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MULTICOLOR PENCIL

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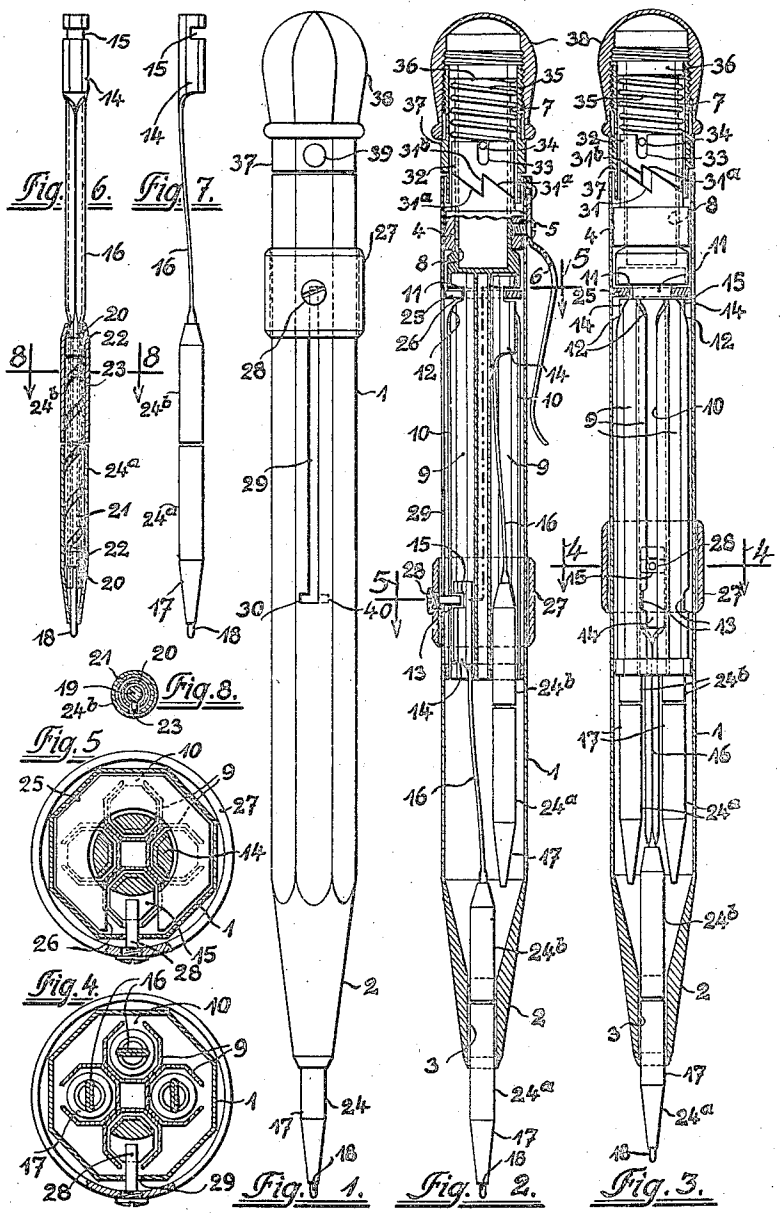


Fig. 6. Fig. 7. Fig. 8. Fig. 5. Fig. 4. Fig. 1. Fig. 2. Fig. 3.

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MULTICOLOR PENCIL

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This invention relates to a propelling pencil, comprising a number of pencils with different coloured leads connected with sliding elements by means of springs so that a pencil of desired colour can be selected to be brought into the position for use, the pencil which is pushed forward, engaging with a guide-groove in the pencil-axis of the point of the pencil case.

The invention has for its object the following improvements in propelling pencils. The sliding elements and the guide-sleeves for the same are octagonal in cross-section in order to secure against rotation those individual pencils which are not to be rotated. The guide-springs for the pencils are formed by rearward extensions of the guide-tubes. Two rings, having oblique teeth and held in engagement the one with the other by spring-action, serve to operate the mechanism for accurately positioning the selected pencil to be propelled. The selected pencil is locked in the position for writing by rotating the push-ring so that the threaded pin of this ring comes into engagement with notches in the side of the longitudinal slots of the guide sleeve and of the outer casing. The pencil, which is in the position for writing, is automatically locked by the spring-power of its adjusting element, said spring-power being produced by the backward rotation of the group of guide-sleeves. The adjusting device together with the magazine for spare leads is arranged in the pencil-head, and the whole inner mechanism can be removed from the casing after the screw-pins have been unscrewed.

Owing to these improvements the propelling pencil, according to the invention, fulfills all requirements as regards durability, a secure operation, low price and maintenance.

The improved propelling pencil, according to the invention is illustrated, by way of example, in the accompanying drawing in which

Fig. 1 is an elevation showing the propelling pencil.

Fig. 2 is a longitudinal section.

Fig. 3 is a longitudinal section taken at 90° with regards to Fig. 2.

Fig. 4 is a cross-section on line 4—4 of Fig. 2 on larger scale, taken at the height of the advanced ring.

Fig. 5 is a similar cross-section on line 5—5 of Fig. 2 taken at the height of the push-ring when the same is pushed back.

Fig. 6 is a longitudinal section showing a rotatable pencil with a lead.

Fig. 7 is an elevation of Fig. 6.

Fig. 8 is a cross-section on line 8—8 through Figs. 6, 7 on larger scale.

The pencil-casing 1 is of octagonal cross-section and has at its front end a conical point 2 which has in its rear end a conical cavity extended by a cylindrical central bore 3. In the rear end of the casing 1 a bearing collar 4 is fixed by means of a screw 5. The screw 5 serves further to hold the end of a clip 6, fixed on the outer side of the casing 1.

In the bearing collar 4 a sleeve 7 is rotatably mounted, the inner space 8 of which serves as magazine for spare leads. On the front end of sleeve 7 four guide-sleeves 9 of octagonal cross-section are soldered. Each guide-sleeve 9 has on its outer side a longitudinal slot 10 and close to its rear end a transverse slot 11 into which the longitudinal slot 10 merges with its enlarged V-shaped rear portion 12. Notches 13 are arranged in the left edge of the slot 10 near the front end of the same (Fig. 2).

In each guide-sleeve 9 a sliding element 14 of octagonal cross-section is shiftably mounted which has near its rear end a transverse groove 15 corresponding to the transverse slot 11 of the guide sleeve 9. Each sliding element 14 is connected at its front end with a short rotatable pencil 17 by means

of a plate-spring 16, possessing great flexibility.

The short rotatable pencils 17 (Figs. 6 to 8) contain each a lead 18, adapted to be pushed forward by means of a push-pin 19. The leads 18 may be of different colors. Their push-pins 19 are guided in the rotatable pencils 17 each by means of a sleeve 20 slit in longitudinal direction. The rear ends of the guide-sleeves 20 for the leads, projecting from the rear end of the rotatable pencils 17, are compressed to form flat plate-springs 16. The rear end of each plate-spring 16 is enlarged and soldered on the back of the corresponding guided element 14.

In each rotatable pencil 17 a metal-band 21 is wound in spirals around the guide-sleeve 20 and secured against shifting in longitudinal direction by two collars 22, fixed by soldering the one near the front end and the other near the rear end on the guide-sleeve 20. A lug 23 of the push-pin 19 projects through the slot of the corresponding guide-sleeve 20 into the spiral-groove of the metal-band 21 so that it is pushed forward or backward when said metal-band 21 is being rotated. The metal-band 21 is rotated by the rotation of the front-part 24*a* of the pencil 17, said front-part 24*a* being connected with the metal-band 21 by soldering. The rear part 24*b* of the pencil 17 is connected by soldering to the rear collar 22 so that it is not rotatable. The rear collar 22, the guide sleeve 20, the spring 16 and the sliding element 14 are soldered together, said sliding element 14 being secured against rotation as it is of octagonal cross-section and engages with the corresponding guide-sleeve 9 which is also of octagonal cross-section. In the transverse slot 11 a locking ring 25 is loosely mounted which, by its octagonal circumference engaging with the octagonal pencil-casing 1, is secured against rotation, the sliding elements 14 gripping with their notches 15 over said ring, whereby accidental advancing of the pencils 17 and jamming of the same in the conical bore of the point 2 of the pencil-casing 1 are prevented. The locking ring 25 has a cut-out portion 26 which forms a passage for the sliding element 14 of the pencil 17 which has to be pushed into the position for writing (Figs. 2 and 5).

A push-ring 27, mounted on the casing 1 so that it can be shifted in longitudinal direction and having an inwardly directed threaded pin 28, serves for pushing forward said pencil 17. When the push-ring 27 is in its rear position, shown in Fig. 1, the pin 28 projects through a longitudinal slot 29 of the casing 1 and through the cut-out portion 26 of the locking ring 25 into the annular groove 11 of the guide-sleeves and into the notch 15 of the push-element 14 of that pencil 17 which is actually in the adjusted position, and it slides in the longitudinal slot 29 of the casing and in the longitudinal slot 10 of the adjusted guide-sleeve 9 and pushes forward the guide-element 14 of the adjusted pencil 17 and also this pencil 17 (Fig. 2).

At this forward movement, the rotatable pencil 17 is, owing to its spring 16, directed into the conical cavity of the point 2 of the casing so that it enters into the central bore 3 of said point and projects from the front-end of casing 1. The lead 18 is advanced from the point of the pencil 17 by rotating the part 24*a* of said pencil.

The threaded pin 28 registers in its extreme forward position with the notch 13 in the left edge of the longitudinal slot 10 of the guide-sleeve 9 (Fig. 2), and at the corresponding end of the longitudinal slot 29 of the casing 1 a notch 30 turned to the left is arranged (Fig. 1). When the ring 27 is rotated, the threaded pin 28 is brought into engagement with the corresponding notch 13 and with notch 30, the pencil 17 which has been brought into the position for writing being thereby secured against backward movement due to the pressure exerted at the writing.

In order that the one or other of the pencils 17 may be selected for writing, the group of guide-sleeves 9 with the pencils 17 is rotatably mounted in the bearing sleeve 7 in the bearing collar 4, in the rear end of the casing 1 and in the locking ring 25 so that any of the pencils 17 can be adjusted so that its guide sleeve 9 registers with the threaded pin 28 of push-ring 27 and with the passage 26 in the locking ring 25.

The group of guide-sleeves 9 is secured in this adjusted position by means of locking teeth 31 in the bearing collar 4 engaging with locking teeth 31*a* of a ring 32 loosely mounted on the bearing sleeve 7. The ring 32 has a slot 33, forwardly extending from the rear edge and designed to engage over a pin 34 of the bearing sleeve 7, so that said ring 32 can be shifted on said bearing sleeve but not rotated on the same. A spring 35, inserted between the rear edge of ring 32 and a collar 36 on the rear end of the bearing sleeve 7 presses the teeth 31*a* of ring 32 into engagement with the corresponding teeth 31 of the bearing collar 4.

On the rear collar 34 of the bearing sleeve 7 a threaded sleeve 37 is fixed by soldering, which is offset several times and extends in forward direction over the spring 35, the locking ring 32 and the locking teeth 31 of the bearing collar 34, and engages with the rear end of the casing 1. On this threaded sleeve 37 an internally threaded cap 38 is screwed which closes the lead-magazine 8. On the offset portion of octagonal cross-section of the threaded sleeve 37 coloured marks 39 are arranged, the colour of which corresponds to the colour of the lead 18 in the rotatable short pencil 17 which registers with the colour-

mark 39, said colour-marks being brought into registry with the longitudinal slot 29 of the casing 1 to select the corresponding pencil 17, the cap 38 having to be rotated for this purpose. As the cap 38 has right-hand thread, the locking teeth 31, 31*a* of the bearing collar 4 and of the locking ring 32 respectively, are inclined from the right to the left and to the rear so that, when the cap 38 is rotated in the direction of screwing on, the teeth 31*a*, 31 slide over each other, but lock with each other when cap 38 is being unscrewed.

In the form of construction shown the vertical faces 31*b* of the locking teeth 31 of ring 32 are situated in the direction of the central line of the longitudinal slots 10 so that, when the adjusting ring 32 is in the position of rest, the selected longitudinal slot 10 stands accurately behind the longitudinal slot 29 of casing 1.

The adjusting ring 32 might however be slightly displaced to the left (Fig. 3), and in this case the longitudinal slot 10 of the selected guide sleeve 9 of the group of sleeves would be slightly displaced in the position of rest to the right with regard to the longitudinal slot 29 of casing 1 under the pressure of the spring 35 and under the rotating effect of the inclined faces of the locking teeth 31, 31*a*. When the selected pencil 17 is then being pushed forward, the group of guide-sleeves would be turned to the left from its position of rest, in opposition to the action of spring 35. This deflection is produced by the threaded pin 28 of the push-ring 27 and with the aid of the V-shaped enlargement 12 of the longitudinal slot 10 of the guide-sleeve 9 at the point where this slot merges into the cross-slot 11. During the forward movement of the push-ring 27, the left edge of the slot 10 of the corresponding guide sleeve 9 is pressed by the tension of the spring 35 against the threaded pin 28.

This tension can then be utilized for automatically producing the locking of the advanced pencil 17, as the group of sleeves will rotate to the right, as soon as the threaded pin 28 comes into registry with the notches 13 in the left edge of the slot 10, whereby said slot 10 is shifted to the right, with regard to the longitudinal slot 29 of the casing, the threaded pin 28 being locked in its position by the notch 13, the advanced pencil 17 being consequently locked also in its advanced position. The notch 30 of the longitudinal slot 29 turned to the left would then not be necessary. Instead of the notches 13 in the left edge of the slots 10 of the guide-sleeve, the slot 29 might have a notch 40 directed to the right with which the threaded pin 28 is automatically brought into engagement to be locked.

When the push-ring 27 is being rotated to the left, the threaded pin 28 is unlocked.

To remove the inner mechanism from the casing 1, it is merely necessary to unscrew the threaded pin 28 of the push-ring 27 and the fixing screw 25 of the bearing collar 4, whereupon the whole inner mechanism can be pulled out through the rear end of the pencil-casing 1.

I claim:—

1. A multicolor-pencil with propelling pencils of different colours adapted to be selected for writing, comprising in combination an outer casing of octagonal cross-section, octagonal guide sleeves soldered together in longitudinal direction rotatably mounted in said casing, sliding elements of octagonal cross-section shiftably mounted in said guide-sleeves, a short rotatable pencil for each guide-element, and a flexible spring connecting said pencil with said guide-element.

2. A multicolor pencil as specified in claim 1 in which the spring connecting the rotatable pencil with the corresponding slide-element consists of a rearward extension of the guide sleeve for the lead in said rotatable pencil said extension being pressed flat and enlarged at the rear end, said enlarged portion being soldered on the back of the corresponding guide-element.

3. A multicolor pencil as specified in claim 1, comprising in combination with the outer casing, a bearing collar on said outer casing having in its upper edge teeth with vertical front edge and inclined rear edge, a group of as many guide sleeves as there are teeth in said collar, a bearing sleeve at the rear end of said group of guide sleeves rotatably engaging with said bearing collar, a ring on said bearing sleeve having on its front end teeth shaped according to the teeth on said bearing collar and a slot, a pin on said bearing sleeve over which said pin engages, and a pressure spring behind the rear edge of said ring.

4. A multicolor pencil with propelling pencils in different colors adapted to be selectively propelled for writing, comprising in combination an outer casing of octagonal cross section having a longitudinal slot with notches in its left edge, guide sleeves of octagonal cross section soldered together in longitudinal direction rotatably mounted in said casing and having each a longitudinal slot and notches in the left edge of said slot, sliding elements of octagonal cross section shiftably mounted each in one of said guide sleeves and having a transverse slot, a short rotatable pencil for each guide element, a flexible spring connecting said pencil with said guide element, a ring shiftable on said casing, a pin fixed in said ring engaging with said longitudinal slots of said casing and sliding element and with the transverse slot of the guide element of the selected rotatable pencil whereby the advanced rotatable pencil is secured in the writing position.

5. A multicolor pencil with propelling pencils in different colors adapted to be selectively propelled for writing, comprising in combination an outer casing of octagonal cross section having a longitudinal slot with notches in its left edge, guide sleeves of octagonal cross section soldered together in longitudinal direction rotatably mounted in said casing and having each a longitudinal slot and notches in the left edge of said slot, sliding elements of octagonal cross section shiftably mounted each in one of said guide sleeves and having a transverse slot, a short rotatable pencil for each guide element, a flexible spring connecting said pencil with said guide element, a ring shiftable on said casing, a pin fixed in said ring engaging with said longitudinal slots of said casing and sliding element and with the transverse slot of the guide element of the selected rotatable pencil whereby the advanced rotatable pencil is secured in the writing position, a toothed bearing collar in the outer sleeve, a bearing sleeve soldered on said guide sleeves rotatably mounted in said toothed collar, a toothed ring shiftable in said bearing sleeve, a spring for pressing said shiftable ring against said bearing collar, a toothed locking ring on the bearing device of the group of guide-sleeves having its teeth slightly displaced backward with regard to the selective position of said guide-sleeves so that, in the selected position, said teeth are not yet completely in engagement with the teeth of the bearing collar so that, owing to the pressure of its spring and owing to the inclined faces of its teeth, said locking-ring has the tendency to rotate said group of guide-sleeves into the selected position so that the corresponding edge of the longitudinal slot of the selected guide-sleeve which is engaging with the threaded pin so that, at the moment when said threaded pin has arrived in the extreme forward position, the notch in the edge on the guide-sleeve is automatically pushed over said threaded pin.

6. A multicolor pencil with propelling pencils in different colors adapted to be selectively propelled for writing, comprising in combination an outer casing of octagonal cross section having a longitudinal slot with notches in its left edge, guide sleeves of octagonal cross section soldered together in longitudinal direction rotatably mounted in said casing and having each a longitudinal slot and notches in the left edge of said slot, sliding elements of octagonal cross section shiftably mounted each in one of said guide sleeves and having a transverse slot, a short rotatable pencil for each guide element, a flexible spring connecting said pencil with said guide element, a ring shiftable on said casing, a pin fixed in said ring engaging with said longitudinal slots of said casing and sliding element and with the transverse slot of the guide element of the selected rotatable pencil whereby the advanced rotatable pencil is secured in the writing position, a toothed bearing collar in the outer sleeve, a bearing sleeve soldered on said guide sleeves rotatably mounted in said toothed collar, a toothed ring shiftable in said bearing sleeve, a spring for pressing said shiftable ring against said bearing collar instead of the notches in the left edge of the longitudinal slot of the guide-sleeves and in the left edge of the longitudinal slot in the casing, one notch turned to the right is arranged in the front end of the right edge of the longitudinal slot of the casing, with which notch the threaded pin is brought into engagement by the pressure of the edge of the slot of the guide-sleeves.

7. A multicolor pencil with propelling pencils, in different color adapted to be selectively propelled for writing, comprising in combination guide sleeves and guide elements and single pencils, deflecting springs connecting said single pencil to said guide elements, a bearing sleeve soldered to the rear end of said guide sleeves, a collar on the outer sleeve in which said bearing sleeve is rotatably mounted, the bearing sleeve for the group of guide-sleeves serving as magazine for spare leads, the bearing sleeve, the threaded sleeve for the pencil-head which carries coloured marks, and the pencil-head which covers as a cap the open rear end of the magazine for the spare leads, gripping the one over the other so that they are arranged on the shortest possible length and completely located in the pencil-head.

8. A multicolor pencil with propelling pencils in different colors adapted to be selectively propelled for writing, comprising in combination an outer casing of octagonal cross section having a longitudinal slot with notches in its left edge, guide sleeves of octagonal cross section soldered together in longitudinal direction rotatably mounted in said casing and having each a longitudinal slot and notches in the left edge of said slot, sliding elements of octagonal cross section shiftably mounted each in one of said guide sleeves and having a transverse slot, a short rotatable pencil for each guide element, a flexible spring connecting said pencil with said guide element, a ring shiftable on said casing, a pin fixed in said ring engaging with said longitudinal slots of said casing and sliding element and engaging with the transverse slot of the guide element of the selected rotatable pencil whereby the advanced rotatable pencil is secured in the writing position, a toothed bearing collar in the outer sleeve, a bearing sleeve soldered on said guide sleeves rotatably mounted in said hooked collar, a toothed ring shiftable in said bearing sleeve, a spring for pressing said shiftable ring against said bearing collar the push pin screwed into the push-ring and the bearing collar for the group of guide-sleeves

fixed in the casing by a screw to be operated from the outer side, and a holding ring for the sliding elements which are pulled back, loosely mounted in the octagonal casing and in a circular groove in the rear element of the group of guide-sleeves so that, by unscrewing of said threaded pin and of said fixing screw for said bearing collar, the whole inner mechanism of said propelling pencil can be pulled out through the rear end of said casing.

In testimony whereof I affix my signature.

PAUL KOHLER.