March 1, 1960 L. DE CSABY 2,926,630

MAGAZINE PENCILS

Filed April 10, 1958 2 Sheets-Sheet 1

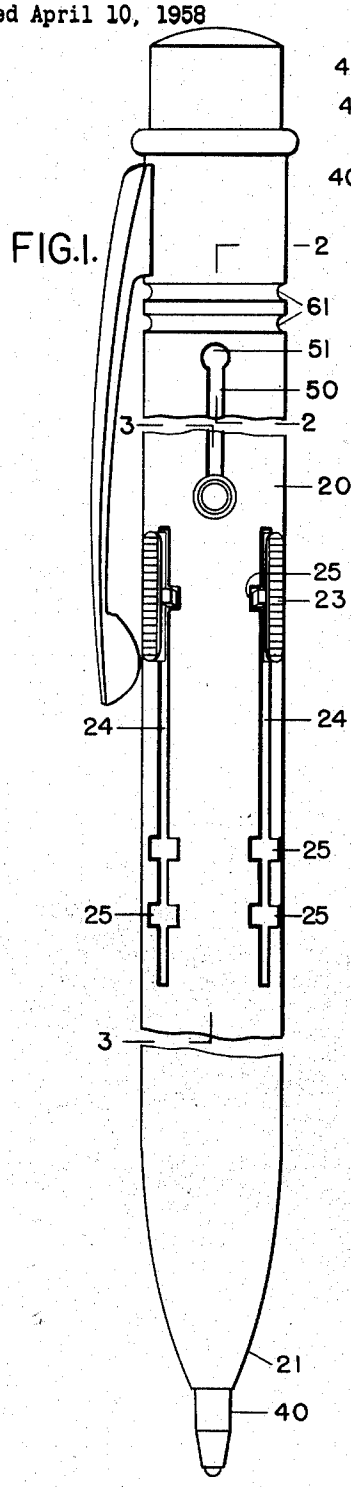


FIG.1.

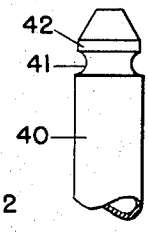


FIG.4.

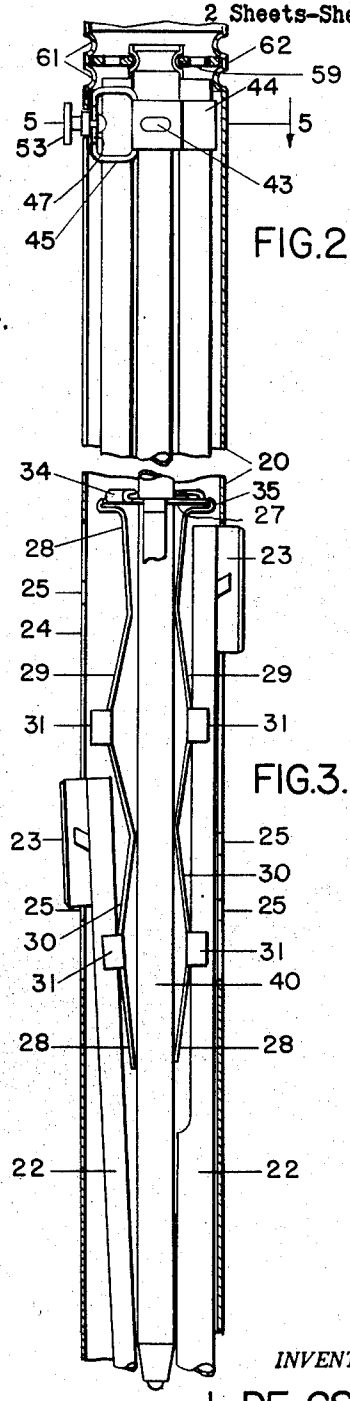


FIG.2.

FIG.3.

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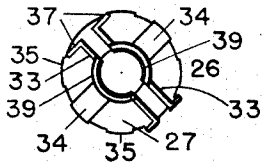
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MAGAZINE PENCILS

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FIG.10.



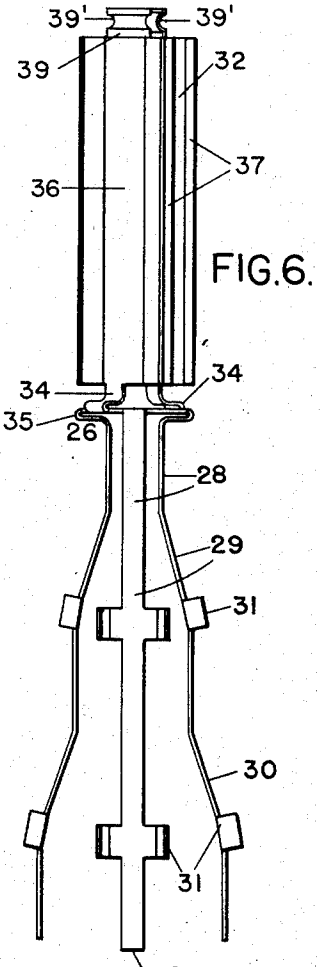
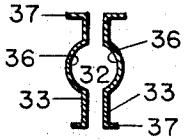


FIG.6.

FIG.8.

FIG.11.



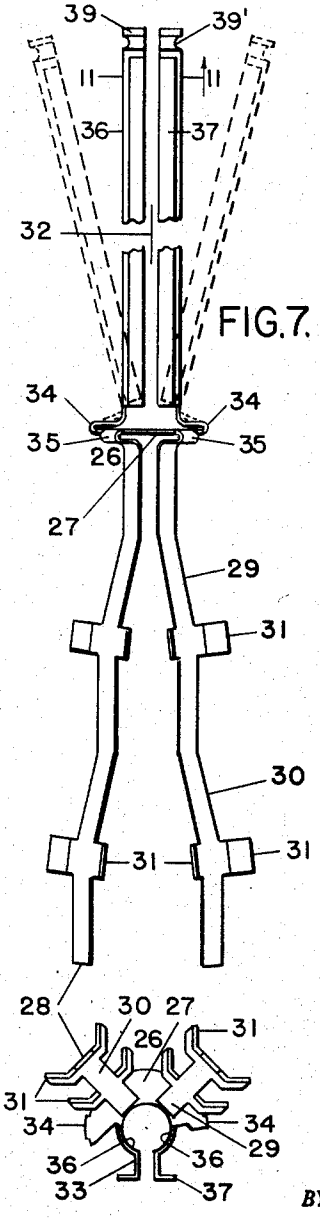


FIG.7.

FIG.9.

FIG.5.

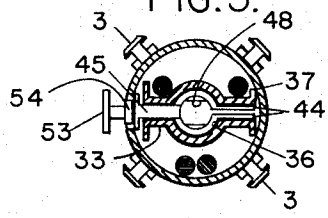


FIG.12.

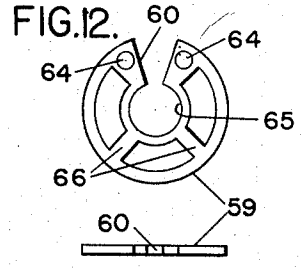


FIG.13.

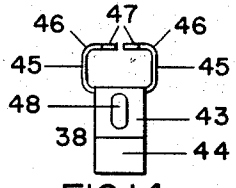


FIG.14.

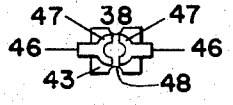


FIG.15.

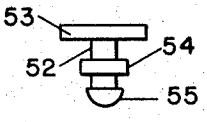


FIG.16.

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MAGAZINE PENCILS

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Application April 10, 1958, Serial No. 727,635

12 Claims. (Cl. 120—1)

My invention relates to magazine pencils, and the object is to house five writing units in the barrel of the magazine pencil where four such units were previously housed.

Another object of the invention is to provide a spider mounted to swing or oscillate in the axis of the barrel.

A further object is to reciprocate the ink cartridge in the spider.

A still further object is to provide a cartridge having a higher ink capacity.

Other features and details of the invention will appear from the specification and claims.

In the appended drawing forming part of this specification, all figures are on a scale larger than the actual magazine pencil.

Fig. 1 is an elevation of the magazine pencil with portions thereof broken out.

Fig. 2 is a vertical section on line 2—2 of the upper fragment of Fig. 1 with the cartridge in retracted position.

Fig. 3 is a vertical section on line 3—3 Fig. 5 through the middle fragment of Fig. 1 with the front arm of the spider broken off.

Fig. 4 is an elevation of the upper tip end of the ink cartridge.

Fig. 5 is a cross-section on line 5—5 Fig. 2.

Figs. 6 and 7 are elevations of the spider at 45° interval when the spider is out of the barrel with the cartridge guide locked.

Fig. 8 is a plan of the lower end of the spider in Fig. 6 with one arm and part of the shoulder broken off to show the cartridge guide section.

Fig. 9 is a plan of the lower end of the spider in Fig. 7 with two arms and part of the shoulder broken off.

Fig. 10 is a plan of the upper end of the spider with the cartridge guide thereof in closed position.

Fig. 11 is a cross-section of the cartridge guide in closed position on line 11—11 Fig. 7.

Figs. 12 and 13 are a plan and edge elevation respectively of the diaphragm for anchoring the spider to the barrel.

Figs. 14 and 15 are side and end elevations of the slide, and

Fig. 16 is the elevation of the pin for reciprocating the cartridge.

Referring to the drawings, a barrel 20 of a magazine pencil is provided with a tip 21 through which the writing ends of the 5 enclosed writing units may be reciprocated, one at time. A plurality of lead writing units 22 are housed in the barrel 20 of which four are shown at 90° intervals. Each unit has a thumb piece 23 projecting out of the barrel's proximate slot 24. The slot has enlargements 25 spaced to lock the unit in predetermined parts within the barrel.

To properly guide said units 22, an elongated spider 26 having a centrally apertured shoulder 27 between its end is located within the barrel. A plurality of arms

28 extend from the shoulder 27 downwardly and outwardly, see Figs. 6 and 7. The angular distance between adjacent arms is 90°. Each arm 28 is a strip of spring steel with two flat V bends 29 and 30, starting some distance below the shoulder 27 and ending at the free end of the arms 28 which extends below the lower enlargement 25. The concavity of the V bends facing the axis of the spider 26 which is normal to the shoulder 27. The obtuse angle of the V bends increases when the arms of the spider are fitted into the barrel, and also when a unit 22 is moved out of the barrel tip see Fig. 3.

Each arm 28 at the base of the V bends 29 and 30 has facing flanges 31 extending outward away from the spider axis and flaring out from the arm, see Figs. 8 and 9. These flanges 31 are adapted to engage the proximate unit 22 in the barrel to guide it in its movement and prevent lateral displacement thereof.

A split cartridge guide 32 rises from the shoulder 27 of the spider 26 to lie in the axis of the spider. The guide 32 is formed of flat spring steel into two spaced U channels 33, each connected to the shoulder 27 by a resilient extension 34 similar to the extension 35 that couples each arm 28 to the shoulder 27. The gaps between the channels 33 lie in a plane passing through the axis of the spider and bi-sects the angle between the adjacent arms 28 of the spider 26, see Figs. 9 and 10.

Each U channel 33 has a median trough 36 in the bottom of the channel parallel to the sides 37. The concave parts of the channels facing to form a substantial cylindrical bushing split longitudinally with the rest of the bottom of the channels forming guides at the split, to receive and guide a slide 38. To maintain the channels 33 parallel each channel has a semi-circular collar 39 with a semi-circular groove 39′ to be engaged by a flexing diaphragm 59 see Figs. 1, 12 and 13.

The slide 38 see Figs. 2, 14 and 15 is shaped from spring steel into a laterally open ring 43 with parallelly spaced flanges 44 extending outwardly from the ring opening. The ring also has ears 45 rising from opposite edges of the ring in the plane of the flanges. Each ear has an extension 46 above the ring 43 terminating into half a washer 47 showing only the split. The ears 45 with the extensions 48 forming a resilient loop. The lateral surface of the ring 43 has diametrically opposite inner protuberances 48 in a plane normal to the flanges.

The slide 38 is placed between the channels 33 as shown in dotted lines in Fig. 7. The channels are moved to the position shown in full lines in same figure, with the ring 43 lying between the troughs 36 of the channels. The flanges 44 of the ring extending through the proximate split between the channels, with the ears 45 projecting out through the opposite split see Fig. 5. The split washer sections 47 lying outside the proximate channel side 37. The central opening 65 of the diaphragm is set in the grooves 39′ of the semicircular collars 30 to couple the slide 38 to the cartridge guide 32 of the spider 26. The slide is free to reciprocate in the guide 32 but prevented to turn therein.

The four lead writing units 22 are placed into barrel 20 in their respective slots 24 housing them in their upper enlargements 25. The spider 26 is moved into the barrel through the upper open end with the free ends of the arms 28. The arms are aligned with the units 22 and when the lower flanges 31 of the spider arms reach the barrel top, the arms are flexed to pass the flanges into the barrel to engage the proximate unit 22. The movement of the spider into the barrel is arrested when the slide 38 in cartridge guide 32 is near the shoulder 27 of the spider 26 and faces with split washer 47 the upper circular opening of a slot 50 in the barrel 20. The slot 50 lies in a plane passing through the axis of the barrel median to

adjacent slots 24. The width of the slot 50 is smaller than the diameter of the openings 51.

A pin 52 of a diameter smaller than slot 50, see Figs. 2, 5, and 16, has a head 53 larger in diameter than the opening 51, and a hub 54 spaced from the head, of a diameter smaller than the opening 51 but larger than the width of slot 50. A button 55 at the end of the pin is spaced from the hub and is equal or smaller in diameter than the hub. The pin between the button and the hub is adapted to be gripped by the split washers' ends 47 when the pin is forced through the upper opening 51 against the washer ends of the resilient loop of the slide 38. The portion of the pin between the head and the hub provides the clearance necessary for that.

The barrel 20 at the upper end has spaced circular grooves 61 forming an annular recess 62 to engage the outer edge of the diaphragm 59 and lock the spider thereat in the axis of the barrel 20. The diaphragm has a gap 60 extending radially from the outer edge to the central opening 65. To enhance the flexibility of the diaphragm a pair of spokes 66 are formed in the body thereof in symmetry with the gap 60. An opening 64 to each side of the gap provides means for a suitable tool to couple the diaphragm with the barrel. The diaphragm suspends the spider with the upper end of the cartridge guide in the axis of the barrel to oscillate or swing within the barrel to and from said axis; the diaphragm being the pivot.

An ink cartridge 40 has a tip 42 of a diameter smaller than the cartridge, with a circular groove 41 therein, see Fig. 4. The tip end of the cartridge is inserted through the tip 21 of the barrel 20 between the arms 28, apertured shoulder 27 and into the open ring 43 of the slide 38 positioned at the lower opening 51. By applying pressure to the lower end of the cartridge projecting out of the tip, the groove 41 of the tip 42 is forced to engage the protuberances 48 of the open ring of the slide, thus coupling detachably the cartridge 40 to the slide to reciprocate therewith in the spider. The writing end of the cartridge normally lies in the path of the lead writing units.

When the cartridge is to be reciprocated in the spider the units 22 are in retracted position. The head 53 of the pin 52 in the upper opening 51 is moved toward the barrel to bring the hub 54 in the barrel to permit the pin to move in the slot 50 toward the lower opening 51 see Fig. 2. The movement of the pin carries the slide and the cartridge within the spider bringing the lower end of the cartridge out of the tip when the pin 52 is in the lower opening 51, see Fig. 1. In this position the cartridge is locked to the barrel in the spider and any pressure on the writing end of the cartridge and pin 52 is absorbed by the barrel 20. By placing the cartridge within the spider, the length thereof is greater than that of a cartridge replacing a lead writing unit, in consequence its ink capacity is greater.

When a lead writing unit 22 is moved to protrude from the tip 21 the cartridge 40 is in retracted position, the thumb piece 23 may engage either of the lower enlargements 25, see left side of Fig. 3. In the normal retracted position of the pencil there is little clearance between the writing end of the cartridge and the lead writing units. A unit 22 in moving toward the tip 21 of barrel 20 flattens the V bends, 29 and 30 of the contacting arm 28 as it moves in the taper of the barrel's tip and forces the spider 26 with the cartridge therein to swing toward the opposite unit 22 on the diaphragm 59. The swinging movement of the spider flattens the V bends 29 and 30 of the opposite arm 28, as the spider moves out of the axis of the barrel, and thus provides clearance for the moving unit 22 to pass out of the tip of the barrel to be engaged by either of the lower enlargements 25. The swinging of the spider with the cartridge in the barrel permits the housing of five writing units in a barrel where previously four writing units have been housed.

It will be noted that the free ends of the arms of the spider are in frictional engagement with the cartridge at all positions in the barrel. The bases of the V bend in the arms have a similar engagement with the proximate lead writing unit.

To replace a cartridge, the writing end thereof is moved out of the tip of the barrel, and by pulling at the protruding end it is disengaged from the slide which is at the shoulder 27 when the cartridge is projecting out of the tip. A new spider can then be inserted as previously described.

It will be noted that the spider oscillates in a plane passing through the axis of the barrel and the longitudinal axis of any of the lead writing units being reciprocated in and out of the barrel's tip.

Space above the shoulder 27 in the barrel houses spare leads, and the access thereto is closed by an eraser not shown, and a cap, see Fig. 1.

I claim:

1. In a magazine pencil a barrel having a tip at one end, a plurality of lead writing units in the barrel, each to reciprocate through the tip, a spider suspended in the axis of the barrel with its upper end to swing and to yieldingly engage the units at all positions of the spider in the barrel, and an ink cartridge detachably coupled to the spider to reciprocate therein, and in and out of the tip while yieldingly engaged by the spider, said cartridge normally being coaxial with the spider with its writing end barring the lead writing unit's entry into the tip of the barrel, said spider swinging in the barrel with the cartridge when a unit is reciprocated in and out of the tip by the yielding engagement of the spider with the unit as the unit moves in the taper of the barrel's tip.

2. In a magazine pencil, a barrel having a tip at one end, a plurality of lead writing units equiangularly spaced in the barrel to reciprocate in and out of the tip, an elongated spider having a guide and plurality of flexing arms below the guide, means to anchor the spider within the barrel by the upper end of the guide near the end of the barrel remote from the tip to oscillate in the axis of the barrel, the flexing arms of the spider engaging the proximate units at all positions of the spider including its oscillation, an ink cartridge detachably coupled with its upper end to the guide of the spider, to reciprocate therein and between the arms of the spider that engage the cartridge and means for reciprocating individually each of the units and the cartridge operable from the outer periphery of the barrel.

3. In a magazine pencil a barrel having a tip at one end, a plurality of lead writing units equiangularly spaced in the barrel to reciprocate in and out of the tip, an elongated spider having a split bushing guide and a plurality of flexing arms below the guide, a diaphragm anchoring the upper end of the guide within the barrel near the end remote from the tip to permit the spider to oscillate in the axis of the barrel from the diaphragm, the flexing arms of the spider engaging the proximate units at all positions in the barrel, a slide mounted to reciprocate in the guide, an ink cartridge extending between the arms of the spider detachably coupled to the slide with the upper end to reciprocate with said slide in the spider to move the lower end of the cartridge in and out of the tip of the barrel, and means for each unit and the slide to reciprocate them individually from the outer periphery of the barrel.

4. In a magazine pencil, according to claim 2 wherein the guide is a split bushing, a slide mounted to reciprocate in the split bushing of the spider and an ink cartridge detachably coupled to the slide with its upper end and means for reciprocating the slide in the guide from the outer periphery of the barrel.

5. In a magazine pencil, according to claim 3, wherein the spider has a central apertured shoulder from which the guide's split bushing rises, with the lower ends of the bushing yieldingly coupled to the shoulder to be coaxial with the aperture, a pair of sides at the split of the bushing extending outwardly and a ring engaging the

upper ends of the split bushing to maintain the splits substantially parallel in a plane median to proximate arms of the spider.

6. In a magazine pencil, according to claim 3, wherein the spider has a plurality of flexing arms each yieldingly coupled to the centrally apertured shoulder to extend outwardly and downwardly, each arm has a pair of V bends engaging the proximate lead writing unit with its base, and facing flanges at the bases of the V to prevent lateral movement of the unit in the barrel when reciprocated.

7. In a magazine pencil according to claim 3 wherein the slide has an open ring in the split bushing, a flange at each edge of the rings opening between the proximate sides of the guide, a split loop between the opposite sides of the guide with the split of the loop outside the guide in proximity of the barrel's inner periphery, the inner periphery of said ring having diametrically opposite protuberances, and the ink cartridge having an annular groove at its upper end engaging the protuberance in the ring.

8. In a magazine pencil according to claim 3 wherein the barrel has a longitudinal slot facing the split bushing through which the split loop extends, and a pin passing through the slot, and coupled to the split loop, said slot lying above the slots for the units in a plane passing through the axis of the barrel and median with the proximate slots for the units.

9. In a magazine pencil according to claim 1, wherein the spider oscillates in a plane passing through the axis of the barrel, and the longitudinal axis of any of the lead-writing units when reciprocated in and out of the barrel's tip.

10. In a magazine pencil, according to claim 2 wherein the spider is oscillated with the cartridge when a lead-writing unit is moved in or out of the barrel tip, and means associated with the guide to reciprocate the cartridge in the spider between the arm thereof from the outer periphery of the barrel; said arms engaging the cartridge yieldingly at all positions of the spider.

11. In a magazine pencil according to claim 3 wherein the splits of the bushing forming the guide lies in a plane passing through the axis of the spider and median of the angle between the proximate arms of the spider.

12. In a magazine pencil a barrel having a tip at one end thereof, a plurality of lead writing units each adapted to reciprocate in and out of the barrel tip, a spider suspended in the barrel with its upper end, yielding means associated with the lower end of the spider and engaging said units to normally maintain the spider coaxial with the barrel, a cartridge suspended in the axis of the spider to reciprocate therein and in engagement with said yielding means, the writing end of said cartridge normally barring the path of entry of the lead writing units to the tip of the barrel, said yielding means swinging the spider with the cartridge writing end clearing the path for a unit moving into the taper of the barrel's tip.

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