(No Model.)

B. B. GOLDSMITH.

PENCIL.

No. 364,916. Patented June 14, 1887.

Fig. 1.

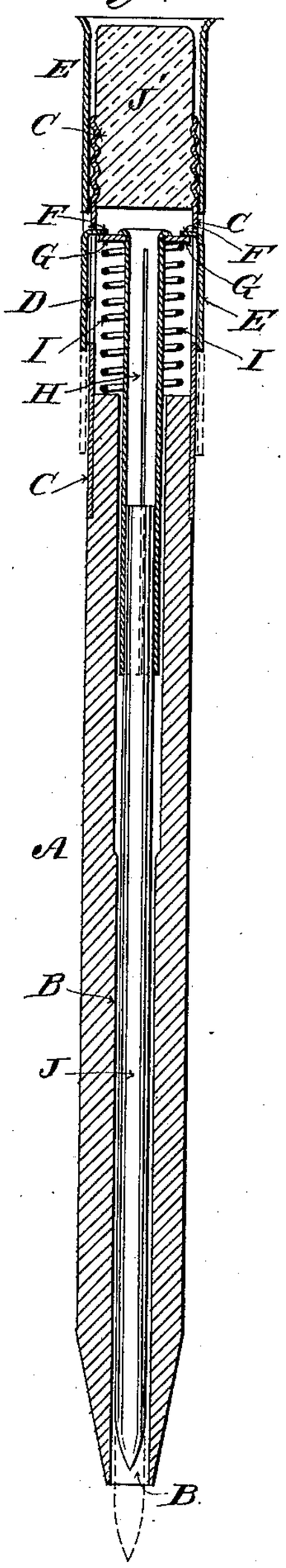

Fig. 2.

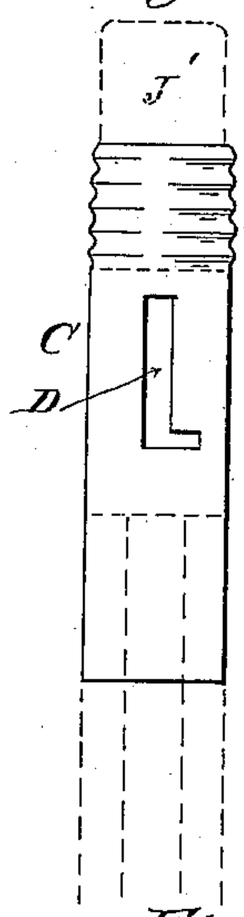

Fig. 3.

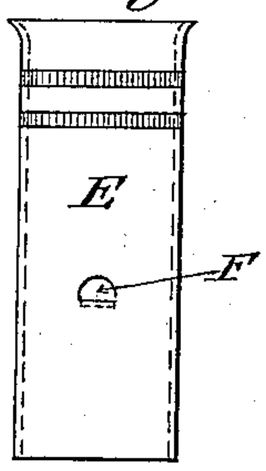

Fig. 8.

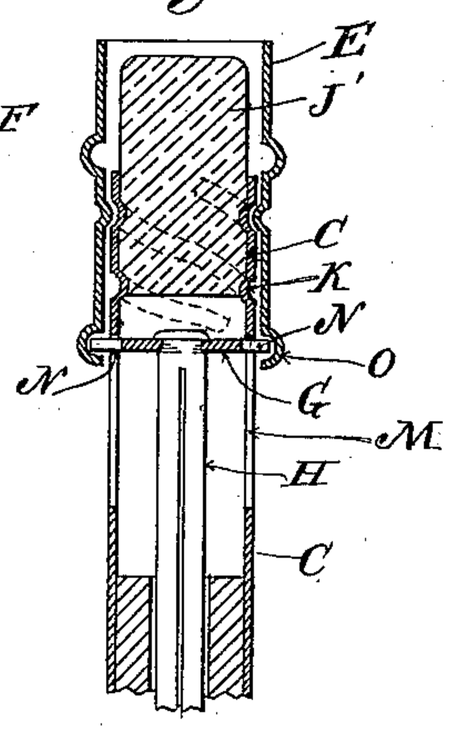

Fig. 6.

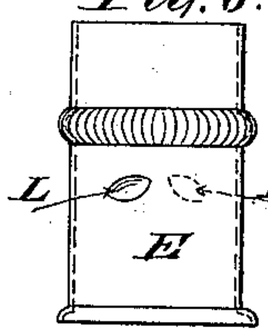

Fig. 5.

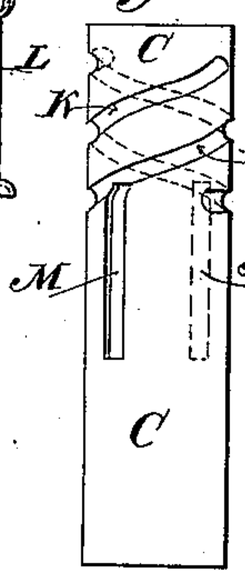

Fig. 4.

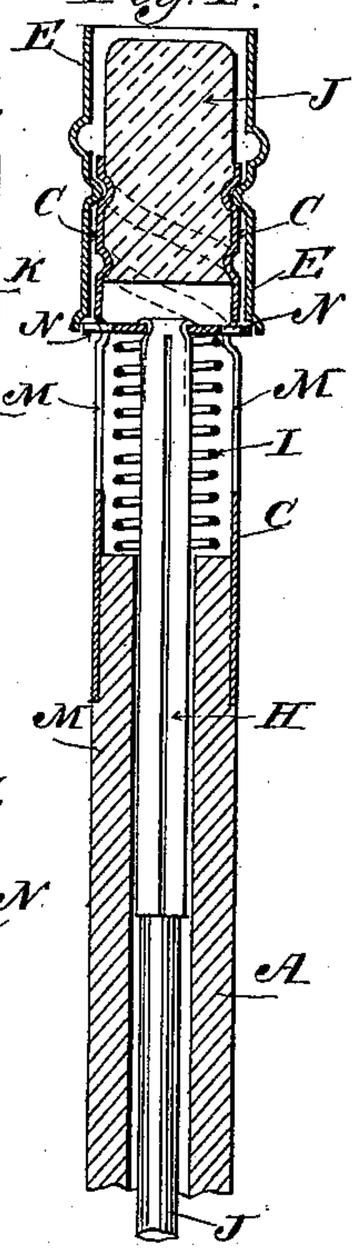

Fig. 9.

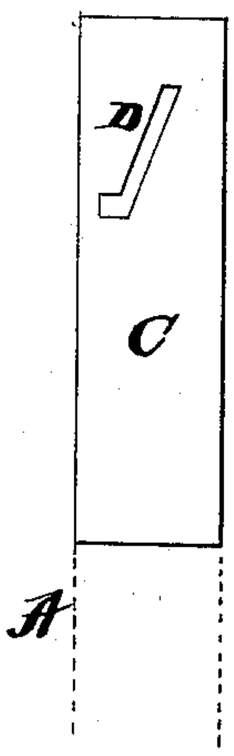

Fig. 7.

WITNESSES:

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PENCIL.

SPECIFICATION forming part of Letters Patent No. 364,916, dated June 14, 1887.

Application filed February 26, 1887. Serial No. 229,042. (No model.)

To all whom it may concern:

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

My invention relates to improvements in lead-pencils; and it consists in a stick or handle having a lead-containing space formed in it longitudinally; a movable cap or tube attached to a lead-holding tube; a spring to retract the lead, and means for holding a rubber or other erasive material, all so combined and arranged that the lead can be protruded and retracted at will from the end of the pencil-stick, the stick being cut away as the lead wears off, and the devices are so arranged that when the lead is retracted the rubber will be covered by a protecting cap or tube, so that it will not become soiled.

In the drawings, Figure 1 illustrates a longitudinal section of my pencil. Fig. 2 illustrates a plan of the rubber-holding tube. Fig. 3 illustrates a plan of the rubber-protecting and lead-operating sheath. Figs. 4, 5, 6, and 7 illustrate an alternative construction, Fig. 4 showing a longitudinal section thereof; Fig. 5 showing a plan of the rubber-holding tube thereof; Fig. 6 showing a plan of the rubber-protecting and lead-operating sheath thereof; Fig. 7 showing a plan of the sliding washer at the upper end of the lead-holding tube thereof. Fig. 8 illustrates a modified construction of the devices shown in Figs. 4, 5, 6, and 7. Fig. 9 illustrates a modified construction of the slot in the lead-holding tube.

Referring first to Figs. 1, 2, and 3, A is the stick or handle of the pencil. It is preferably made of wood, and resembles the ordinary pencil-sticks. It may, however, be made of any other material, the pointed end whereof can be cut away or otherwise removed as the lead wears off.

B is a longitudinal recess or bore made through the stick from end to end.

C is a metallic tube rigidly attached to the upper end of the stick A. At its outer end it holds a stick or piece of rubber or other erasive material, as usual in such devices.

D D are slots made in the tube C, having a bayonet-joint recess at their lower ends. There are preferably two of these slots, one on each side of the tube.

E is another metallic tube so much larger than the tube C as to slide freely on it longitndinally.

F F are two ears or lugs extending inwardly from the inner side of the tube E, which are, preferably, cut out from the metal of the tube itself, as shown. They are of such size as to fit and move easily in the slots D D.

G is a washer of such diameter as to slide freely in the tube C, and H is a lead-holding tube, preferably split, as shown, which is attached to the washer G. The ears F extend so far through the slots D inwardly as to overlap the washer.

I is a spiral spring, shouldered at one end against the end of the pencil and at the other against the washer.

J is the lead.

J′ is the rubber.

The ends of the slot D act as stops against the ears F, determining the movement of the tube E.

The operation of the pencil as thus far described is as follows: The lead is entered at the pointed end of the stick A, and is pushed into the lead-holding tube H and is firmly held therein. Now, to uncover the rubber and expose the lead both at the same time, the tube E is pushed downwardly, the ears F carrying the washers G, the lead-tube H, and the lead J with it, and, compressing the spring I, the ears F slide through the slots D. When the ears F of the tube E reach the bottom of the slot, the tube is turned or twisted slightly relative to the stick A, and the ears moving laterally enter the bayonet-joint recesses, and thus lock the parts in their then position, the lead being projected from the pointed end of the pencil and the rubber being exposed for use at the other end. To retract the lead and re-cover the rubber, the tube E is simply turned or twisted back again, freeing the ears from the bayonet-joint recesses, and then, being released, the spring returns the parts to their position, as shown in Fig. 1. As the lead wears off the point of the pencil-stick is cut away.

The slot may be made in the lead-holding

tube at an angle to the central line of the tube, as shown in Fig. 9, with the advantage that if so made it will not be necessary to turn the tube E by hand, because the action of the spring upon withdrawing the pressure on the tube will cause the ears F to enter the bayonet-joint recesses, which, by reason of the inclination of the slot, is directly above the ears F when they are at the bottom of the slot. To retract the lead, the tube E must of course be turned to release the ears from the bayonet-joint recesses. This construction is especially desirable when no rubber is used, because then simply pressing the end of the inverted pencil on the table or like support will protrude the lead and lock it in a protruded position.

Figs. 4, 5, 6, and 7 illustrate a modified construction. The stick A, lead J, rubber J′, lead-holding tube H, and spring I are all substantially the same as the like parts shown in Figs. 1, 2, and 3. The rubber-holding tube C, however, has indented screw-threads or spiral depressions K K formed in its exterior, and the rubber-protecting and lead-operating tube E has two depressions, L L, forming interior projections which engage with the spiral depressions K K of the tube C, these two features constituting practically male and female threads. The tube C has also two straight slots, M M, formed longitudinally in it, in which slide two projections, N N, extending from opposite sides of the washer G. These projections N N extend so far through the slots M M as to engage with the lower end of the tube E. The rubber J′ is held by the tube C, the same as before described.

The operation is as follows: The lead is introduced, as before stated. The tube E being then turned or twisted relative to the stick A, the projections L engaging with the spiral depressions K K cause the tube E to travel down the tube C, carrying the washer G, tube H, and lead J with it, because of the impingement of the projections N of the washer G against the lower end of the tube E. The spring being compressed, the lead is thus projected and the rubber is exposed. The parts will remain in any position in which the tube E may be left, the pitch of the threads or depressions K being such that pressure on the point of the lead will not retract it. Upon turning back the tube E the spring causes the washer and its attached parts to follow the tube E, thus retracting the lead. This modification of my invention is different from that shown in Figs. 1, 2, and 3, in that the degree of projection of the lead and the uncovering of the rubber may be adjusted.

In Fig. 8 I show still another modification of my invention. All the parts are the same as those shown in Figs. 4, 5, 6, and 7, excepting that the spring I is not used, and at the lower end of the tube E an annular internal groove, O, is formed by rolling over the end of the tube. The projections N N of the washer G fit into this groove. Thus the washer is positive with the tube E, and is carried by it up and down, thus projecting and retracting the lead by the simple turning of the tube E, without the employment of the spring I.

I do not limit myself to the details of construction shown, since they may be somewhat departed from and still my invention be employed.

Having described my invention, I claim—

1. The combination of a pencil-stick constructed and arranged to be removed as the lead wears away, having a longitudinal lead-containing recess therein, a spring-controlled lead-holding device arranged to slide longitudinally in the pencil-stick, and locking mechanism coacting with the sliding lead-holding device, whereby the lead may be locked in its projected position against the stress of the spring, substantially as set forth.

2. The combination of a pencil-stick constructed and arranged to be removed as the lead wears away, having a longitudinal lead-containing recess therein, a spring-controlled lead-holding device arranged to slide longitudinally in the pencil-stick, a rubber-holding tube attached to the rear end of the pencil-stick, and an exterior longitudinally-movable rubber-protecting tube engaged with the lead-holding device and moving with it, substantially as set forth.

3. The combination of a pencil-stick constructed and arranged to be removed as the lead wears away, having a longitudinal lead-containing recess therein, a longitudinally-movable lead-holding device engaged with an exterior rubber-protecting tube, and a rubber-holding tube attached to the rear end of the pencil-stick, substantially as set forth.

4. The combination of a pencil-stick constructed and arranged to be removed as the lead wears away, having a longitudinal lead-containing recess, a longitudinally-movable lead-holding device, a rubber-holding tube, and a longitudinally-movable rubber-protecting tube engaged with the lead-holding device and controlling its position, substantially as set forth.

5. The combination of a recessed stick, A, constructed and arranged to be removed as the lead wears away, a lead-holding tube, H, a washer, G, attached to the lead-holding tube, a spring, I, a rubber-holding tube, C, having slots through it, a rubber-protecting tube, E, engaged with the washer G through the slots in the rubber-holding tube, and coacting locking parts on the rubber-holding and rubber-protecting tubes, whereby the exposure of the lead and of the rubber is determined, substantially as set forth.

6. The combination of a pencil-stick constructed and arranged to be removed as the lead wears away, having a longitudinal lead-containing recess therein, a lead-holding tube longitudinally movable within the pencil-stick, a tube provided with slanting slots having bayonet-joint recesses at their lower ends,

an exterior longitudinally-movable tube provided with ears, which pass through the slots in the said slot-containing tube and engage with the lead-holding tube, and a spring arranged to retract the lead-holding tube and the exterior longitudinally-movable tube, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of February, A. D. 1887.

BYRON B. GOLDSMITH.

Witnesses:

JOHN H. IVES,

GEORGE A. VOSS.