(No Model.)

J. HOFFMAN.

PENCIL.

No. 331,398. Patented Dec. 1, 1885.

Figure 4:

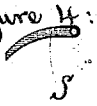


Figure 5:

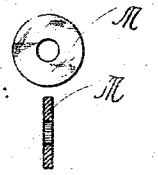


Figure 1:

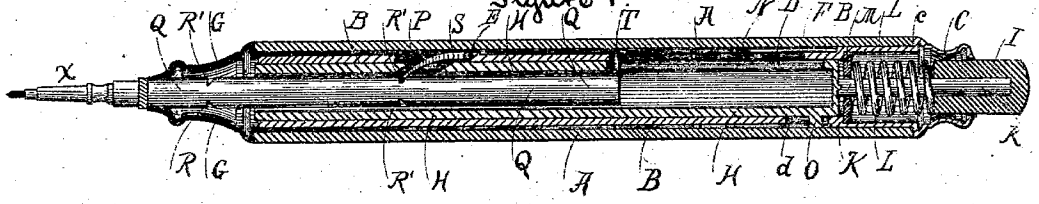


Figure 2:

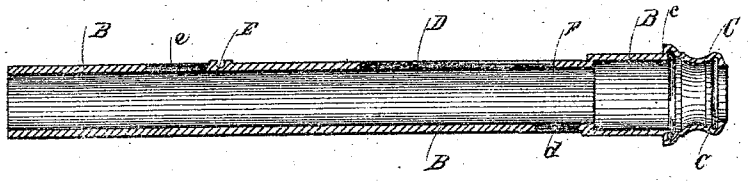
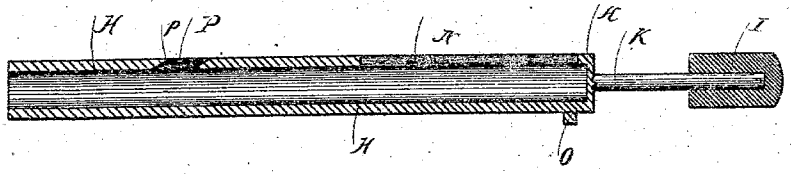


Figure 3.



WITNESSES:

Joseph A. Levy

John J. Cauldwell

INVENTOR

Joseph Hoffman

BY Phillips Abbott

his ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH HOFFMAN, OF NEW YORK, N. Y., ASSIGNOR TO GUSTAVUS A. GOLD SMITH, OF SAME PLACE.

PENCIL.

SPECIFICATION forming part of Letters Patent No. 331,398, dated December 1, 1885.

Application filed July 20, 1885. Serial No. 172,107. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HOFFMAN, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented a certain new and useful Improved Pencil, of which the following is a specification.

My invention relates to an improvement in pencils of the class known as "drop lead-pencils;" and it consists in a tubular case or handle inclosing a longitudinally-movable tube which is operated in one direction by pressure on its end externally of the case or handle and in the other by a spring preferably located within the case or handle, and another tube or rod which carries the lead-holding device, and which is placed within the longitudinally-movable tube. The longitudinally-movable tube by its movement actuates a pawl, which engages with notches or shoulders formed in or on the lead-bearing tube or rod, whereby it is held in its projected and retracted position, the projection and retraction being effected by the action of gravity upon releasing the pawl.

In the drawings like letters indicate like parts in all the figures.

Figure 1 illustrates a longitudinal section of my pencil taken through the pawl. Fig. 2 illustrates a longitudinal section of the tube placed within the outer case or handle to which the pawl is preferably attached. Fig. 3 illustrates a longitudinal section of the longitudinally-movable tube which actuates the pawl. Fig. 4 illustrates the pawl S detached. Fig. 5 illustrates the collar M detached.

A is the outer case or handle. It may be made of wood, rubber, paper, celluloid, metal, or any other suitable material. It is tubular in form. Within this handle is placed a tube, B. It is rigidly attached to the handle. The tube B is preferably provided with a tip, C, at its rear end, provided with a shoulder, *c*. This tip finishes and ornaments the rear end of the pencil, and also acts as a guide to the cap of the longitudinally-movable tube, hereinafter described. The tube B has a slot, D, cut in its rear part, and another short slot, *d*, located near its rear end. It has also a bearing or pivot-point, E, for the pawl S, formed upon it adjacent to an opening, *e*, formed in the tube through which the pawl passes. The rear end of the slot D terminates in a shoulder, F. The front end of the pencil-handle is provided with another tip, G, which finishes and ornaments this end thereof. The tip G is rigidly attached to the handle of the pencil.

H is the longitudinally-movable tube. It is provided with a cap, I, at its rear end, which is adapted to slide easily within the rear tip, C. In front of the cap the tube is reduced to the form of a spindle, (seen at K,) about which is coiled a spiral spring, L. Any suitable form of spring may be employed instead of a spiral spring, and it may be located wherever desired, provided its action on the parts is practically the same as that of the spring L.

M is a collar or washer, which acts as an abutment or shoulder for one end of the spring L. The other end takes against the cap I. The collar M is rigidly attached to or formed on the tube B; or if this tube is not used, (see post,) then on the handle A itself. The tube H is slotted at N, and has a stop, O, formed upon it, which enters the short slot *d*, formed in the tube B. Near the front end of the tube H is formed a short slot, P, the front shoulder or end of which is preferably cut on an incline, as seen at *p*, Fig. 3. The rear shoulder or end of this slot may also be cut on an incline, if preferred; as shown, its action on the pawl S is better and the durability of the parts is somewhat enhanced if so formed.

Q is a tube or rod, preferably of metal to the front end of which is attached the lead-holding device X, which may be an ordinary propeller-pencil, as shown in the drawings, or an "artist's pencil," so called, or any other suitable device for holding the lead. At R R′, I form notches in or their equivalent shoulders on the rod or tube Q, which are adapted to receive the end of the pawl S. If desired, these may be made circumferentially of the rod or tube Q. This pawl is pivoted to the tube B at E and passes through the slot P, formed in the longitudinally-movable tube H, and at proper times it engages with the notches or shoulders R R′, formed on the tube or rod Q. The tube Q has also preferably at

or near its rear end a stop, T, which plays through the slots D and N, formed in the tubes B and H, respectively, these slots being coincident. This stop T determines the movement of the rod or tube Q, and also prevents it from turning, which is necessary if a "propeller" or other like pencil be used as the lead-holding device.

The length of the slots D *d* and N, and the location of the stops O and T, and the distance of separation of the notches or shoulders R R′ on the drop tube or rod Q are all preferably so adjusted relative to each other that the longitudinally-movable tube H will operate the pawl, lifting it from both of the notches or shoulders R and R′ without giving motion to the tube or rod Q.

The operation is as follows, assuming the lead-holding device to be projected, as shown in Fig. 1, and held there by the pawl S engaging with the notch R′—to wit, the pawl being pressed into the notch by the spring L, which presses the inclined end *p* of the slot P against the upper side or edge of the pawl. To retract the lead, press upon the cap I. The spring will be compressed, the tube H shoved forward until the stop O brings up against the front end of the slot *d*, and the rear end or shoulder of the slot P will lift the pawl S out of the notch R′. The pencil being then held point up, gravity will cause the tube or rod Q and the lead-holding device attached to it to drop within the handle until the stop T brings up against the shoulder F of the slot D in the tube B. Then upon relieving the pressure on the cap I the spring L will move the tube H rearwardly, and the inclined forward end of the slot P (seen at *p*) will again impinge upon the upper side or edge of the pawl S and force it into the notch, or behind the shoulder R, and thus lock the tube or rod Q and the lead in their retracted position within the handle. To project the lead, the operation is simply reversed. If the spring L be stiff enough, it will hold the rod or tube Q and the lead in their retracted position without requiring the forward notch, R. It will be obvious that if preferred the tube B may be dispensed with, the pawl S then being attached directly to the inside of the handle A, and suitable shoulders to act on the stop T, taking the place of the ends of the slots D and *d*, being formed on the inside of the handle, and suitable tips, C and G, and shoulder or collar M being formed on or attached to the handle A; but for many reasons the tube B is preferable, and particularly on the score of economy in manufacture and perfection of operation of the completed pencil; also, the pawl S may be attached to and travel with the longitudinally-movable tube H, and be lifted out of the notches R R′ by contact with suitably-located pins or their equivalent on the handle A; but for the reasons above given and others I prefer the stationary pawl; also, the pawl, instead of being a dead-pawl operated entirely by the action of the ends of the slot P against it, may be a spring-pawl, either made independently and soldered or otherwise attached to the tube; or it may be cut out of the body of the tube itself, and thus, being a spring-pawl, it will normally tend to enter the notches R and R′ independent of the action of the spring L, and the front inclined end of the slot P (seen at *p*) may be dispensed with.

The front side of the notches R′, against which the pawl S bears, may be inclined backwardly, so that the pressure of the pawl against it will tend to move the tube or rod Q forward, thus pressing the stop T against the forward end of the slot D, whereby the lead will be held more immovably.

It will be observed that my pencil embodies many improvements upon the pencils of this class, among which are great simplicity in construction, the parts being produced by mechanical operations very easily and exactly effected; also, there are no jaws or clamping devices which impinge on the lead itself, which, as in the "automatic" pencils, so called, bite the lead, and frequently break it; also, there are no rough jaw-points, as in the said automatic pencils, projecting beyond the end of the pencil when the lead is retracted, which scratch the hands of the user, and also injure the clothing; also, the lead is held positively in its projected position.

I do not limit myself to the details of construction shown, since they may be considerably varied and still my invention be employed.

It will be evident to any one familiar with this art that instead of the lead or crayon tube or rod other compact utensils—such as a knife-blade, a button-hook, tooth-pick, &c.—may be employed, the shank or tang of such utensils being constructed and employed in the combination, substantially as the rod or tube for holding the lead or crayon is constructed and employed therein.

Having described my invention, I claim—

1. The combination, in a pencil, of an external case, A, an internal rigid tube, B, bearing a pivoted pawl, and a longitudinally-movable tube, H, provided with a cap, I, externally of the case or handle of the pencil, and also provided with a spring, L, the said longitudinally-movable tube engaging with the pawl, whereby the pawl is acted on by the spring automatically to dog a lead-bearing tube or rod, Q, placed within the longitudinally-movable tube, substantially as and for the purposes set forth.

2. The combination, in a pencil, of the lead-bearing rod or tube Q, the longitudinally-movable tube H, provided with a cap, I, a spring, L, and slot P, and a pivoted pawl, S, the free end whereof passes through the slot P in the longitudinally-movable tube H, and into the path of the lead-bearing tube or rod, and engages with shoulders on the same to hold it in a projected and retracted position, all being combined and operating substantially as and for the purposes set forth.

3. The combination, in a pencil, of a case or handle, A, a tube B, rigidly attached to the inside of the handle, a pawl, S, pivoted to the tube B, and extending inwardly toward the central line of the pencil, a longitudinally-movable tube, H, provided with cap I, spring L, shoulder M, and slot P, through which the free end of the pawl S passes, the slots D and *d*, formed in the rigid tube B, the slot N, formed in the longitudinally-movable tube H, the stop O, formed on the longitudinally-movable tube H, and the rod or tube Q, bearing a lead-holder, and provided with notches or shoulders R and R′ and stop T, all combined and operating substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 18th day of July, A. D. 1885.

JOSEPH HOFFMAN.

Witnesses:
JOHN H. IVES,
JOHN J. CAULDWELL.