No. 694,879. Patented Mar. 4, 1902.

B. T. MULLIGAN.

PENCIL.

(Application filed Oct. 31, 1901.)

(No Model.)

Fig. 1.

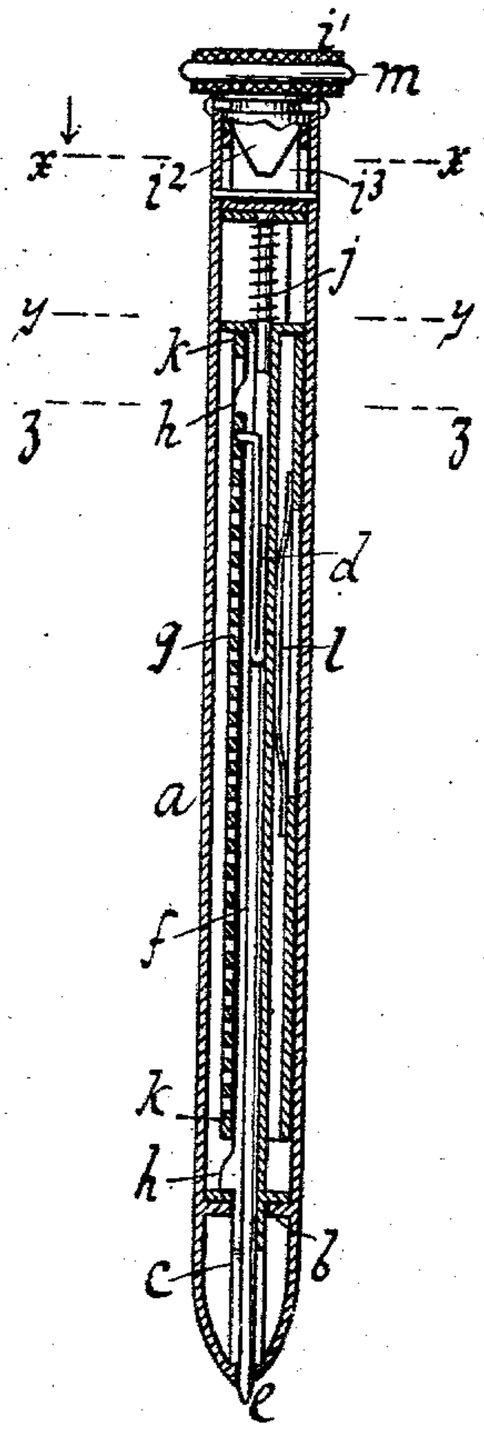


Fig. 2.

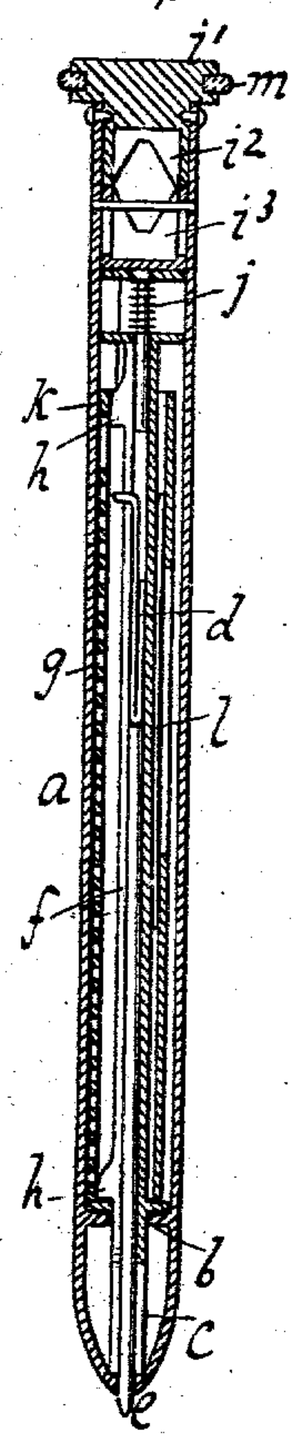


Fig. 3.

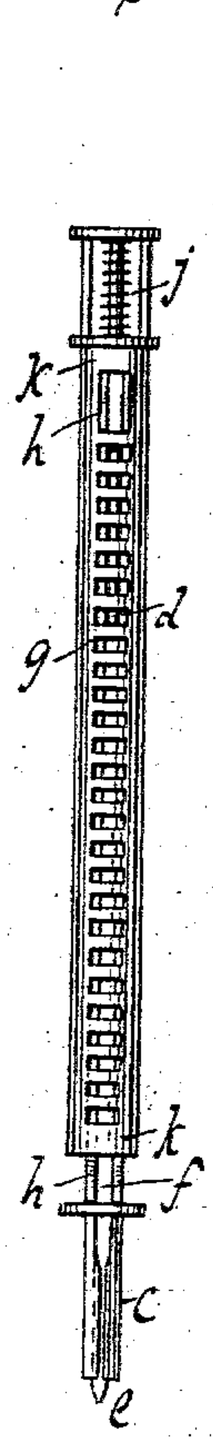


Fig. 8.

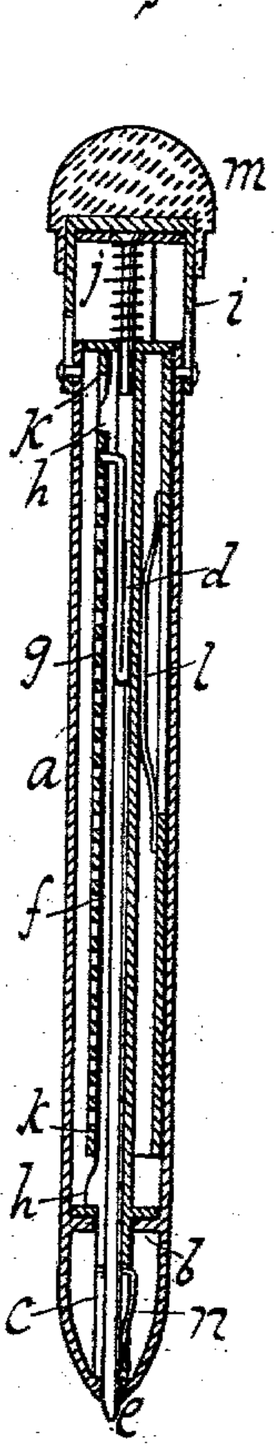


Fig. 4.

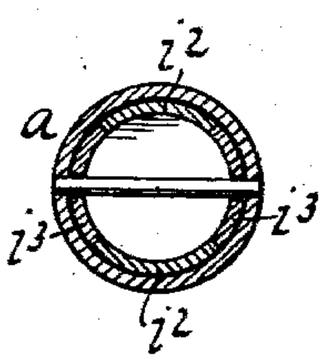


Fig. 5.

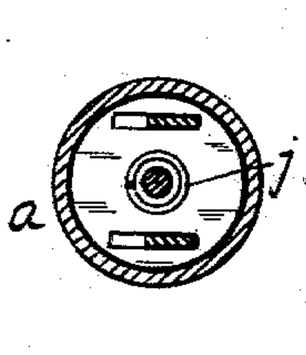


Fig. 6.

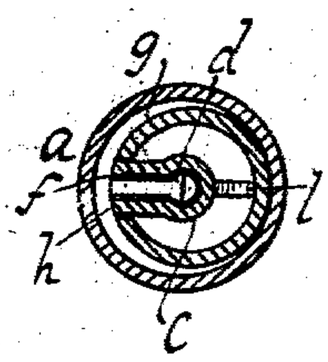
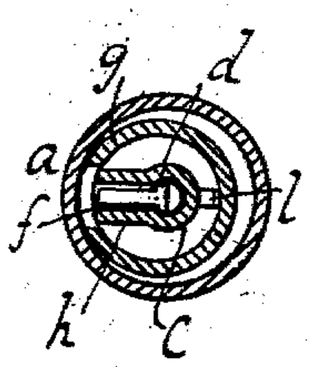


Fig. 7.



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PENCIL.

SPECIFICATION forming part of Letters Patent No. 694,879, dated March 4, 1902.

Application filed October 31, 1901. Serial No. 80,670. (No model.)

To all whom it may concern:

Be it known that I, BARTLEY T. MULLIGAN, a citizen of the United States, residing at Brooklyn borough, New York city, in the county of Kings and State of New York, have invented new and useful Improvements in Pencils, of which the following is a specification.

This invention relates to pencils—such, for example, as slate or lead pencils or like marking, writing, or drawing substances. For convenience of description the marking substance may be called a "lead," although not merely graphite, but other substance—such, for example, as slate or crayon—could be employed.

By means of this invention a structure is obtained which can be readily made and operated, and the pencil can be fed out as required for use or sheathed or moved back into the case when not to be used—as, for example, when being carried in the pocket.

The invention resides in the features of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a longitudinal section of the pencil with the feed-rack retracted. Fig. 2 is a like view showing the feed-rack thrust forward. Fig. 3 is a face view of the feed-rack or feed-tube with its teeth. Fig. 4 is a section along x x, Fig. 1. Fig. 5 is a section along y y, Fig. 1. Fig. 6 is a section along z z, Fig. 1, with the pawl in engagement or ready to feed the lead. Fig. 7 shows the pawl freed for allowing the lead to be pushed back. Fig. 8 shows a modification.

The lead or slate e is fed by depressing or rotating the button or the cap and held in position for writing, as required.

This pencil comprises a shell a, which has a contracted portion b, which serves to hold the pencil-case c in the interior of the shell. The interior of this pencil-case is provided with a spring-pawl d, the tail of which buts against a lead or slate e. The pencil-case is provided with a slotted portion f, so that the nose of the pawl can slide freely up or down in the slot when the pencil is being fed, Fig. 2. The nose of the spring-pawl engages with a rack g, which tends to hold the pawl and the lead or slate in their proper positions for writing, Fig. 1. The upper and lower portion of the pencil-case is provided with lugs h, which are engaged by the rack or by a bridge k on the rack and tend to push the rack and pawl out of engagement when the cap i is depressed, thus bringing the pencil and pawl in position for feeding, Fig. 2. A spring j will bring the rack and the pencil-case back to their normal position when the pressure is removed from the cap i or cam i^2.

Suitable means are provided for actuating or reciprocating the feed-tube from outside the casing. A slide or cap i can be applied, Fig. 8, or a button or rotary cam, Fig. 1, has also been found practical. The button i' has a cam i^2, engaging a cam i^3, mounted or secured on the feed-tube. As the button is rotated or twirled back and forth to bring the high parts of the cams to and from one another the feeding reciprocation is imparted to the feed-tube.

A spring l of bow or suitable shape secured to the pencil-tube or interposed between the latter and the feed-tube tends to hold or press the pencil-tube or the pawl to the rack. The pawl or tooth d is of course so shaped that when the rack is pressed by the actuator or makes a feed-stroke the pawl partakes of the motion of the rack. On the return of the rack the latter glides over the pawl or presses on the inclined face of the pawl to depress the latter against the action of spring l. As the pawl remains at rest during the return of the rack the latter brings a succeeding tooth to register with or engage the pawl, and on the next feed-stroke of the rack the pencil or its pawl is again projected a certain distance. The pawl can thus be gradually fed toward the outlet of the pencil-tube, if desired, or as far as the last tooth of rack g or end of the rack-tube.

The pawl is readily formed by a spring piece or wire bent or doubled at one portion to form a pusher fitting with certain friction into the pencil-tube and sitting or pushing against the pencil to feed or expel the latter. Another portion or end of the pawl or wire being suitably bent and filed or inclined will form the pawl-tooth.

The mouth or exit portion of the pencil-tube can be suitably split or provided with a spring part or made to form a clamp or

spring-jaws which exert a certain friction or hold on the outgoing pencil portion, so as to prevent the latter or the pusher *d* from falling out.

It has been noted that when the pencil-tube has its shoulders or lugs *h* resting under or against the bridge or pieces *k* on the rack the pencil-tube or pawl is depressed against the action of spring *l* or freed from engagement with the rack. The pencil-feeding pawl *d* and the pencil or lead can then be pushed back or sheathed in the tube to be protected, or a new pencil or lead can be pushed into place, the insertion or entry of the pencil pushing back the disengaged or freed pawl. The rack can be shifted to cause the bridge *k* to press the pawl free either by the slide-cap *i* or by causing the high parts of the cams i^2 i^3 to rest in engagement with one another, Fig. 2.

As the tube *c* and rack *g* are free from or simply slipped or inserted in the casing *a*, the parts are readily assembled or taken apart and are comparatively simple or easy to construct, and the tube and rack can reciprocate in the casing without rotating or can be rotated without reciprocating. The rack and pencil-tube can thus be inserted into the casing without requiring any alinement of any particular portion.

The reciprocating cap *i* can be connected to the casing by any suitable connection, as a pin and a slot. A like connection can be applied at the reciprocating cam i^3. The button i' or cap *i* can be provided with rubber cap or band *m*, serving as an eraser and also as an antifriction surface or pad, giving a secure or comfortable rest or hold for the finger or hand.

As a precaution against loss of the lead or pusher *d* a spring, as seen at *n*, Fig. 8, could be applied to press or exert friction near the outlet of the lead or tube.

What I claim as new, and desire to secure by Letters Patent, is—

1. A casing, a feed-rack in the casing, a pencil-tube in the casing having a longitudinal slot, a pawl in said tube for feeding the pencil and the nose of which projects through said slot to engage the rack, and means for operating the rack, said rack and casing being free from or placed loosely one into the other so that no rotation is communicated from one to the other.

2. A casing, a feeding-rack, a slotted pencil case or tube, a pencil-feeding pawl in the tube made to engage the rack, a spring for holding the case and pawl toward the rack, means for freeing the pawl from the rack for returning the pawl, and means for actuating the rack substantially as described.

3. A casing, a feeding-rack, a pencil case or tube, and a pencil-feeding pawl made to engage the rack, said rack and pencil-tube having a bridge and shoulder portion made to engage one another to free or disengage the pawl and rack substantially as described.

4. A casing, a reciprocating rack having a bridge portion, a pencil-tube having a shoulder portion, a pencil-feeding pawl in the pencil-tube, and a spring interposed between the pencil-tube and rack to hold the pawl normally in engagement with the rack, said pencil-tube and rack being non-rotary to keep the pawl in line with the rack-teeth and said bridge and shoulder portions being made to engage one another to depress the pawl to clear the rack substantially as described.

5. A casing, a reciprocating rack having a bridge portion, a pencil-tube having a shoulder portion, a pencil-feeding pawl in the pencil-tube, and a cam for oscillating the rack to feed the pawl and pencil and to hold the rack with the bridge and shoulder portions in engagement to free the pawl for return of the latter substantially as described.

6. A casing, a reciprocating rack having a bridge portion, a pencil-tube having a shoulder portion, a pencil-feeding pawl, and means for reciprocating the rack to feed the pawl and for holding the bridge and shoulder portions in engagement to free the pawl, said pawl being constructed from a spring-wire bent to form a pawl-tooth and a pencil-tube engaging or friction portion substantially as described.

7. A casing, a reciprocating rack, a pencil-tube having a pencil-feeding pawl actuated by the reciprocating rack, and a bridge and shoulder portion on the rack and pencil-tube respectively for freeing the pawl, said pencil-tube having a spring or clamping portion at its outlet to prevent loss of the pencil and pawl substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BARTLEY T. MULLIGAN.

Witnesses:
CHAS. E. POENSGEN,
E. F. KASTENHUBER.