Aug. 25, 1942. J. P. LYNN 2,293,993

ERASER FOR MECHANICAL PENCILS

Original Filed June 15, 1938

Fig. 1.

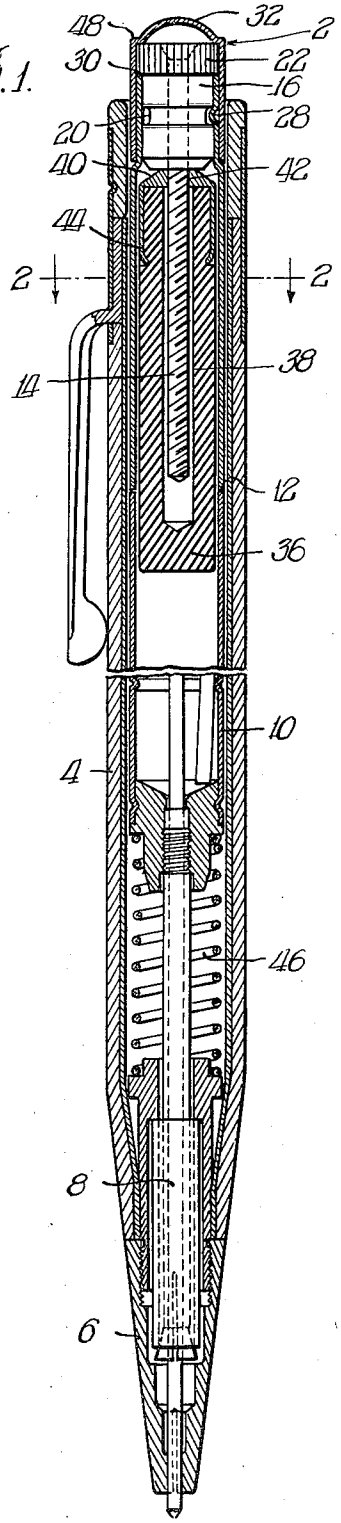


Fig. 2

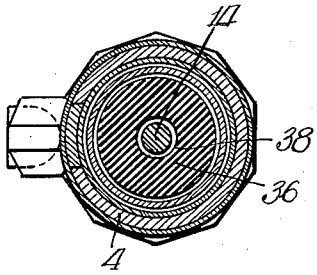


Fig. 3.

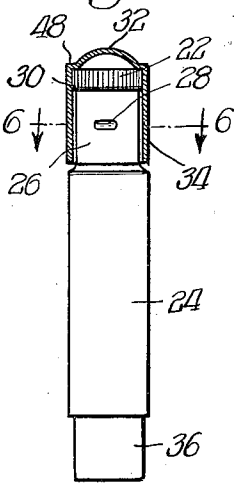


Fig. 5

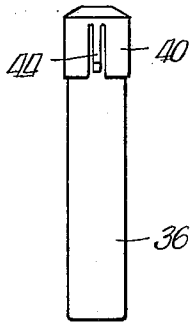


Fig. 4

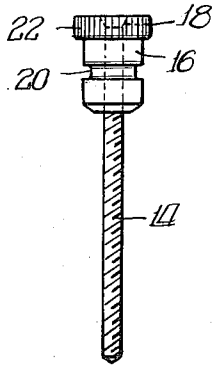
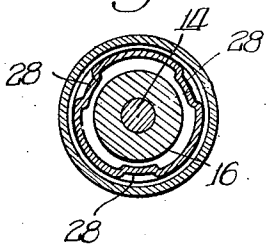


Fig. 6.



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ERASER FOR MECHANICAL PENCILS

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Original application June 15, 1938, Serial No. 213,754. Divided and this application March 7, 1940, Serial No. 322,706

7 Claims. (Cl. 120—38)

This invention relates to novel eraser constructions which are provided with elongated erasers capable of being propelled and retracted within eraser holding containers and which bodily may be housed within and removed from the upper end of the pencil barrel, as desired, this application being a division of application Serial No. 213,754, filed June 15, 1938.

Among the objects of the present invention is to provide an eraser assembly which is capable of being bodily removed from the upper end of a pencil and reinserted therein from either end so that a closing cap is provided for the end of the pencil in one position or the exposed eraser is provided in the other position.

Another object of the invention is to provide an eraser assembly which is utilized in combination with the step-by-step type of lead propelling mechanism and in which the eraser assembly serves as the means at the head end of the pencil for exerting the pumping action on the lead propelling mechanism.

The invention further relates to improved eraser propelling and retracting mechanism whereby a very efficient construction and operation result while at the same time providing a simple and inexpensive arrangement of parts.

Other objects, features, capabilities and advantages are comprehended by the invention, as will later appear and as are inherently possessed thereby.

Referring to the drawing—

Figure 1 is a longitudinal cross-sectional view of an eraser assembly constructed in accordance with this invention;

Figure 2 is a cross-sectional view taken on the line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is an elevational view, partly in cross-section, of the eraser assembly shown in Figure 1 of the drawings;

Figure 4 is a side elevational view of the threaded stem and head piece utilized in the eraser assembly shown in Figure 3;

Figure 5 is a side elevational view of the eraser and cap member utilized in the assembly shown in Figure 3; and

Figure 6 is a cross-sectional view taken on the line 6—6 through the eraser assembly of Figure 3 and looking in the direction of the arrows.

Referring now more in detail to the drawing, an eraser assembly 2 selected to illustrate the invention is shown in connection with a pencil having a body 4 of substantially cylindrical shape throughout a portion of its length, the same having an opening at one end and being provided with a tapered portion forming a tip 6 at its other end. Enclosed within said body 4 is a step-by-step type lead propelling or feeding mechanism referred to generally by the reference numeral 8, and including a lead magazine 10 connected to and being adapted for operation of the lead propelling mechanism 8, the said magazine 10 terminating short of the upper open end of the body 4, as at 12.

The eraser mechanism to which this invention is particularly directed is composed of a threaded screw 14 which is permanently attached to a head 16. The head is preferably drilled and inserted over the screw member, with the screw end enlarged, as at 18, in the opening at the top of the head so as to hold the members in fixed relationship. The head is provided with an annular groove 20 and a flange 22 preferably having a knurled outer edge.

Surrounding the threaded member 14 is a tubular body portion or housing element 24 having its upper end reduced, as at 26, for engaging that portion of the head below the flange 22. The fit at this point is so adjusted that the housing element 24 may turn relative to the head when desired. The tubular body portion 24 has indented portions 28 which fit within the groove 20, whereby the housing element 24 is held against axial displacement, while at the same time being free to rotate on the head.

Preferably a cap member or housing element 30 having a domed end 32 is fitted over the knurled flange 22 and fixedly attached thereto. The depending portion 34 of the housing element 30 is of such diameter that it forms a continuation of the cylindrical surface of the tubular body portion or housing element 24. It will thus be apparent that the housing element 24 may be held in the fingers of one hand while the housing element is turned by the other hand, and that during such operation there will be a relative turning movement between the tubular body or housing element 24 and the screw 14.

Disposed within the tubular body or housing element 24 is an elongated cylindrically-shaped eraser 36 having a central opening 38 therein. This eraser has one end fitted in a cap 40 which has a central screw-threaded opening 42 at the top for engagement with the screw 14. The cap further has spring fingers 44 for tightly gripping the eraser, whereby the eraser is held against axial and rotational movement relative to the cap member. Furthermore, the spring fingers 44, by virtue of their construction, are caused to project

slightly outwardly from the exterior cylindrical surface of the cap member 40, whereby they provide a slight frictional drag on the interior of the cylindrical body or housing element 24.

The construction is such that although the eraser is not positively held against rotation in the housing element 24, it will, nevertheless, resist such rotation due to the frictional action of the fingers 44, whereby the turning of the housing element 30 with reference to the housing element 24 will cause the eraser to be projected from the housing element 24 or drawn into the housing element 24, according to the direction of rotation.

Also an important feature is that when the eraser is turned into the housing element 24 to a maximum possible extent, the parts will not stick or bind in such manner as might strip the threads of the screw, but instead the eraser will turn bodily in the eraser holding housing element and thereby avoid all damage to the device.

The opening 38 in the eraser is at all times sufficiently free to accommodate the screw without interference therewith. Preferably the opening 38 of the eraser does not extend all the way through, but this is actually immaterial. The eraser functions in a satisfactory manner even though it has a central hole therethrough.

It will thus be apparent that when the eraser wears down the housing element 30 may be turned relative to the housing element 24 to cause it to project from the body a sufficient amount to enable it to be readily used. If desired, the eraser then can be retracted into the housing element 24 or it may be left in the adjusted position.

As clearly shown in Figure 1 of the drawing, the eraser assembly hereinabove described is so formed that the same fits within the upper end of the body 4 whereby the end of the housing element 24 abuts the upper end of the magazine tube 10, and, while so doing, projects above the upper end of the body 4 to provide a portion which may be readily pressed by the thumb to give it a pumping in-and-out movement against the action of the spring 46 of the lead propelling mechanism 8. In this way the eraser assembly acts as a unit as a part of the lead propelling mechanism.

It will be further noted that the eraser assembly thus illustrated is capable of being reversed in position so that the cap member or housing element 30 is inside of the pencil and the end of the eraser projects beyond the end thereof. This presents the end of the eraser in a position to be used in the usual manner, but at the same time the eraser assembly is still capable of being used as a part of the lead propelling mechanism. In this position the upper edge 48 of the cap member or housing element rests on the upper end 12 of the lead magazine tube and transmits the thrust in exactly the same manner as when the eraser assembly is in the reverse position.

While I have herein described and upon the drawing shown an illustrative embodiment of the invention, it is to be understood that the invention is not limited thereto but may comprehend other consructions, arrangements of parts, details and features without departing from the spirit of the invention.

I claim:

1. A unitary and adjustable eraser assembly in which the eraser is capable of being advanced and retracted comprising an elongated eraser and a housing therefor, said housing having parts rotatable relative to each other, and one of said parts having threaded association with said eraser, said eraser assembly having an outside surface of substantially uniform cross-section from one end to the other.

2. A unitary eraser assembly comprising a housing of multi-part construction provided with means connecting two of said parts to limit movement of said parts to relative rotational movement, a screw-threaded member mounted in one of said parts and extending into the other of said parts, an eraser having a cap disposed within said other of said parts and threadedly engaging said screw-threaded member, and means cooperating with said cap to hold said eraser against rotational movement within said other of said parts whereby said eraser is advanced and retracted in said housing upon relative rotational movement of said parts.

3. A unitary eraser assembly comprising a screw-threaded member having an enlarged head, a housing element fixed thereto, a second housing element associated with said first-named housing, means providing a rotatable connection between said second-named housing and said enlarged head whereby said housing elements are relatively rotatable with one another, an eraser having a cap threadedly engaging said screw-threaded member, and said cap having means frictionally engaging said second-named housing element to hold said eraser against rotational movement whereby said eraser is advanced and retracted in said assembly upon relative rotational movement of said housing elements.

4. A unitary eraser assembly comprising a screw-threaded member having an enlarged head. a housing element fixed thereto, a second housing element associated with said first-named housing, said enlarged head and said second-named housing element having a cooperating groove and projection providing a rotational connection between said second-named housing and said enlarged head whereby said housings are relatively rotatable with one another, an eraser having a cap threadedly engaging said screw-threaded member, and said cap having means frictionally engaging said second-named housing element to hold said eraser against rotational movement whereby said eraser is advanced and retracted in said assembly upon relative rotational movement of said housing elements.

5. A unitary eraser assembly comprising a screw-threaded member, a housing element fixed therewith, a second housing element rotatably mounted on said screw-threaded member, an eraser disposed in said second-named housing element and having a bore for receiving said screw-threaded member, an eraser cap mounted on said eraser and having threaded engagement with said screw-threaded member, and said cap having a spring finger frictionally engaging said second-named housing element to prevent rotation of said eraser whereby said eraser may be advanced and retracted upon relative rotation between said housing elements.

6. In a mechanical pencil, the combination of a housing, a unitary eraser assembly removably associated with said housing, said assembly comprising a housing connected to the housing for said pencil, a screw-threaded member fixed to said second-named housing, a sleeve rotatably connected to said screw-threaded member and said second-named housing, and an eraser having

means threadedly engaging said screw-threaded member and means cooperating with said sleeve to prevent rotation thereof whereby said eraser is advanced and retracted in said sleeve upon relative rotational movement of said sleeve and said second-named housing.

7. A unitary eraser assembly comprising a housing having means adapted to be removably connected to a pencil housing, a screw-threaded member, said eraser housing having a cap connected to said screw-threaded member, said eraser housing further including a sleeve in which said screw-threaded member is rotatably mounted, an eraser disposed in said sleeve and embracing said member, an eraser cap secured to said eraser and having screw-threaded engagement with said member, and said cap having friction means engageable with said sleeve to hold said eraser against rotation whereby said eraser is advanced and retracted in said sleeve upon relative rotational movement of said sleeve and said first-named cap.

JOHN P. LYNN.