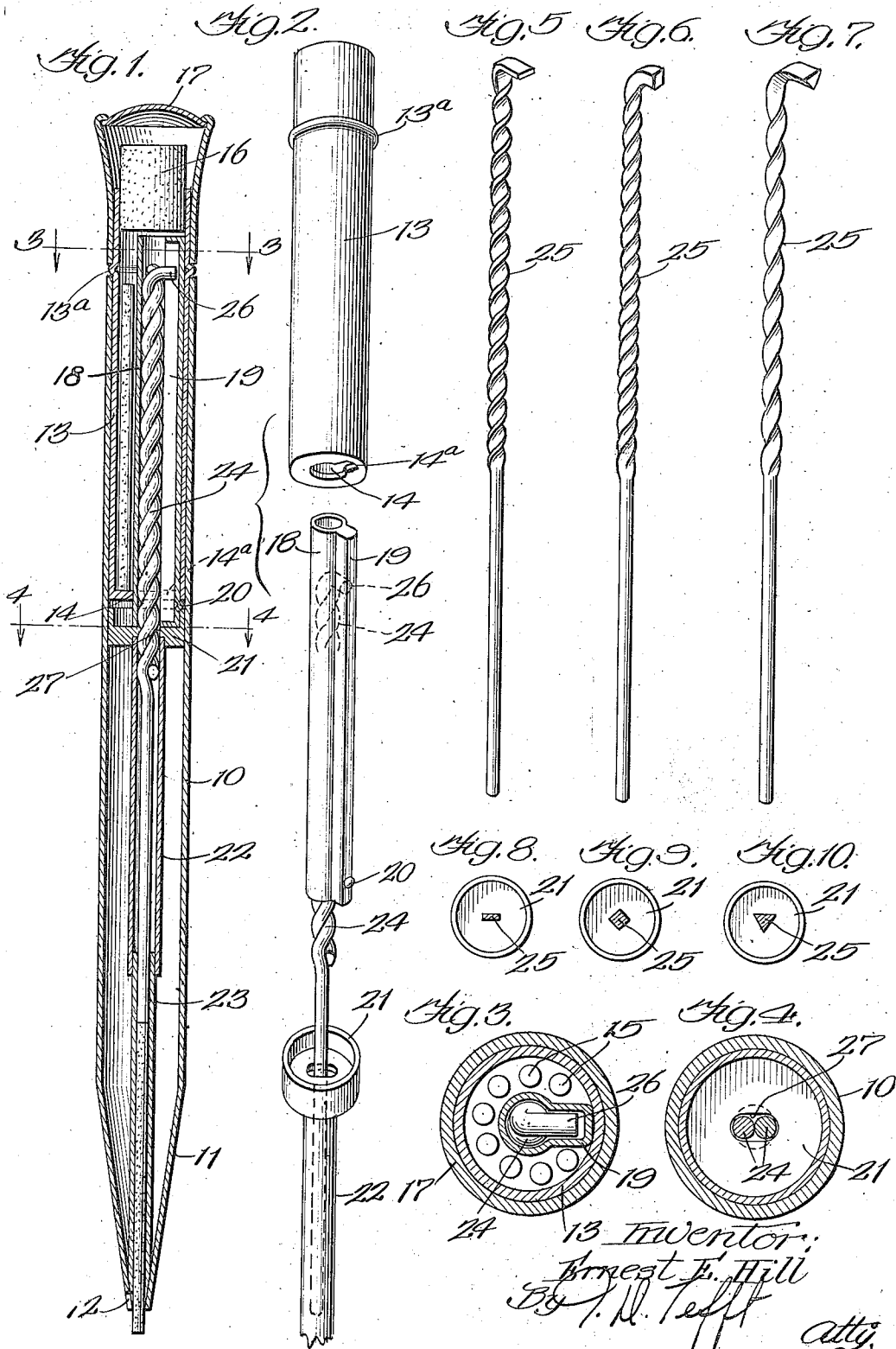


E. E. HILL.
MECHANICAL PENCIL.
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UNITED STATES PATENT OFFICE.

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MECHANICAL PENCIL.

Application filed December 16, 1920. Serial No. 431,174.

To all whom it may concern:

Be it known that I, ERNEST E. HILL, a citizen of the United States, and a resident of the city of Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanical Pencils, of which the following is a specification.

My invention relates to mechanical pencils, or more particularly to a pencil in which an independent lead is forced into the split tip thereof and forced from the pencil by a special mechanical plunger mechanism.

The object of my invention is in the provision of a simple but efficient mechanism for propelling therefrom an independent lead thrust into the split tip of the pencil.

Another object of my invention is in the provision of a special plunger mechanism in connection therewith for mechanically forcing a lead from the pencil.

Other objects of my invention will appear in the following specification and claim in connection with the annexed drawings in which;

Fig. 1 is a longitudinal sectional view of the pencil;

Fig. 2 is a perspective view showing in detail the mechanical propelling mechanism;

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a cross sectional view on the line 4—4 of Fig. 1;

Figs. 5, 6 and 7 are perspective views in detail of different types of plungers capable of use in the pencil; and

Figs. 8, 9 and 10 are plan views of barrel nuts having apertures therein to conform to the plungers in Figs. 5, 6 and 7 respectively.

Referring to the drawings, 10 is the outer casing or pencil barrel, said barrel being suaged as at 11 and having formed at its tip the split portion 12. An inner barrel 13 is spun into the upper end of the pencil barrel having frictional engagement therewith. An indentation 13^a prevents the inner barrel from sliding too far into the pencil barrel and the portion projecting above the pencil barrel forms a seat for the frictional cap 17. The member 13 has a bore 14 and groove 14^a formed therein. As is best illustrated in Fig. 3, the chamber formed between the inner barrel 13 and the housing

member 18, hereinafter to be described, is used as a receptacle for carrying extra leads as is shown at 15. An eraser 16 is mounted in the upper end of said barrel. A plunger housing 18, having formed thereon the hollow tongue 19, fits into the corresponding bore and groove in the inner barrel. Near the lower end of the tongue 19 is a projection 20 which abuts the lower end of the inner barrel and prevents the plunger housing from being entirely contained within the member 13.

A barrel nut 21 abuts the lower end of the plunger member, said barrel nut being soldered to the inner wall of the pencil barrel. A plunger guide way 22 extends down from the barrel nut 21 and houses a portion of the plunger. Connected to the lower end of said guide way is a lead tunnel 23, said tunnel containing therein independent lead thrust through the split tip of the pencil. A plunger member 24, having any of the threaded portions 25 as shown in Figs. 1, 5, 6 and 7, is contained within the plunger housing, and its outwardly projecting head 26 rides within the hollow tongue 19, the lower portion of the plunger passing through an aperture 27 conforming to its cross section, thence through the guide way 22 and abutting at its lower end the independent lead contained in the lead tunnel. The operation of the mechanical pencil is as follows:

An independent lead is thrust into the lead tunnel through the split tip. When it is desired that lead be forced from the pencil the cap 17 is turned in a clockwise manner. The cap, having frictional engagement with the inner barrel 13, also turns said barrel, and the inner barrel having contained therein the plunger housing, also turns said housing, thus the plunger contained within the housing is revolved and consequently, due to its threaded portion, is screwed downwardly, thereby forcing the lead contained in the lead tunnel outwardly through the split tip of the pencil.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but

desire to avail myself of such variations and modifications as come within the scope of the appended claim.

5 Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

10 An article of the class described comprising a barrel tapered and slotted at one end to form a tip; a shell having a longitudinal guide way therein rotatably mounted in the upper portion of said barrel; means on said shell to cooperate with means mounted on the interior of the barrel for retaining the

shell within the barrel and permitting relative turning in respect to the barrel; a 15 threaded feed wire mounted in said shell having a crosshead engaging in the guide way therein; a nut mounted within the barrel below the shell; a lead guidé connecting the nut with the tip and means whereby a 20 relative turning of the shell in respect to the barrel will cause a lead to be propelled from the tip.

In witness whereof I have hereunto subscribed my name.

ERNEST E. HILL.