

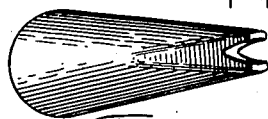
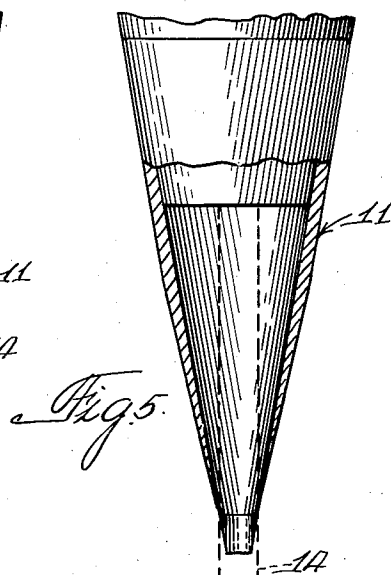
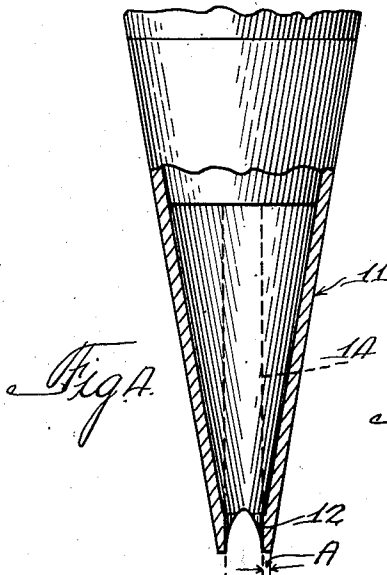
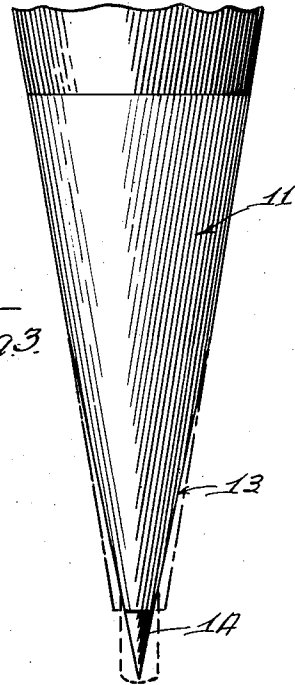
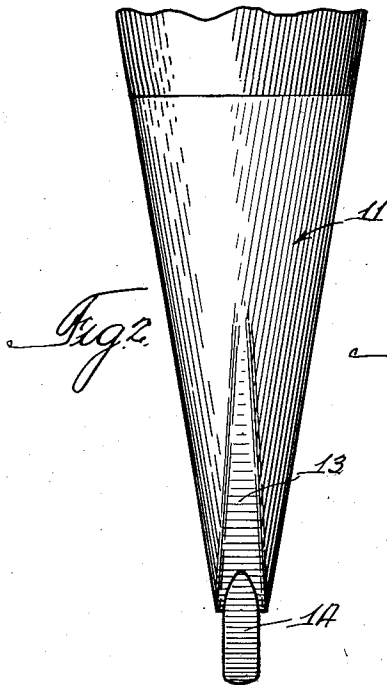
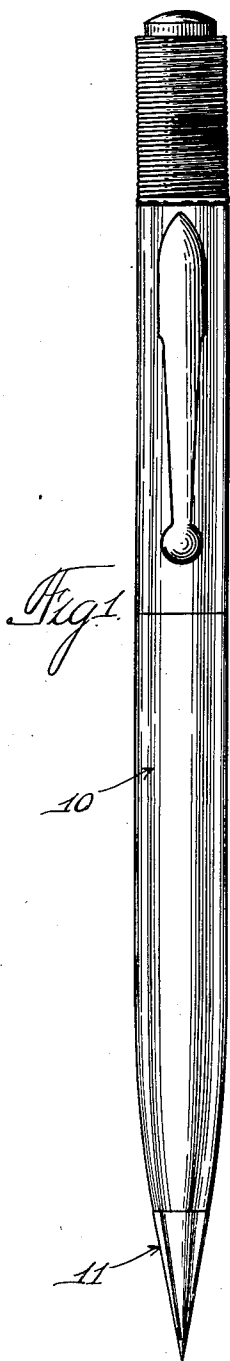
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2,232,231

TIP FOR A MARKING INSTRUMENT

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TIP FOR A MARKING INSTRUMENT

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6 Claims. (Cl. 120—9)

This invention relates to a tip for a marking instrument and has special reference to a shell for the writing point end of a mechanical pencil or the like, the shell having an axial opening therethrough of a diameter to permit the passage of a lead or other marking medium.

More particularly, this invention relates to a tip for a marking instrument comprising a rigid shell having an end opening through which the marking medium extends, the material of the shell having a portion of reduced thickness adjacent the end opening thereof to present a minimized clearance between the side wall of the marking medium and a guide or the like against which the shell may be rested.

The present invention contemplates a tip for mechanical pencils of the usual type on the market today whereby such a pencil may be employed by draftsmen, engineers, and the like, where it is necessary, for example, to guide the pencil with a straight edge in producing a line. The usual tip for mechanical pencils or other marking instruments is formed of a relatively soft base metal sometimes plated with a precious metal. Most metals thus employed are of a comparatively great thickness since a substantial strength is required in supporting the lead or marking medium projecting therethrough and in opposing stresses such as are occasioned by dropping the marking instrument on a hard surface.

In the use of such a usual marking instrument with a guide or straight edge there is a very substantial clearance between the side wall of the marking medium and the guide if the tip is rested against the guide or, should the lead be rested against the guide directly, then a very substantial portion of the lead is extended from the end of the pencil. In the first instance where the thickness of the wall of the tip spaces the lead substantially from the guide, the mark produced is either not accurate or very difficult to make accurate and, in the latter instance, where the pencil lead is extended sufficiently beyond the tip of the writing instrument so as to contact the guide of itself, the lead is weakened by reason of not having a proper support therefor and is very readily broken.

In the usual tip construction it is impractical to extend the lead sufficiently for the purpose of sharpening to produce a fine line as is necessitated in drafting. The sharpened point needs extend such a substantial distance beyond the end of the tip that it will not function satisfactorily without breaking. The present invention contemplates

the provision of a tip in which the thickness of the side wall thereof is reduced to such an extent that accurate workmanship may be obtained by a draftsman in resting the tip directly against the guide. Also the tip may be provided with a side wall opening or opposed side wall openings formed by gradually reducing the thickness of the side wall resulting in such opening or openings in communication with the end opening. Such a construction presents exposed wall portions of the marking medium inwardly of the end of the shell so that the marking medium may be sharpened inwardly beyond its supported portion to have an extending pointed end portion of comparatively small length.

With a construction as above identified a minimized clearance between the side wall of the marking medium and a guide against which the tip may rest is provided and where side wall openings communicate with the end opening, exposed wall portions of the marking medium inwardly of the end of the shell provide that the marking medium may be pointed inwardly of the end of the shell and thus reduce to a minimum the amount of marking medium which extends beyond the end of the shell.

One of the objects of this invention is to provide a tip for a marking instrument of the character indicated above whereby the clearance between the side wall of the marking medium and the guide against which the tip may rest is substantially minimized.

Another object of this invention is to provide a tip for a marking instrument of the type hereinabove mentioned in which exposed wall portions of the marking medium are presented inwardly of the end of the shell so that the marking medium may be sharpened with a minimum length of the marking medium extending from the end of the tip.

Other objects and advantages of this invention will hereinafter be more particularly pointed out and, for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing, in which latter:

Figure 1 is a front elevational view of a mechanical pencil having a tip at the writing point end thereof incorporating the features of this invention;

Fig. 2 is an enlarged side elevational view of a fragmentary portion of the end of the mechanical pencil shown in Fig. 1;

Fig. 3 is an enlarged fragmentary view of the lower end of the mechanical pencil of Fig. 1;

Fig. 4 is a view similar to Fig. 2 showing a portion of the tip in section;

5 Fig. 5 is a view similar to Fig. 3 showing a portion of the tip in section; and

Fig. 6 is an enlarged perspective view of the tip shown in the preceding figures.

Referring now more particularly to the drawing, the tip embodying the features of the present invention is shown attached to the writing point end of a mechanical pencil 10, the pencil being of a standard construction. The tip comprises a conical-shaped shell 11 of any rigid material.

The shell 11 is formed by swaging a piece of tubular stock or it may be processed on a screw machine from rod stock. The material of the shell 11 is ordinarily of a base material such as brass having a nickel or precious metal plating thereon. In the present construction, while the above material may be employed it has been found preferable to employ stainless steel having a high chromium content, the shell thus formed being of substantially less thickness than that of brass or such material and yet having the same strength. In practice it has been found that the tip may be swaged from a .005" wall stainless steel tube.

Referring more particularly to Fig. 4, it will be noted that the tapered outside wall of the conical shell 11 is straight and that the inside wall thereof is likewise straight to the end opening 12 which is of uniform diameter throughout its length. After the shell 11 has been swaged into conical shape, a .037" hard steel wire is inserted in the end of the swaging mandrel and extends through the end opening of the shell with the tip being formed down on the steel wire to produce the opening 12 of uniform diameter. The thickness of the material at the extreme end of the shell indicated by the numeral A is .0055" thus presenting a minimized clearance between the side wall of the marking medium extending through the opening 12 and any guide against which the shell 11 may rest.

In perhaps most conditions of use this clearance is sufficiently small to effect a high degree of accuracy, yet it is a further object of this invention to present exposed wall portions of the marking medium inwardly of the end of the shell in order that the marking medium may be exposed for purposes of sharpening to a very fine point and further that the sharpened point need only extend a comparatively short distance from the end of the shell. In order to accomplish this result, opposed sides of the shell are ground to present flattened portions 13, the flattened portions extending at a greater angle than the normal inclination of the conical surface of the shell. This results in gradually reducing the shell in thickness as shown more particularly in Figs. 3 and 5. In Fig. 3, the normal contour of the shell is shown in dot-dash lines with the actual contour of the shell after grinding being shown in full lines. The marking medium 14 is shown in its normal size in dotted lines and in its actual shape after sharpening in full lines.

70 In use with a guide, either the marking medium or the shell may be engaged against the guide. In both instances an accurate marking on a surface is obtained in conformity with the

guide. In the usual marking instrument, accuracy is obtained strictly in accordance with manual manipulation, depending for example on maintaining the same angularity of the instrument in the movement thereof along the guide. 5

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A tip for a marking instrument comprising 15 a rigid conical shell having an end opening through which the marking medium extends, the material of said shell having opposed portions of gradually reducing thickness in the direction of and terminating adjacent the end opening thereof to present opposed flattened side walls for producing a minimized clearance between the side wall of the marking medium and a guide against which said shell may rest. 20

2. A tip for a marking instrument comprising a rigid conical shell having an end opening through which the marking medium extends, the material of said shell having opposed portions of gradually reducing thickness in the direction of and terminating adjacent the end opening thereof to present opposed flattened side walls terminating in side wall openings to expose portions of the side wall of the marking medium. 25 30

3. A tip for a marking instrument comprising a conical metallic shell having an opening at the smaller end thereof through which the marking medium extends, the material of said shell at opposed portions thereof being gradually reduced in thickness to terminate in a side wall opening to present exposed wall portions of said marking medium inwardly of the end of said shell. 35 40

4. A tip for a marking instrument comprising a conical metallic shell having an opening at the smaller end thereof through which the marking medium extends, said shell having opposed paraboloid-shaped openings at the smaller end thereof to present exposed wall portions of said marking medium inwardly of the end of said shell. 45 50

5. A tip for a marking instrument comprising a conical metallic shell having an opening at the smaller end thereof through which the marking medium extends, the material of said shell at opposed portions thereof being gradually reduced in thickness toward said end opening terminating in a side wall opening to present exposed wall portions of said marking medium inwardly of the end of said shell. 55 60

6. A tip for a marking instrument comprising a conical metallic shell having an opening at the smaller end thereof through which the marking medium extends, the material of said shell at opposed portions thereof being gradually reduced in thickness toward said end opening to present opposed flattened side walls terminating in paraboloid-shaped openings in communication with said end opening for exposing wall portions of said marking medium inwardly of the end of said shell. 65 70

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