June 16, 1942. I. D. TEFFT ET AL 2,286,878

ADJUSTABLE ERASER HOLDER

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Fig. 1.

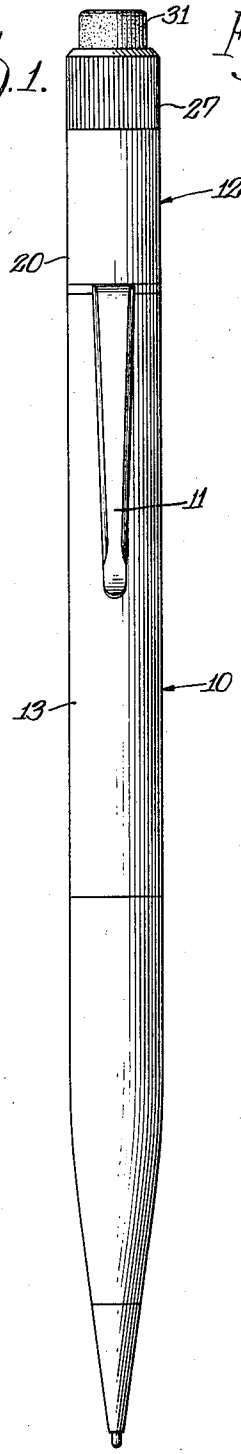


Fig. 2.

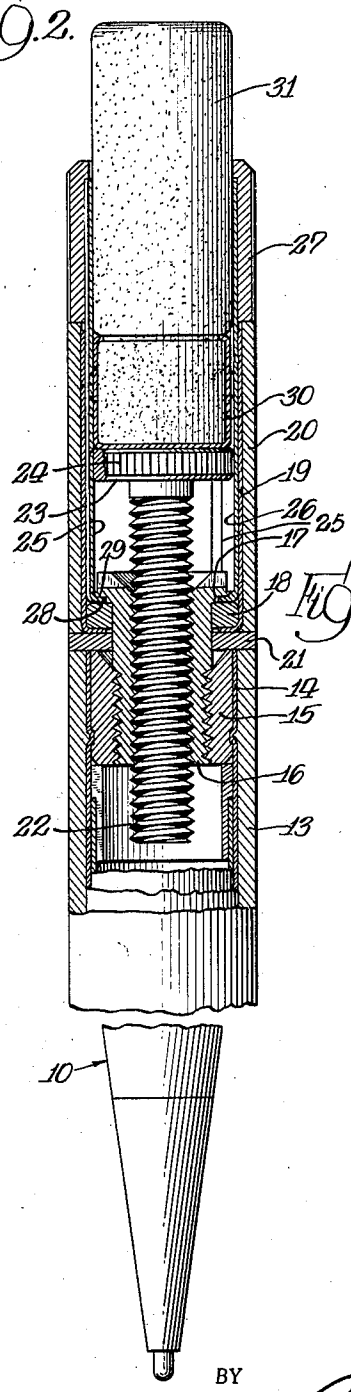
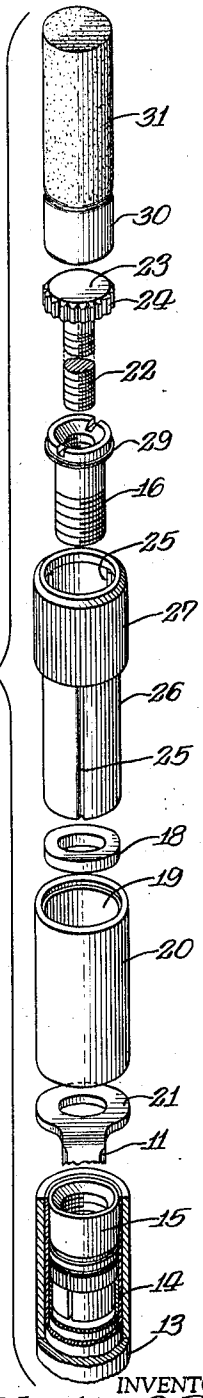


Fig. 3.



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Fig. 4.

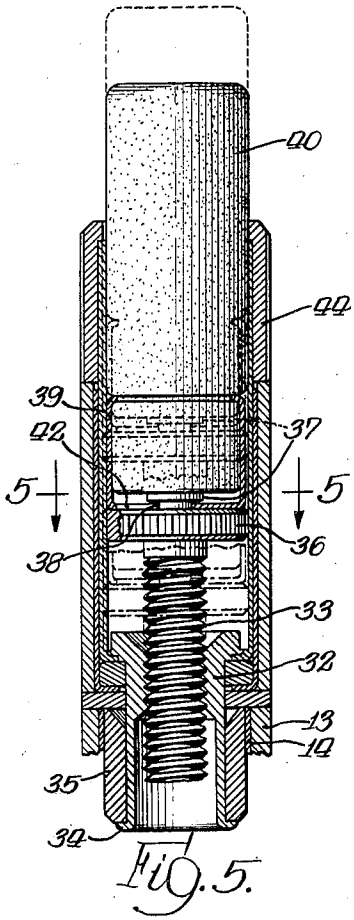
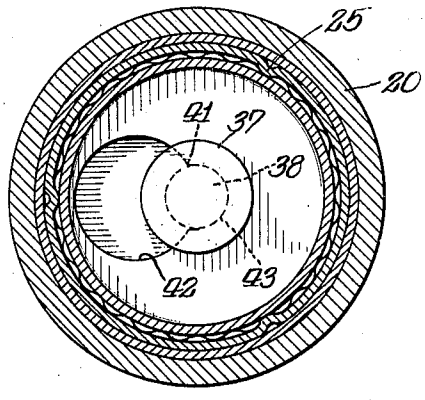


Fig. 5.



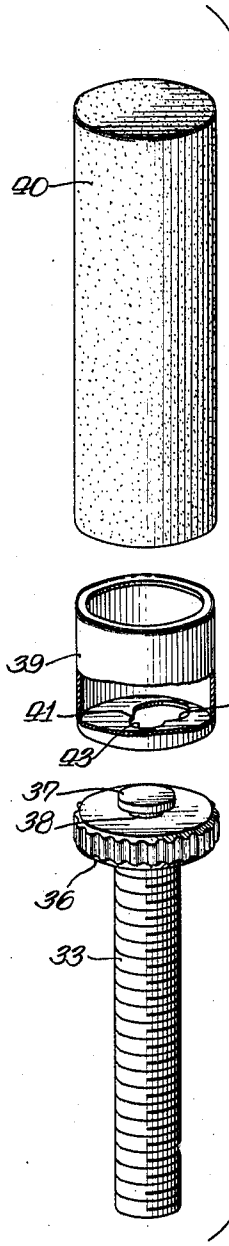


Fig. 6.

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Patented June 16, 1942 2,286,878

UNITED STATES PATENT OFFICE

2,286,878

ADJUSTABLE ERASER HOLDER

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Application January 10, 1941, Serial No. 373,914

8 Claims. (Cl. 120—38)

Our invention relates to adjustable eraser holders and is more particularly concerned with a device of this type that forms an integral part of a mechanical pencil.

One object of our invention is to provide an eraser holder that is capable of housing a considerable length of eraser and which incorporates a propelling mechanism whereby any desired portion of the eraser may be quickly and easily projected for use.

A further object is to devise a holder that is characterized by an expelling and a retracting action of the eraser.

A further object is to provide a holder of the character indicated which may be conveniently mounted on the end of a mechanical pencil as a smooth and attractive continuation of the body of the pencil and which is durable, compact, and simply and inexpensively constructed.

These and further objects of our invention will be set forth in the following specification, reference being had to the accompanying drawings, and the novel means by which said objects are effectuated will be definitely pointed out in the claims.

In the drawings:

Figure 1 is an elevation of a characteristic mechanical pencil showing our improved holder attached thereto.

Fig. 2 is an enlarged view of the pencil shown in Fig. 1, with the eraser holder and the propelling mechanism illustrated in section.

Fig. 3 is a perspective view showing in dispersed assembly the several parts of the holder.

Fig. 4 is a section of a modified type of holder which is characterized by an ejecting and a retracting action.

Fig. 5 is a section on the line 5—5 in Fig. 4.

Fig. 6 is a perspective view showing as a dispersed assembly certain essential parts of the holder.

Referring to Figs. 1 to 3, inclusive, the numeral 10 designates a mechanical pencil, or generally a pencil of any type, which is provided with the usual pocket-engaging clip 11 and with our improved eraser holder generally indicated by the numeral 12.

In the form illustrated, the pencil 10 is provided with the usual barrel 13 having a liner 14 within which is fixedly mounted at the upper end of the pencil as viewed in Fig. 2 an internally threaded bushing 15. A nut sleeve 16 is screwed tightly into the bushing 15 and this sleeve acts as a fixed nut for certain propelling mechanism presently described and also as the medium for connecting the eraser holder to the body of the pencil 10. For the latter purpose, the upper end of the sleeve 16 is provided with an annular shoulder 17 which clamps a washer 18, the inwardly flanged, lower end of a liner 19 that is mounted within a tubular housing 20, and the eye portion 21 of the clip 11 against the upper ends of the barrel 13 and bushing 15.

Threaded through the nut sleeve 16 is a propelling stem 22 having at its upper end a cylindrical head 23 whose lateral surface is serrated or toothed as at 24. These teeth are in driven engagement with one or more longitudinal ribs 25 provided in an actuating sleeve 26 that is journaled in the liner 19 and whose upper end is enlarged to provide a finger piece 27. Endwise movement of the sleeve 26 during rotation is prevented by inwardly flanging the lower end thereof as at 28 for engagement with an annular shoulder 29 that is concentric with the shoulder 17, it being understood that while the shoulder 17 firmly seats on the top surface of the washer 18, the shoulder 29 merely has sliding engagement with the top surface of the flange 28 so that the actuating sleeve 26 is not prevented from turning. The top surface of the propelling head 23 abuts the bottom of the usual eraser cup 30 that carries an eraser 31.

In Fig. 2, the eraser 31 is shown in partially ejected position and further ejection can be effected by rotating the finger piece 27 in an unscrewing direction for a right-hand thread which, by reason of the engagement of the teeth 24 with the ribs 25 and the fact that the sleeve 26 is restrained axially, is followed by a turning movement of the propelling stem 22 and a movement of the head 23 in an upward or expelling direction.

When it is desired to completely house the eraser 31, it is merely necessary to rotate the finger piece 27 in the opposite direction and, when the head 23 engages the upper end of the nut sleeve 16, further downward movement of the head 23 is prevented and if sufficient turning effort is applied to the finger piece 27 the teeth 24 may slide over the ribs 25 and emit a slight clicking sound to indicate to the user that the innermost position of the head 23 has been reached. The user can then force the eraser 31 into the holder by pressing on the eraser with a finger.

The modification illustrated in Figs. 4 to 6, inclusive, differs from that heretofore described in two major particulars, first, in the use of a rivet sleeve 32, corresponding to the nut sleeve 16, whose upper portion only is internally threaded to receive a propelling and retracting stem 33, while the lower portion is internally smooth and its lower extremity is outwardly flanged as at 34 for engagement with the lower end of a bushing 35 to definitely prevent any inadvertent axial movement of the sleeve. With this construction, therefore, it is not contemplated that the sleeve 32 can be removed from time to time for purpose of repair.

The second distinction consists in providing on the top of the head **36**, corresponding to the head **23**, an annular shoulder **37** that is spaced from the top of the head by a shank **38** having a smaller diameter. The top surface of the head **36** abuts in the usual manner the bottom of an eraser cup **39** which receives the lower end of the usual eraser **40**, and the bottom wall of the cup **39** is provided with a key slot **41** having a large portion **42** that is offset from the axis of the stem **33** and a small portion **43** that is coaxial with the stem. When the parts occupy the several positions illustrated in Fig. 4, the shank **38** extends though the slot portion **43** so that the shoulder **37** is disposed within the cup **39** below the lower end of the eraser **40**. Accordingly, when the finger piece **44** is rotated in an unscrewing direction for a right-hand thread, the head **36** will eject the eraser **40** in the manner heretofore described, but when the finger piece **44** is rotated in the opposite direction, the shoulder **37** engages the bottom wall of the cup **39** and retracts the eraser within the finger piece **44**.

It will be understood that the stem **33** possesses sufficient length to expose the shoulder **37** above the upper end of the finger piece **44** while still maintaining threaded engagement with the sleeve **32**. This arrangement is necessary in order to attach new erasers. The procedure in such a case is merely to register the large slot portion **42** with the shoulder **37** and, after the latter has passed within the cup **39**, the latter is moved laterally to cause the shank **38** to seat within the slot portion **43**. Otherwise, the parts of the holder are identical with those described in connection with the form shown in Fig. 2.

We claim:

1. An eraser holder comprising in combination, fixed nut means for attachment to a pencil, a propelling stem threaded through the nut means and having a head for ejecting contact with an eraser, and a rotatable actuating sleeve coaxial with the stem and held against axial movement by the nut means, the sleeve having a connection with the head adapted to cause the sleeve and head to rotate together and the head to move axially during rotation.

2. An eraser holder comprising in combination, fixed nut means for attachment to a pencil, a propelling stem threaded through the nut means and having a cylindrical head for ejecting contact with an eraser, the lateral surface of the head being serrated, and a rotatable actuating sleeve coaxial with the stem and held against axial movement by the nut means, the sleeve having one or more longitudinal guide ribs engageable with the serrations on the head for causing the sleeve and head to rotate together and the head to move axially during rotation.

3. An eraser holder comprising in combination, fixed nut means for attachment to a pencil, a stem threaded through the nut means and having a propelling and retracting head provided with means for detachably connecting the head to an eraser, and a rotatable actuating sleeve coaxial with the stem and held against axial movement by the nut means, the sleeve having a connection with the head adapted to cause the sleeve and head to rotate together and the head to move axially during rotation.

4. Adjustable erasing means for pencils comprising in combination, fixed nut means for attachment to a pencil, a headed stem threaded through the nut means, an eraser carried by a cup in coaxial relation to the stem, a shoulder extension on the head projecting through a key slot in the bottom of a cup whereby the head and shoulder respectively effect an ejection and retraction of the eraser when the head is rotated, and a rotatable actuating sleeve coaxial with the stem and held against axial movement by the nut means, the sleeve having a connection with a head adapted to cause the sleeve and head to rotate together and the head to move axially during rotation.

5. In combination with a pencil having an open end, internally threaded barrel, a nut sleeve screwed tightly in the barrel and having at one end a pair of concentric shoulders, the innermost shoulder limiting movement of the sleeve into the barrel, a propelling stem threaded through the sleeve and having a head for ejecting contact with an eraser, and a rotatable actuating sleeve coaxial with the stem and having one end thereof inwardly flanged to engage the outermost shoulder to restrain the sleeve against axial movement when rotated, the actuating sleeve having a connection with the head adapted to cause the actuating sleeve and head to rotate together and the head to move axially during rotation.

6. An eraser holder comprising fixed nut means for attachment to a pencil, a propelling member threadedly engaged with said nut means and shiftable axially by rotation thereof for propelling an eraser, a rotatable actuating sleeve coaxial with said nut propelling member, means for holding said sleeve against axial displacement while rotating, and means connecting said propelling member to said sleeve for rotation therewith and axial shift movement relative thereto as said sleeve is rotated to thread said propelling member axially through said nut means.

7. An eraser holder comprising fixed nut means for attachment to a pencil, a propelling member threadedly engaged with said nut means and shiftable coaxially for propelling the eraser, an eraser supporting member connected to said propelling member, a rotatable actuating sleeve coaxial with said propelling member and said eraser supporting member, means for holding said sleeve against axial displacement while rotating, and means connecting said propelling member to said sleeve for rotation therewith and axial shift movement relative thereto as said sleeve is rotated to thread said propelling member axially through said nut means.

8. An eraser holder comprising fixed nut means for attachment to a pencil, a propelling member threadedly engaged with said nut means and shiftable coaxially for propelling the eraser, means for connecting said propelling member to the eraser, a rotatable operating sleeve coaxial with said propelling member and eraser, means for holding said sleeve against axial displacement while rotating, and means connecting said propelling member to said sleeve for rotation therewith and axial shift movement relative thereto as said sleeve is rotated to thread said propelling member axially through said nut means.

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