Feb. 26, 1924. **1,485,073**

C. J. FUNK

PENCIL

Filed Aug. 27, 1921

Fig. 1.

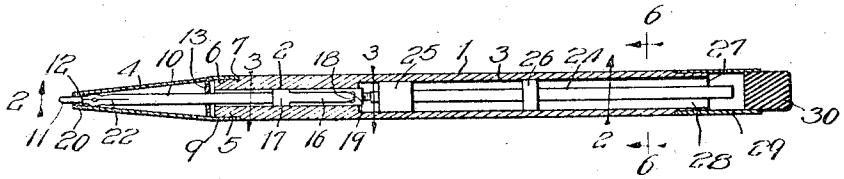


Fig. 2.

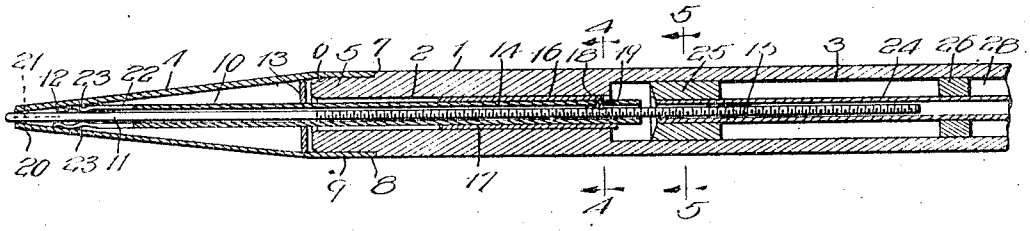


Fig. 3.

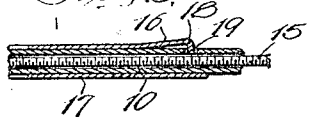


Fig. 4.

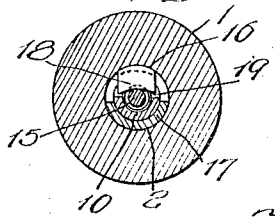


Fig. 6.

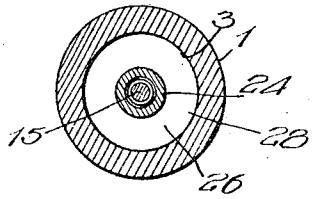


Fig. 5.

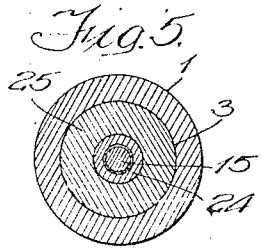


Fig. 8.

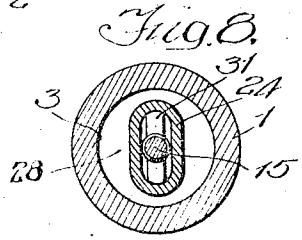
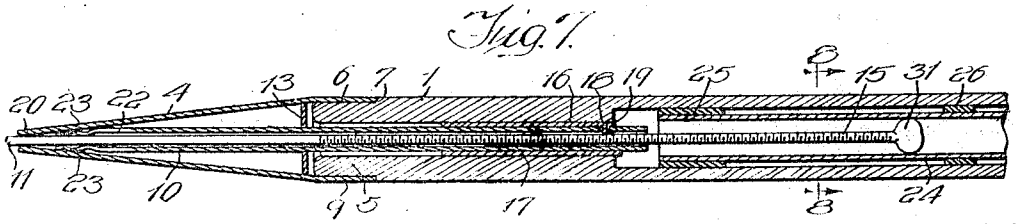


Fig. 7.



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Patented Feb. 26, 1924. 1,485,073

UNITED STATES PATENT OFFICE.

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PENCIL.

Application filed August 27, 1921. Serial No. 496,122.

To all whom it may concern:

Be it known that I, CHARLES J. FUNK, formerly a citizen of Austria-Hungary, having declared my intention of becoming a citizen of the United States, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Pencil, of which the following is a specification.

My invention relates to improvements in pencils and has special reference to pencils of the kind adapted for projecting the leads as the point is worn away.

The object of my invention is to provide a pencil in which the lead can be pushed forward as it wears out for renewing the point; which pencil shall be of very simple construction comprising few parts easily produced by the usual manufacturing processes. In other words it is my object to provide a pencil of the renewable lead type which can be manufactured at a low cost and sold for a relatively small price. Many more desirable and advantageous features of construction and operation will appear from the following description.

My invention will be more readily understood by reference to the accompanying drawings forming part of this specification and in which:

Figure 1 is a longitudinal central sectional view of a pencil made in accordance with my invention;

Figure 2 is a fragmentary sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a fragmentary longitudinal sectional view taken on the line 3—3 of Figure 1;

Figures 4 and 5 are transverse sectional views on the lines 4—4 and 5—5, respectively of Figure 2;

Figure 6 is a transverse sectional view on the line 6—6 of Figure 1;

Figure 7 is a central longitudinal sectional view similar to Fig. 2 and showing a slight modification of my invention; and

Figure 8 is a transverse sectional view on the line 8—8 of Figure 7.

In said drawings, 1 illustrates the body of the pencil which can be of any suitable material such as hard rubber, wood, etc. This handle 1 is provided with a continuous central bore from end to end, the portion 2 thereof at the forward or point end being relatively small and the remaining portion 3 thereof extending to the rear or upper end being larger in diameter. Upon the forward end of the body 1 I removably mount a tapered or coned point member or shell 4 preferably made of tubing having a relatively thin wall and I reduce the forward end 5 of the handle of the body member as shown at 6 to receive the upper or rear end of the point member 4 providing an annular shoulder 7 against which the rear portion 9 of the point member which engages the reduced end 5 of the handle member abuts. I make said portion 9 of straight cylindrical form and make the two parts of such relative diameters that the point member 4 can be readily forced upon the forward end of the handle member and will be retained securely thereon by friction.

Within the point member and secured permanently thereto I provide a tubular guide 10 for the renewable lead 11. This tubular guide is of a diameter to permit the lead 11 to slide freely through the guide. The guide extends into the coned point 4 from the rear end and its forward end 12 contacts with the inner surface of the coned point close to its forward free end and is thereby held centrally in the coned point. To hold the rear end of the guide 10 centrally of the coned point I provide a disk member 13 having a central opening to receive the tubular guide and of an outer diameter to fit snugly within the cylindrical portion 9 of the coned point and in arranging the several parts I force the disk member 13 inwardly to the bottom of the cylindrical part 9 of the point until it contacts with the larger end of the coned portion of the point and I fix it in such position with the tubular guide extending through the central opening by soldering or otherwise firmly fixing it in place. The tubular guide extends through the small bore 2 of the handle member a sufficient distance to receive a lead 11 and is of suitable extra length for receiving and guiding a suitable pusher. For pushing out the lead and holding it in its adjusted position, I provide a rod 15 of a size to readily pass through the tubular guide 10 and I provide the rod with transverse ridges preferably by externally threading it. For the purpose of holding the threaded rod 15 and the lead 11 against being pushed into the

handle in use, I provide means for engaging the thread on the rod. This means comprises an inwardly extending spring tongue 16 formed of a portion of the wall of a tubular member 17 surrounding the inner end of the tubular guide and fitting snugly within the smaller portion 2 of the central bore of the handle. This spring tongue is bent inwardly at its free end 18 to engage the threads of the rod 15, as best shown in Figures 2 and 3, when the point 4 with the tubular guide and rod 15 are entered into the handle from the forward end, as shown in Figure 3. When the parts are separated the spring tongue 16 springs outwardly and disengages the threads so that the rod 15 can be moved freely longitudinally in the tubular guide 10.

Preferably I provide the tubular guide 10 with a transverse cut or opening 19 to receive the bent end portion 18 of the spring tongue. The tube 17 of which the spring tongue 16 forms a part, is secured to the tubular guide 10 by soldering or otherwise. For the purpose of providing sufficient friction for holding the lead 11 against falling out and against rotation while being used, I split the extreme point 20 of the coned delivery point 4 as shown at 21 adapting the end 20 to be closed sufficiently to cause the lead to slightly expand same as the lead is forced through the point 20. I prefer to add to this frictional holding of the lead by splitting the forward end 12 of the tubular guide 10 by means of a longitudinal central cut 22 and I form the two parts, thus provided, to provide between their ends inwardly extending rounded projections 23 adapted to be pressed into contact with the lead by the contact of the free end portions of the parts thus formed with the inner surface of the point 4. This construction allows for considerable variation in the diameter of the lead 11.

As so far described, my improved pencil is an operative device but for the purpose of providing a suitable magazine for extra leads I provide a tubular guide 24 within the larger portion 3 of the handle for the rod 15 when the same is entered but a short distance into the tubular guide 10 and I secure the tubular guide 24 in position in the larger portion 3 of the bore by means of a head 25 fitting within the bore 3 and arranged at the inner end of the guide 24 and a second head 26 arranged within the larger portion 3 of the bore and far enough from the rear end 27 of the handle to form a magazine space 28 deep enough to contain the extra leads around the guide 24.

For closing the rear end of the handle I provide a short thin walled tubular member 29 mounted upon the rear end of the handle member and adapted to receive and hold a cylindrical eraser 30. The heads 25 and 26 are fixed within the larger portion 3 of the bore and the tubular guide 24 is fixed in the heads. It is to be noted that the rod 15 is free within the tubular guide 24.

In the use of my improved pencil when the lead 11 wears down so that it is required to force it forwardly in the tubular guide 10 to project its wearing end sufficiently, the point 4 is withdrawn from the handle and the rod 15, being at such time free from the spring tongue 16, is pushed forward through the tubular guide 10 to project the lead the desired amount and then the point 4 is replaced upon the handle, the replacement causing the spring tongue 16 to engage in the threaded surface of the rod 15 and hold the same against relative longitudinal movement, in other words, holding the lead against being forced back into the handle.

In Figures 7 and 8 I have illustrated a simple means for projecting the lead forward without the necessity of removing the point 4 from the handle 1. This means consists in providing a flattened head or end 31 on the threaded rod 15 and making the tubular guide 24 of oval form to prevent the relative rotation of the guide and the rod.

It will be obvious that by means of this construction I can project the lead after the point has been placed upon the handle by relatively rotating the handle 1 and the point 4 whereby the threaded rod 15 will be forced longitudinally of the device by reason of the engagement of the spring tongue 16 with the screw surface of the rod 15.

As many modifications of my invention will readily suggest themselves to one skilled in the art, I do not limit or confine my invention to the specific details of construction herein shown and described.

I claim:

1. In a pencil of the kind described a handle member, a point member adapted to be removably mounted upon the handle member, a tubular guide carried by the point member adapted to enter a central bore in the handle member, an abutment rod adapted to enter the rear end of the tubular guide, the rod having a transversely ridged surface, and means carried by the tubular guide adapted to engage the ridged surface of the abutment rod when the point is on the handle and prevent the relative longitudinal movement of the abutment rod.

2. In a pencil of the kind described a handle member having a central bore, a point member adapted to be removably mounted on the handle member, a central tubular guide carried by the point member and adapted to be projected into the central bore, a threaded abutment rod adapted to be projected into the tubular guide and a

rod retaining member adapted to be engaged with the threaded surface of the abutment rod when the point is placed upon the handle member.

3. In a pencil of the kind described a handle member having a relatively small central bore at its forward end, a point member adapted to be removably mounted on the forward end of the handle member, a tubular guide for the lead carried by the point member and adapted to be projected within the said bore, the tubular member provided with a transverse slot adjacent to its inner end, a spring tongue carried by the tubular member having its free end formed for entering through said slot, a threaded abutment rod for pushing the lead through the tubular guide adapted to be engaged by the inwardly projecting end of the spring tongue by the contact of the tongue with the wall of said relatively small bore when the point is mounted upon the handle.

4. In a pencil of the kind described a tapered point member adapted to be removably mounted upon a handle, a tubular guide for the lead centrally mounted in the point member, the forward end of the guide projecting close to the forward end of the point, said forward end of the guide having a split end the two portions thereof formed to produce inwardly extending rounded projections for frictional engagement with the lead, as and for the purpose specified.

5. In a pencil, in combination, a handle member having a central bore, a point member adapted to be removably mounted in the handle member, a tubular guide member carried by the point member, and a threaded abutment member, including a resiliently active member on the tubular member normally in disengagement with the abutment member but active under the compression force attending the uniting of the point member to the handle member to cause engagement of the abutment member by the resilient member whereby through relative rotation of the handle and point members the abutment member will be advanced or retracted.

6. In a pencil of the kind described, a handle member having a central bore, a point member adapted to be removably mounted upon the handle member, a tubular guide for the lead carried by the point member, an abutment rod adapted to enter the inner end of the guide for adjusting the position of the lead, means carried by the tubular guide for engagement with the abutment rod to prevent relative longitudinal movement of the rod when the point is mounted upon the pencil, and a centrally fixed tubular guide in the handle for receiving the free end of the abutment rod, said fixed tubular guide extending to the rear or upper end of the handle and a head within the bore of the handle in which the fixed tubular guide is held to provide an annular space at the upper end of the pencil as a magazine for extra leads and means for closing the outer end of said magazine.

7. In a pencil of the kind described a handle member having a central longitudinal bore, a removable point member adapted to be mounted upon the handle, a tubular guide for the lead carried by the point member, an externally threaded abutment rod adapted to enter the inner end of the tubular guide, means carried by the tubular guide for engagement between the adjacent threads of the abutment rod when the point is mounted on the handle, and means carried by the handle for preventing relative rotation of the handle and abutment rod whereby when the point member is rotated the abutment rod can be pushed forward to project the lead.

8. In a pencil of the kind described a handle member having a central longitudinal bore, a removable point member adapted to be mounted upon the handle, a tubular guide for the lead carried by the point member, an externally threaded abutment rod adapted to enter the inner end of the tubular guide, means carried by the tubular guide for engagement between the adjacent threads of the abutment rod when the point is mounted on the handle, and a fixed tubular guide in the handle member for receiving the free end of the abutment rod, said fixed guide and free end of the abutment rod being formed to prevent relative rotation whereby when the point member is rotated on the handle member, the abutment rod can be forced forward to project a lead.

Signed at Chicago, Illinois, this 19th day of August, 1921.

CHARLES J. FUNK.