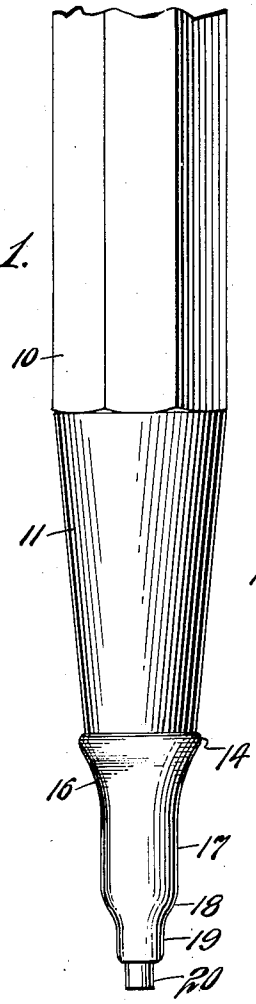
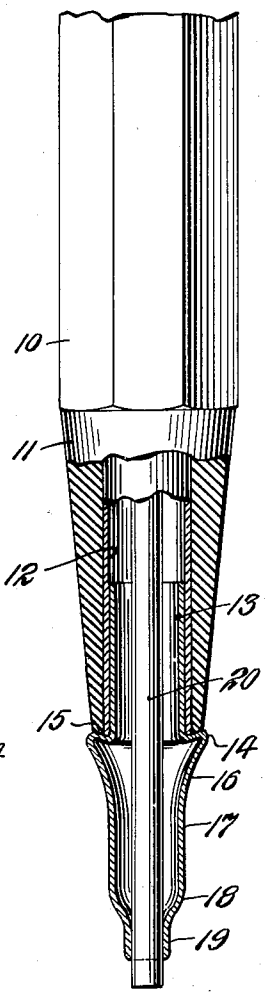
Oct. 19, 1943. H. S. HASSELQUIST 2,332,223

MECHANICAL PENCIL TIP

Filed July 15, 1942 2 Sheets-Sheet 1

Fig. 1.





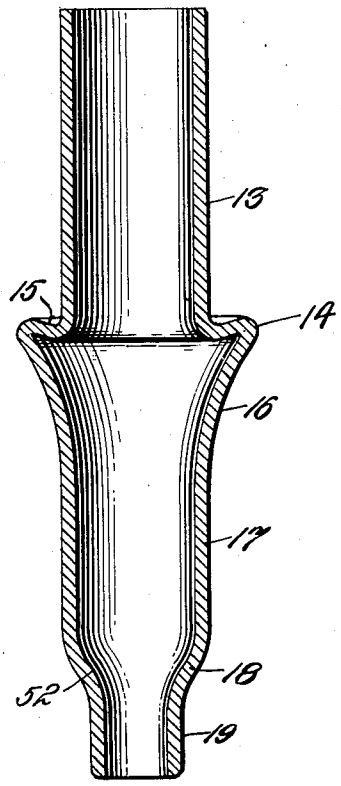


Fig. 11.

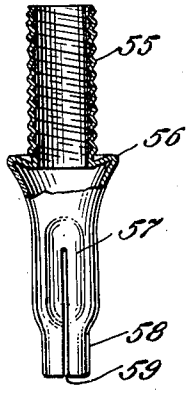
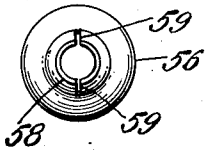


Fig. 2.

Fig. 3.

Fig. 12.



INVENTOR.
HUGO S. HASSELQUIST
BY
Luther W. Hawley.
ATTORNEY

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MECHANICAL PENCIL TIP

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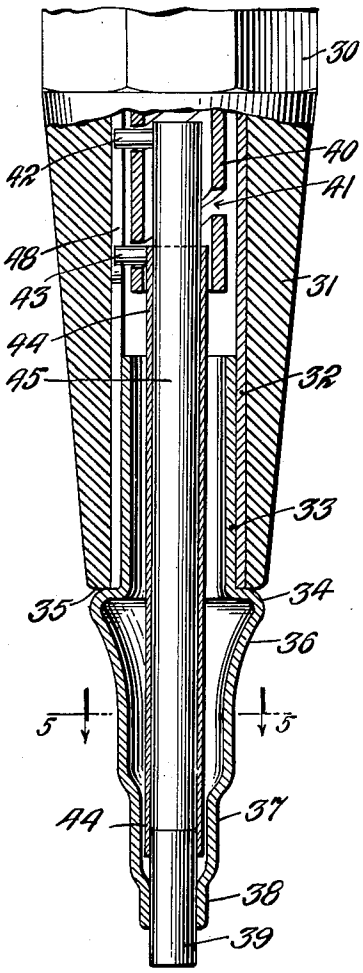


Fig. 4.

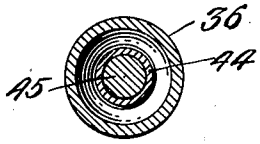


Fig. 5.

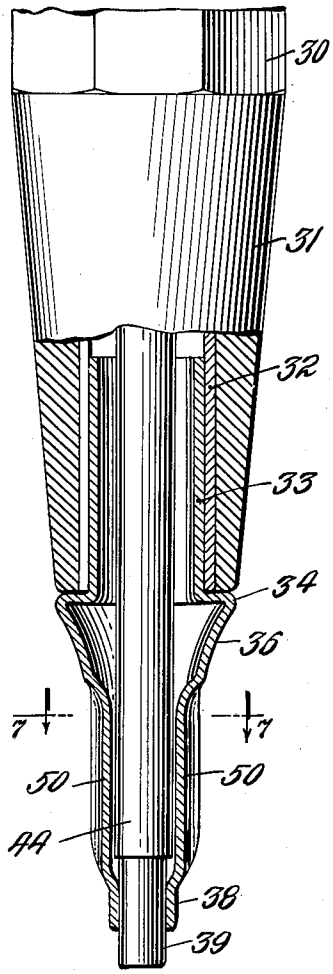


Fig. 6.

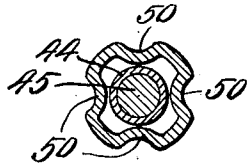


Fig. 7.

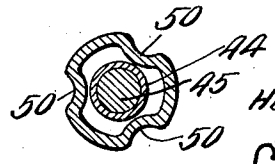


Fig. 8.

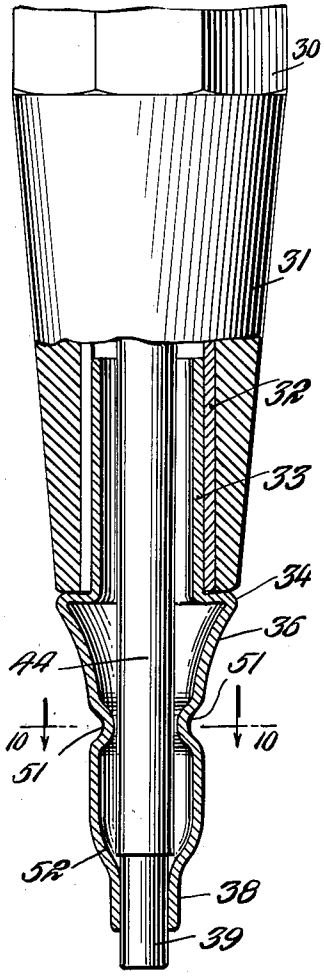


Fig. 9.

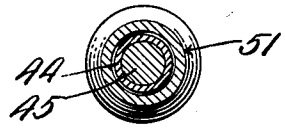


Fig. 10.

INVENTOR.
HUGO S. HASSELQUIST
BY
Luther W. Hawley.
ATTORNEY

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2,332,223

MECHANICAL PENCIL TIP

Hugo S. Hasselquist, Oak Park, Ill., assignor to Joseph Dixon Crucible Company, Jersey City, N. J., a corporation of New Jersey

Application July 15, 1942, Serial No. 450,979

8 Claims. (Cl. 120—18)

This invention relates to mechanical pencils and particularly to pencil tips for such pencils.

At the present time mechanical pencil tips are usually made on automatic screw machines. This method of making tips is time-consuming, wasteful of material and expensive.

This invention has for its salient object to provide a construction of pencil tip that is attractive in appearance, will use a minimum amount of material for its manufacture, can be made at a higher rate of speed of production and from a cheaper grade or type of metal than the ordinary machined pencil tip.

Another object of the invention is to provide a mechanical pencil tip formed from sheet metal and so constructed that the lead will be supported thereby and furthermore so made that the tip will not obscure the view of the writing from the observer.

Another object of the invention is to provide a mechanical pencil tip so constructed that it is particularly adapted for use with a ruler or straight edge and the pencil tip will not interfere with the use of the pencil in this manner or fail to adequately support the lead as is the case with the ordinary mechanical pencil tip.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which:

Fig. 1 is an elevational view of a portion of a mechanical pencil provided with a pencil tip constructed in accordance with the invention;

Fig. 2 is a view similar to Fig. 1 but showing the outer end of the pencil and tip in section;

Fig. 3 is an enlarged sectional elevation of the pencil tip;

Fig. 4 is an enlarged sectional elevation showing further details of the pencil construction and a modified form of tip constructed in accordance with the invention;

Fig. 5 is a transverse sectional elevation taken substantially on line 5—5 of Fig. 4 looking in the direction of the arrows;

Fig. 6 is a view similar to Fig. 4 but illustrating another form of tip constructed in accordance with the invention;

Fig. 7 is a transverse sectional elevation taken substantially on line 7—7 of Fig. 6 and looking in the direction of the arrows;

Fig. 8 is a view similar to Fig. 7 but showing a modified form of cross section;

Fig. 9 is a view similar to Figs. 4 and 6 and illustrating a still further modified form of the tip embodying the invention;

Fig. 10 is a transverse sectional elevation taken substantially on line 10—10 of Fig. 9 looking in the direction of the arrows;

Fig. 11 is an elevational view, partly in section, of another form of pencil tip embodying the invention; and

Fig. 12 is a bottom end view of the structure shown in Fig. 11.

The mechanical pencil and the lead-holding and feeding means may be constructed in any desired manner and form no part of the present invention. In the form of the invention shown in Figs. 1 to 3 inclusive, there is shown a pencil body 10 having the usual conical end portion 11. The pencil body is provided with a sleeve 12 of the usual construction.

The pencil tip as shown in enlarged section in Fig. 3 is formed of sheet metal and comprises a cylindrical portion 13 which is received in the outer end of the sleeve 12, an annular flange or shoulder 14 having a seat 15 for the outer end of the pencil body, a tapered portion 16 which merges into a cylindrical portion 17, and a second tapered portion 18 which merges into a reduced cylindrical end portion 19.

As clearly shown in Figs. 2 and 3, the flange 14 extends outwardly at an acute angle to the cylindrical portion 13 of the tip, forming an under cut. Moreover, the outer end 15 of the pencil body or cone 11 is beveled or tapered. The under cut flange 14 and the tapered end 15 coact to force the body or cone 11 into gripping frictional engagement with the cylindrical portion 13 of the pencil tip.

As clearly illustrated in Fig. 2, the lead 20 which is supported and fed in any suitable manner in the pencil body 10 extends through the pencil tip and fits snugly within the reduced cylindrical end portion 19, this cylindrical end portion forming a firm support for the lead.

The construction of tip above described is attractive in appearance and by reason of the progressively reduced diameter toward the outer end, the tip is so formed that it does not obstruct the writer's view of the writing, and, furthermore, the shape of the outer end portion 19 provides a construction which adapts the pencil particularly for use with a straight edge or ruler.

In the form of the invention illustrated in Figs. 4 and 5, the pencil body 30 has a tapered or conical end portion 31 having a sleeve 32 which receives a tubular upper end 33 of the pencil tip. The tip has a laterally extending flange or shoulder 34 which forms a seat for the end 35 of the conical end portion 31 of the pencil. The flange

or shoulders **34** in Figs. 4, 6 and 9 may be under cut and the end **35** of the conical portions **31** may be beveled, if desired, as in Figs. 2 and 3. A tapered portion **36** of the tip extends downwardly from the shoulder **34** and merges into a reduced cylindrical portion **37**, the end of the tip being further reduced to a cylindrical portion **38** which is dimensioned to receive the lead **39**.

The pencil shown in Figs. 1 to 9 inclusive has a feed tube **40** provided with a spiral slot **41** which receives lugs **42** and **43**. The lug **43** is carried by the upper end of a clutch tube **44** which in turn engages the upper end of the lead **39**. Lugs **42** and **43** extend into a slot **48** in sleeve **32**.

The lug **43** is carried by the upper end of an ejecting plunger **45** mounted in the clutch sleeve or tube **44**.

The feed tube **40** is connected at its upper end to the eraser cap in the usual manner and as the cap is rotated the spiral slot **41** of the tube **40** will feed the clutch tube **44** downwardly, thus feeding the lead from the reduced tubular portion **38** of the pencil tip.

From the showing in Fig. 4 it will be noted that when the lead has been nearly exhausted and only a small portion remains in the pencil, the clutch tube **44** will be disposed at the lower end or outer end of the pencil tip, the end portion of the feed tube being positioned within the cylindrical portion **37** of the tip. This portion **37** forms a guide and lateral support for the tube **44** and for the lead carried thereby, thus preventing the tube **44** from undue lateral displacement.

In the form of the invention illustrated in Fig. 6, the clutch tube **44** is supported in a similar manner by a plurality of inwardly extending portions **50** of the pencil tip, these portions being formed by longitudinally grooving the portion of the pencil tip between the portions **36** and **38**. In Fig. 3 there are three inwardly projecting portions **50**, and in Fig. 7 four such portions are provided.

In Figs. 9 and 10 the clutch tube **44** is guided and held against lateral displacement by an annular inwardly extending projection **51** which is formed in the portion **36** of the tip by forming an annular groove therein.

The form of the invention shown in Figs. 11 and 12 was developed particularly for the "push" type of pencil in which the lead is not retracted. The upper end **55** of the tip is threaded and is arranged to be threaded into the outer end of the pencil body. The flange **56** is under cut as in Figs. 2 and 3. The portion **57** is indented longitudinally to form guides for the pencil clutch sleeve. The lower end **58** and a portion of the part **57** are slitted as shown at **59**, forming a friction grip for the lead.

In the form of the invention first described namely, that illustrated in Figs. 1 to 3 inclusive, the clutch tube is not shown since it is disposed in the body portion **10** of the pencil. However, this clutch tube **44** when fed downwardly to the position shown in Figs. 4, 6 and 9, would have its lower end positioned substantially as shown in Fig. 9 or within the portion **52** of the tip and it will thus be seen that this portion would, by its proximity to the lower end of the clutch tube, provide means for preventing undue lateral displacement of the feed tube.

From the foregoing specification it will be evident that a simple, practical and economical construction of pencil tip has been worked out and that this tip will form an efficient support for the lead and also for the feed tube **44** when the tube has been fed inwardly to the extent illustrated in Figs. 4, 6 and 9.

The pencil tip is formed of sheet metal by suitable drawing operations which form no part of the present invention and are therefore not described. It will be obvious that a very considerable saving in time and material is effected by constructing the tip of sheet metal, thus providing a cheaper as well as a more attractive construction.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of further modification and that further changes in the construction may be made without departing from the spirit or scope of the invention as expressed in the following claims.

I claim:

1. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip formed of sheet metal and uniform in thickness throughout its length having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having a surface intermediate the ends of the tip dimensioned to receive and guide the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

2. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip substantially uniform in thickness throughout the length thereof and having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having a cylindrical portion of reduced diameter intermediate the ends of the tip dimensioned to receive the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

3. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip substantially uniform in thickness throughout the length thereof and having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having an annular surface intermediate the ends of the tip dimensioned to receive the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

4. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having inwardly offset supporting means intermediate the ends of the tip dimensioned to receive and guide the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

5. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having an annular internal shoulder forming annular supporting means intermediate the ends of the tip dimensioned to re-

ceive and guide the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

6. In a mechanical pencil having a clutch sleeve for receiving and supporting the lead and means to feed said clutch sleeve and lead, a pencil tip having a cylindrical end portion for snugly receiving and supporting the outer end of the lead and having a longitudinally grooved portion forming supporting means intermediate the ends of the tip dimensioned to receive and guide the outer end of the clutch sleeve and prevent lateral displacement thereof when the clutch sleeve has been fed into the tip.

7. A pencil tip made of sheet metal, said tip having an outwardly extending flange intermediate the ends thereof, one end of the tip being tubular and dimensioned to fit in the end of the pencil body and the other end being tubular and reduced in diameter to form a land to support the leads, the flange extending outwardly at an acute angle to the tubular end portion of the tip.

8. A pencil tip made of sheet metal, said tip having an outwardly extending flange intermediate the ends thereof, one end of the tip being tubular and dimensioned to fit in the end of the pencil body, the flange extending outwardly at an acute angle to the tubular end portion of the tip.

HUGO S. HASSELQUIST.