Aug. 28, 1951 H. BECKER ET AL 2,565,715

PENCIL WITH LEAD ADVANCING AND TENSIONING MECHANISM

Filed Dec. 10, 1948

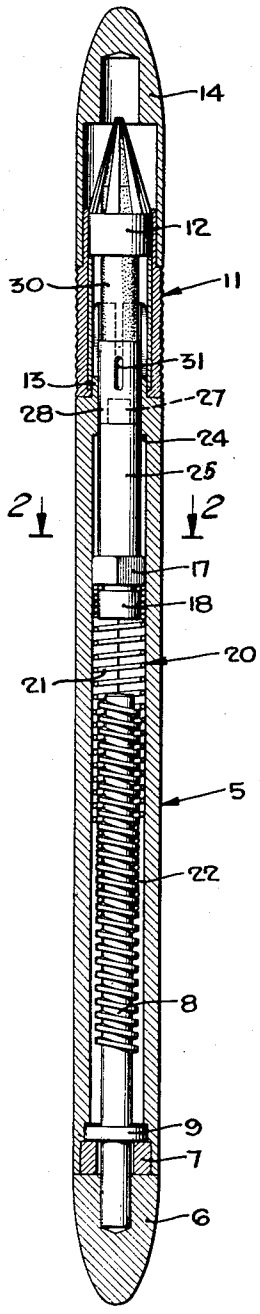


FIG. 1.

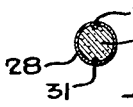


FIG. 4.

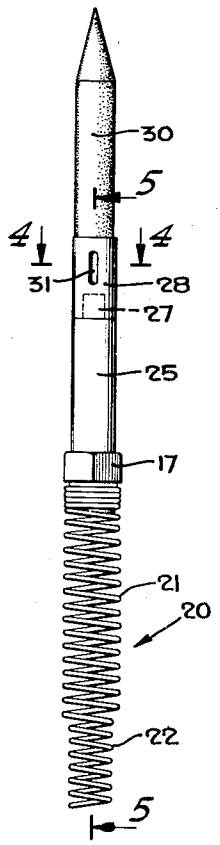


FIG. 3.

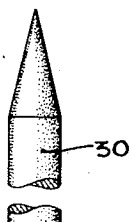


FIG. 9.

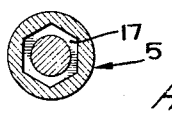


FIG. 2.

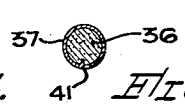


FIG. 7.

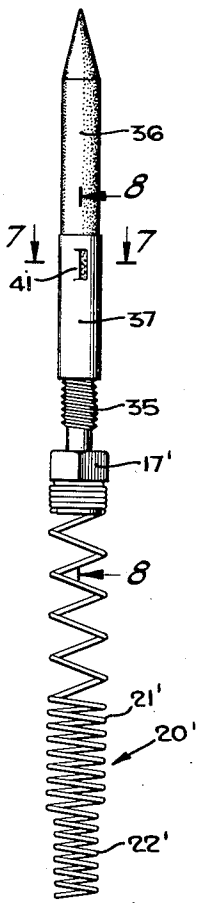


FIG. 6.

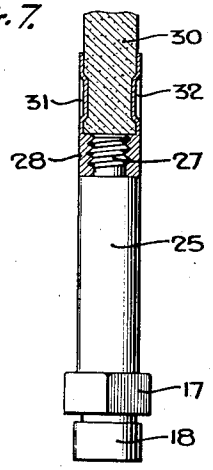


FIG. 5.

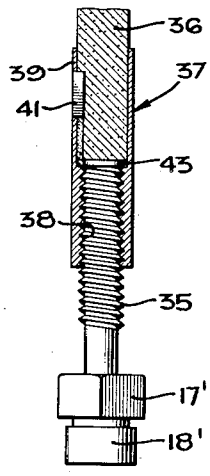


FIG. 8.

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PENCIL WITH LEAD ADVANCING AND TENSIONING MECHANISM

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Application December 10, 1948, Serial No. 64,585

8 Claims. (Cl. 120—9)

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This invention relates to a cosmetic device, and particularly to improved lead feeding and replaceable lead units for a combination renewable eyebrow and/or china pencil and sharpener, such as is disclosed and claimed in Becker co-pending application, Ser. No. 27,457, filed May 17, 1948, now U. S. Patent No. 2,519,625 of August 22, 1950.

As described in this co-pending application, china and eyebrow pencil leads or cores are composed of soft wax-like substances, which are difficult to sharpen with a knife or razor blade. The present invention utilizes the same principles of sharpening; that is, an internal conical sharpener into which the lead is resiliently advanced at a predetermined pressure of a spring. In the co-pending application above mentioned, there is disclosed a long threaded rod within a rotatable nut, behind which a spring is positioned for providing the proper pressure of the lead within the sharpener. This prior construction, although operating satisfactorily, employs a plurality of concentric sleeves in addition to the lead holding rod and nut. The advancing and tensioning mechanism hereinafter described in detail performs equally well, involves fewer parts, and is one which may be manufactured at a much lower cost. Primarily, it uses a two-diameter spring element, the smaller diameter portion functioning as a threaded nut, and the larger diameter portion, as a spring. The spring advancing threaded rod is now rotatable by the end tip of the pencil case.

In addition to the above improvement, the lead socket formerly used, from which the old lead had to be removed with a pin or similar sharp instrument, is now held in a screw socket, which is supplied with the lead and need only be threaded on the lead holder. A modification is disclosed in which the socket is also threaded on the holder, but further advancement of the socket ejects the lead from its socket. Either of these improvements facilitates the changing of leads in the pencil.

The principal object of the invention, therefore, is to provide an improved mechanism for sharpening a pencil and changing the lead therein.

Another object of the invention is to provide an improved lead advancing and tensioning means for a pencil lead sharpener.

A further object of the invention is to provide an improved lead holder for a pencil which facilitates the changing of new leads for used leads.

Although the novel features which are believed to be characteristic of this invention will be

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pointed out with particularity in the appended claims, the manner of its organization and the mode of its operation will be better understood by referring to the following description, read in conjunction with the accompanying drawings, forming a part hereof, in which:

Fig. 1 is a cross-sectional view of a combination eyebrow pencil and sharpener embodying the invention.

Fig. 2 is a cross-sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is an elevational view of the lead holder and lead advancing unit of the pencil.

Fig. 4 is a cross-sectional view taken along the line 4—4 of Fig. 3.

Fig. 5 is a view, partially in cross-section, taken along the line 5—5 of Fig. 3.

Fig. 6 is an elevational view showing a modification of the lead holder and spring.

Fig. 7 is a cross-sectional view taken along the line 7—7 of Fig. 6.

Fig. 8 is a view, partially in cross-section, taken along the line 8—8 of Fig. 6, and

Fig. 9 is a detailed view of one form of lead holder.

Referring now to the drawings, in which the same numerals identify like elements, the casing for the pencil includes a main barrel 5 and an end cap 6 rotatable on a sleeve 7, pressed into the lower end of barrel 5. The cap 6 has the end of a threaded rod 8 pressed therein, the sleeve 7 being held between the cap and a flange 9 on the rod 8.

At the other end of the barrel 5 is the sharpener unit 11 having a sharpener 12 at one end thereof, such as disclosed in the above mentioned co-pending application. The unit 11 slides on the barrel 5 over a sleeve 13, on which it is rotatable to sharpen the lead. The sharpener is covered by a cap 14 slidable on and off the upper portion of unit 11. Thus, when the pencil is not in use, all sections 5, 6, 11, and 14 are as shown in Fig. 1.

Now, should it be desired to place the pencil in use, the cap 14 is grasped, and, because there is greater friction between the cap 14 and unit 11 than between unit 11 and sleeve 13, the sharpener is removed with the cap 14. The lead 30 is now exposed. Should it be desired to sharpen the pencil, the unit 11 is held firmly, when on barrel 5, and the cap 14 removed from the unit, the sharpener thus remaining on the barrel to be rotated when the lead is fed therein, as will now be described.

The insides of the barrel 5 include a lead holder mounting unit having a flat sided portion and a

lower, cylindrical portion 13, on which is fixedly positioned one end of a spring 20 having a large diameter portion 21 and a smaller diameter portion 22. The sizes of these portions are such that small diameter portion 22 will thread on the threads of rod 8, while the larger diameter portion 21 will slip over the rod threads. Thus, rotation of rod 8 will advance or withdraw spring 20 and the unit 17, which is slidable longitudinally within barrel 5 up to shoulder 24, but not rotatable within the barrel.

The upper portion of unit 17 is in two forms. As shown in Figs. 1, 3, 4, 5, and 9, it has a cylindrical body 25 on the end of which is a threaded portion 27. On the portion 27 is threaded a socket 28, in which is the lead 36, the socket being crimped inwardly at 31 and 32 to hold the lead therein. When the lead is worn down so it cannot be sharpened, it is only necessary to unthread the socket 28 and thread on a new combination socket and lead, the leads being provided with their sockets as a unit, as shown in Fig. 9.

The other modification of the lead holder is shown in Figs. 6, 7, and 8. In this form, the upper portion 35 of unit 17' and 18' is threaded, thus eliminating cylindrical section 25. The lead 36 is now held in an elongated socket 37, which has an internally threaded section 38 and a lead holding section 39, which is crimped-in at 41 to form a holding element. (See Fig. 8.) Between the lower end of lead 36 and the shoulder between the threaded portion 38 and lead holding portion 39 is a washer disc 43. In this modification, therefore, the lead 36 is ejected from socket portion 39 by threading the socket farther on the threaded portion 35, it being thus unnecessary to touch the lead to remove it from its socket. A new lead may then be inserted when the socket is threaded back to its position shown in Fig. 8.

In Fig. 6, another form of spring 20 is shown as spring 20', this form having the upper turns of its upper large diameter section 21' expanded, while the small diameter section 22' remains the same as section 22 in Figs. 1 to 5, inclusive. In this manner, different lengths of barrels 5 and screw rods 8 may be accommodated with the same spring.

As mentioned above, the sharpening unit functions in the same manner as the unit disclosed and claimed in the above mentioned co-pending application. That is, to provide a predetermined pressure of the lead within the sharpener 12, the rod 8 is turned, advancing the lead into the sharpener under tension of spring portions 21 and 21'. The sharpener is then rotated to provide the desired point on the lead.

We claim:

1. A lead advancing mechanism for a pencil sharpener, comprising a barrel, a rotatable element on one end of said barrel, said element having a threaded rod thereon extending into said barrel, a lead holder non-rotatable with respect to said barrel for holding a lead to be advanced into a lead sharpener adapted to be attached to the other end of said barrel, and a two-diameter spring non-rotatable with respect to said barrel threaded on the threads of said rod and fixedly attached to said holder within said barrel, rotation of said rod advancing said lead holder and lead into said sharpener under tension of a portion of said spring.

2. A lead advancing mechanism in accordance with claim 1, in which the small diameter section of said spring is threaded on said rod, the large diameter section being larger than the diameter of said rod and passing over said rod to provide pressure between said lead and said sharpener determined by the resiliency of the large diameter section of said spring.

3. A lead advancing mechanism for a pencil sharpener, comprising a barrel, a rotatable element on one end of said barrel, said element having a threaded rod thereon extending into said barrel, a lead holder for holding a lead to be advanced into a lead sharpener adapted to be attached to the other end of said barrel, and a two-diameter spring threaded on the threads of said rod and fixedly attached to said holder within said barrel, rotation of said rod advancing said lead holder and lead into said sharpener under tension of a portion of said spring, said lead holder including a flat sided portion, a threaded socket and a threaded body portion, said socket being threaded on said body portion.

4. A lead advancing mechanism for a pencil sharpener, comprising a barrel, a rotatable element on one end of said barrel, said element having a threaded rod thereon extending into said barrel, a lead holder for holding a lead to be advanced into a lead sharpener adapted to be attached to the other end of said barrel, and a two-diameter spring threaded on the threads of said rod and fixedly attached to said holder within said barrel, rotation of said rod advancing said lead holder and lead into said sharpener under tension of a portion of said spring, said lead holder including a unit with a flat sided portion slidable longitudinally within said barrel, said unit having an upper threaded portion, and an internally threaded socket for said lead, said lead being ejected from said socket by threading said socket on said upper threaded portion.

5. A tensioning mechanism for the inside of a pencil barrel, comprising a rotatable, threaded rod longitudinally disposed in said barrel, a unit non-rotatable with respect to but longitudinally slidable in said barrel toward a rotatable pencil sharpener adapted to be attached to the other end of said barrel, means for attaching a pencil lead to said unit, and a two-diameter spring fixedly attached to said unit and threaded on said rod, rotation of said rod in opposite directions advancing and retracting said spring, said unit and said lead attaching means with respect to said sharpener.

6. A tensioning mechanism for the inside of a pencil barrel, comprising a rotatable, threaded rod longitudinally disposed in said barrel, a unit longitudinally slidable in said barrel, means for attaching a pencil lead to said nut, and a spring interconnecting said unit and said threaded rod, rotation of said rod in opposite directions advancing and retracting said spring, said unit, and said lead attaching means, said spring being non-rotatable with respect to said pencil barrel and having two sections, one section having a diameter and pitch to permit threading on the threads of said rod, and the other section having an internal diameter greater than the external diameter of the threads of said rod.

7. A tensioning mechanism in accordance with claim 5, in which said unit is slidable and non-rotatable in said barrel, and said spring maintains a desired pressure between said lead and said sharpener during rotation of said sharpener.

8. A pencil lead advancing and tensioning mechanism for a sharpener for lead, comprising a cylindrical barrel, a threaded element slidable within said barrel and non-rotatable with respect to said barrel, a lead and socket therefor thread-

able on said element, an elongated, threaded rod rotatable within said barrel, and longitudinally fixed with respect to said barrel, and a spring having one section of a diameter and pitch to be threaded on said rod and another section having an internal diameter larger than the external diameter of said rod and attached to said slidable means, rotation of said elongated threaded rod moving said socket and said lead to and from a sharpener adapted to be attached to said barrel, said large diameter section of said spring tensioning said lead in said sharpener.

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