Nov. 29, 1932. A. HIRTH 1,889,550

MAGAZINE PENCIL

Filed Feb. 26, 1932 2 Sheets-Sheet 1

Fig. 1.

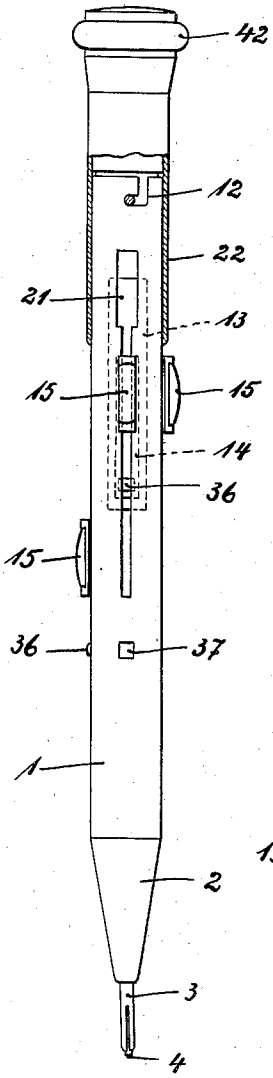


Fig. 3.

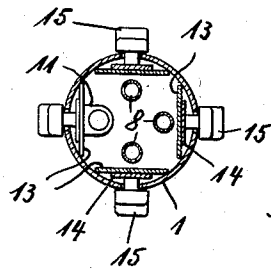
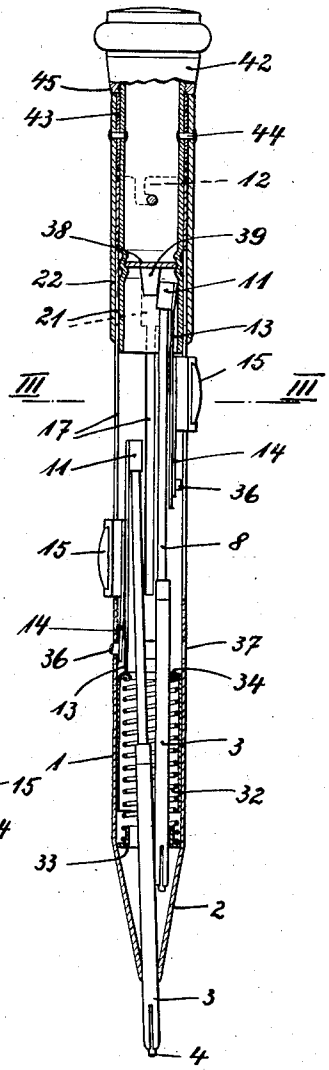


Fig. 2.



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Fig. 4.

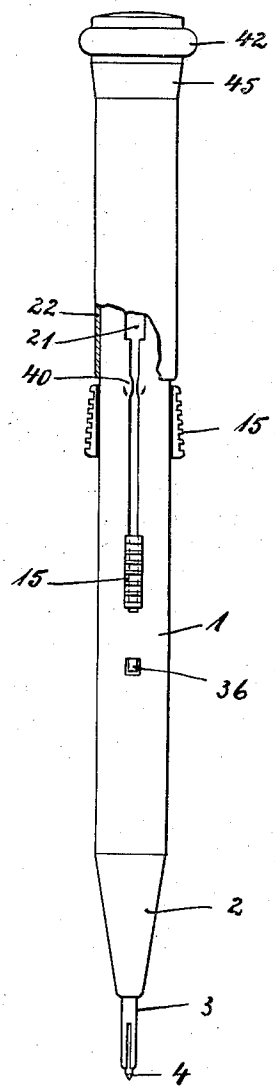
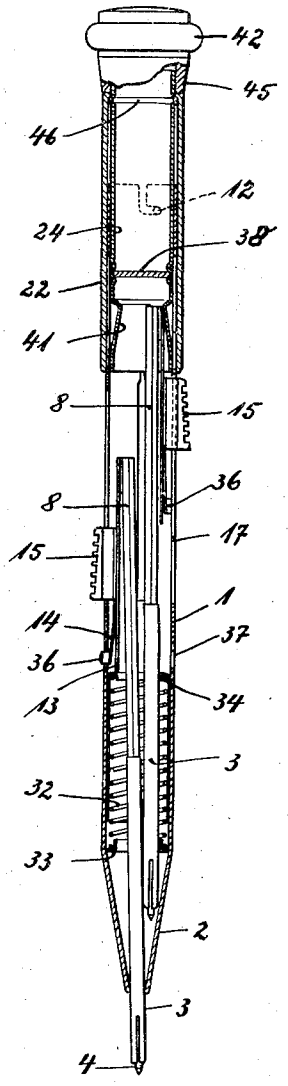


Fig. 5.



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Patented Nov. 29, 1932 1,889,550

UNITED STATES PATENT OFFICE

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MAGAZINE PENCIL

Application filed February 26, 1932, Serial No. 595,675, and in Germany December 19, 1930.

My invention relates to magazine pencils in which a set of lead carriers are arranged in a barrel and moved into active position by means such as a handle for each carrier, these handles projecting from slots in the barrel.

It is an object of my invention to improve a pencil of the kind described. To this end I provide a spring in the barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position and to return the carrier into its initial position.

Other objects of my invention will appear from the following specification and the drawings affixed thereto and forming part thereof in which two types of pencils embodying my invention are illustrated diagrammatically by way of example.

In the drawings

Fig. 1 is a partly sectional elevation,

Fig. 2 is an axial section, and

Fig. 3 is a section on the line III—III in Fig. 2, drawn to a larger scale, of the first type,

Fig. 4 is an elevation, with a portion of the magazine partly broken away, and

Fig. 5 is an axial section of the second type.

Referring now to the drawings, 1 is the barrel of the lead pencil which may be cylindrical and is preferably of thin wall section, 2 is a tapered tip at the lower end of the barrel, 3 are the lead carriers, and 4 are the leads in the carriers. In the present instance, four carriers 3, each for a different color, have been illustrated by way of example but it is understood that I am not limited to a definite number of carriers. 24 is a magazine which is inserted in the upper end of the barrel 1, 12 are a pair of bayonet joints by which the magazine is detachably secured to the handle and 22 is a sleeve on the magazine which fits the outer wall of the barrel 1. The bayonet joints may also be in the sleeve 22.

The carriers 3 are tubes, preferably of thin wall section, which are contracted and slotted in the usual manner at their outer ends for resiliently engaging the leads. A plunger (not shown) is inserted in each carrier and adapted to be displaced therein by screwing. Each carrier is rotatably connected to a tubular extension 8 which may be of circular section as shown in Figs. 1, 2 and 3, or of square section as shown in Figs. 4 and 5, and has a head 11 at its upper end. Each carrier is equipped with a handle 15 having a pin projecting inwardly through a slot 17 in the barrel 1, a slide 13 which is applied to the inner wall of the barrel by the inner end of the pin, as best seen in Fig. 3, and a spring 14 with a catch block 36 at its lower end which is connected to the slide 13 by the pin of its handle 15, but might also be made integral with the slide. The block which may be provided with a hemispherical knob on its outer face as shown in Fig. 2, is so wide that it is retained by the slot 17. In a position corresponding to the active position of the carriers 3 a hole 37 is provided in line with each slot 17 which may be square as shown, or of any other suitable configuration, and is of such size that the block 36 enters it if the carrier is moved into the active position as shown for the carrier at the left in Fig. 3. The spring catch now arrests the carrier in the active position and the knob of 36 which may be of the same color with which the corresponding handle 15 is marked, projects from the hole 37 ready for operation if it is desired to return the carrier into its initial position. The other carriers are not influenced by the movement of this particular carrier, means which will be described being provided for retaining them in their initial position as shown for the carrier at the right in Fig. 2.

21 is an extension at the upper end of each slot 17 which is so large that the handle 15 can be pushed into the interior of the barrel for extracting the carrier and its handle after the magazine 24 has been removed. When the magazine 24 is in position on the upper end of the handle its sleeve 22 covers the extensions 21.

33 is a combined annular spring seat and carrier guide which is arranged at the point where the tip 2 merges into the barrel, 32 is a compression spring on the seat 33, and 34 is an annular spring plate at the upper end of the spring 32. The spring is com-

pressed when the slide 13 of the carrier which has been moved into active position, bears on the plate 34 as shown in Fig. 2. The plate 34 is shifted with the carrier in compressing the spring and moves away from the slides 13 of those carriers which are still in the initial position. It will be understood that if all carriers are in the initial position their slides 13 are engaged and retained by the spring plate 34 under the pressure of the distended spring 32. When one of the carriers is moved into active position the other carriers are no longer supported by the spring 32 and therefore the means referred to must be provided for retaining them in their initial position.

Referring now to Figs. 1 to 3, the handles 15 are channeled and provided with projecting insertions or plates in the color of the lead in the corresponding carrier 3. When a carrier has been moved into active position as shown at the left in Figs. 1 and 2, the spring 14 pushes the block 36 into the corresponding hole 37 as described, locking the carrier in its active position. For returning the carrier into its initial position the knob on the block 36 which projects from the hole, is depressed with one finger, the carrier is released and the spring 32 pushes it back into its initial position.

The magazine 24 and its outer sleeve 22 are connected by a barrel 43 which is in line with the upper end of the barrel 1, and by rivets 44. A knob 42 is screwed on the upper end of the magazine 24 with a threaded extension 45. Obviously any other means might be provided for connecting the magazine 24 and the sleeve 22. 38 is the bottom of the magazine which is held by two parallel ribs and so positioned with respect to the lower end of the magazine that the heads 11 in the initial position of the carriers 3 project into the magazine 24 below the bottom 38, as shown at the right in Fig. 2. The magazine 24 and the sleeve 22 obviously brace the slotted portion of the barrel on the inside and the outside in a very effective manner.

39 is a frusto-conical cam which projects downwardly from the bottom 38 of the magazine. This cam engages and deflects radially the heads 11 at the upper ends of the tubular carrier extensions 8 when they are projected towards their initial position by the spring 32. The heads 11 are not only arrested but also clamped between the cam 39 and the inner wall of the magazine 24. By these means the carriers are retained in their initial position when one of them is moved into active position and the pressure of spring 32 is taken off. The lower ends of the carriers which are in their initial position project downwardly from the combined guide and seat 33 at the lower end of the spring 32 by which they are held out of contact with the spring 32.

Means for holding the carriers 3 in their initial position may also be provided on the slots 17 and an example is illustrated in Figs. 4 and 5. Each slot has a pair of inwardly projecting lugs 40 in such position that the pin of the corresponding handle 15 overcomes the resilient resistance of, and is retained by, the lugs returning into their initial position after having been moved apart by the pin.

The tubular extensions 8 of the carriers 3 which are of square section in this instance and without the heads 11 illustrated in Figs. 1 to 3, here engage an inverted hollow taper 41 at the lower end of the magazine 24. In the initial position of the carriers the upper ends of their tubular extensions 8 bear on the inclined wall of the taper 41 and are forced inwardly. The handle 15, with its pin held in the slot 17, acts like a pivot for a double-armed rocking lever so that the lower end of the carrier 3 is applied to the seat 33 or the tip 2 at slight pressure.

In the example illustrated in Figs. 4 and 5, the handles 15 are serrated for facilitating their manipulation. The interstices of the serrations are filled in at the bottom with colored matter corresponding to the color of the leads in the carriers.

The magazine 24 is slightly modified as compared with that illustrated in Figs. 1 and 2. The barrel 43 is dispensed with and the sleeve 22 is secured to the magazine by a rib 46.

Otherwise the design and operation of the pencil illustrated in Figs. 4 and 5 are similar to those of the pencil illustrated in Figs. 1 to 3.

The operation of my pencil is very convenient. The particular carrier required is moved into active position by one finger of the hand which holds the pencil ready for writing. The writer need not pay any attention to the proper positioning of the handle 15 as it is automatically arrested in the active position of the carrier by the spring catch 36. If it is desired to return the carrier into its initial position the block 36 is pushed back with one finger and with the pencil still held in writing position, whereupon the carrier is immediately returned into its initial position by the automatic spring 32 without any effort on the part of the writer. As soon as one of the carriers has been returned into its initial position, another carrier may be pushed into active position.

The pencil consists exclusively of parts which are simple and easily assembled, having regular geometrical shapes and being particularly suitable for quantity production.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:—

1. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving

said carriers into and out of active position, and a return spring in said barrel common to and surrounding all said lead carriers which is so positioned as to be engaged and compressed by that carrier which is moved into active position.

2. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a spring plate mounted to slide in said barrel and adapted to be engaged by that carrier which is moved into active position, a spring seat arranged in said barrel in line with said spring plate, and a compression spring inserted between said plate and said seat.

3. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a spring plate mounted to slide in said barrel and adapted to be engaged by that carrier which is moved into active position, a combined spring seat and annular guide for said carriers arranged in said barrel in line with said spring plate, and a compression spring inserted between said plate and said seat.

4. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a separate slide for each carrier which is operatively connected to the corresponding carrier-moving means and engages the inner wall of said barrel, and a return spring in said barrel common to and surrounding all said lead carriers which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

5. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

6. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, spring catches operatively connected to said carriers for holding them in active position, and a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position.

7. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, a spring catch per carrier which is connected to said slide by said handle, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

8. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, a spring catch per carrier which is connected to said slide by said handle, a block on said spring catch which is wider than the corresponding slot and adapted to enter a hole in said barrel in the active position of the corresponding carrier, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

9. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier having serrations and layers of color at the bases of the serrations for indicating the color of the lead in the corresponding carrier, each handle extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

10. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position, each slot having an extension at its upper end which is so large as to admit the handle into the interior of said barrel.

11. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, means on said slots for exerting resilient resistance to the movement of said carriers, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

12. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle

per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, lugs projecting inwardly from the sides of said slots for exerting resilient resistance to the movement of said carriers, and a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position.

13. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and means on said magazine for limiting the upward movement of said carriers under the action of said return spring.

14. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and means on said magazine for moving the ends of said carriers into frictional engagement with the inner wall of said barrel.

15. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and a tapered cam on the lower end of said magazine for clamping the ends of said carriers between said cam and the inner wall of said barrel.

16. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and a tapered sleeve at the lower end of said magazine for holding said carriers in their inactive position.

17. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and a tapered sleeve at the lower end of said magazine for engaging the upper ends of said carriers so as to rock the carriers about said carrier-moving means and to move their lower ends toward the inner wall of said barrel.

18. A magazine pencil comprising a barrel, lead carriers in said barrel, means for moving said carriers into and out of active position, a return spring in said barrel which is so positioned as to be engaged and compressed by that carrier which is moved into active position, a detachable magazine at the upper end of said barrel, and a sleeve extending downwardly from said magazine and fitting the outer wall of said barrel for bracing its slotted portion.

19. A magazine pencil comprising a slotted barrel, lead carriers in said barrel, a handle per carrier extending through the corresponding slot and connected to the carrier, a slide per carrier which is secured to the inner end of the handle and to the corresponding carrier and engages the inner wall of said barrel, a return spring in said barrel which is so positioned as to be engaged and compressed by the slide of that carrier which is moved into active position, a detachable magazine at the outer end of said barrel, and a sleeve fitting the outer wall of said barrel and extending downwardly beyond said extensions.

In testimony whereof I affix my signature.

ALBERT HIRTH.