April 27, 1954 J. M. MACZYNSKI 2,676,568

MECHANICAL PENCIL

Filed March 6, 1953 4 Sheets-Sheet 1

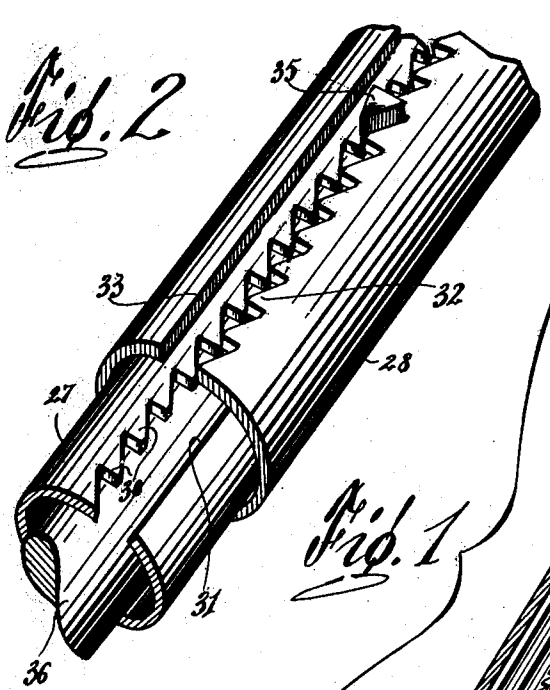

Fig. 2

Fig. 1

Fig. 3

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MECHANICAL PENCIL

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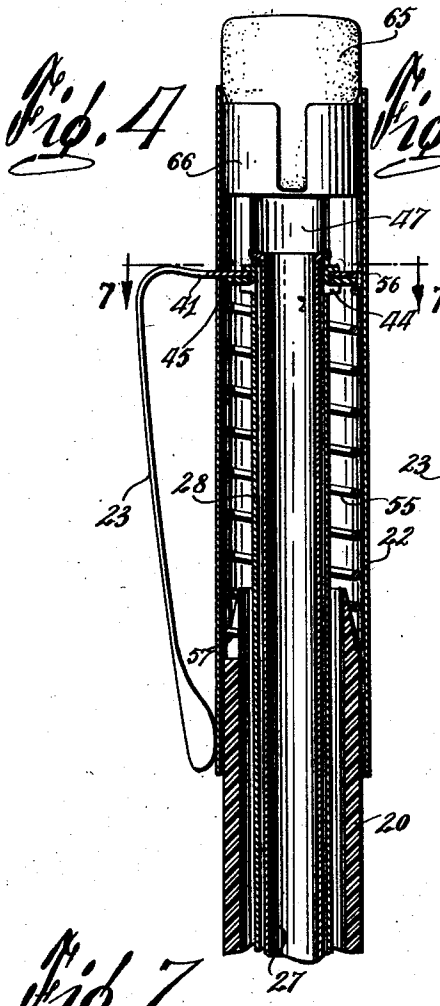

Fig. 4

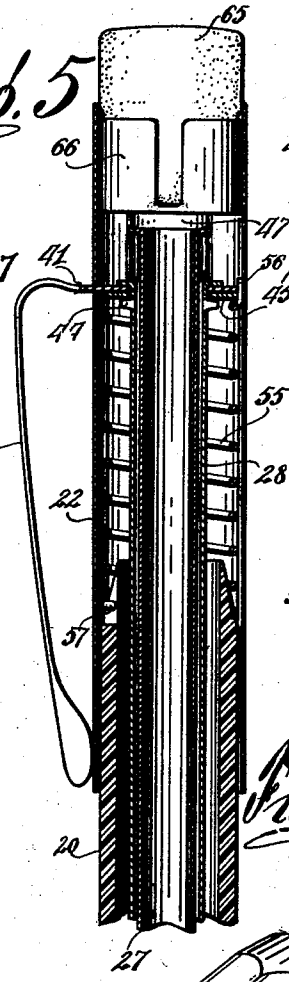

Fig. 5

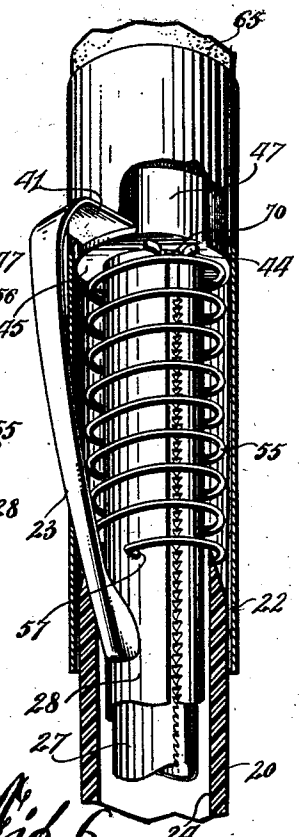

Fig. 6

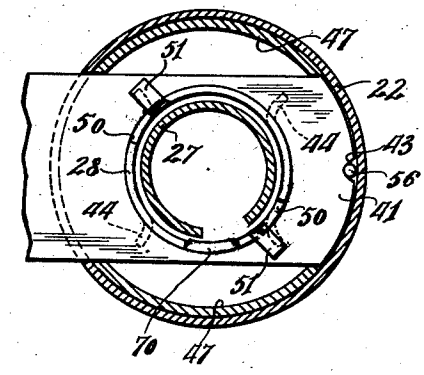

Fig. 7

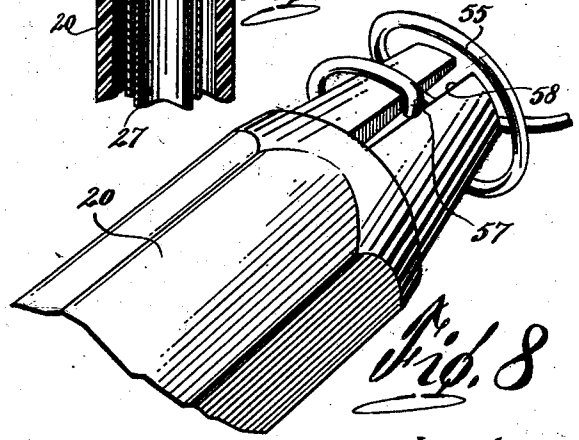

Fig. 8

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Fig. 9

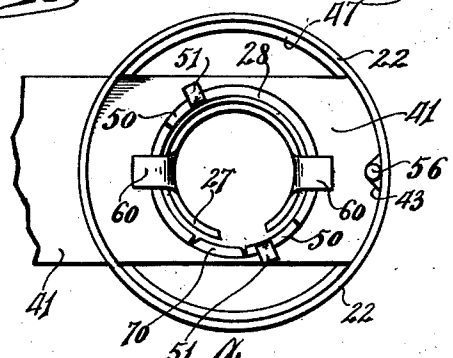

Fig. 17

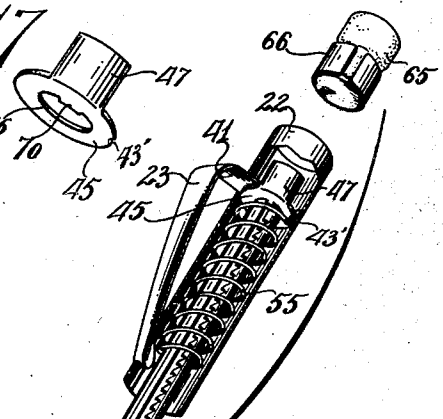

Fig. 12

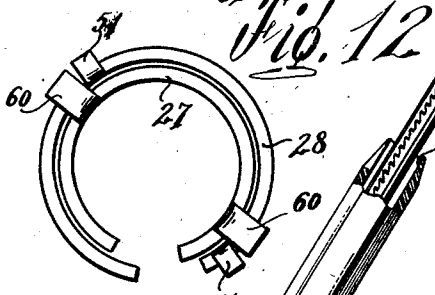

Fig. 10

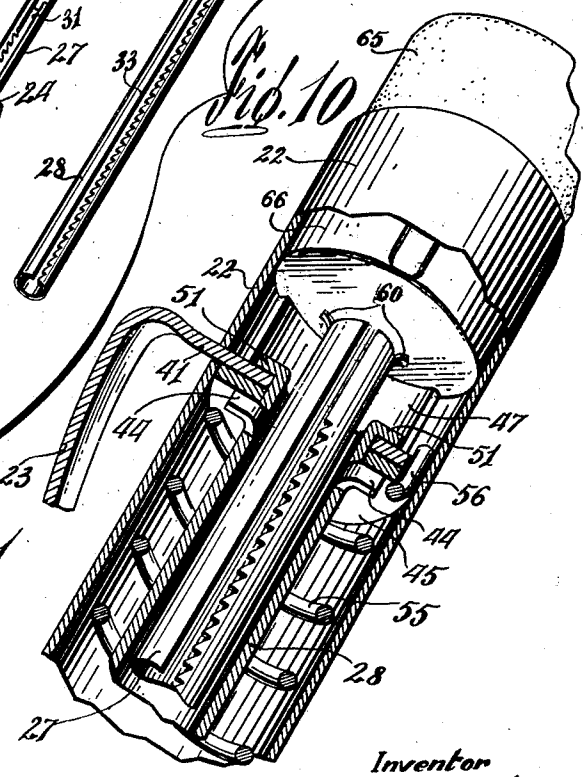

Fig. 11

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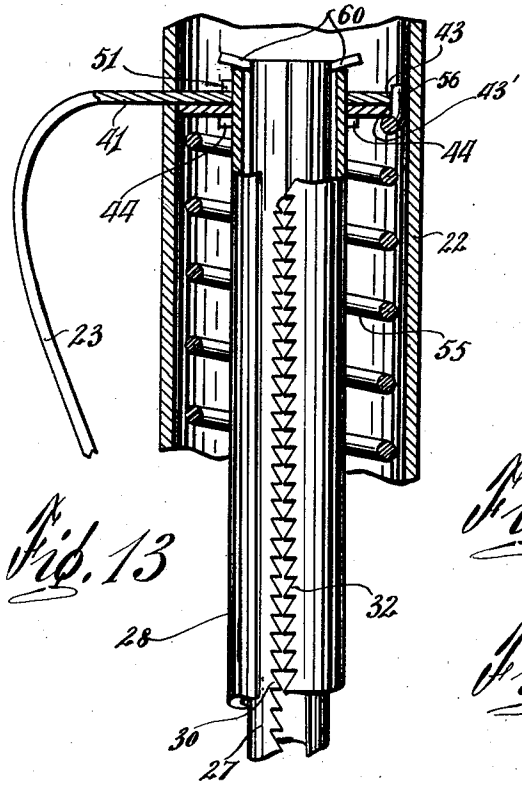

Fig. 13

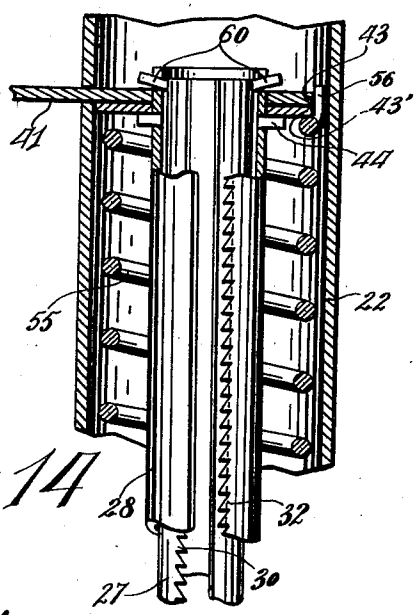

Fig. 14

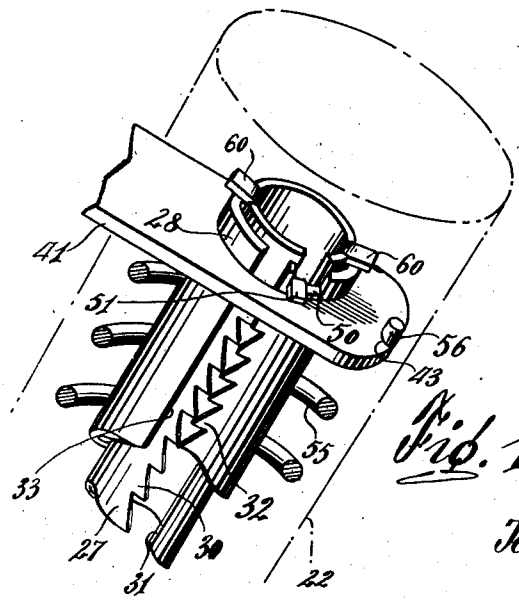

Fig. 16

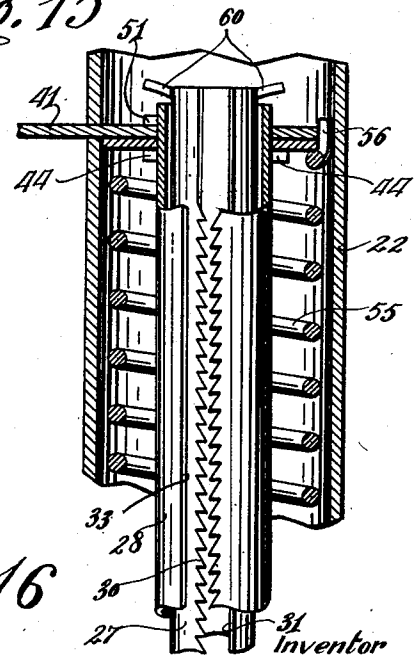

Fig. 15

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UNITED STATES PATENT OFFICE

2,676,568

MECHANICAL PENCIL

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Application March 6, 1953, Serial No. 340,838

12 Claims. (Cl. 120—17)

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The present invention relates to a mechanical pencil and, more particularly, such a pencil of the so-called "plunger" type in which advancement of the writing lead is effected step-by-step.

Mechanical pencils of all descriptions have been used for a long time, all said pencils having the basic feature of protruding from, and retracting within, a protecting body a thin writing lead movable and housed inside said body.

Various ingenious mechanisms have been suggested for effecting this longitudinal advancement and retraction of the lead; a very popular and successful method of propelling the lead is based on a screw thread principle, one member of the pencil body being rotated relatively to a fixed portion of said body. Although such a pencil is undoubtedly efficient, it cannot be operated with the fingers of one hand only or, at best, such operation is a very awkward procedure.

Another type of pencil in great popular favor also is the plunger pencil which is well adapted to one-hand operation, a very desirable feature when only one hand is available for writing and note-taking purposes. Most such pencils, however, require rather accurate construction and, when chucks are used for holding the lead, the cost of production is apt to be rather high. Unfortunately, also, chucks tend to slip or, in extreme cases, to crush or break the lead.

The present invention has been conceived to avoid the drawbacks noted above and, furthermore, to meet one main objective, namely: an extremely low cost of production in a writing implement which, nevertheless, is perfectly serviceable.

Another important object of the invention can be said to reside in a plunger-type mechanical pencil which is efficient for the purpose in view and an improvement over existing types in that the lead is positively locked in writing position, or easily released, by means of simple finger movements of one hand.

A further object of the invention is the provision of a pencil of the character noted, which pencil can be mass-produced easily from inexpensive materials, while lending itself very well to decorative treatment.

Still another object is the provision of an inexpensive mechanical pencil which is yet very rugged and of long-life expectancy.

A still further object concerns a mechanical pencil of the plunger type which is easily adaptable to accept any gauge of the pressed writing leads currently available.

Yet another object envisages a plunger mechanical pencil in which the writing lead can be usefully protruded down to the very end without slippage, or breakage.

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Other objects and advantages of the invention will become apparent, or be pointed out fully, during the description to follow.

Before proceeding with this description, however, it is believed an exposé of the basic construction will facilitate comprehension of the specification proper.

As in all mechanical pencils, the device of this invention comprises an elongated tubular body having a pointed tip at one end, through which tip the lead is adapted to protrude for writing purposes. The other end of the body has a cylindrical cap, acting as the pencil operating member, said cap being free over the body but limited in its movements relative thereto.

Both the body and cap carry a rack, said racks being in the form of teeth cut on one inner edge of a longitudinally slotted tube, the tube secured to the body being inside, and concentric with, the tube secured to the cap. The rack teeth are all inclined in one direction (towards the tip of the pencil) and formed like ratchet teeth.

A spring between body and cap tends to rotate the cap tube in overlapping position over the other, this movement being resisted by a plunger slidable within the center rack tube and having a triangular head projecting between the teeth of both racks.

Now, the body rack is perfectly stationary while the cap rack can be displaced longitudinally, towards the tip, a distance slightly greater than the spacing of the teeth.

Consequently, this longitudinal movement will displace also the plunger head which will then click from one tooth of the body rack to the next, the shape of the teeth preventing any possible movement of the plunger in the opposite direction. Since the lead is propelled by the plunger, said is positively arrested against retracting tendencies by the plunger itself.

As the cap rack is yieldably mounted, rotatively, the plunger head is permitted to ride over the teeth of the fixed body rack by this lateral resiliency of the cap rack, as already stated.

Release of the lead is easily achieved by causing relative rotation of the racks away from each other, behind the smooth faces of the opposite longitudinal edges of the tubes. The plunger head is thus liberated from the rack teeth and free to move in the inner tube; a simple pressure on the projecting lead of the pencil is all that is

necessary to permit re-entry thereof within the pencil body.

As an example of execution an embodiment of the invention is shown in the annexed drawings, wherein:

Figure 1 is a perspective, so-called "exploded," view of the pencil of the invention and showing the constitutive parts thereof in their relative approximate position;

Figure 2 is an enlarged perspective fractional view of the rack tubes in engagement over the head of the plunger;

Figure 3 is a similar view but showing the racks in plunger-head-released position;

Figure 4 is a vertical section through the cap end of the pencil, showing the mechanism in plunger-releasing position;

Figure 5 is a similar view but showing the mechanism in plunger-advancing position;

Figure 6 is a perspective view of the members shown in Figures 4 and 5, seen from below;

Figure 7 is a sectional view taken on line 7—7 of Figure 4;

Figure 8 is an enlarged fractional view of the pencil body inner end, depicting a shoulder thereon for seating one end of the cap-retracting spring;

Figure 9 is an end view of the pencil, from the cap end and with the eraser removed;

Figure 10 is a perspective view of the two main components of the pencil, just prior to the final assembly together;

Figure 11 is a view similar to Figure 6 but showing the members in section;

Figure 12 is a view somewhat like Figure 9 and showing the rack tubes rotated to release the plunger head;

Figure 13 is an enlarged sectional detail view of the tubes actuating mechanism, in lead-advancing position;

Figure 14 is a similar view but with the mechanism in plunger, or lead, releasing position;

Figure 15 is a view similar to the two previous ones but illustrating the mechanism in intermediate position;

Figure 16 is an enlarged perspective view of the extreme inner end of the rack tubes, and;

Figure 17 is an enlarged detail of a cup shown in perspective.

Referring now to the drawings, wherein similar reference characters represent corresponding parts throughout, the reference numeral 20 designates the body of the pencil, 21 the conical tip, 22 the barrel cap and 23 the pencil-securing clip.

The body 20 is an elongated element formed of any suitable material but preferably of plastic compositions, some of which are ideally adapted to such use. The said body may be of the hexagonal shape shown in Figure 10, to simulate the accepted appearance of ordinary pencils, and is provided with the internal bore 24 corresponding to the diameter of the shoulder 25 on the tip 21. Thus, the outer end of the hollow body may be press-fitted, or otherwise secured to said tip. Obviously, the tip in question is drilled axially to permit the frictional passage of a writing lead, a slit 26 assisting this frictional action so that a lead may be held and prevented from falling out under its own weight.

As stated previously, the lead-advancing, or feeding, mechanism is constituted of a pair of concentric tubes having ratchet teeth, the inner tube 27 being secured to the inner end of the tip 21 and the larger, outer tube 28 attached to the barrel cap 22 (see Figure 10). Said tubes are slotted longitudinally their entire length and each carry on one edge of its slot a row of ratchet teeth forming a rack. Thus, the tube 27 carries the teeth 30 on one edge of its slot, the other edge 31 remaining linear and smooth, while tube 28 has the teeth 32 and the smooth edge 33.

Such tubes can best be manufactured by stamping teeth on one longitudinal edge of a narrow elongated strip and then rolling said strip lengthwise, so that the two longitudinal edges become turned inwardly in spaced, oppositely facing relation. The space, or slot, existing between said edges should be of a width slightly more than twice the length of the teeth, for reasons to become evident later on.

As shown to advantage in Figure 3, the end of the teeth is flattened off, to remove the sharp edge of too-pointed a tooth and, consequently, allay the rapid wear of such a point and facilitate the movement of the plunger head 35 thereagainst. Finally, the pitch of the teeth should be such that the writing lead can be advanced, or fed, out of the pencil at a small enough rate, not more than approximately a sixteenth of an inch at one time. The lead-advancing or feeding plunger 36 is disposed to move inside the small rack tube 27, the shank of the plunger being preferably covered with a foil-like covering 37 adapted to provide a slight friction between plunger and tube, whereby the plunger is less apt to fall freely inside the tube when released from the tubes teeth. Thus, the tube 27 and plunger 36 can be mass-produced without having to maintain the close tolerances otherwise necessary for frictionally retaining the plunger alone inside its tube. The plunger is completed by having formed thereon, at right angles to its longitudinal axis, a head 35 of triangular formation corresponding to the slope of the teeth on the racks; the width of said head is twice the length of any tooth on the racks and the side edges are similarly flattened. As noted before, the teeth on both tubes are inclined, or point, towards the writing tip of the pencil.

As before stated, the barrel cap 22 is secured to the inner end of the tube 28 in a simple manner lending itself well to mass-production. This is achieved by having said barrel slit transversely at 40 (see Figure 1), said slit being of the same width as that of the flat-extension 41 right-angularly bent with respect to the clip proper 23. The extension 41 is furthermore punched at 42 to provide a hole therein through which the end of the tube 28 can be passed; finally, said extension is notched at 43 for a purpose to be explained later on.

The cap end of the outer tube is formed with lugs 44 struck sideways from the body thereof, said lugs being a short distance from the end of the tube and calculated to provide shoulders, or stops, for locating the tube with respect to the extension 41 (see Figures 1, 6, 11, 15).

Resting immediately on the lugs or stops 44, after assembly, and fitting snugly inside the barrel, there is a cup 45 apertured in the middle of its bottom, at 46, to allow passage therethrough of the tube 28. Said cup is shown to advantage in Figure 17, wherein a small tab 70 is adapted to enter the slot of tube 28 for preventing relative rotation of the tube in the cup. Said cup has its skirt cut diametrically to receive the flat extension 41 leaving, in effect, two upstanding cheeks 47 facing each other and contacting the inside of the barrel. The purpose of said cheeks

is to position the cup correctly inside the barrel, prevent relative rotation of the barrel with respect to the clip and to facilitate assembly of the pencil (see Figures 1, 6, 10, 11).

Assembling the barrel at the end of tube 28 is done as follows: the flat extension 41 of the clip is inserted through the slit 40 and said extension pushed as far as it will go. The cup 45 is then slipped inside the barrel, from the lower or tube end thereof, with the cheeks 47 pointing towards the extension. Said cup is then pushed inside and manipulated so that the cheeks project past both sides of the extension until the bottom of the cup rests against said extension (see Figures 1 and 6). Both apertures 42 and 46 should now be in register to allow passage therethrough of the tube 28, the lugs 44 thereof limiting penetration of the tube through both the clip extension and the cup. If, now, the free end of the tube 28 projecting slightly past the clip is crimped, rolled or beaded, it is evident that the tube and barrel will be locked together about the clip.

This locking of the tube 28, over the clip extension is effected as illustrated in Figure 16. As shown, the end of the tube 28 is milled, or cut, to form a pair of diametrally opposed cavities 50, one of said cavities being formed near the longitudinal slot edge carrying the teeth 32. The purpose of said cavities will become evident later on (see also Figures 9 and 12).

Immediately adjacent the cavities 50, on one side thereof, a lug 51 is punched to be bent outwardly over the extension 41, each of said lugs serving to lock the tube 28 in place, as explained above. Consequently, the assembly should now appear as shown in the upper part of Figure 10 and is ready to be connected to the pencil body assembly depicted in Figure 10. Said body assembly has the tip 21, the tube 27 mounted axially on the tip and the body proper 20.

The tube 28, and barrel 22 attached, is slipped over the tube 27 after a pull-back spring 55 has been interposed between the body 20 and the cup 45.

This spring is illustrated in Figures 1, 6, 8 and 10 and has one end 56 bent sharply in the axial direction of the spring, the other end 57 being bent inwardly in the plane of the coils, but right angularly with respect to the axis (Figure 8). The said end 57 fits in the slot 58 formed at end of the body 20 provided with a reduced conical portion adapted to provide a seat for positioning the spring 55. The other straight end 56 enters the notch 43 of the clip extension (Figures 1, 10, 11).

The physical dimensions of the spring 55 are so calculated that, after final assembly, said spring will be under compression between body 20 and barrel 22 and, at the same time, exert a torsional tension on said barrel. Therefore, the spring will tend to push the said barrel away from the writing end while, simultaneously, urges the said barrel clockwise over the body. Obviously, this clockwise tension rotates the outer tube 28 over the tube 27 until this movement is arrested by the head 35 projecting between the tubes. Thus, the said head is the element arresting rotation of the barrel with respect to the body and, hence, the relative movement of the tubes in the direction corresponding to the full engagement of the plunger head between the rack teeth 30 and 32.

After the barrel, with intervening spring, has been slipped over the body 20, the plunger 36

slipped inside tube 27, and the tubes 27, 28, telescoped within each other, the outer end of the inner tube 27 is adjusted to prevent retraction and to hold the pencil parts together. Referring more particularly to Figure 10, it will be seen that said tube 27 is originally punched with axially projecting elements 60, diametrally disposed on the end of the tube and hereinafter called ears after being bent angularly and outwardly, as shown in Figure 11 and also in Figures 9–12 and 16.

From the foregoing, it should be clear that said ears 60, after bending, will effectively prevent retraction of the tube 27 from tube 28, under the action of spring 55, because the said ears extend beyond the periphery of tube 28 (see Figures 9, 12, 16). Furthermore, the ears are so dimensioned as to enter the cavities 50 whenever the barrel is rotated counter-clockwise relative to the body 20. If it is remembered that the spring 55 exerts a tension urging tube 28 outwardly from tube 27, it will be evident that the ears will snap into the cavities when rotated to be in registering position therewith.

An inspection of Figures 14 and 16 will demonstrate the position of the tubes when the ears 60 are engaged in the cavities 50; in this position the tubes 27 and 28 have been rotated so that the racks are separated from each other and, consequently, the plunger head becomes free. Release of the ears is effected by pushing the barrel down over the body, causing a relative axial movement between the tubes raising the ears out of the cavities. As soon as the ears are disengaged, the tubes 27, 28 are rotated relatively, by the action of spring 55, into the plunger-head-engaging position shown in Figures 2 and 13.

With the racks positioned as above, the writing lead may be advanced out of the pencil by the simple expedient of "pumping," or alternating, the barrel up and down with respect to the body. As the body is held stationary, the tube 27 connected therewith can be considered fixed and, therefore, the barrel movement will be translated as an axial displacement of the tube 28 relatively to 27. Consequently, the downwardly moving teeth 32 of the tube 28 will engage the flat top of the triangular head 35 and propel the same downwardly also. Such movement is possible because, as already explained, the two racks are yieldably urged only towards each other, the riding of the head over the stationary teeth 30 causing a slight lateral displacement of the tube rack 28.

During the return movement of the barrel and, hence, of the tube 28, the flat top of the head 35 will prevent backward motion of said head and, again, the tube rack 28 will be slightly displaced laterally as the teeth 32 slide over the now-stationary head 35. Of course, only one tooth of each rack is actually in play during the movements just described, although the plural "teeth" has been employed for this description, because all the teeth may become involved in turn in the course of extended use of the pencil.

Finally, for closing the open end of the barrel an eraser 65 may be used, held in a metal ferrule 66; this is pushed in the barrel until the ferrule contacts the cup cheeks 47, whereby further penetration is arrested.

In closing this explanation of the construction and operation of the pencil herein, a few remarks concerning the limits of relative dis-

placements, between the constitutive elements, will be useful for a better general understanding of this invention.

Obviously, the outward longitudinal movement of the entire barrel, under the action of the spring, is limited and arrested by the radial ears 60 projecting from tube 27, as already explained.

The inward axial displacement of the barrel, however, towards the pencil tip 21, is a function of the distance existing between the free end of tube 28 and the free end of the tip shoulder 25. This distance corresponds to slightly more than the pitch of the rack's teeth, the end of the tube abutting the shoulder after the writing lead has been ejected from the tip an amount corresponding to a rack tooth and a half, more or less.

The rotational limits of the barrel, around the pencil body, are determined by the breadth of the slots in the tubes. Since the plunger head extends through said slots at all times, the tubes can only be relatively rotated (and the barrel therewith) between a full engagement of the teeth with the head and, conversely, a full engagement of the smooth sides 31—33 of the slots with said head (Figure 3).

For a "fool-proof" operation of the pencil, the location of the cavities 50 has been so calculated as to be within the rotational limits noted above, whereby one ear 60 cannot, accidentally, fall or catch in the open end of the slot in tube 28.

Summing up the features of the pencil object of the present invention, it can be stated that the writing lead is propelled by the ratchet action of two racks co-operating with each other and a plunger triangular head projecting between said racks.

One rack is secured to the pencil body and the other rack to an operating barrel imparting a displacement to its rack relative to the other. Thus the triangular member is advanced by one rack and retained against retraction by the other rack.

The triangular head is integral with a plunger movable inside the body rack and, thus, operable to advance a writing lead also disposed inside this rack.

The racks noted above are in tubular form, that is: they are tubes slotted longitudinally from one end to the other and carrying ratchet teeth on one edge of the slot, the other edge being smooth. Both racks are telescoped one within the other, the inside rack carrying the plunger disposed axially therein.

The smaller rack is secured at one end to the body and the larger, or outer, rack connected to the barrel which, in turn, is slidably and concentrically mounted over the body, at the upper end thereof, but actually secured to the larger rack tube.

A spring inserted between the body and barrel urges said members apart and, furthermore, imparts a torsional tension on the barrel clockwise around the body.

This torsional tension is obviously transmitted to the rack tubes also and, accordingly, said tubes are yieldingly rotated to a tooth-engaging position with the triangular head of the plunger.

Relative longitudinal displacements of the racks, back and forth, will propel the head from one tooth to another, the action being ratchet-like due to the special shape of the teeth. The barrel is the element used for transmitting this back-and-forth motion to the larger tube.

Diametral cavities in the barrel end of the larger tube rack are adapted to receive ears formed at the free end of the inner rack tube; said ears adapted to snap into the cavities when the barrel is rotated slightly counter-clockwise with respect to the body. This counterrotation similarly revolves the tube racks, relatively to each other, causing retraction of the racks from the plunger head, thereby liberating the same and freeing the plunger.

Under the spring action, the racks will again engage the plunger head when the ears are raised out of the cavities by a downward pressure on the barrel.

From the foregoing, it should be evident that the pencil of the invention is a meritorious advance of the art, said invention embodying a pencil which is practical, can be operated at least as easily as pencils of comparable type and produced to sell at a very low cost. In point of fact, this pencil will be retailed at appreciably less than a dollar and, therefore, on a competitive basis with any mechanical pencil now currently available, irrespective of type or construction.

The advantages above are not obtained at the expensive of solidity, ruggedness or life expectancy. An inspection of the drawings annexed will reveal that the constitutive parts are amply strong to resist normal wear, shocks and stresses.

Furthermore, the simple outside elements are easily adaptable to any desired decorative treatment or streamlining, without cost increase.

The operation of the pencil is easy and can be rapidly performed: for advancing the lead, the pencil is grasped by the fingers and the barrel pumped up and down with the thumb.

Evidently, this motion is quite easily performed and the assistance of both hands is not necessary. Release of the lead is equally simple: the body is held with three fingers only and the barrel rotated slightly (about 75 angular degrees) by the thumb and forefinger. The lead may then be pushed back by the simple expedient of pressing the pencil lead on any surface.

Re-engagement of the lead, in writing position, is effectuated simply by displacing the barrel slightly, in an axial direction, the hand position remaining as above.

Therefore, actuation of the present pencil with one hand is quite simple and can be performed rapidly.

It must be understood that various changes as to the shape, size and arrangement of parts can be resorted to without departing from the spirit of the invention, or the scope of the subjoined claims.

What I claim is:

1. In a mechanical pencil, a pair of co-operating racks having opposed ratchet teeth, a lead abutting plunger having a head extending between said opposed teeth, means for yieldingly bringing the teeth in engagement with said plunger, and means for longitudinally displacing one rack with respect to the other rack, whereby to move said plunger to a position with its head in engagement from a tooth of one rack to another ratchet tooth of the other rack.

2. In a mechanical pencil, a hollow elongated body, two racks housed within said body longitudinally thereof and having opposed ratchet teeth, one rack fixed with respect to said body and the second rack longitudinally displaceable with respect to said first rack and said body, a lead abutting plunger longitudinally slidable within said body having a head extending be-

tween said opposed teeth, yielding means urging the teeth of both racks into engagement with said plunger, whereby longitudinal displacement of said second rack with respect to said first rack will move said plunger to a position with its head in engagement with another ratchet tooth of said first rack.

3. In a mechanical pencil, a hollow body, a lead receiving tip at one end of said body, a member at the other end of said body reciprocable longitudinally of said body, two racks disposed within said body, one of said racks fixed relatively to said body and the other rack connected to said member, said racks having ratchet teeth and the ratchet teeth of one rack being opposite the ratchet teeth of the other rack, a lead abutting plunger slidable within said body and having a head engaged between opposite teeth of said racks, and spring means urging the teeth of said racks into plunger head engaging position whereby reciprocable movement of said member and of its connected rack will cause longitudinal displacement of said plunger head relatively to the other rack.

4. In a mechanical pencil, a hollow elongated body, a lead receiving tip mounted at one end of said body, a member mounted on the other end of said body for reciprocable longitudinal movement relatively to said body, two elongated straight racks disposed longitudinally within said body, one of said racks fixed relatively to said body and the other rack connected to said member for longitudinal displacement within said body, each of said racks having ratchet teeth disposed along one edge thereof and facing the ratchet teeth of the other rack, a lead abutting plunger slidable within said body and having a head engaged between opposite teeth of said racks spring means urging the teeth of said racks into plunger head engaging position, the ratchet teeth of said racks being oriented so as to prevent movement of said plunger head in a direction towards said member but to allow movement of said plunger head in a direction toward said lead receiving tip, whereby longitudinal movement of said barrel and of its connected rack towards said lead receiving tip will displace said plunger head to a position in engagement with another ratchet tooth of said other rack, and means to space said racks apart so that said ratchet teeth will disengage said plunger head to allow free movement of said plunger towards said member.

5. In a mechanical pencil, two longitudinally slit tubes disposed one within the other, ratchet teeth disposed on opposite edges of said tubes, a plunger slidable within the inner tube having a head extending through the slits of said racks, yieldable means urging relative rotation of said tubes in a direction such that said teeth will engage said plunger head and hold the same against movement in one direction longitudinally of said tubes, one tube being longitudinally displaceable with respect to the other tube whereby longitudinal movement of said one tube in a direction opposite to said last named direction will displace said plunger head to a position in engagement with another ratchet tooth of said other tube.

6. A mechanical pencil comprising a hollow elongated body, a lead receiving tip at one end of said body, a member mounted at the other end of said body for longitudinal reciprocable movement relatively to said body, two longitudinally slit tubes disposed one within the other and coaxial with said body, one edge of one of said slit tubes being provided with ratchet teeth and the

opposite edge of the other of said slit tubes being also provided with ratchet teeth so that the ratchet teeth of said two tubes face each other, a plunger slidable within the inner tube and having a head extending through the slits of said tubes for engagement with said opposed ratchet teeth, said ratchet teeth being so oriented as to prevent longitudinal movement of said plunger in a direction towards said member but to allow longitudinal movement of said plunger in a direction towards said tip, yieldable means urging relative rotation of said tubes in a direction such that said teeth will engage said plunger head, one of said tubes being fixed to said hollow body and the other of said tubes being connected to said member, whereby longitudinal movement of said member and of its connected tube towards said tip will displace said plunger head to a position in engagement with another ratchet tooth of said fixed tube nearer to said tip, and whereby relative rotation of said tubes in a direction to move said opposed ratchet teeth apart will allow free movement of said plunger in a direction towards said member.

7. A mechanical pencil as claimed in claim 6, wherein said yielding means comprise a coil spring secured at one end to said hollow body and at its other end to said member, said spring stressed so as to urge said member in a direction of rotation to cause engagement of said plunger between said opposed ratchet teeth, said coil spring urging also longitudinal movement of said member and its connected tube in a direction away from said tip, and means to stop said outward movement of said member relatively to said hollow body.

8. A mechanical pencil as claimed in claim 7, including interlocking means for maintaining said tubes in plunger head disengaging position, and means to render said interlocking means inoperable upon longitudinal movement of said member and its associates tube in a direction towards said tip.

9. A mechanical pencil as claimed in claim 8 wherein said interlocking means comprise ears outwardly bent from the free end of said inner tube and engageable with cavities made in the free end of said outer tube.

10. A mechanical pencil comprising a hollow elongated body, a lead receiving tip secured to one end of said body, a first longitudinally slit tube extending co-axially within said body and secured to the inner end of said tip, a second longitudinally slit tube surrounding said first tube and longitudinally slidable and transversely rotatable relatively to said first tube, a barrel member surrounding the end of said body away from said tip and longitudinally displaceable and transversely rotatable relatively to the same, said barrel member having a transverse slot made therein, a clip having a bored extension passing through said slot to extend within said barrel member, the outer ends of said first and second tubes passing through the bore of said extension, said second tube being secured to said clip extension to thereby rigidly connect said second tube to said barrel member, outward bars provided on the outer end of said first tube to limit longitudinal movement of said second tube and barrel in a direction away from said tip, a coil spring disposed within said barrel and secured at one end to the outer end of said elongated body and at its other end to said clip extension, said coil spring urging said barrel in a direction away from said tip, each tube being provided along one edge with a series of ratchet

teeth, the ratchet teeth of one tube facing the ratchet teeth of the other tube, a lead abutting plunger slidable with said first inner tube and having a head extending through the slits of said tubes to be engaged by said ratchet teeth, said ratchet teeth being oriented so as to prevent displacement of said plunger head in a direction towards said barrel when in plunger head engaging position but to allow longitudinal movement of said plunger head towards said tip, said spring urging rotation of said second tube relatively to said first tube in a direction to cause engagement of said plunger head by said opposed ratchet teeth, the other edge of each of said first and second tubes being smooth and linear whereby upon rotation of said second tube relatively to said first tube in a direction to space apart said opposed series of ratchet teeth, the smooth edges of said first and second tubes will come in contact with said plunger head to guide free movement of the same in either direction longitudinally of said hollow body.

11. A mechanical pencil as claimed in claim 10 further including a cup shaped member having a bore in its bottom for receiving said second tube and having upstanding cheeks contacting the inner face of said barrel, the bottom of said cup shaped member resting against said clip extension to thereby position said tubes and clip extension coaxially of said barrel.

12. A mechanical pencil as claimed in claim 11 further including diametrically opposed cavities made in the outer end of said outer tube and adapted to receive outwardly extending ears of said first inner tube whereby said ears will engage said cavities upon rotation of said barrel relatively to said body to maintain said second outer tube in a rotative position relatively to said first tube such that the ratchet teeth of said first and second tubes be in plunger head releasing position.

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