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PUSH-CAP OPERATED PENCIL
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Fig. 1.

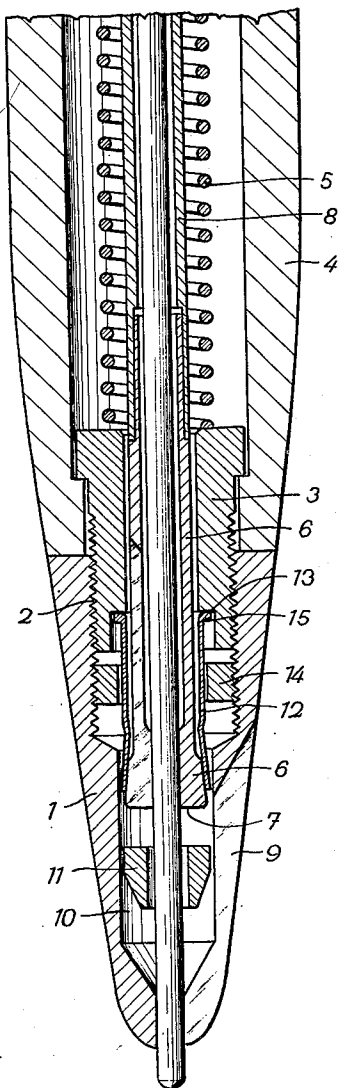
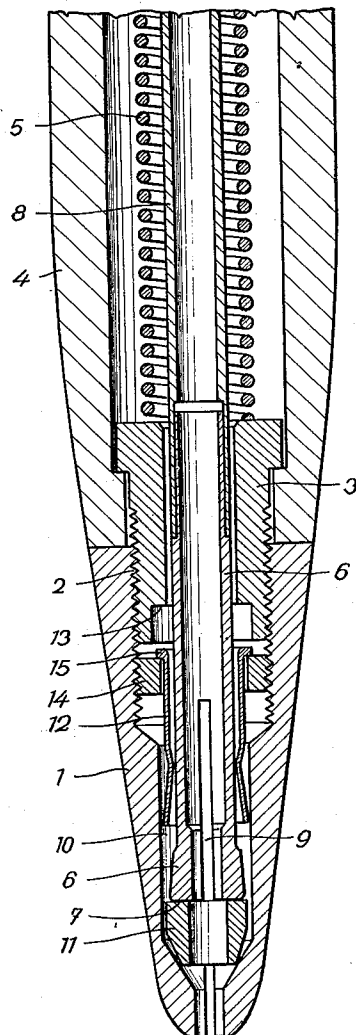


Fig. 2.



Witnesses:

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PUSH-CAP OPERATED PENCIL

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2 Claims. (Cl. 120—17)

1

In push-cap operated pencils with a thin lead the satisfactory guidance and reliable gripping of the lead are among the most important requirements. The guiding of the lead is effected at the tip of the pencil, and the holding is effected by means of a gripper.

For many purposes it is necessary to return the lead into a storage cavity after use, this being particularly the case with copying pencils and coloured leads, which, in view of their chemical composition, are liable to cause oxidation of the tip of the pencil, whereby the expulsion of the lead through the tip might be hampered.

With the tip constructions hitherto known this requirement could not be fulfilled, or, if this was still necessary, by employing push-cap operated pencils with leads dropping out by gravity, that is, by employing gripping means without a tip.

The use of gripping means alone is however unsafe for thin leads of a diameter of 1.18 mm., particularly in the case of coloured leads, which are regularly of less strength, and, in the absence of guidance in the tip, are inevitably liable to break.

According to the present invention these disadvantages are obviated by arranging, in the slotted tip of the push-cap operated pencil, a conical thrust ring, which, when displaced forwards by the pressure of the end face of the gripping means, spreads the tip asunder, thereby enabling the lead to fall freely through the bore of the tip, and, after use, to be conveniently retracted into the storage space.

One form of construction of the invention is diagrammatically illustrated in the accompanying drawings, in which:

Figure 1 shows a longitudinal section through the tip of the pencil with the lead thrust out and held fast; and

Figure 2 is a similar view showing the tip spread asunder, without the lead.

The tip 1 of the pressure-filled pencil is screwed on to the thread 2 of a carrying member 3 inserted in the casing 4 of the pencil. In the interior of the tip 1, against the pressure of a spring 5, moves the gripping means 6, with a plane end face 7. The gripper 6 is secured to the end of a guiding tube 8, extending through the casing 4. The tip 1 is provided with a slit 9, and has in the interior a bore 10, tapering conically towards the end of the tip. In the interior of the bore 10 there lies, in front of the end face 7 of the gripper 6, a freely displaceable thrust ring 11, the front end of which is externally frusto-conical. The gripper 6 is closed by a squeezing

2

tube 12. The squeezing tube 12 has at its inner end a flange 15, which, when the gripper 6 is closed, bears on a shoulder 13 of the carrying member 3, as shown in Figure 1, whereby the displacement of the squeezing tube 12 in an upward direction is limited, whereas when the gripper is open the flange abuts against a positioning ring 14, which is screwed on to the thread 2 in front of the carrying member 3, and limits the downward displacement of the squeezing tube, as shown in Figure 2. The positioning ring 14 can be shifted as required, whereby the flange comes into contact with the same earlier or later, thereby terminating the expulsion of the lead earlier or later.

Upon depressing a push-cap, not shown, on the pencil with the tip held downwards, the closed gripper 6 slides forward, together with the squeezing tube 12. As soon as the flange 15 of the squeezing tube 12 comes into contact with the positioning ring 14, only the gripper 6 moves further forward, and in so doing it opens, and thus effects the falling out of the lead until contact takes place at the margin of the tip opening. When the push-cap is released, the gripper 6 moves back again, the flange 15 of the squeezing tube 12 bears upon the shoulder 13 of the carrying member 3, and, through the action of the spring 5, a clamping of the lead is effected in the gripper 6. If the lead is to be protruded from the tip 1, the push-cap must be depressed again, whereby the lead, together with the gripper 6 and the squeezing tube 12, is displaced forwards. During this movement the squeezing tube 12 abuts with its flange 15 upon the positioning ring 14, and the gripper 6 is opened, whereby the further expulsion of the lead is limited. The positioning ring 14 is screwed on to the thread 2, and can be shifted by rotating it, so that in this way the length of the part of the lead protruding from the tip 1 can be altered. The pencil now behaves like an ordinary automatic push-cap operated pencil, in which, by depressing the push-cap, the lead can always be protruded from the tip to a definite extent.

When the lead is to be retracted into the storage space, the tip of the pencil must be directed upwards, whereupon the push-cap, not shown, is strongly depressed. The procedure described above for pushing out the lead is repeated, except that the end face 7 of the gripper 6 comes into contact with the thrust ring 11 and displaces the same into the interior of the tip 1. The slotted tip 1 is provided at the front end with a conical bore, so that by pushing the thrust ring 11,

3

which at the front end is likewise conically shaped, into this conical bore, the tip is splayed out, and the released lead can fall back into the storage space by its own weight. After release of the push-cap, the gripper 3, the squeezing tube 12 and the thrust ring 11 revert to their original positions.

I claim:

1. A push-cap operated pencil, comprising: a casing, a slotted hollow tip at the front end of the casing, the internal cavity of the tip terminating in a frusto-conical portion at its front end, a gripper longitudinally displaceable in the casing and capable of gripping an axially movable pencil lead, releasable squeezing means controlling the gripper, a thrust ring, externally frusto-conical at its forward end, longitudinally displaceable within the tip before the front end of the gripper, and means for pushing forward the gripper, and thereby releasing it from the squeezing means and impelling the thrust ring forward into the conical end of the cavity in the tip and thus splaying open the tip and allowing the lead to slide freely through the tip and the gripper under the action of gravity.

2. A push-cap operated pencil, comprising: a

4

casing, a slotted hollow tip at the front end of the casing, the internal cavity of the tip terminating in a frusto-conical portion at its front end, a gripper longitudinally displaceable in the casing and capable of gripping an axially movable pencil lead, releasable squeezing means surrounding and controlling the gripper, an abutment, such as a flange, on the squeezing means, an abutment adjustable in the interior of the tip and adapted to engage the abutment on the squeezing means so as to limit forward movement thereof, a thrust ring, externally frusto-conical at its forward end, longitudinally displaceable within the tip before the front end of the gripper, and means for pushing forward the gripper, and thereby impelling the thrust ring forward into the conical end of the cavity in the tip and thus splaying open the tip, the gripper being at the same time released from the squeezing means by the restriction on the advance of the latter, thus allowing the lead to slide freely through the tip and the gripper under the action of gravity.

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No references cited.