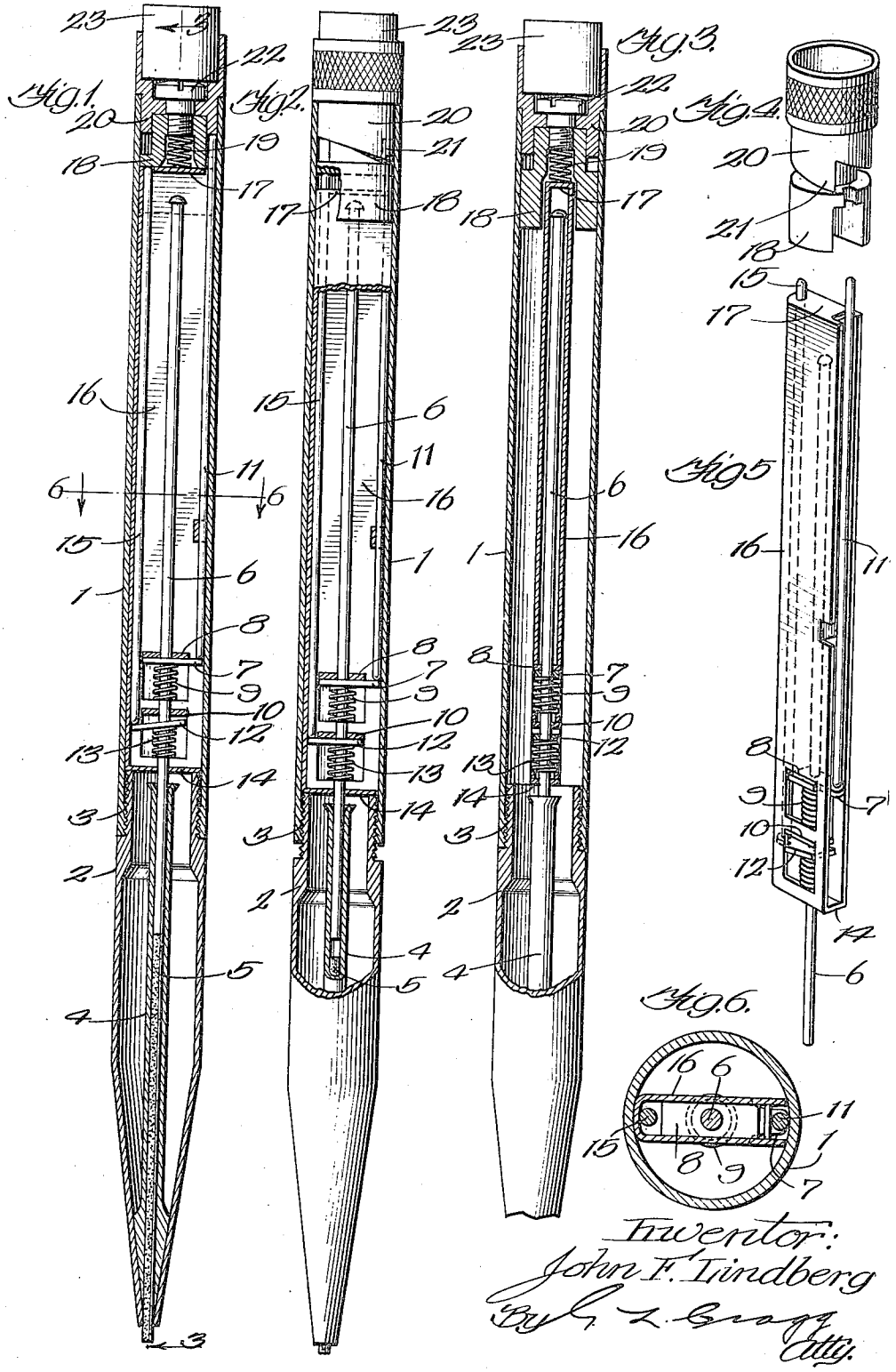
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J. F. LINDBERG

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UNITED STATES PATENT OFFICE.

JOHN F. LINDBERG, OF CHICAGO, ILLINOIS.

PENCIL.

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To all whom it may concern:

Be it known that I, JOHN F. LINDBERG, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pencils, of which the following is a full, clear, concise, and exact description.

My invention relates to pencils employing leads or other rods of marking material and includes improved mechanism for moving or feeding the leads to new positions and improved mechanism for maintaining the leads in the positions to which they are advanced.

A pencil embracing all characteristics of my invention is inclusive of a casing, a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element, a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element, a clutch within the casing and manually operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod, and an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof.

Pencils of this construction form the subject matter of my co-pending application Serial No. 405,036, filed August 21, 1920, the structure of my present invention being an improvement upon the structure of said co-pending application.

I will explain my invention in detail by reference to the accompanying drawing showing the preferred embodiment thereof and in which drawing Fig. 1 is a view in sectional elevation showing the parts in normal position; Fig. 2 is a view similar to Fig. 1 showing the holding clutch in released position; Fig. 3 is a sectional view on line 3—3 of Fig. 1; Fig. 4 is a perspective view of cam mechanism that is preferably employed to feed the lead; Fig. 5 is a perspective view of the carrier that is preferably provided for the clutch mechanism; and Fig. 6 is a sectional view, on a larger scale, on line 6—6 of Fig. 1.

Like parts are indicated by similar characters of reference throughout the different figures.

The pencil casing illustrated is in the form of a hollow cylinder having an upper section 1 and a lower section 2 in threaded connection at the mid portion 3 of the casing. A tubular guide 4 is coaxial with the casing, and is fixed to and within the casing section 2. The rod 5 of lead or other marking material that is in use is moved through the guide 4 to project sufficiently far through the hole in the writing end of the pencil casing, said lead being frictionally held by the guide or the writing end of the casing to prevent it from dropping out.

A follower rod 6 is within and movable longitudinally of the casing and has its forward end in thrusting engagement with the inner end of the marking rod. A feeding ring clutch 7 surrounds the follower rod within the casing, this clutch being normally held in a released position at right angles to the follower rod and against a positioner 8 by a coiled spring 9, so that said clutch will permit reverse or inward movement of the follower rod and the lead subsequent to the lead feeding movement of these parts. The abutment 10 for said spring desirably also surrounds but is free from the follower rod. An actuating rod 11, preferably manually operable from the exterior of the casing as hereinafter set forth, serves to tilt the clutch and thereafter to effect its bodily forward movement against the force of the spring 9 in order to effect forward movement of the follower rod and the consequent feeding movement of the lead.

A second ring clutch 12 also surrounds the follower rod but is normally held in gripping engagement therewith by the spring 13 normally to prevent return movement of this rod and of the lead whose feeding movement is permitted by this clutch. The follower rod also desirably passes freely through the abutment 14 for this spring. A releasing rod 15, preferably manually operable from the exterior of the casing as hereinafter set forth, serves to release the holding clutch 12 by permitting the spring 13 to place said clutch flat against the abutment 10 so as to be at right angles to the follower rod, said release rod

normally serving as a positioner normally to permit the spring to tilt the clutch into holding engagement with the follower rod.

The clutches, their springs, and the follower rod are desirably assembled with and within a hollow clutch carrier, the spring abutments being desirably integral parts of said carrier. In its preferred form the carrier is made of sheet metal folded into U-form and bent in at the ends of the carrier to constitute the bottom end wall 14, which is also the abutment for the spring 13, and the top end wall 17. The elements 8 and 10 of the clutch mechanism are desirably struck inwardly from one of the side walls of the hollow clutch carrier.

When the sections 1 and 2 of the pencil casing are screwed together, the clutch carrier is clamped thereby between the inner end of the pencil casing section 2 and the inner end of the plug 18 fixed tightly in the outer end of the pencil casing section 1. The releasing rod 15 is also now held by the holding clutch spring 13 tightly between the plug 18 and said clutch to serve as a positioner to enable the spring to apply the holding clutch to the follower rod.

When the pencil casing sections 1 and 2 are screwed apart to a limited extent (Fig. 2), the spring 19, within a cavity in the plug, presses upon the upper end of the clutch carrer and maintains the lower end of this carrier against the upper end of the pencil casing section 2. In this operation the space between the spring abutment 14 and the plug 18 is increased to permit the spring 13 to place the holding clutch 12 flat against the positioner 10 (Fig. 2) so that the follower rod may be moved inwardly. This adjustment is effected whenever the lead is to be pushed back into the casing or when the follower rod is to be moved upwardly to permit of the insertion of a new lead, which may be admitted to the casing through the front or writing end thereof. Thus the engaging threaded ends of the pencil casing sections 1 and 2 have cam-like action to bring the holding clutch into and out of action.

The feeding or actuating rod 11 is of such length as to be normally engaged at one end with its actuating element 20, while having its other end in engagement with the feeding clutch 7 when this clutch is in its normal follower rod releasing position. The actuating rod is thus in readiness to tilt the clutch 7 and effect its forward bodily feeding movement whenever the actuating element 20 is operated. This actuating element is desirably in the form of a cam 21 journaled upon the smooth portion of the stem of screw 22, the head of this screw and the outer end of plug 18 confining the cam to a single plane of rotation with respect to the pencil casing section 1. Said cam desirably has two cam formations 21 upon its inner end. When the cam is turned a half revolution, one of these formations 21 depresses the actuating rod that, in turn, tilts the ring clutch 7 and thereafter effects its bodily forward movement to effect forward movement of the follower rod which then pushes the lead forward. When the actuating rod escapes the cam, the clutch spring 9 immediately raises the actuating rod to normal position and restores the clutch to the follower rod releasing position shown in Fig. 1, the holding clutch now functioning to prevent return movement of the follower rod and lead.

The outer end of the cam element 20 may be of tubular form to receive a rubber eraser 23.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and normally operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; and a carrier for said clutches that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section.

2. A pencil including a casing formed in upper and lower sections that are in threaded connections; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudilnally of the casing, said follower rod being engageable with the in-

ner end portion of said marking element; a clutch within the casing and normally operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; a carrier for said clutches that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section; a spring within the casing and engaging the clutch carrier to maintain it in engagement with the upper end of the lower casing section when said sections are partially unscrewed; and a positioner within the upper casing and engaging the holding clutch to enable this clutch to function and releasing the clutch when the casing sections are unscrewed.

3. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and normally operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effects its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; a carrier for said clutches that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section; and a spring within the casing and engaging the clutch carrier to maintain it in engagement with the upper end of the lower casing section when said sections are partially unscrewed, the upper casing section being in positioning relation with the holding clutch when the casing sections are screwed together to enable the holding clutch to function and releasing the holding clutch when the casing sections are unscrewed.

4. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the working element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; and a carrier for said clutch that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section.

5. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and normally operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; and a carrier for said clutch that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section.

6. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; a carrier for said clutch that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section; a spring within the casing and engaging the clutch carrier to maintain it in engagement with the upper end of the lower casing section when said sections are partially unscrewed; and a positioner within the upper casing and engaging the holding clutch to

enable this clutch to function and releasing the clutch when the casing sections are unscrewed.

7. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof; a carrier for said clutch that is disposed within the upper casing section and is engaged by the upper end of the lower pencil section and held thereby in assembly with and within the upper pencil section; and a spring within the casing and engaging the clutch carrier to maintain it in engagement with the upper end of the lower casing section when said sections are partially unscrewed, the upper casing section being in positioning relation with the holding clutch when the casing sections are screwed together to enable the holding clutch to function and releasing the holding clutch when the casing sections are unscrewed.

8. A pencil including a casing formed in upper and lower sections that are in threaded connection; a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; and an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof, this clutch being governed by said casing sections and made effective when the casing sections are screwed together and released when said casing sections are screwed apart.

9. A pencil including a casing; a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and manually operable from the exterior of the casing, said clutch, when operated, engaging the folower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; a manually operable cam in rotative connection with the pencil casing and in actuating relation to the aforesaid clutch; and an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof.

10. A pencil including a casing; a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and manually operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; an actuating rod within the casing for operating said clutch; a manually operable cam in rotative connection with the pencil casing and in actuating relation to said actuating rod; and an automatically operating clutch within the casing and interrelated with the follower rod to prevent material return movement thereof.

11. A pencil including a casing; a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and manually operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; and a manually operable cam in rotative connection with the pencil casing and in actuating relation to the aforesaid clutch.

12. A pencil including a casing; a marking element, in the form of a rod formed of marking material, within and movable longitudinally of the casing which is open at the writing end of the pencil to permit of the projection of the forward end portion of the marking element; a follower rod within and movable longitudinally of the casing, said follower rod being engageable with the inner end portion of said marking element; a clutch within the casing and

manually operable from the exterior of the casing, said clutch, when operated, engaging the follower rod to effect its forward movement to cause projecting movement of the marking element and subsequently permitting reverse movement of this rod; an actuating rod within the casing for operating said clutch; and a manually operable cam in rotative connection with the pencil casing and in actuating relation to said actuating rod.

In witness whereof, I hereunto subscribe my name this fourteenth day of February, A. D., 1921.

JOHN F. LINDBERG.