March 5, 1940. F. M. HALE 2,192,470

ADJUSTABLE ERASER

Filed Feb. 21, 1938

Fig. 1.

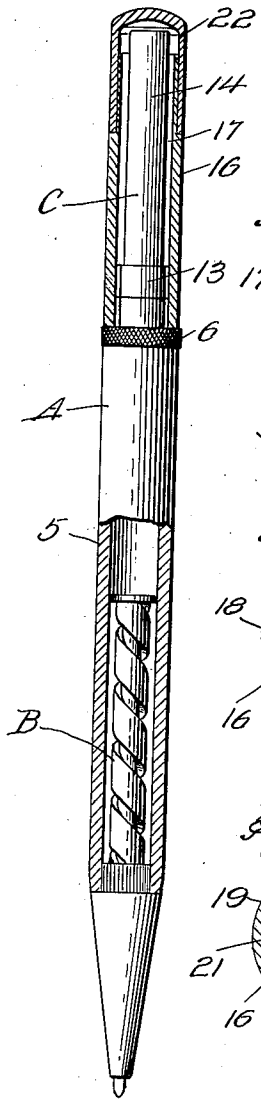


Fig. 4.

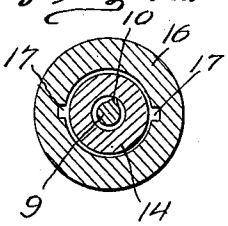


Fig. 5.

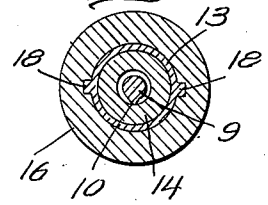


Fig. 6

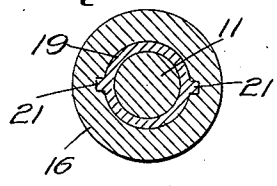
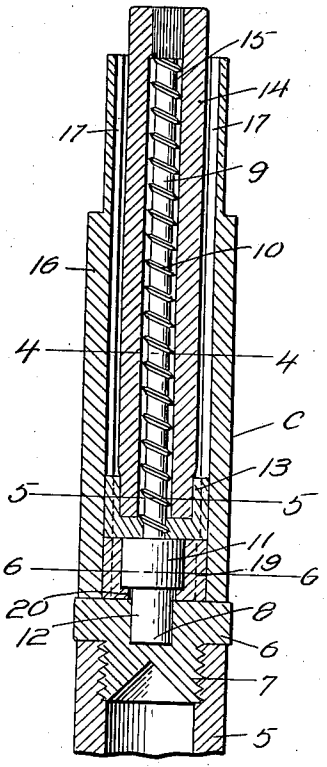


Fig. 2.



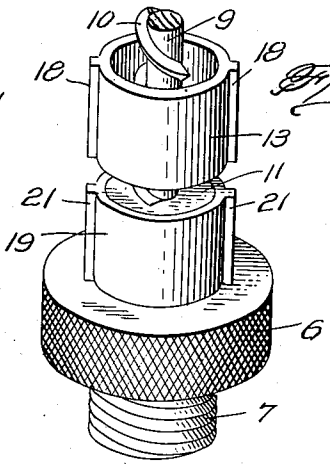


Fig. 3.

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2,192,470

ADJUSTABLE ERASER

Frank M. Hale, Mexico, D. F., Mexico

Application February 21, 1938, Serial No. 191,805

3 Claims. (Cl. 120—38)

This invention relates to new and useful improvements in mechanical pencils generally, although more particularly to such pencils which are equipped with extensible and renewable erasers.

The principal object of my invention is to provide a mechanical pencil with a relatively long eraser which is adapted to be mechanically extended into position for use or retracted therefrom.

Another object of my invention is to provide a device of the above character in which the eraser can be readily renewed.

Another object of my invention is to provide a device of the above character which is simple in construction, durable, and economical to manufacture.

With these and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a front elevation, partly in section, of a mechanical pencil constructed in accordance with my invention,

Figure 2 is an enlarged longitudinal section of the upper portion thereof,

Figure 3 is an enlarged detail view of the operating assembly,

Figure 4 is a horizontal section taken on line 4—4 of Figure 2,

Figure 5 is a horizontal section taken on line 5—5 of Figure 2, and

Figure 6 is a horizontal section taken on line 6—6 of Figure 2.

Like reference numerals designate corresponding parts throughout the several figures of the drawing.

Referring to the drawing in detail, my invention is embodied in a mechanical pencil A having the usual pencil lead propelling means B and my improved eraser propelling and retracting means C.

The pencil A includes the usual tubular barrel 5 which houses the lead propelling means. The upper end of the barrel 5 is internally threaded to receive a knurled mounting base 6 for the eraser propelling means C, said base also serving as a closure for the barrel 5. The base 6 is provided with a downwardly extending threaded stud 7 engageable with the threaded end of the barrel 5, and the upper face of the base is provided with an axial recess 8. A longitudinally extending screw shaft 9 having left-handed threads 10 thereon, is provided at its lower end with an enlarged cylindrical end portion 11 and a stud 12 which depends therefrom. The stud 12 is rigidly mounted in the recess 8 by a drive fit.

A cup 13 is located directly above the enlarged end portion 11 and is threadably engaged with the shaft 9, said cup frictionally receiving the lower end of an elongated eraser 14 which is provided with a longitudinal bore 15 for receiving the shaft 9, said bore extending throughout the length of the eraser. An actuating sleeve 16 surrounds the eraser and is splined to the cup 13 through the medium of diametrically disposed longitudinal grooves 17, 17 formed in the inner face of the sleeve and cooperating splines 18, 18 formed on the cup. Thus when the sleeve 16 is rotated in either direction, the cup 13 will be likewise rotated and also moved longitudinally along the screw shaft 9, thereby either projecting or retracting the eraser with respect to the upper end of the sleeve. In order to retain the sleeve in alinement with the screw shaft and hold it from endwise movement when rotated about the shaft, a collar 19 is freely mounted on the enlarged portion 11 of the shaft and is provided at its lower end with an inner angular flange 20 which engages under said portion 11 with swivel effect. The collar is provided with diametrically disposed keys 21, 21 which are fitted tightly in the grooves 17, 17 of the sleeve sufficiently to hold the parts normally in fixed relation to each other except when excess force is applied endwise to separate them. A removable closure cap 22 is mounted on the upper end of the sleeve.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:

1. A holder for an eraser including a base element made and adapted to be mounted stationarily on the upper end of a pencil barrel, said base element being provided with an axial recess in its outer end, a longitudinally extending screw-shaft provided with an enlarged cylindrical inner end portion having an axial stud extended therefrom and fixedly mounted in said axial recess of the base element, an eraser-receiving and holding cup having a correspondingly screw-threaded axial opening in its bottom fitted on the threaded portion of said screw-shaft, an elongated eraser element of circular cross section throughout,

fixedly secured at its inner end in said cup and having a longitudinal bore for receiving said screw-shaft freely slidable therein and without interfitting threaded engagement therebetween, and an actuating sleeve surrounding said eraser element free of direct attachment thereto but attached at its inner end with swivel effect to the cylindrical enlargement of said screw-shaft whereby to rotate freely about the enlargement but without relative longitudinal movement, said sleeve having longitudinally slidable driving engagement with said eraser-receiving and holding cup whereby the cup rotates therewith and simultaneously moves lengthwise on the screw-shaft.

2. A holder for an eraser including a base element in the form of a screw-plug adapted to be fitted normally stationary in the upper end of a pencil barrel, said screw-plug being provided with an axial recess in its outer end, a longitudinally extending screw-shaft provided with an enlarged cylindrical inner end portion having an axial stud extended therefrom and fixedly mounted in said axial recess of the screw-plug with the inner end of said cylindrical enlargement spaced from the screw-plug, a cylindrical collar surrounding and freely rotatable about said cylindrical shaft enlargement and provided at its inner end with an inturned annular flange fitted rotatably under the inner end portion of said cylindrical shaft enlargement and in abutting relation to the adjacent end portion of said screw-plug, an actuating sleeve detachably but supportingly keyed at its inner end portion on said collar whereby to rotate fixedly with the collar in concentric spaced relation to said screw-shaft, said sleeve being longitudinally grooved internally, a cylindrical eraser-receiving and holding cup having a correspondingly screw-threaded axial opening in its bottom fitted on the threaded portion of said screw-shaft and provided with a circumferential spline fitted slidably in the longitudinal groove of said actuating sleeve whereby the cup rotates with the sleeve and at the same time moves lengthwise on the shaft, and an elongated tubular eraser element of circular cross section throughout, sleeved freely over said screw-shaft and without interfitting threaded engagement therebetween but fitted at its inner end portion in said eraser-receiving and holding cup whereby to rotate and travel lengthwise therewith.

3. A holder for an eraser including a base element made and adapted to be mounted stationarily on the upper end portion of a pencil barrel, a stationarily mounted elongated screw-shaft extending rigidly and axially from said base element, said shaft having a cylindrical enlargement near its inner end and the inner end of the enlargement being spaced from the adjacent end portion of the base element, a cylindrical collar surrounding said cylindrical enlargement of said screw-shaft and rotatable freely thereabout, said collar being provided at its inner end with an inturned annular flange engaged under said cylindrical enlargement of the screw-shaft and abutting the outer end of the base element, an actuating sleeve having its inner end portion detachably fitted on said collar but keyed thereto so as to rotate therewith and being thereby supported in concentric spaced relation about said screw-shaft, a cylindrical eraser-receiving and holding cup provided with a screw-threaded axial opening in its bottom fitted on the threaded portion of said screw-shaft and having a longitudinally slidable driving engagement with said actuating sleeve, whereby the cup rotates with the sleeve and simultaneously moves lengthwise on the screw-shaft, and an elongated eraser element of circular cross section throughout, secured at its inner end in said cup whereby to rotate and travel lengthwise therewith and having a longitudinal bore for receiving said screw-shaft freely and without interfitting threaded engagement therebetween.

FRANK M. HALE.