evident that this marking-point does no harm in this retiring operation, this being due to the construction which forces it out of the magazine-tube in the innermost position of the clamping-jaws.

We have finally to consider the operation of feeding a fresh marking-point into position when taking the pencil out of the pocket, all of the marking-points having been retired within the magazine. The operation is illustrated in Figs. 10, 11, and 12. In Fig. 10 the feeding-finger B is within the magazine-tube and the spacing-finger B′ is on the outside of the tube. The series of marking-points a' a^2 a^3 lie supported on the side of the feeding-finger B. Pressure is applied to the cap-plate G, and the clamping-jaws are projected from the compressor C. During this operation the feeding-finger B′ has been withdrawn from the interior of the magazine, thus letting go of its hold on the marking-point a', which is thereupon dropped into position between the clamping-jaws. On the other hand, the spacing-finger B′ has entered the magazine and has gripped the marking-point a^2, withdrawing it within or sliding it up the magazine-tube. This position of the parts is shown in Fig. 11. Pressure upon the cap G being now released, the spring D forces the clamping-jaws A′ toward the compressor C and feeding and spacing fingers B B′. The feeding-finger again enters the magazine-tube and forces the marking-point a' into a position between the clamping-jaws with the desired amount of

pressure. The spacing-finger B′ has, on the other hand, kept in touch with the marking-point a^2 and prevented it from falling forward until the feeding-finger B had projected into the magazine-tube at a point ahead of the marking-point a^2. Therefore the feeding-finger B has had no opportunity to act on the back of the marking-point a^2, and thus to eject the marking-point a' from the clamping-jaws.

As appears from the above, the pencil-holding jaws are of a shape to have an inward extension. In the form shown in Fig. 1 the jaws are frusto-conical, the slant of the cone providing the inward extension, or I could use the shape of jaws shown in Fig. 12, in which the marking-point is in the shape of a cone mounted on a cylinder, and the pencil-holding jaws have an inward extension A^{20} to act as a stop against the base of this cylinder. It will be noticed, however, that the marking-point in the absence of the compressor fits loosely in the pencil-holding jaws, being prevented from forward motion by the stop or flange A^{20}, but being entirely free to drop backward if the pencil-holding jaws are turned the other end up. Both in the forms shown in Figs. 12 and 1 the pencil-holding jaws have an inward extension to prevent forward motion of the marking-point except under the action of considerable force in the process of ejecting a worn-out point. So, too, in each of these cases the pencil-holding jaws are non-gripping of themselves in the absence of the compressor to permit the marking-point to fall backwardly. The shape of the jaws with an inward extension is thus highly important in my pencil. It prevents the marking-point from escaping through the open end of the jaws except when forced therethrough in the action of ejecting a worn marking-point. At the same time it permits the marking-point to drop back into the magazine when the pencil is held upright and the feeding-fingers are drawn from behind it. It must be understood at the same time that while the jaws will usually be frusto-conical in shape, this being the most efficient shape, a frusto-pyramidal shape or other shape possessing the same functions—for instance, that shown in Fig. 13—would be comprised within the phrase "inwardly-extending" jaws as used by me. The bias of the pencil-holding spring-jaws is such as not to cause them to bind upon a marking-point which has been pressed home between the jaws by the feeding-finger apart from the action of the compressor. The spring-jaws are, in fact, so biased that they may be further compressed by the compressor or be further expanded when a marking-point is ejected therethrough. Of themselves and aside from the compressor they are non-gripping in character.

What I claim is—

1. A lead-pencil comprising a magazine constructed to receive a series of individual marking-points, inwardly-extending spring-jaws communicating therewith, a feeding-finger and a spring for causing the approach of the jaws and finger and thus causing the finger to drive and hold the marking-point in place within the jaws or to eject it, substantially as described.

2. A lead-pencil comprising a magazine-tube constructed to receive a series of individual marking-points and communicating with inwardly-extending spring-jaws, a feeding-finger extending within the magazine-tube and a spring surrounding the tube for causing the approach of the jaws and finger to drive and hold a marking-point in place between the jaws, or to eject it, substantially as described.

3. A lead-pencil comprising a magazine constructed to receive a series of individual marking-points, inwardly-extending spring-jaws communicating therewith, a feeding-finger, a compressor, and a spring for causing the approach of the finger and compressor and the jaws, whereby the finger ejects or drives a marking-point in place and the compressor compresses the jaws thereupon, substantially as described.

4. A lead-pencil comprising a magazine-tube for receiving a series of individual marking-points communicating with inwardly-extending spring-jaws, non-gripping of themselves, a feeding-finger, and a spring for causing the approach of the jaws and finger, whereby pressure upon the spring permits a marking-point to retire within the magazine and expansion of the spring causes the fingers to eject or drive a marking-point into position, substantially as described.

5. A lead-pencil comprising a magazine-tube for receiving a series of individual marking-points communicating with jaws non-gripping of themselves, a feeding-finger extending into the tube, a compressor embracing the jaws, and a spring for causing the approach of the finger and compressor and the jaws, whereby the expansion of the spring causes the finger to eject or drive a marking-point in place and the compressor to compress the jaws thereupon and the compression of the spring permits a marking-point to drop into the magazine from the non-gripping-jaws, substantially as described.

6. A lead-pencil comprising a mantle, a magazine-tube sliding within the mantle for receiving a series of individual marking-points and provided with inwardly-extending spring-jaws, non-gripping of themselves, a feeding-finger and a compressing-nozzle, each secured in a fixed position to the mantle, and a helical spring surrounding the tube for drawing the jaws toward the compressor-nozzle and feeding-finger, substantially as described.

7. A lead-pencil comprising a magazine and a feeding and a spacing finger movable in relation thereto, substantially as described.

8. A lead-pencil comprising a tube constructed to receive a series of individual

marking-points, a feeding and a spacing finger movable therein and a spring for causing relative motion between the tube and finger, substantially as described.

9. A lead-pencil comprising a slotted magazine-tube, a series of individual marking-points and a feeding-finger and a spacing-finger movable in relation to the tube and constructed to enter and withdraw therefrom in alternation, substantially as described.

10. A lead-pencil comprising a tube communicating with pencil-holding jaws, constructed to receive a series of individual marking-points, a feeding-finger and a spacing-finger therebehind, movable in relation to the tube, the construction being such that when the fingers are in their position removed from the jaws the spacing-finger projects within the tube, substantially as described.

11. A lead-pencil comprising a magazine constructed to receive a series of individual marking-points, spring-jaws non-gripping in themselves communicating therewith, and a feeding and a spacing finger movable in the magazine, whereby a marking-point can be withdrawn into the magazine, a single new point can be fed into position and a worn point can be ejected, substantially as described.

12. A lead-pencil comprising a magazine constructed to receive a series of individual marking-points, spring-jaws non-gripping in themselves communicating therewith, feeding and spacing fingers movable with relation to the jaws, and a spring causing the approaching motion of fingers and jaws, whereby a marking-point can be withdrawn into the magazine, a single new point can be fed into position, and a worn-out point can be ejected, substantially as described.

13. A lead-pencil comprising a magazine constructed to receive a series of individual marking-points and communicating with spring-jaws non-gripping in themselves a feeding-finger and a spacing-finger movable in the magazine, a compressor for the jaws and a spring causing the approaching motion of the jaws and the fingers and compressor whereby a marking-point can be withdrawn into the magazine, a single new point can be fed into position and a worn point can be ejected, substantially as described.

14. A lead-pencil comprising a magazine-tube for receiving a series of individual marking-points, pencil-holding jaws communicating therewith, and a spacing-finger movable in the tube and withdrawable from its interior on motion toward the jaws, substantially as described.

15. A lead-pencil comprising a magazine adapted to receive a series of individual marking-points, pencil-holding jaws non-gripping in themselves, a compressor therefor, a spring-impelled push-piece, and means actuated thereby for permitting a marking-point to fall into the magazine from the jaws, substantially as described.

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

BYRON B. GOLDSMITH.

Witnesses:

J. STARK,

C. E. FINN.