

Feb. 4, 1930.

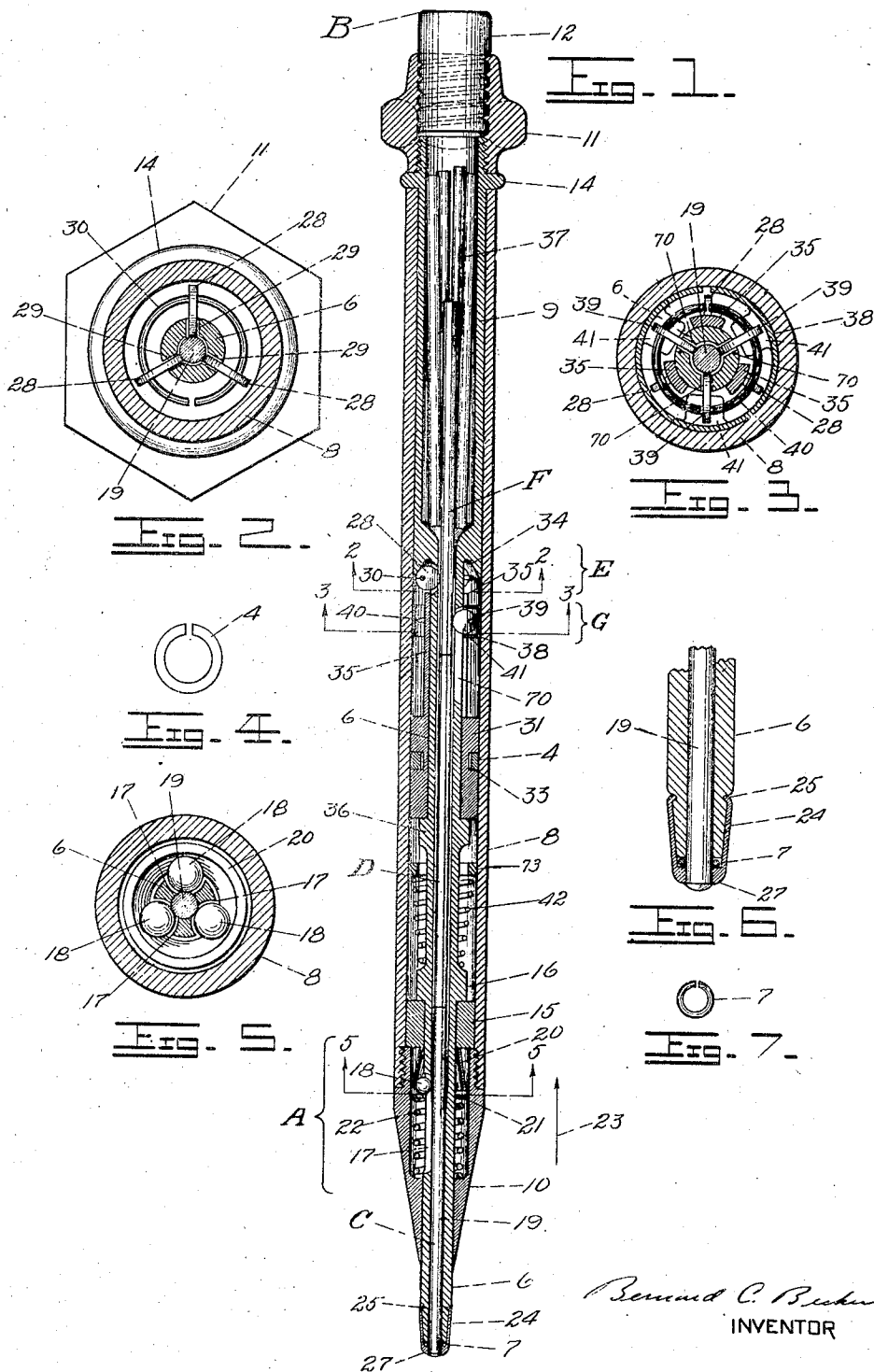
B. C. BECKER

1,745,658

LEAD PENCIL

Filed July 19, 1922

2 Sheets-Sheet 1



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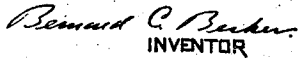
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

BERNARD C. BECKER, OF YORK, PENNSYLVANIA, ASSIGNOR TO THE YODER PENCIL COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

LEAD PENCIL

Application filed July 19, 1922. Serial No. 576,011.

This invention relates to lead pencils, the object thereof being to provide a pencil in which the leads will automatically feed from a lead carrying magazine to the writing end of the pencil through the mere customary action of writing.

In carrying out my invention I provide a tube which surrounds the lead close to the writing end and which recedes on the lead, as the end thereof wears away, through the action of writing. In conjunction with a tube of this character, my object is to provide means through which leads of short lengths will automatically feed from a magazine into said tube and there be automatically locked against reverse movement.

Other objects will be apparent from the following description, taken in connection with the accompanying drawings, forming a part hereof, and in which similar numerals refer to similar parts throughout the several views.

Fig. 1, represents a longitudinal sectional view of a pencil, and represents one form of my invention.

Fig. 2, is an enlarged sectional view of Fig. 1 taken on line 2—2.

Fig. 3, is an enlarged sectional view of Fig. 1 taken on line 3—3.

Fig. 4 is a detail drawing of the expandible spring ring 4 of Fig. 1.

Fig. 5, is an enlarged sectional view of Fig. 1 taken on line 5—5.

Fig. 6, is an enlarged view of the end of tube 6 of Fig. 1, this construction is also applicable to the tubes 6 of Figs. 8, 9 and 10.

Fig. 7, is a detail drawing of the contractile spring ring 7 of Figs. 1 and 6.

Figs. 8, 9 and 10, represent modified forms of my invention.

Fig. 11, is a sectional view taken on line 11—11 of Fig. 8.

Fig. 12, is a sectional view taken on line 12—12 of Fig. 9.

Fig. 13, is a sectional view taken on line 13—13 of Fig. 10.

Fig. 14, is a sectional view taken on line 14—14 of Fig. 10.

In the following description of this invention it should be understood that wherever

any part is described as being "fixed" to another, the same is meant to be soldered thereto or in other words rigidly fixed thereto.

With reference to Fig. 1, 8 is a tubular casing forming a handle for the pencil. 6 is a lead carrying tube, the upper end of which is enlarged as shown at 9 to form a magazine for carrying a stock of leads. The tubular point 10 is screwed into the handle 8 as shown. The magazine is closed through the screw cap 11 and eraser 12.

The tube 6 including the magazine 9 is free to slide lengthwise in the handle 8, the downward movement being limited by the collar 14. Fixed inside the handle 8 is a sleeve 15 which also limits the downward movement of tube 6, through the collar 16. A spring 42 normally holds the tube 6 in the downward position, however it is yielding enough to permit inward movement of the tube 6 when the end 27 thereof is subjected to less than normal writing pressure. The ring 73 is fixed to the casing 8, and forms a backing for the spring 42.

The tube 6 is provided with three longitudinal slots 17, adapted to receive the balls 18 and permit contact thereof with the lead 19. Surrounding the three balls 18 is a conical casing 20. A washer 21 and spring 22 are provided to normally hold the balls 18 up against the conical surface and hence in contact with the lead 19 as shown. It is apparent that a oneway clutch A is formed by these parts which is adapted to prevent rearward movement of the lead 19 but freely permit forward movement thereof. It is also apparent that lengthwise movement of the tube 6 is not hindered by any parts of this clutch.

During the action of writing the end 27 of the tube 6 normally contacts with, and slides on and over the surface being written upon, and as the end of section C of the lead 19 wears away the tube 6 moves inward, in the direction indicated by arrow 23. The lead however cannot move inward on account of the backing formed by the clutch A. It is therefore apparent that the writing end of the lead 19 is generally substantially flush with the end 27 of the tube 6. If for any reason the end of the lead is short of being flush

then the tube will readily recede during the action of writing and the lead will promptly contact with the writing surface.

If for any reason the end of the lead 19 protrudes an appreciable extent beyond the end 27 of the tube 6, then of course the same will snap off as soon as writing is attempted. At any rate this will occur with leads of the diameter which I prefer to use.

Promptly after beginning to write with this pencil, the writing end of the lead 19 wears away, while the tube 6 gradually recedes relative thereto, thus avoiding any obstruction to effectively produce a line; and further upon raising the pencil point from the writing surface, for instance between the making of words or characters, the spring 42 will promptly carry the tube 6 forward to its original position as limited by the collar 16 when it contacts with the bushing 15. However means must be provided for carrying the lead 19 forward in unison with forward movement of the tube 6 and this is accomplished by a one-way clutch E.

The clutch E consists of three disks 28, each of which protrude through a slot 29 formed in the wall of the tube 6 as most clearly shown in Fig. 2, they are also arranged to grip the lead through a wedging action which occurs when they are forced into the conical bore 34, and consequently they grip the lead section F and carry it forward with forward movement of the tube 6. As a means for forcing the disks 28 into said conical bore while said tube is moving forward, a sleeve 31 is provided and arranged to slide within the tubular casing 8, and forming a part thereof are three prongs 35 which extend upward between and avoiding the various elements of clutch G as most clearly shown in Fig. 3. These prongs are of sufficient length so that the ends thereof will contact with the disks 28, then for the purpose of setting up a slight resistance to lengthwise movement of the sleeve 31 with respect to the tubular casing 8, an expandible spring ring 4 is carried thereby in a groove 33, and consequently when the tube 6 moves forward the sleeve 31 drags behind, through the resistance to movement caused by ring 4, until the ends of the prongs 35 of the sleeve come in contact with the disks 28, thereby forcing the disks 28 into the conical bore 34 which in turn forces them against the lead and accordingly carries the lead forward in unison with the tube movement. When the tube moves in the opposite direction, for instance when the tube 6 recedes relative to the lead while writing is progressing, the sleeve 31 drags behind until it comes in contact with the collar 36; and then the disks 28 are released and the spring ring 30 expands and moves them out of contact with the lead. As a result thereof leads from the stock 37 gravitate into the tube 6 between the disks 28, nevertheless a slight forward movement of the

tube 6 again causes the disks 28 to grip the lead particularly section F and accordingly forces the preceding section C forward through the clutch A in unison with forward movement of the tube 6. It is obvious from the above description that the leads 37 will normally gravitate one after the other into the tube 6 and there will be taken up by the clutches E and A, and accordingly in response to reciprocating movement of the tube 6, as effected through the mere customary action of writing and in connection with the automatic reaction of the spring 42, they will be automatically carried forward to the writing end of the pencil as new or additional lead is needed for writing.

As a modification of this feeding device the spring 42 may be dispensed with, and then in operating the pencil it would merely be necessary to occasionally press on the head end B of the pencil, thus moving the tube 6 forward to its normal position; no other effort or manipulation would be necessary to maintain a writing point until the store of leads 37 is depleted. However in this arrangement if the tube 6 has been recently moved in the direction indicated by arrow 23 and if it is not promptly moved forward then the lead sections D and F are free to gravitate lengthwise in the tube, on account of the clutch E being released, and if the pencil is turned upside down these leads will fall back into the magazine. To avoid this I provide a third clutch G.

The clutch G consists of an expandible casing 38 adapted to retain its position through frictional contact with the casing 8. Disks 39 are provided to grip the lead section F through the normal action of contractile spring ring 40. The disks 39 are prevented from moving lengthwise in the pencil through coming in contact with the bent over ends 41 of the casing 38 and are rigidly fixed to the contractile spring ring 40 so that no turning movement relative thereto can occur. The slots 70 formed in the wall of the tube 6, and through which the disks 39 protrude so as to contact with the lead, are of such length as may be necessary to permit sufficient reciprocatory movement of the tube 6 to feed the leads, and accordingly not interfere with the gripping action of said disks. This clutch G has just sufficient gripping action to prevent the lead sections D and F from falling back into the magazine 9 when the clutch E is released and the pencil is turned upside down.

A further modification would be had in connection with the elimination of the spring 42, by making the internal mechanism of the pencil, that which is arranged to slide lengthwise relative to the casing 8, of sufficient weight so that it will normally gravitate in the forward direction. The pencil then functions in the same manner as when the spring

42 is employed, except that there is no resistance equivalent to the reaction of the spring 42 to overcome while writing. A self feeding pencil embodying this feature is fully disclosed in my copending application on lead pencil, Serial No. 582,800, filed August 18, 1922. Attention is also directed to my copending application on lead pencil, Serial No. 527,169, filed January 5, 1922, which also discloses a pencil in which the lead automatically feeds outward through the mere customary action of writing. However in neither of these applications is a magazine disclosed in which a number of leads may be promiscuously placed, with means for feeding these leads automatically from the magazine to the writing end of the pencil. The modified forms of pencils represented in Figs. 8, 9 and 10, are also modifications of the broad idea of the pencil forming the subject matter of said pending applications; however they are here disclosed to show several modifications of the pencil forming the subject matter of this application, and as additional support for the appended claims. The right to make these modifications the subject matter for separate or divisional applications is expressly reserved.

With reference to Figs. 8 and 11, the tube 6^a is free to slide lengthwise in the casing 8^a and carries the magazine 9^a which is fixed thereto. A collar 43 is fixed to the inside of casing 8^a and supports a spring 42 which normally moves the tube 6^a in the forward direction through the flange 44. The collar 43 serves as a stop to limit forward movement of the tube 6 and magazine 9^a.

Fixed to the tube 6^a is a contractile saw toothed shell 49 adapted to grip the lead 19 between the teeth thereof and the tube; this is to insure that the lead will move forward with forward movement of the tube. This device forms a substantial equivalent to clutch E, Fig. 1. The length of the teeth 45, 46, 47, 48, etc., which form a part of shell 49, are made successively shorter and several of the last teeth mentioned should be sufficiently short so that the lead will gravitate thereunder without it being necessary for the shell 49 to yield, however those further forward should be of sufficient length so as to grip the lead after a slight yielding of the shell 49.

When the lead falls into the tube 6^a it first engages the pawl 50 which is fixed to the casing 8^a, the lead passes through or in other words under this pawl which is made delicately flexible and therefore yields to permit such engagement, the sharp point thereof cuts into the surface of the lead and holds it against moving backward while the tube 6^a and shell 49 move backward, or in other words, while the tube and shell recede during the action of writing, and consequently gives the teeth of shell 49 an opportunity to grip the lead at a point well up along the side thereof and accordingly carry the lead forward with the next forward movement of the tube 6^a. As the shell 49 carries the lead forward, through the action of spring 42 in carrying the tube 6^a forward, the lead engages between the teeth of the contractile saw toothed shell 51 which is held stationary relative to the casing 8^a through being fixed thereto at 69, and accordingly the lead is firmly locked against reverse movement. This shell 51 including the teeth thereof forms a substantial equivalent to the clutch A of Fig. 1. A stationary shoe 52 is provided to counteract the pressure exerted upon the lead by the contractile shell 51 and thereby avoids clamping of the tube 6^a; this shoe lies within the shell 51 and is backed up thereby, it protrudes through a suitable slot in the shell 49, and is held against lengthwise movement by a lug as shown protruding through a suitable hole in the rear wall of shell 51.

With reference to Figs. 9 and 12; in this representation I have not shown the magazine, but from the disclosure as presented in the other figures it is apparent how the same may be connected to the upper end of tube 6^a in a practical manner.

The tube 6^a is free to slide lengthwise in the casing 8^b and tubular point 10^b. Fixed to the casing 8^b is a threaded extension 53 which carries the tubular point 10^b. A disk 15 is clamped between the extension 53 and the shoulder 54. A collar 16^b limits the forward movement of the tube 6^a against the action of spring 42. The conical shell 20^b is adapted to act upon the disks 18^b against the action of spring 22 and cause the same to grip the lead 19, thereby preventing inward movement of the lead. The washer 21^b is provided with slots 55 to guide the disks 18^b. In this construction the slots 17 are adapted to allow the corners 5 of the tube 6^a to contact with the disks 18^b as shown, when the collar 16^b is against the disk 15^b. It will be observed that when in this condition the disks 18^b will not grip the lead, but a slight inward movement of the tube 6^a will allow the disks 18^b to contact with the lead and grip the same under the action of spring 22.

In this form of construction the clutch is normally released to permit free entrance of the lead between the gripping disks 18^b, but as soon as writing is attempted, by bringing the end 27 of the tube in contact with the writing surface, inward movement of the tube occurs when the disks immediately grip the lead. As writing is progressing the tube 6^a recedes on the lead as heretofore described with respect to Fig. 1. The clutch in this arrangement is in effect a combination of clutches A and E of Fig. 1.

With reference to Figs. 10, 13 and 14; here the tube 6^c is divided to provide space for the clutch A; 6' indicating the lower portion, and 6'' the upper portion. The two tube

portions are connected through the rods 56 which are fixed thereto. The tube portion 6'' is provided with a collar 16° which limits the forward movement of tube 6° against the action of spring 42. The shell 57 is fixed to the casing 8° and forms the bottom of magazine 9° and extends downward to form a guide for the tube portion 6''. In this case it will be noted that the magazine is not carried by the tube 6° but is formed by casing 8° in conjunction with the shell 57, and is therefore not slidable.

Clutch A consists of, a shell 58 fixed to the casing 8°, a sleeve 59 free to slide therein, and a spiral spring 60 which normally grips the lead 19, the lower end thereof being fixed to the shell 58 at 26. As the lead 19 is forced forward through the spring 60, said spring is compressed lengthwise sufficient to enlarge the inside diameter thereof to permit entrance of the lead. After the lead has entered the spring 60, any effort to move it in the reverse direction will cause this spring to grip the lead more firmly and prevent movement thereof, in accordance with the tendency of the spring to elongate and consequently reduce its internal diameter more and more as said efforts are increased.

For forcing the lead 19 through the clutch A with forward movement of the tube 6°, I provide a clutch E, also consisting of a spiral spring 62 which normally grips the lead 19; the lower end of this spring is fixed to the tube 6'' at 63. A sleeve 64 is carried in the tube 6'' and adapted to slide lengthwise, the movement thereof being limited by the shoulder 65 in one direction and by the shell 66 in the opposite direction. Friction blocks 72 are fitted into slots in the shell 57 as shown and are normally held against the surface of the sleeve 64 through the action of contractile spring ring 67. Slots 68 in the wall of tube 6'' are sufficiently long to avoid interference to lengthwise movement of the tube.

The action of this clutch is as follows:—As the tube 6° moves in the direction indicated by the arrow 23, and recedes on the lead 19, the sleeve 64, being held stationary through the action of friction blocks 72 and spring ring 67, will cause the spring 62 to compress until the shoulder 65 contacts with said sleeve; then it will move in unison with the tube movement while sliding between the friction blocks 72, and accordingly the internal diameter of the spring 62 is enlarged and will permit free entrance therein of the lead 19 as it gravitates from the magazine 9. Forward movement of the tube 6° will return the sleeve 64 to the original position shown in the drawing, while the spring 62 freely elongates, the internal diameter thereof again contracts and accordingly grips the lead 19 and carries it forward with forward movement of the tube 6°. This action occurs very promptly at the beginning of forward movement of the tube 6°, and will

carry the lead 19 through the clutch A in unison with said forward movement.

No equivalent to clutch G of Fig. 1, is disclosed in these figures (10, 13 and 14), because as heretofore explained, it is not absolutely essential when a spring 42 or the equivalent thereof is employed, for in connection with said spring the clutch E is nearly always in gripping condition, except while writing is progressing, and rarely is the pencil held in a position through which the lead could gravitate back into the magazine while writing is progressing, nevertheless a clutch G may be desirable in some cases for holding the lead section F steady while clutch E is functioning and in released condition.

It should be observed that through the means provided, the leads will feed from the magazine through gravitation into the lead carrying tube during the customary actions of writing; or in other words, it is not necessary to remove a push rod or perform some similar action to permit the lead to pass into the lead carrying tube. It is merely necessary to fill the magazine with leads in a promiscuous manner and no special attention or operation is required for causing them to engage with the feeding mechanism.

To prevent the lead sections from inadvertently falling out of the end 27 of the tube 6, I provide a lead gripping device, comprising a contractile spring ring 7 which normally grips the lead, this spring is carried in a groove formed by the cap 24 in conjunction with the end of tube 6, the cap being firmly held to the tube through the turned over edge 25. It is obvious of course that the end 27 of the cap 24 should be round and very smooth so that it will not offer any annoying resistance to movement when sliding on and over the surface being written upon.

Having thus described my invention, what I claim, and desire to secure by United States Letters Patent is as follows:

1. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, and a clutch for the lead in operable connection with said tube to open sufficiently to permit said lead to gravitate therein and close to firmly grip the same in response to reciprocatory movement of the tube.

2. In a lead pencil, the combination with a casing, of a tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, a clutch for said lead in operable connection with said tube to close and firmly grip the same in response to forward movement of the tube, and a spring tending to hold said clutch open.

3. In a lead pencil, the combination with a casing, of a tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, a clutch for the lead, a spring normally holding said clutch open, and closing means for said clutch operable in response to reciprocatory movement of said tube.

4. In a lead pencil, the combination with a casing, of a tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, slots through the wall of said tube, clutch jaws protruding through said slots and in operable connection with said tube to release while said tube recedes, and resilient means normally holding said jaws open.

5. In a lead pencil, the combination with a casing, of a tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, clutch jaws for the lead in operable connection with said tube to release while said tube recedes, resilient means normally holding said jaws open, and closing means for said jaws.

6. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead, a clutch in operable connection with said tube to slide therewith, resilient means normally holding said clutch open, and a sleeve slidable lengthwise with said tube and in operable connection with said casing to lag behind with respect to the tube movement and accordingly close said clutch.

7. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith and frictional means holding said lead in said clutch.

8. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing, and also arranged to recede relative to the lead when under the influence of normal writing pressure, a magazine the bottom of which is in open communication with the end of said tube, and a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith.

9. In a lead pencil, the combination with a casing, of a slidable tube capable of carry-

ing a lead, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, and frictional means holding said lead in said clutch.

10. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a clutch for the lead in operable connection with said tube to open and close in response to reciprocatory movement of the tube, and a spring normally holding said tube in the forward position.

11. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, said tube being arranged to recede relative to said lead when under the influence of normal writing pressure, a clutch for the lead operable in response to reciprocatory movement of said tube, a spring tending to hold said clutch open, and a spring normally closing said clutch.

12. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a clutch in operable connection with said tube to slide therewith, resilient means normally holding said clutch open, a sleeve slidable lengthwise with said tube and in operable connection with said casing to lag behind with respect to the tube movement and accordingly close said clutch, and a spring normally holding said tube in the forward position.

13. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, a frictional means holding said lead in said clutch, and a spring normally holding said tube in the forward position.

14. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, said tube being arranged to recede relative to said lead when under the influence of normal writing pressure, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open in response to receding movement of the tube and slide in unison therewith, and a spring normally closing said clutch.

15. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from said casing, said tube being arranged to recede relative to said lead when under the influence of normal writing pressure, of a magazine the bottom

of which is in open communication with the upper end of said tube, and a one-way clutch for the lead, said clutch being mounted rigid relative to said casing at a point between said magazine and the writing end of said tube.

16. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead, said tube being arranged to protrude from the writing end of said casing and recede relative to the lead when under the influence of normal writing pressure, a one-way clutch for the lead, and a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith.

17. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, and a one-way clutch for the lead.

18. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, a one-way clutch for the lead, and a frictional means holding said lead in said self-opening clutch.

19. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a one-way clutch for the lead, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, and a spring normally holding said tube in the forward position.

20. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, a one-way clutch for the lead, and a spring normally holding said tube in the forward position.

21. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and protruding from the writing end of said casing, a magazine the bottom of which is in open communication with the end of said tube, a clutch in operable connection with said tube to open and close in response to reciprocatory movement of the tube and slide in unison therewith, a one-way clutch for the

lead, a frictional means holding said lead in said self-opening clutch, and a spring normally holding said tube in the forward position.

22. In a lead pencil, the combination with a casing, of a slidable tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, means for moving said tube forward, and a clutch for the lead in operable connection with said tube to open sufficiently to permit said lead to gravitate therein and close to firmly grip the same in response to reciprocatory movement of the tube.

23. In a lead pencil, the combination with a casing, of a tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, a clutch for said lead, and resilient means tending to hold said clutch open and arranged to react against movement of said tube.

24. In a lead pencil, the combination of a casing, a slidable tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, a clutch for the lead, resilient means tending to hold said clutch open, and resilient means normally closing said clutch and arranged to react against movement of said tube.

25. In a lead pencil, the combination of a casing, a slidable tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, a magazine the bottom of which is in open communication with the end of said tube, a self-opening clutch for the lead, said clutch being self opening in that it releases its gripping action during receding movement of said tube, and a spring normally closing said clutch.

26. In a lead pencil, the combination of a casing, a slidable tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, a self-opening clutch for the lead, said clutch being self opening in that it releases its gripping action during receding movement of said tube, and means for holding said lead against gravitation when said clutch is open.

27. In a lead pencil, the combination of a casing, a tube capable of carrying a lead and arranged to recede relative to said lead when under the influence of normal writing pressure, a clutch for the lead, resilient means normally holding said clutch open, and closing means for said clutch, said closing means being arranged to effect a closing action in said clutch in response to forward movement of said tube.

28. In a lead pencil, the combination of a lead carrying magazine, means operable by the ordinary movements of the pencil as writing progresses for feeding the lead outward-

ly, and a clutching device governed by the object being written upon to permit the lead to gravitate from said magazine to said feeding means.

5 29. In a lead pencil, the combination of a magazine in which a plurality of leads can be promiscuously placed, means operable by the ordinary movements of the pencil as writing progresses for feeding said leads outwardly, and a guide device arranged to maintain open communication between said magazine and said feeding means and conduct said leads from said magazine and into said feeding means while writing progresses.

15 30. In a lead pencil, the combination of a tube capable of carrying a lead, a lead carrying magazine, means operable by the ordinary movements of the pencil as writing progresses for feeding the lead outwardly, and a one-way clutch arranged to conduct the lead from said magazine and into said feeding means.

20 31. In a lead pencil, the combination of a lead carrying magazine, and means operable by the ordinary movements of the pencil as writing progresses for feeding the lead outwardly, said means comprising a one-way clutch arranged to conduct the lead from said magazine to said feeding means, and a one-way clutch arranged to react against inward movement of the lead when said lead is under the influence of normal writing pressure.

25 32. In a lead pencil, the combination of a casing, a tube capable of carrying a lead, a magazine for the leads, and means operable by the ordinary movements of the pencil as writing progresses for feeding said leads from said magazine to the object being written upon.

30 33. In a lead pencil, the combination of a lead carrying magazine, a feeding device capable of propelling the leads from said magazine to the object being written upon, and controlling means for said feeding device, said controlling means being arranged to respond to the customary action of writing and effect a propelling action in said feeding device.

In testimony whereof I affix my signature.

50 BERNARD C. BECKER.

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