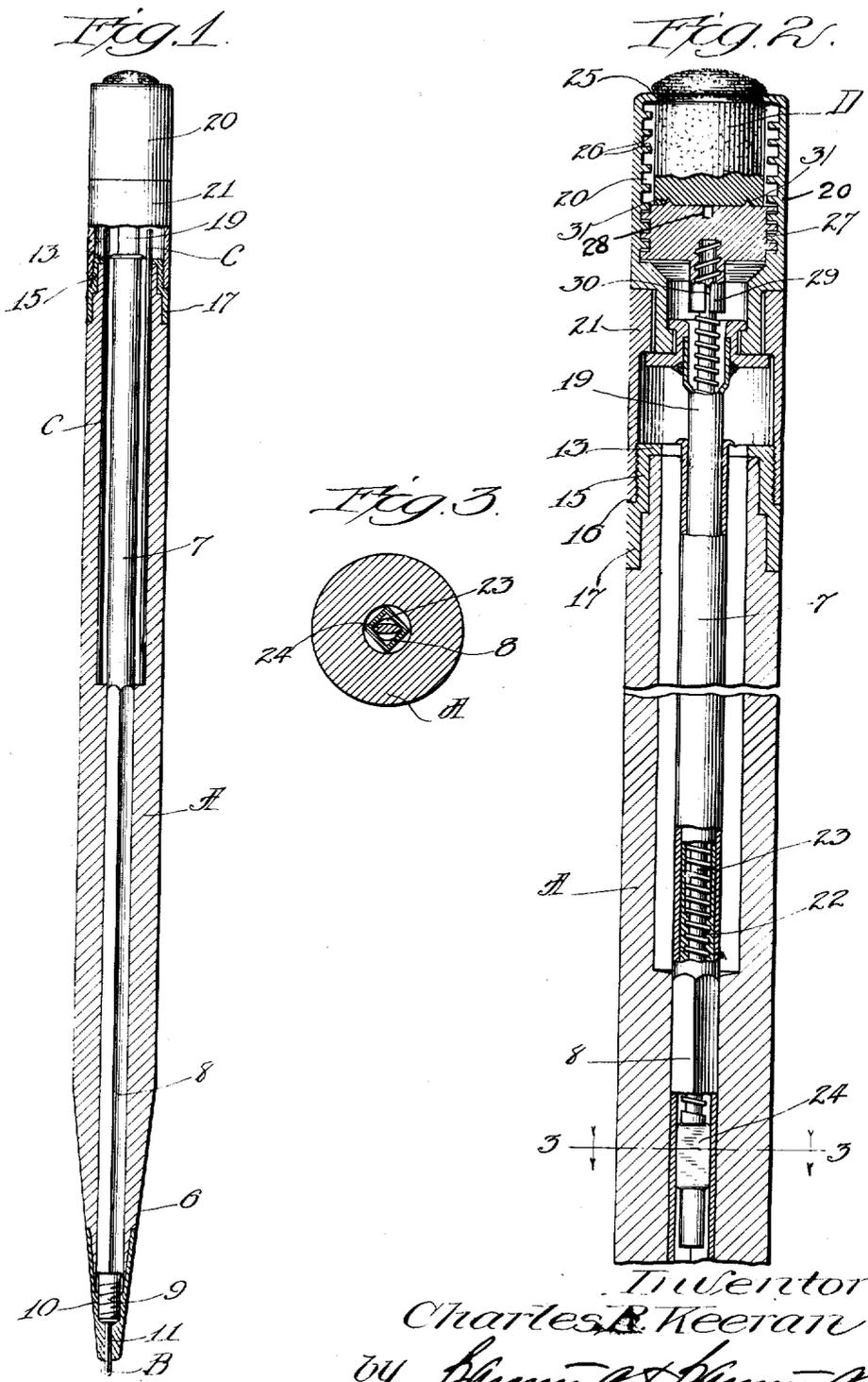


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C. R. KEERAN.  
PENCIL.  
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Inventor  
Charles R. Keeran  
by *Blum & Blum*  
Attys

# UNITED STATES PATENT OFFICE.

CHARLES R. KEERAN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUTOPOINT MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## PENCIL.

Original application filed April 21, 1919, Serial No. 291,494. Forfeited and continuation filed in application Serial No. 425,025, filed November 18, 1920. Patent No. 1,372,296, dated March 22, 1921. This application filed June 1, 1920. Serial No. 385,532.

*To all whom it may concern:*

Be it known that I, CHARLES R. KEERAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pencils, of which the following is a specification.

This invention relates to a pencil that may be equipped with propelling mechanism interiorly of its body, which is adapted to be operated by means exteriorly thereof for advancing into operative position a lead at one end, and an eraser at the other. More particularly the features of this invention are concerned with a means for advancing the eraser either independently of or in conjunction with the lead propelling mechanism. The subject matter herein claimed was originally embodied in my application filed April 21, 1919, as Serial No. 291,494, which was succeeded by a continuation application Serial No. 425,025, from which issued on March 22, 1921, Letters Patent No. 1,372,296.

In the accompanying drawing an exemplification of this invention is shown in the manner following:

Figure 1 is a longitudinal section through the pencil body which may be formed of some such material as wood, the interior parts being shown in elevation:

Fig. 2 is an enlarged longitudinal section through the upper portion of the pencil, the parts interiorly of the body being represented mostly in section; and

Fig. 3 is a transverse section taken on line 3—3 of Fig. 2.

In the use that is herein made of the terms "upper" and "lower", it should be understood that I am referring to the pencil as it is pointed in use—that is, with the eraser end up, and the writing end down.

In Fig. 1, the pencil body, designated as A, is represented as having a lower end 6 which terminates bluntly in the form of a truncated cone. Arranged within an axial bore in the body is a tube 7 that is deformed throughout its lower portion 8 to present a

cross section other than round—preferably square as best shown in Fig. 3. At its lower end 9 this tube may be reduced to fit within a combined ferrule and tip 10, screw threads being suggested as a convenient means for connecting the one part to the other. By forming the sides of the ferrule to align in flush relation with the tapered walls of the pencil, as shown, a smooth and neat appearance is presented. Within the lower end of the ferrule is an axial bore 11 whose walls are suitably constricted to frictionally engage with a lead B that is projected for use.

Attached to the upper end of the pencil is a cap 13 from which depends a circular wall 15 exteriorly threaded and offset as at 16 to provide a shoulder below which is a lower circular wall portion 17 which is fitted non-rotatably upon the upper end of the pencil which is preferably reduced sufficiently to permit the cap walls 17 to lie flush therewith. The cap may be received in position by extending the upper end of the tube 7 through an opening formed centrally therein, the tube being connected therewith in any desired manner.

The means for propelling a lead through the pencil may be of any suitable kind. As shown in the drawings, it is preferred to use a sleeve 19 which is non-rotatably connected with an eraser sleeve 20 which, in turn, is rotatably, but inseparably, secured to a collar 21 interiorly threaded at its lower end for attachment to the upper portion 15 of the cap. The sleeve 19 is arranged to telescope within the tube 7 for, perhaps, half its length, being interiorly threaded as at 22 to engage with a threaded plunger 23 having near its lower end a flattened-out portion 24 to provide in effect a pair of laterally extending fins. Under normal operating conditions, the lower end of the plunger is disposed within the deformed portion 8 of the tube, as shown in Fig. 2, wherein the fins act to prevent rotation of the plunger relative thereto. The plunger being free to move longitudinally, but not

otherwise, it may be propelled by rotating the sleeve 19 through the medium of the eraser sleeve 20 whereby a lead B may be projected as desired through the constricted opening 11 that is formed axially in the tip. Since the exact construction of the parts which constitute the propelling mechanism for the lead is of relatively minor importance to this invention, and may be varied, if desired, further explanation thereof is not deemed essential.

Referring again to the eraser sleeve 20 to which is inseparably connected the collar 21 by means which form no part of this invention—these parts constitute what may be termed the head of the pencil, and, together with the sleeve 19 and plunger 23 therein, may be freely removed from the body whenever refilling of leads is required. At its upper end the eraser sleeve is provided with a flange 25 adapted to grip an eraser D, and interiorly of the sleeve are formed threads 26 which, by preference, are square cut in cross section, as appears clearly in Fig. 2. A threaded plate 27 is arranged within the eraser sleeve having a connection therewith that is relatively loose, this being accomplished conveniently by forming square cut threads on the plate arranged for slight longitudinal play within the eraser sleeve.

The upper side of the plate which may be slotted as at 28 lies in abutting relation to the eraser so as to force it outwardly whenever the plate is turned relative to the eraser sleeve. I prefer that the under side of the plate should be provided with a hollow boss 29 interiorly threaded to receive the upper end of the plunger 23 whenever it is retracted sufficiently for this purpose. To facilitate register of the plunger threads with those within the boss 29, the plate 27 is arranged for slight play, as already explained, but supplementary to this, or independently thereof, other means for the same purpose may be employed such as the formation of slits 30 extending upwardly from the lower end of the boss to provide sections which may be sprung outwardly as required to permit the plunger end to move across the boss threads until a registration is effected therewith. Preferably the depth of the boss threads is reduced toward its lower end to facilitate such movement of the plunger prior to registration of its threads with those interiorly of the boss.

After threading the plunger end into the boss, the parts may be further rotated with the result that, the plate being locked non-rotatably to the plunger, both of these parts are moved upwardly to force out the eraser. This rotative movement may be continued as far as necessary to advance the eraser the distance desired, whereupon the parts should be reversely rotated to disengage the plunger from the plate. This engaging action of

the plunger relative to the plate is facilitated by the loose threaded connection between the plate and the eraser sleeve which results in a minimum of friction between these parts, and tends accordingly to induce disengagement therebetween rather than between the plunger end and the plate; or if pressure be applied to the end of the eraser so as to develop a friction between the threads of the eraser sleeve and plate which exceeds that obtaining between the plate and plunger, the eraser sleeve may be then rotated so as to propel the plunger downwardly, this latter element tending to disengage itself freely from the plate, and leaving the plate in advanced position to properly support the eraser. Whenever the eraser has been used up sufficiently to require replacement, the worn down piece is removed, and a screw driver, knife, or similar instrument is then inserted within the slot 28 so as to turn the plate back to initial position, after which a new eraser is placed within the sleeve.

The means for propelling the eraser in each of the constructions described makes use of the plunger which acts also to propel the lead. Reference to Fig. 2 will disclose the provision upon the upper side of the plate 27 of a plurality of fine projecting points 31 adapted to bite into the bottom end of the eraser so as to lock the eraser non-rotatably to the plate. By use of such a connection, the eraser may be propelled in either direction simply by applying pressure to its upper end such as to hold stationary the eraser and plate 27 while a turning movement is imparted to the sleeve 20, or by holding this sleeve stationary while bearing down upon the eraser end with a rotary movement, the effect in either case being to induce relative rotation between the sleeve and plate therewithin. Such eraser propelling movements, it should be noted, may be effected with entire independence of the plunger.

I claim:

1. A pencil having an internally threaded eraser sleeve rotatable with respect to its body, and a threaded plate arranged operatively within the sleeve in abutting relation to the rear end of an eraser therein, and a means of connection between the plate and eraser such that rotary movement of the one is communicated to the other whereby the eraser is propelled longitudinally within the sleeve, substantially as described.

2. A pencil having an internally threaded eraser sleeve rotatable with respect to its body, and a threaded plate arranged operatively within the sleeve in abutting relation to the rear end of an eraser therein, the contact face of the plate being formed with points adapted to bite into the eraser to establish a non-rotatable connection therewith, such that turning movements of the

one will be communicated to the other whereby the eraser is propelled longitudinally of the sleeve, substantially as described.

3. A pencil on the end of whose body is a sleeve, carrying an eraser, and a plate behind the eraser secured in place by a threaded connection, the contact surfaces of the eraser and plate being formed to oppose

relative rotation therebetween whereby a turning movement of either will cause the eraser to advance longitudinally of the sleeve, substantially as described.

CHARLES R. KEERAN.

Witness:

EPHRAIM BANNING.