

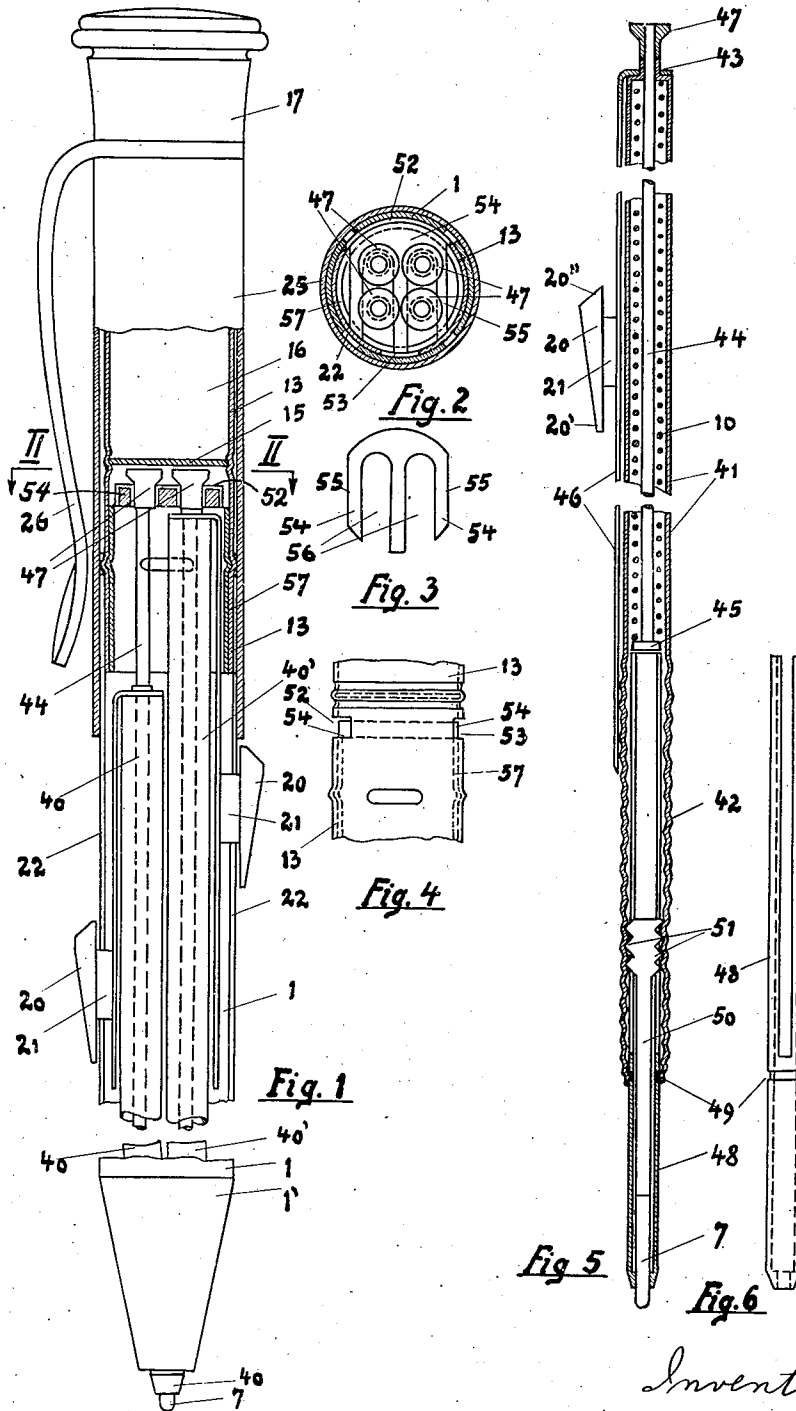
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SELECTIVE MULTIPLE LEAD PENCIL

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SELECTIVE MULTIPLE LEAD PENCIL

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9 Claims. (Cl. 120—14)

This invention relates to a multiple lead pencil with exchangeable lead holders, which are shiftable by slides in guide slots in the pencil case from their inoperative position into a notch determining the position of use, which are locked in operative position, and in which each lead holder, after the disengagement of the locking means, slides back into its inoperative position under the action of a separate pressure spring serving as return spring. All of said pressure springs are accommodated in a sleeve adapted to be inserted into the pencil case from the rear end thereof. The object of the invention is, to facilitate the insertion and connecting of the lead holders in the insertable sleeve, and to construct the lead holders in such a manner that they comprise the fewest possible number of parts and are consequently easy and cheap to produce and reliable and very strong in use. According to the invention the rigid (not shiftable) parts of the lead holders carrying the pressure springs have an enlargement at their rear end, and they are held in the insertable sleeve by a carrier plate which is slipped from the outer side into a transverse slot in the sleeve and engages under the end enlargement by means of a slot. The multiple lead holders can now be inserted into the insertable sleeve from the front and then be suspended in this sleeve by a single manipulation, namely the slipping in of the carrier plate. To enable the plate to be again easily removed, it is advisable that the insertable sleeve have an aperture diametrically opposite the slot for introducing the carrier plate, which can be pushed out of the sleeve through this aperture. As the lead holders must be laterally shiftable to facilitate the introduction of the slide knob into the guide slots in the outer case, it is advisable that the carrier plate be of a diameter which is not greater than the internal diameter of the insertable sleeve and rotatably rests on a pressed rib in the sleeve or on a carrier ring inserted therein.

The individual lead holders are, according to the invention, constructed in such a manner that the pressure spring is carried by a rod having an enlargement at its rear end and a second enlargement at its front end, which rod is fitted in a reduced portion of the rear end of the tubular lead holder. The reduced rear end of the holder serves as an abutment for one end of the pressure spring. This offers the additional possibility of making the smooth tubular sleeve forming the rear end of the lead holder and the screw threaded sleeve of the rotary lead pencil situated at its front end as a single tube. In this manner

a separate sleeve is not necessary for accommodating the return spring and the lead holder need no longer be formed of several rod- or tubular parts soldered together. It is much simpler to produce the one-piece structure and furthermore it has an absolutely smooth surface, this being important for the reliable operation of the multiple lead pencil. In this construction the lead mounting in the front end of the lead holder and adapted to be pushed forward can also be made in a particularly simple manner in that the rotary part serving as a lead guide and slotted sleeve is formed by a tube in the screw threaded portion of the sleeve and connected with the screw threaded sleeve so that it is rotatable yet secured against axial displacement by means of pressed ribs. The part situated in this sleeve has two diametrically opposite longitudinal slots for receiving and guiding the teeth formed by the screw threads of a lead feeding rod.

According to another feature of the invention the slide knob has a triangular longitudinal cross-section of such shape that the surface directed towards the point of the lead is longer and flatter than the surface directed towards the rear. Thus, a good supporting surface is formed for the finger which acts on the slide knob only in the direction of movement but no longer presses it against the wall of the pencil. The manufacture is thereby facilitated. This shape of the slide knob is not only suitable for the lead holder here described, but also for differently constructed lead holders in multiple lead pencils.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawing, in which

Fig. 1 is an elevation of a multiple lead pencil with parts being shown in a longitudinal section.

Fig. 2 is a cross-section on line II—II of Fig. 1.

Fig. 3 is a plan view of the carrier plate.

Fig. 4 is a fragmentary elevation of the sleeve 13 showing the carrier plate in position.

Fig. 5 is a longitudinal section through a lead holder and

Fig. 6 is an elevation of a portion of a lead holder.

The multiple lead pencil comprises an outer case 1, the front end of which has a conical point 1' having an aperture for guiding a slipped-in lead holder. In the rear end of the outer case a sleeve 13 is slipped, the rear portion of said sleeve forming a lead magazine 16 closed at its front end by a bottom plate 15. Sleeve 13 is clamped in the outer case 1 by a closing sleeve 25 which in turn is held by a cap 17 screwed onto

the insertable sleeve 13. This cap carries a clip 26.

Four lead holders are accommodated in the front portion of the outer case 1, and two, 40 and 40', of these holders, are shown in Fig. 1, 40 being in position for use and 40' in the inoperative position. The upper end of each lead holder projects into the insertable sleeve 13. Each lead holder comprises a tube 41 which is smooth at its rear end, whereas a screw thread is pressed into its front portion 42. The rear end 43 of the tube is reduced.

A rod 44 having at its front end an enlargement 45 is accommodated in the smooth rear portion of tube 41. This rod carries a helical pressure spring 10 which bears at its front end against the enlargement 45 and at its rear end against the shoulder formed by the reduced portion 43 of the tube 41. A blade spring 46 is slipped on and soldered onto this reduced portion. A hollow rivet or enlargement 47 is riveted or formed on that end of rod 44 which projects from the reduced portion 43 and prevents axial movement of the rod 44.

In the threaded part 42 of the tube there is carried a slotted tube 48 which is slipped into the tube 41 from the front end. The tube 48 is axially but rotatably connected with the threaded portion 42 by a pressed in rib 49 in the former in which is seated the lower edge of the latter. A lead 7 is accommodated in this tube 48. A feed rod 50 which feeds the lead 7, is formed with teeth 51 conforming to and engaging the screw thread 42 and extending into the longitudinal slots in the tube 48. By turning the tube 48 in tube 42 the lead can be pushed forward.

A slide knob 20 is mounted on the blade spring 46 by means of a strap 21. This knob is of such triangular longitudinal section that a forwardly directed flat and long surface 20' and short rear surface 20'' are formed. The surface 20'' affords a particularly firm support for the finger during the shifting of the lead holder. This surface 20'' also, if desired, might be perpendicular to the direction of the shifting.

The four lead holders 40 are slipped into the insertable sleeve 13 from the front. This sleeve (Fig. 4) has a transverse slot 52 formed in one side and a diametrically opposite smaller aperture 53 formed in the other. A carrier plate 54 is slipped through slot 52 in such a manner that it engages under the end enlargements 47 of rods 44 and embraces these rods by means of slots 56. The carrier plate 54, as shown in Fig. 3, is of circular shape cut away to form two diametrical opposite flat edges 55 to enable it to be slipped into the transverse slot 52 and has further two slots 56 parallel to the edges 55. Its diameter corresponds to the internal diameter of sleeve 13. After insertion, the plate 54 is rotatably seated on a short sleeve 57 which is fixed in sleeve 13 by a plurality of beads 57^a formed thereon. After having been turned out of its insertion position, it cannot drop out through the slot 52. To accomplish its removal it must be brought into its insertion position and pushed out from the aperture 53.

The straps 21 slide in the guide slots 22 in the outer case 1. It is advisable, when slipping the lead holders into the outer case, that plate 54 can turn so that the straps 21 can easily be introduced into the slots.

I claim:—

1. A multiple lead pencil with exchangeable

lead holders, comprising in combination an outer case, a plurality of tubular lead holders accommodated in said case, a rod in each of said holders and projecting from the rear end thereof, a pressure spring on each of said rods within said holders, an enlargement on the rear end of each of said rods, a tube adapted to be slipped into said case from the rear end thereof and formed to provide a transverse slot therein, and a slotted carrier plate adapted to be inserted into said tube through said slot and to engage the enlarged rear ends of said rods to hold said holders in said tube.

2. A multiple lead pencil as specified in claim 1, said tube being formed to provide an aperture therein diametrically opposite said slot to facilitate the ejection of the carrier plate through said slot.

3. A multiple lead pencil as specified in claim 1, in which said carrier plate is of a smaller diameter than the internal diameter of said tube, and means adapted to rotatably support said plate in said tube.

4. A multiple lead pencil as specified in claim 1, in which the carrier plate is of smaller diameter than the internal diameter of said tube, and a carrier ring inserted in said tube, said ring having a bead formed thereon to mount the same in said tube, and said ring comprising means for supporting said plate.

5. A multiple lead pencil as specified in claim 1, in which each of said rods has at its front end an enlargement forming a support for the front end of its spring, and the rear end of its lead holder being reduced to form a guide for said rod and a support for the rear end of the spring.

6. A multiple lead pencil as specified in claim 1, in which each lead carrier comprises a sleeve, said sleeve being smooth at its rear end and formed to provide a screw thread at its front end.

7. A multiple lead pencil as specified in claim 1, each lead holder being formed to provide a smooth rear portion and a screw threaded front portion, a lead guide tube in each of said lead holders, said guide tube being formed to provide a pair of diametrically opposite slots extending longitudinally thereof and an annular groove extending transversely thereof, an inwardly pressed annular rib on said screw threaded portion engaging in said groove and rotatably connecting said guide tube with said lead holder and securing said guide tube against axial displacement, a lead feed rod axially shiftable in said guide tube, and two teeth comprising screw threads projecting laterally from said feed rod, one through each of said slots, and engaging the screw threaded portion of said holder to axially displace said rod when said guide tube is rotated relatively to said holder.

8. A multiple lead pencil as specified in claim 1, in which said enlargement on said end of said rod comprises a hollow rivet riveted on said rod.

9. A multiple lead pencil as specified in claim 1, in which the outer case is formed to provide a number of longitudinal slots therein corresponding to the number of lead holders, a blade spring fixed on the rear end of each holder, said spring mounting a slide knob adapted to project through one of the slots in said outer case, said knob being of triangular longitudinal section with the surface directed towards the front being longer than that directed towards the rear.

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