C. W. BOMAN.

PENCIL.

APPLICATION FILED OCT. 14, 1910.

986,896.

Patented Mar. 14, 1911.

Fig. 1.

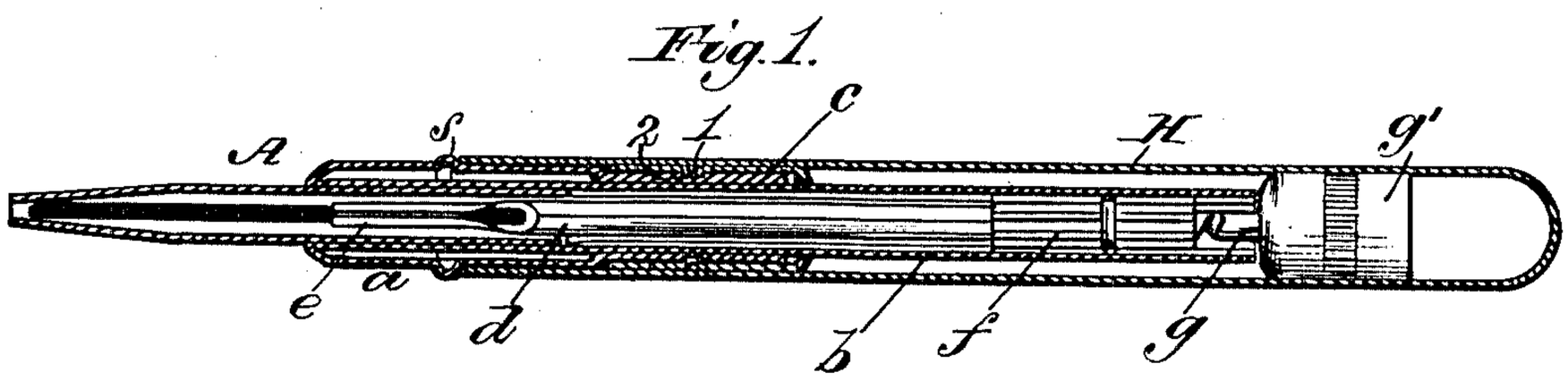


Fig. 2.

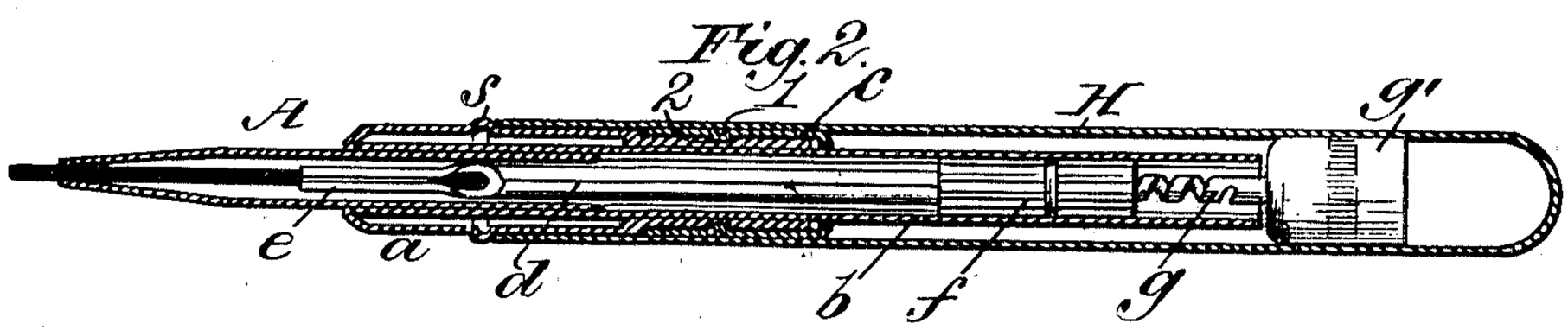


Fig. 3.

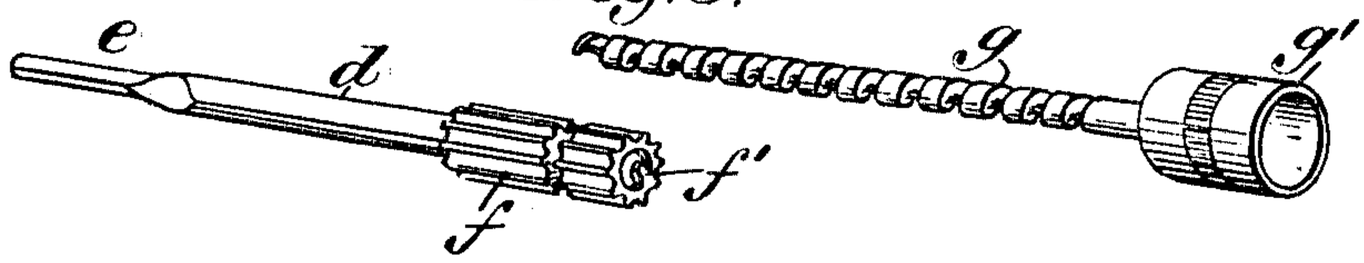
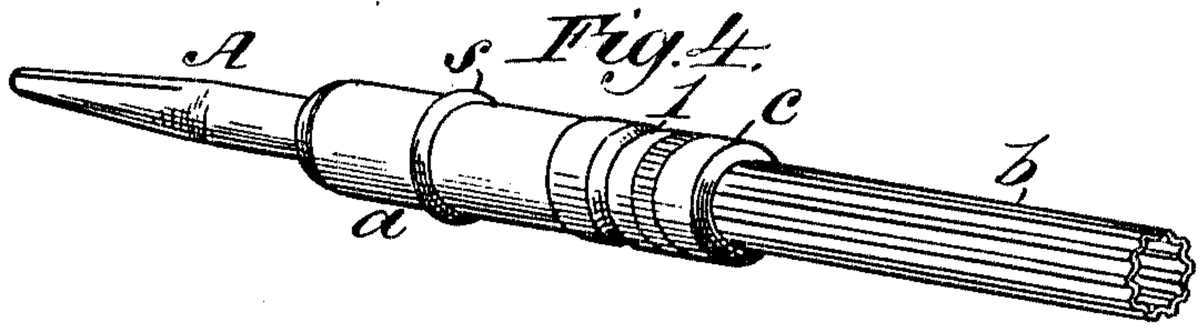


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

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PENCIL.

986,896. Specification of Letters Patent. **Patented Mar. 14, 1911.**

Application filed October 14, 1910. Serial No. 587,093.

To all whom it may concern:

Be it known that I, CLAES WILIAM BOMAN, residing in the city, county, and State of New York, have invented a new and useful Improvement in Pencils, of which the following is a specification.

My invention is directed to a mechanical pencil of the pro- and re-pelling type—that is to say a pencil in which the well known "pro- and re-pelling movement," so called, is employed for the purpose of advancing and retracting the lead. My invention is directed to certain improvements in the form and adaptation of parts in a pencil of this kind, designed more particularly to effectively hold and control the movement of leads of very small diameter. These improvements will first be described in connection with the accompanying drawing, forming part of this specification, and will then be more particularly pointed out in the claim.

In said drawings—Figure 1 is an axial section of a pencil embodying my invention in its preferred form, the parts being in the position which they occupy when the lead is retracted. Fig. 2 is a like section with the parts in the position they assume when the lead is projected from the nozzle of the pencil. Fig. 3 is a perspective view of the "pro- and re-pelling movement" with its parts detached from one another. Fig. 4 is a like view of the nozzle and interior body portion of the pencil attached to the same.

A is the nozzle or tapering front end of the pencil from which extends rearwardly the cylindrical body portion *a*, and beyond that a cylindrical longitudinal fluted barrel *b* of relatively smaller diameter, in which the movement is housed, and, as to its lead carrying portion, can move longitudinally back and forth. Upon the cylindrical body portion *a*, and flush with the same, is mounted a sleeve *c*, which is capable of free rotary movement, without lengthwise movement thereon, it having for this purpose, in the present instance, an annular internal bead 1, which engages a correspondingly annular external groove 2 in the body *a*.

The "movement" comprises essentially a longitudinally movable lead carrier, and a rotating propelling screw. The lead carrier consists of a sheet metal cylindrical tube *d* on the front end of which is a stem *e* of smaller diameter, having in its front end a cylindrical socket to receive and hold the lead. Upon the rear end of the tube is made fast a section *f* of a sheet metal longitudinally fluted tube, which, when the carrier is inserted in the fluted barrel *b* of the body portion, will fit snugly therein, with its flutes engaging those of the barrel, whereby the lead carrier is permitted longitudinal movement only in the barrel *b* in which it is housed. Other known means of preventing rotary movement of the lead carrier in the barrel, may be substituted for the flutes, what is essential being that the carrier shall be capable of longitudinal movement only in the barrel. The propelling screw *g* is a solid externally threaded rod, which is received and fits snugly in the carrier tube *d*, in which it can rotate. The screw thread in the propeller screw is engaged by a suitable pin projecting inwardly from the carrier to engage the thread in the screw. This pin consists in the present instance of a projection *f'* at the rear end of the fluted sheet-metal section *f*.

Upon the rear end of the propeller screw *g*, is a head *g'* which, when the "movement" is in place in the barrel *b*, brings up against the rear end of said barrel. It is held in this position by the tubular sheath or handle H, which receives the body portion of the pencil. The sheath is secured fast to the head *g'* of the propeller movement, and also to the rotating sleeve *c* on the body portion *a*, with its front end abutting against an annular shoulder *s* on the nozzle A. The sheath and body portion are thus held firmly together, while at the same time they are free to rotate relatively to one another. Rotation of the sheath will produce corresponding rotary movement of the propelling screw, and this movement of the screw will advance or retract the lead carrier, according to the direction of rotation of the screw, as will be understood without further explanation.

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

The combination with the main body portion and the barrel connected therewith, of the tubular lead-carrier housed in the barrel and capable of longitudinal movement only therein, the rotatable propelling screw rod

fitting and housed in said carrier and projecting beyond the rear end of the barrel, a head on said projecting part of the propelling screw rod to the rear of the barrel, a sleeve secured to and rotatable upon the main front body portion of the pencil, and a tubular sheath secured at its rear to the head on the propelling screw rod, and at its front to the rotatable sleeve, as and for the purposes hereinbefore set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CLAES WILIAM BOMAN.

Witnesses:

OTTO GUGENHEIM,

OSCAR B. ANDERSON.