Feb. 7, 1950 G. LYNN 2,496,554

MECHANICAL PENCIL

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Fig. 1

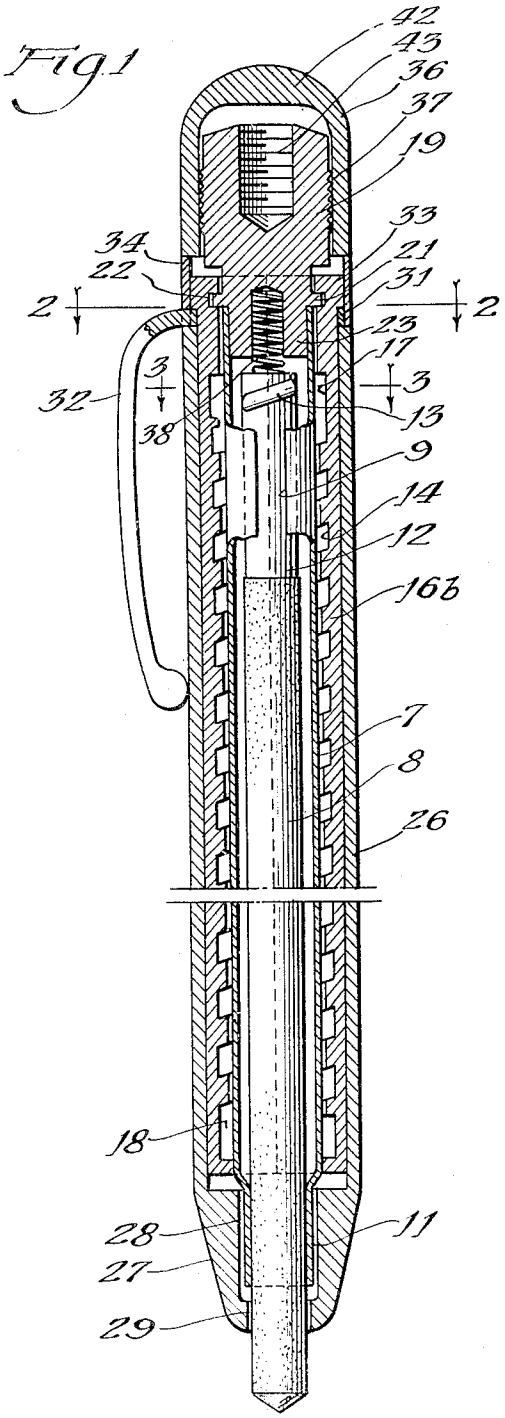



Fig. 2.

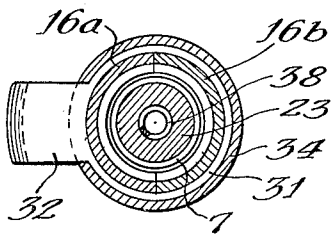
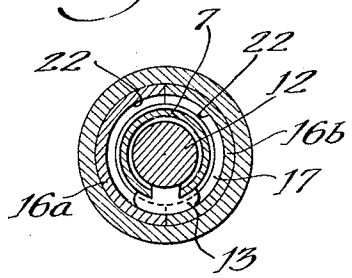



Fig. 3.




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MECHANICAL PENCIL

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Fig. 4.

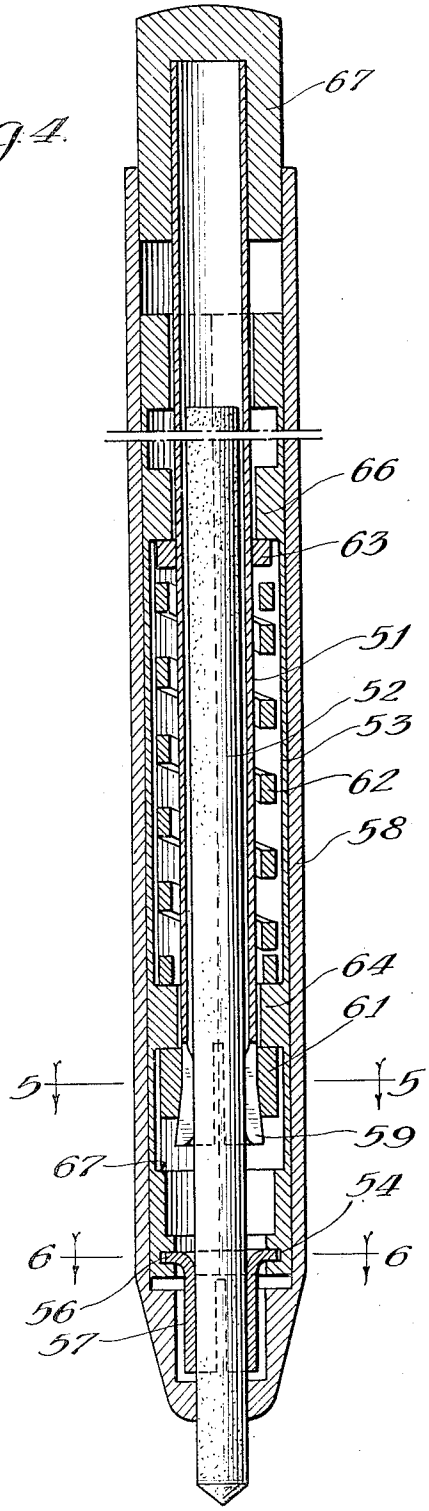



Fig. 5.

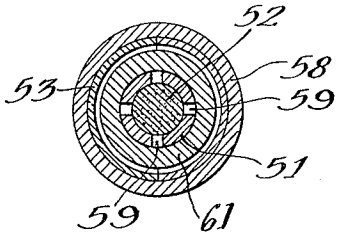
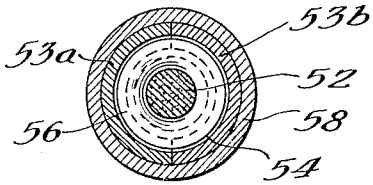



Fig. 6.




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# UNITED STATES PATENT OFFICE

2,496,554

## MECHANICAL PENCIL

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Application December 18, 1946, Serial No. 716,907

6 Claims. (Cl. 120—18)

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This invention relates to mechanical pencils and is more particularly concerned with the provision of a pencil embodying means for guiding and feeding relatively large diameter lead suitable for such uses as marking packages, checking items, marking bowling scores, et cetera. In marking bowling scores, printing on packages, et cetera, it has heretofore been the practice to use crayons which, due to their enlarged diameters, must be provided with a sharpened point in order to provide legible writing or printing. Crayons are also objectionable as they become softened and broken through use in hot weather.

The present invention contemplates the provision of a mechanical pencil embodying either a screw feed mechanism or a reciprocable clutch feed mechanism for progressively moving a relatively large diameter lead toward the point of the pencil.

This invention further contemplates the provision of a mechanical pencil embodying a feed mechanism adapted to be enclosed within a two-piece housing which, in turn, is inserted into and frictionally engaged within the barrel or body of the pencil.

This invention further contemplates the provision of means for preventing relative longitudinal movement of the two pieces of the split housing during or after assembly of same within the barrel of a pencil.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawings wherein:

Fig. 1 is a longitudinal sectional view showing a mechanical pencil embodying features of this invention.

Fig. 2 is a transverse sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is a longitudinal sectional view showing a modified form of a checking pencil embodying features of this invention.

Fig. 5 is a transverse sectional view taken along the line 5—5 of Fig. 4.

Fig. 6 is a transverse sectional view taken along the line 6—6 of Fig. 4.

Referring now to the drawings for a better understanding of this invention and more particularly to Figs. 1, 2 and 3 therein, the mechanical pencil is shown as comprising a lead guide tube 7 adapted to receive a relatively large diameter lead 8. The lead guide tube 7 is preferably

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blanked and formed of relatively thin sheet metal to provide a longitudinally extending slot 9 and a neck portion 11 of reduced diameter to frictionally engage the lead 8.

A feed plug 12 is mounted for reciprocable movement within the lead guide tube 7 for moving the lead 8 outwardly through the reduced neck portion 11. The feed plug 12 is provided with a feed shoulder 13 which projects outwardly through the longitudinally extending slot 9 for engagement within a helical groove 14 formed in a feed housing 16. In order to prevent breakage of parts, the helical groove 14 terminates at its ends in run-out chambers 17 and 18 which permit rotational movement of the feed housing 16 without imparting reciprocatory movement to the feed plug 12. The feed housing 16 is also split longitudinally along diametrically opposed sides, as illustrated in Figs. 2 and 3, to facilitate assembly and to reduce the cost of manufacture. By making the feed housing in two halves, each section 16*a* and 16*b* may be inexpensively formed by either die casting or stamping operations. The sections 16*a* and 16*b* of the feed housing 16 are secured in proper alignment by means of a head plug 19 formed with an annual flange 21 to be received in arcuate aligning recesses 22—22. The inner end of the head plug 19 is formed with a cylindrical boss 23 for insertion into the inner end of the guide tube 7. The guide tube 7 is secured to the cylindrical boss 23 by welding or brazing to form a relatively strong, rigid unitary structure adapted to be rotated within the split feed housing 16.

A barrel 26 formed of plastic, metal or other suitable material is provided to snugly and frictionally receive and engage the split feed housing 16. The outer end of the barrel 26 is reduced at 27 and formed with a reduced bore at 28 to receive the neck portion 11 of the guide tube 7. An aperture 29 is formed in the outer end of the barrel 26 for the passage of the lead 8.

If desired, a ring portion 31 of a clip 32 may be mounted on the split feed housing 16 between the head portion 33 thereof and the inner end of the barrel 26. A band of thin metal 34 is mounted over the inner end of the split feed housing 16 to enclose the ring portion 31 of the clip 32. A suitable cap 36 formed of plastic or metal is pressed over the head plug 19 and is secured against relative rotational or axial movement therewith by means of a knurled surface 37 formed on the plug 19. A helical compression spring 38 is mounted within the cylindrical boss 23 to urge the feed plug 12 outwardly to move the feed shoulder 13

out of the run-out chamber 17 and into the helical groove 14. If desired, a tassie may be inserted through an opening 42 formed in the end of the cap 36 for threaded engagement at 43 in the head plug 19, in which event the clip 32 would be omitted from the pencil construction.

In the use of a pencil of the type shown and described, the lead 8 is forced outwardly through the guide tube 7 by means of relative rotational movement between the guide tube 7 and the split feed housing 16. When the feed plug 12 is in its inner position, as indicated in Fig. 1, the compression spring 38 acts to move the feed plug 12 outwardly until the feed shoulder 13 moves into the helical groove 14. When the feed shoulder 13 is disposed within the helical groove 14, it will be noted that relative movement between the guide tube 7 and the split feed housing 16 will cause reciprocable movement of the feed plug 12. As the lead 8 becomes worn, the feed plug 12 will eventually come to rest at the outer end of the guide tube 7, with the feed shoulder 13 disposed within the run-out chamber 18. In refilling the pencil with a new lead, the feed plug is moved to its inner position, illustrated in Fig. 1, and a lead 8 is inserted into the guide tube 7.

Figs. 4, 5 and 6 illustrate a modified form of this invention in which the pencil is shown as comprising a guide tube 51 to receive a lead 52. The guide tube 51 is enclosed within a split feed housing 53 formed of two similar half sections 53*a* and 53*b*. Each section 53*a* and 53*b* is provided with an arcuate recess 54 to receive an annular flange 56 formed on the inner end of a friction collar 57. The annular flange 56 serves to hold the sections 53*a* and 53*b* in alignment with each other. The sections forming the feed housing 53 are snugly received and frictionally engaged within a barrel 58 formed of plastic or metal.

A plurality of tapered fingers 59 are formed on the outer end of the guide tube 51 for engagement by an annular clutch collar 61 which acts to move the fingers 59 into clutching engagement against the lead 52 when the guide tube 51 is moved inwardly to its position shown in Fig. 4. The guide tube 51 is normally urged to its inner position by means of a helical compression spring 62 interposed between a shoulder 63 formed on the guide tube 51 and a bearing 64 formed on the split feed housing 53. During inward movement of the guide tube 51, it is brought to rest by engagement of the shoulder 63 against a bearing 66 formed on the feed housing 53. A suitable cap 67 is secured to the end of the guide tube 51 for engagement by the thumb of the user in reciprocating the guide tube to impart a step-by-step outward movement of the lead 52. During forward movement of the guide tube 51, the fingers 59 are held in tight engagement against the lead 52 by means of the clutch collar 61. As the guide tube approaches the forward end of its stroke, the clutch collar 61 is brought to rest against a shoulder 67 formed on the feed housing 53 to permit the resilient fingers 59 to move out of clutching engagement with the lead 52. After release of the clutch fingers 59 from their engagement with the lead 52, the guide tube 51 is returned to its normal position by means of the helical compression spring 62. As the guide tube 51 approaches its normal position, the clutch collar 61 is brought to rest against the bearing 64 and acts to wedge the resilient fingers 59 inwardly for clutching engagement against the lead 52. During the return stroke of the guide tube 51, the friction collar 57 serves to hold the lead 52 against axial movement.



It will be noted that each of the two pencil constructions shown and described embodies a split feed housing for enclosing a guide tube, the feed housing being divided longitudinally along diametrically opposed sides to form two half sections which are maintained against relative axial displacement by means of an annular flange disposed in arcuate recesses formed in the half sections. During assembly of the mechanical pencil, the guide tube is first enclosed within the two sections forming the feed housing, and the feed housing is then forced into the barrel of the pencil for snug frictional engagement therewith. If the pencil should become inoperative for any reason, it is a simple matter to remove the feed housing and other parts from the interior of the barrel to repair or replace parts. By forming the feed housing in two sections, the cost of manufacture is greatly reduced as the sections may be inexpensively formed by die-casting or stamping operations.

While this invention has been shown in but two forms, it is obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit and scope of the claimed invention.

I claim as my invention:

1. In a mechanical pencil, a tubular housing divided longitudinally along diametrically opposite sides to form two similar abutting sections, a tubular barrel snugly enclosing said housing, a guide tube mounted within said housing to receive a writing lead, means operable responsive to movement of said guide tube relative to said tubular housing to move a writing lead longitudinally through said guide tube, and a member mounted in one end of said housing, said member having an annular flange disposed within and preventing relative longitudinal displacement of the two sections forming the housing.

2. In a mechanical pencil, a tubular housing divided longitudinally along diametrically opposite sides to form two similar abutting sections, one end of said tubular housing being formed with an internal annular groove, a tubular barrel snugly enclosing said tubular housing, a guide tube mounted within said housing to receive a writing lead, means operable responsive to movement of said guide tube relative to said housing to move a writing lead longitudinally through said guide tube, a member mounted in one end of said housing, said member having an annular flange disposed within said internal annular groove to prevent relative longitudinal displacement of the two sections forming the housing.

3. In a mechanical pencil, an internally threaded tubular housing divided longitudinally along diametrically opposite sides to form two abutting sections, a tubular barrel snugly enclosing said housing, a guide tube mounted within said housing to receive a writing lead, said guide tube having a longitudinally extending slot formed therein, a plug mounted within said guide tube, a shoulder provided on said plug and extending outwardly through the slot formed in said guide tube for engagement by the threads of said internally threaded housing, and a member mounted in one end of said housing, said member having an annular flange disposed within and engaging the two sections of the housing against relative longitudinal displacement.

4. In a mechanical pencil, a tubular housing divided longitudinally along diametrically oppo-

site sides to form two abutting sections, a tubular barrel snugly enclosing said housing, a guide tube mounted within said housing to receive a writing lead, resilient fingers formed on one end of said guide tube, a clutch sleeve mounted on said guide tube to engage and move said resilient fingers into frictional engagement with a writing lead, and shoulder means formed on said housing to move said clutch sleeve into and out of engagement with said resilient fingers responsive to reciprocatory movement of said guide tube.

5. In a mechanical pencil, a tubular housing divided longitudinally along diametrically opposite sides to form two abutting sections, a tubular barrel snugly enclosing said housing, a guide tube mounted within said housing to receive a writing lead, resilient fingers formed on one end of said guide tube, a clutch sleeve mounted on said guide tube to engage and move said resilient fingers into frictional engagement with a writing lead, shoulder means formed on said housing to move said clutch sleeve into and out of engagement with said resilient fingers responsive to reciprocatory movement of said guide tube, and a helical compression spring interposed between said housing and guide tube to normally hold said clutch sleeve in engagement with said resilient fingers.

6. In a mechanical pencil, a tubular housing divided longitudinally along diametrically opposite sides to form two abutting sections, a tubular barrel snugly enclosing said housing, a guide tube



mounted within said housing to receive a writing lead, resilient fingers formed on one end of said guide tube, a clutch sleeve mounted on said guide tube to engage and move said resilient fingers into frictional engagement with a writing lead, shoulder means formed on said housing to move said clutch sleeve into and out of engagement with said resilient fingers responsive to reciprocatory movement of said guide tube, a helical compression spring interposed between said housing and guide tube to normally hold said clutch sleeve in engagement with said resilient fingers, a friction sleeve to snugly receive and engage a writing lead, and annular flange means provided on said friction sleeve to engage and maintain the two sections of the housing against relative longitudinal displacement.

GARY LYNN.


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