

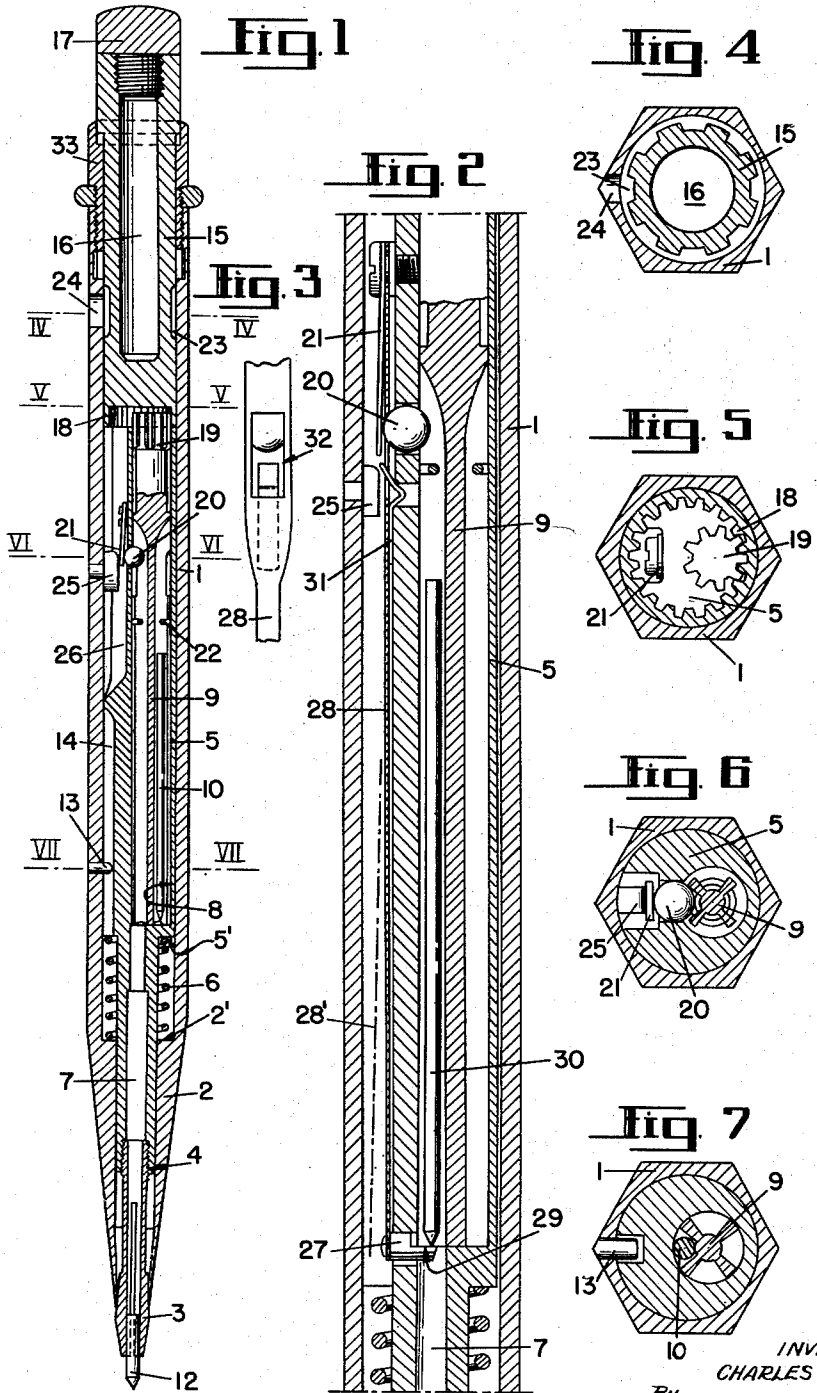
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C. BERGONZO

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SEVERAL COLOR LEAD HOLDER PENCIL

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INVENTOR
CHARLES BERGONZO
By
Toulmin & Toulmin
ATTORNEYS.

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SEVERAL COLOR LEAD HOLDER PENCIL

Charles Bergonzo, Moutier, Switzerland

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1

The present invention has for its object a several color lead holder pencil, in which the leads of each color are held in position for use by a common gripper, normally closed under the action of a spring which gives it a backward movement against which a button allows it to be shifted into another position, i. e. to open it.

In the pencil according to the invention, the various leads are disposed in longitudinal grooves of a cylindrical support, the axis of which is parallel but excentric with that of the body of the lead holder pencil, so that owing to the rotative movement of the button which works the gripper it is possible to bring successively each lead into the axis of the lead holder, coinciding with a channel so that the lead falls into the opened gripper and is held there to be used for writing.

The annexed drawing shows an embodiment of the object of the invention, given by way of example, and another improved construction.

Fig. 1 is a longitudinal axial cross section of the represented lead-holder pencil.

Fig. 2 shows a part of this same sectional view, but enlarged, with supplementary means constituting an improvement.

Fig. 3 is a corresponding detail view.

Fig. 4 is a cross section on IV—IV of Fig. 1.

Fig. 5 is a cross section on V—V of Fig. 1.

Fig. 6 is a cross section on VI—VI of Fig. 1.

Fig. 7 is a cross section on VII—VII of Fig. 1.

The multi-color lead holder pencil shown in the drawing consists primarily of a sleeve 1 having an outer hexagonal shape which ends at the lower end thereof in a cone shaped portion 2. Extending through the cone shaped portion 2 is a small cylindrical bore which leads to another cylindrical bore of a larger diameter than the first mentioned bore, and extends through the entire upper portion of the sleeve.

Mounted inside the sleeve 1 is a tube 5 having a bore 8 which is eccentrically located with regard to the longitudinal axis of the sleeve 1. This bore 8 communicates with a smaller bore 7 which is concentrically located with regard to the axis of the sleeve 1. The lower end of the bore 7 is provided with a thread engaging a correspondingly threaded portion 4 of a gripper 3 adapted to grip and hold a lead. This gripper has a cone shaped portion which is usually engaged by the inner walls of the bore provided in the cone shaped portion 2 of sleeve 1 and having slidably mounted therein the lower end of tube 5. As will be clear from Figure 1, the tube 5 has a shoulder 5' which is engaged by the upper end of a spring 6, the lower end of which abuts a

2

shoulder 2' provided in the sleeve 1. Thus, it will be evident that the spring 6 continuously urges the tube 5 upwardly, thereby drawing the gripper 3 inwardly and forcing the cone shaped and split end of the gripper together so that it will firmly hold the lead.

On the other hand, if the tube 5 is moved downwardly, the gripper 3 also moves downwardly so that it will protrude further from the cone shaped portion 2 of the sleeve 1, thereby allowing the split end of the gripper by its own spring action to open so that it will release the lead.

Grippers opening and closing in this manner are well known, and the gripper 3 itself does not form a part of this invention.

Rotatably mounted in the bore 8 is a holder 9 with four longitudinal radially extending ribs leaving therebetween grooves to receive four leads. These leads are kept imprisoned between the cylindrical inner wall of the bore 8 and the four ribs. The profile of these parts appears clearly in the cross sectional views of Figs. 6 and 7.

The functioning of the pencil is easy to understand, the accessory elements below described being simply destined to ensure a reliable working and an easy handling of the pencil according to the present invention.

Provided that a lead such as 10 of Fig. 1 is in each of the containers constituted by the grooves of the holder 9, it is easy to understand that by turning said holder, each of the leads may be brought one after the other into alignment with the axis of the channel 7, through which the lead can now freely fall into the gripper 3 and come into the writing position 12.

It has already been set forth above how the gripper can be opened and closed by longitudinal displacement of tube 5, and now it will be described how the holder can be turned and finally how certain mistakes in handling, or accidents may be prevented.

First of all, the tube 5 must be prevented from turning, but without hindering it from sliding axially. This result is obtained by the cooperation of pin 13 and of a corresponding longitudinal lateral groove 14 in the said tube 5.

Secondly, the tube must be able to be pushed forward and to make the holder 9 turn with the least possible means. This result is obtained by means of a plunger 15, which has a cavity 16 therein closed by a knob 17 forming the uppermost end of the lead holder pencil. The lower end of the plunger 15 slidably engages a portion

3

of the upper end of sleeve 1, and it will be obvious that by pressing upon the knob 17, the plunger 15 will push the holder 5 downwardly, thereby causing the gripper 3 to open. The lower end of the plunger 15 is provided with inner teeth 18 meshing with the teeth 19 provided on the outside of the upper end of the holder 9. Thus, by turning the plunger 15, the holder 9 may be turned so as to bring each of the longitudinal grooves in holder 9 into alignment with the bore 7.

However, since it is necessary, when turning the plunger 15 by means of knob 17, to be aware from the outside of the moment when a groove of the holder is in alignment with the channel 7, the tube 5 carries a ball 20, which a flat spring 21 tends to apply against the holder 9. Fig. 6 shows how the above mentioned elements constitute a kind of locking device destined to immobilize the holder 9 in each of its four positions in which a lead may fall into the gripper.

In order to prevent that by turning the pencil upside down the leads are jammed at the rear end of the holder or block the working of ball 20, the four ribs of the holder 9 are notched in order to receive a ring 22, which serves as an abutment for the leads.

To show the color of the lead, which the support is ready to drop into the writing position, the plunger 15 has eight small recesses 23 disposed on its outside and adapted to register with a window 24 of sleeve 1. The recesses contain colored plates which appear in turn at the window, and correspond to the color of the respective lead which in the respective position of the plunger 15 would be able to enter the gripper 3.

In the specific example shown in the drawings, the relationship between the teeth 18 and the teeth 19 is such that one-eighth of a turn of the plunger 15 causes the holder 9 to rotate by twice the same angle, i. e., by 90°. Thus, each time a recess 23 registers with the window 24, one of the four compartments in holder 9 registers with the bore 7.

In order to fill the described pencil, the gripper must be held upward. Then the holder is given each time a quarter of a turn by turning plunger 15 by 45°, whereupon the gripper is opened, and the leads are introduced into the pencil through the open gripper.

To bring a desired lead into writing position, the pencil is also held gripper upward and the holder is turned until the desired color appears in the window 24. Only then the pencil is turned gripper downwards, thus making the chosen lead fall through the channel 7 into the gripper 3. The return of the lead into the holder is effected by opening the gripper the pencil being now held with the gripper upwards.

It is necessary to prevent mistakes on the part of the user, who might turn the support while a lead is held in the gripper. In fact, this would result in mixing the colors and causing several leads to be jammed in one of the grooves of the holder.

To avoid such accidental handling, a small block 25 is disposed in the interior of the sleeve 1 in the neighborhood of ball 20. It will be recalled that the tube 5 can occupy only three distinct positions, namely the forward position with the gripper empty and open, the rearward position with an empty and closed gripper, and finally an intermediate position (as represented) when a lead has been introduced and is held in the gripper.

4

Therefore, it is clear that the rotation must be done in the rearward position of the tube 5, and, in this position only, in which, as stated above, the gripper is empty.

By suitably disposing the small block 25, it is easy to ensure that it will be in front of the spring 21 in all positions of the tube 5 except the rearward position. By preventing the raising of the spring, the block prevents the withdrawal of ball 20 from the respective compartment of the holder 9 and thus prevents rotation of the holder 9. The rotative movement of holder 9 can therefore only be effected in its rearward position, i. e. when the gripper is empty and block 25 does not block the spring 21 and ball 20.

Moreover, by making the block 25 cooperate with the longitudinal groove 26 of the tube, it is possible to omit the pin 13, the tube being thus guided longitudinally and prevented from turning.

The enlarged cross sectional view of Fig. 2, showing the sleeve 1 constituting the body of the pencil, the tube 5a which is somewhat modified over tube 5 of Figure 1, the holder 9, the ball 20 with the flat spring 21 and the small block 25, discloses another improvement intended to prevent the shearing of a lead by the untimely rotation of holder 9.

In fact, it appears from Fig. 1 that when holding the lead holder pencil with the gripper downwards, without opening the said gripper, a lead may fall on the backside of this latter, the holder being however not locked. By making it turn, the lead may be sheared or if it is sufficiently short it may come entirely into the channel 7 and can be mixed with others.

Such accident is prevented by means of a blocking key 27 supported by an elastic blade 28 and extending through the wall of tube 5a. This key is placed with a flat part 29 in front of the groove of holder 9 which is in alignment with the channel 7. A lead such as 30 is thus normally retained against any falling out of the holder.

In the neighborhood of ball 20 and of block 25 is disposed a lever 31, placed under the blade 28, but an arm of lever 31 extends through an opening 32 in blade 28 (see Fig. 3) so that this arm extends into the immediate neighborhood of the free extremity of spring 21.

When the tube 5a is pushed forward in order to open the gripper, it takes along the spring 21, the blade 28 and the lever 31. When the spring 21 and the lever 31 meet the block 25, the spring 21 immobilizes the ball 20 in the way already described, whereas the lever 31 rocks and raises the blade 28, the free end of which comes into the position shown in dot and dash line, in which the key 27 is carried away from the front of the lead 30. The lead 30 is now free to fall into the gripper in order to be held there. In this position the block 25 keeps the ball immobilized and the lever 31 rocked.

In view of this arrangement, the handling of the described lead holder is greatly simplified and any risk of error is done away with.

It is in fact no longer necessary to hold the pencil gripper upward when changing the color by turning the holder 9. This operation can be done in any position of the pencil and it suffices, just as for all lead holder pencils to see that the gripper be directed downwards when a lead must fall into the grippers and upwards when the lead must return to its container.

It may be mentioned that the plunger 15 may be retained in the sleeve 1 in any desired manner,

for instance by means of the threaded nut 33. Accordingly, if it is desired to extract the tube 5 or 5a and the spring 6, it suffices to unscrew the gripper and to unscrew the nut 33, whereupon the entire pencil may be taken apart.

It will also be clear, that, if desired, the knob 17 may be replaced by a stopper serving simultaneously as eraser.

It is, of course, understood that the present invention is by no means limited to the particular construction shown in the drawings, but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. A multi-color lead holder pencil having a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means for gripping said leads, said tube being provided with an eccentrically located longitudinal recess, a cylindrical holder rotatably mounted in said recess and provided with longitudinal grooves one for each lead, said holder being adapted to cooperate with said tube for guiding a lead into said gripper means, and means responsive to the longitudinal movement of said tube for actuating said gripper means and causing the transfer of a lead thereto.

2. A multi-color lead holder pencil having a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means for gripping a lead released from said tube, said tube being provided with a longitudinal recess having its axis arranged eccentrically with regard to the axis of said tubular body, a holder rotatably mounted in said recess and provided with a plurality of compartments corresponding in number to the number of different colored leads to be used in connection with said pencil, said holder being adapted to cooperate with said tube for guiding a lead into said gripper means, and manually operable means operable to effect longitudinal sliding movement of said tube for causing the latter to actuate said gripper means.

3. A multi-color lead holder pencil having a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means for gripping a lead released from said tube, said tube being provided with a longitudinal recess having its axis arranged eccentrically with regard to the axis of said tubular body, a holder rotatably mounted in said recess and provided with a plurality of compartments corresponding in number to the number of different colored leads to be used in connection with said pencil, said holder being adapted to cooperate with said tube for guiding a lead into said gripper means, and manually operable means operable to effect longitudinal sliding movement of said tube for causing the latter to actuate said gripper means, said manually operable means being provided with means operatively engaging said tube for effecting rotative movement thereof.

4. A multi-color lead holder pencil having a tubular body, a tube longitudinally slidable in said body and adapted to receive a plurality of leads, gripper means for gripping any of said leads, said tube being provided with a longitudinal recess having its longitudinal axis eccentrically located with regard to the longitudinal axis of said tubular body, a holder rotatably mounted in said recess and provided with a plurality of compartments corresponding in number to the number of leads to be used in connection with said pencil, said holder being adapted to cooper-

ate with said tube for guiding a lead into said gripper means, manually operable means adapted both to effect a rotative movement of said tube and also to effect a longitudinal movement of said tube in said tubular body, means responsive to the longitudinal movement of said tube for actuating said gripper means and causing the transfer of a lead thereto, and means operable automatically and temporarily to lock said tube in a predetermined position after the tube has been rotated by a predetermined angle.

5. A multi-color lead holder pencil comprising in combination, a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means for gripping any of said leads, said tube being provided with a longitudinal recess having its axis eccentrically located with regard to the axis of said tubular body, a lead holder rotatably mounted in said recess and being provided with a plurality of compartments, each of said compartments being adapted to receive one lead, manually operable means for effecting longitudinal movement of said tube within said tubular body, means operatively interconnecting said manually operable means with said tube to cause rotation of said tube in response to rotation of said manually operable means, blocking means associated with said tube for preventing transfer of a lead from said tube to said gripper means in a first predetermined position of said tube, and means for making said blocking means inoperative in a second predetermined position of said tube.

6. A multi-color lead holder pencil comprising in combination, a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means associated with said tube for gripping a lead released from said tube, said tube being provided with a longitudinal recess having its axis arranged eccentrically with regard to the longitudinal axis of said tubular body, a holder rotatably mounted in said recess and provided with a plurality of compartments each of which is adapted to receive one lead, means associated with said tube for rotating the same to bring any of said compartments into alignment with said gripper means, locking means operable automatically to temporarily lock said tube in a position in which any of said compartments is in alignment with said gripper means, and means operable to effect longitudinal sliding movement of said tube in a predetermined position thereof.

7. A multi-color lead holder pencil comprising in combination, a tubular body, a tube longitudinally slidable in said body and adapted to receive a plurality of leads, gripper means for gripping any of said leads, said tube being provided with a longitudinal recess having its axis eccentrically located with regard to the longitudinal axis of said tubular body, holding means rotatably mounted in said recess and provided with longitudinal grooves, one groove being adapted to receive one lead, means for effecting rotation of said tube to bring any of said grooves into alignment with said gripper means, means responsive to the longitudinal movement of said tube for actuating said gripper means, and means operable automatically for preventing rotation of said holding means when the gripper means is empty unless said tube is in its retracted position.

8. A multi-color lead holder pencil comprising in combination, a tubular body, a tube longitudinally slidable in said body and adapted to receive

7

leads, gripper means for gripping any of the leads when released from said tube, said tube being provided with a longitudinal recess having its longitudinal axis located eccentrically with regard to the longitudinal axis of said tubular body, a holder rotatably mounted in said recess and provided with a plurality of compartments each of which is adapted to receive one lead, means for effecting a rotative movement of said holder to bring any of said compartments into alignment with said gripper means, means operable selectively to effect longitudinal movement of said tube into a forward position or into a retracted position, blocking means associated with said tube and arranged in said retracted position of said tube to prevent the passage of a lead into said gripper means, and means associated with said blocking means and adapted automatically in response to movement of said tube into said forward position to make said blocking means ineffective.

9. A multi-color lead holder pencil comprising in combination, a tubular body, a tube longitudinally slidable in said body and adapted to receive leads, gripper means for gripping said leads when released from said tube, said tube being provided with a longitudinal recess having its axis eccentrically located with regard to the axis of said tubular body, holding means rotatably mounted

8

in said recess and provided with longitudinal compartments each of which is adapted to receive one lead, means for effecting rotative movement of said holding means to align any of said compartments with said gripper means, key means associated with said tube and normally preventing the transfer of a lead from said holding means to said gripper means, resilient means carrying said key means, means for selectively moving said tube into a predetermined forward position, spring means continuously urging said tube into a predetermined retracted position, and means responsive to the movement of said tube into said forward position for actuating said resilient means to make said key means ineffective, thereby allowing transfer of a lead from one of said compartments to said gripper means while said compartment is in alignment with said gripper means.

CHARLES BERGONZO.

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