

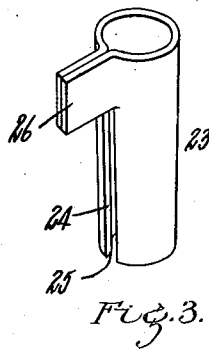
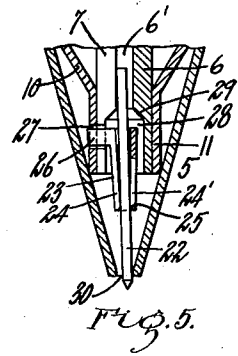
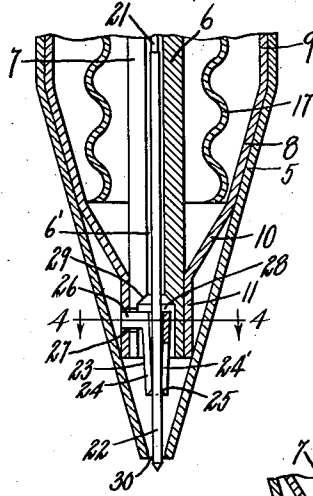
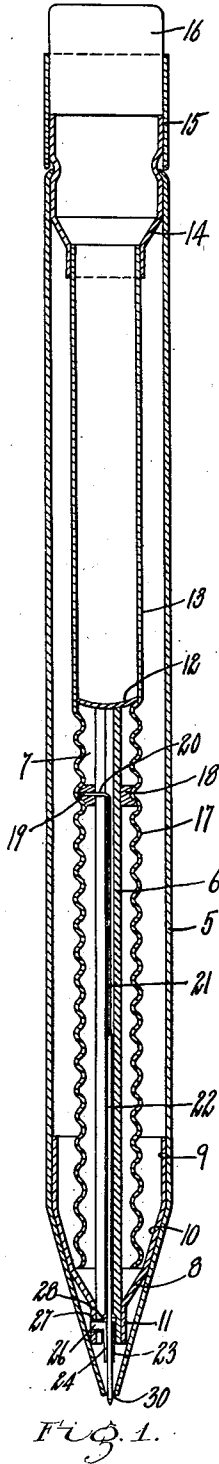
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W. P. DE WITT

PENCIL WITH FLOATING CLUTCH

Filed Sept. 26, 1921



Inventor:  
William T. DeWitt,  
by his attorney,  
Charles V. Gooding.

# UNITED STATES PATENT OFFICE.

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## PENCIL WITH FLOATING CLUTCH.

Application filed September 26, 1921. Serial No. 503,149.

*To all whom it may concern:*

Be it known that I, WILLIAM P. DE WITT, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Pencils with Floating Clutches, of which the following is a specification.

This invention relates to an improved pencil of that type in which a lead of small diameter is used in which the lead is fed outwardly from the pencil by means of a reciprocatory member.

The object of the invention is to provide a cheap, durable and practical pencil of the character set forth and particularly the object of the invention is to provide means in the front end of the pencil whereby the lead when being inserted in the pencil, will be accurately guided into a guide tube located in said pencil, and will be held by said means from dropping out of the pencil and from rotating in the pencil casing, said means being so arranged and constructed that the lead will be guided into the guide tube independent of the diameter of said lead within certain limits and independent of the fact that the lead may not be absolutely straight.

The object of this invention is further to provide a means of the character set forth which will be free to move at the front end thereof but which will be limited in its movement laterally and circumferentially at the rear end thereof and which is limited to a slight longitudinal movement, said means being so constructed and arranged that it is perfectly free at all times to move as hereinbefore set forth, and which will constitute a floating clutch member, the lead itself being fulcrumed at the extreme front end of the pencil casing and capable of moving so far as said floating clutch is concerned until the rear end of the lead touches the inside bore of the guide tube; thus the lateral movement of the lead is controlled at two points, one at the extreme front end of the casing, the other by engagement of the rear end of the lead with the inside of the guide tube. The means whereby these results are secured consists of a floating clutch which holds the lead against dropping out of the casing and which holds it against rotation, but which does not hold the lead against lateral movement, this

clutch being so positioned and constructed that it will yield to receive leads of different diameters within certain limits and will also yield or swing to allow the lead when being inserted in the pencil to be guided into the guide tube in position for the rear end thereof to be engaged by a push rod. In other words, the floating clutch member of my invention is so constructed, supported and arranged that it will prevent the lead, when inserted in the pencil, from dropping out, and it will also prevent said lead from rotating and will guide the lead when being inserted into the guide tube, but will perform no other function with relation to the lead, the position of the lead laterally thereof being independent of the clutch member so that after the lead has once been inserted within the pencil, the clutch is positioned, so far as lateral movement is concerned, by the lead.

Referring to the drawings:

Figure 1 is a longitudinal, sectional elevation of my improved pencil.

Fig. 2 is an enlarged section of the front end portion of the pencil.

Fig. 3 is a perspective view of the auxiliary clutch member.

Fig. 4 is a sectional plan taken on the line 4-4, Fig. 2.

Fig. 5 is a sectional elevation similar to Fig. 2 illustrating another position of the lead and floating clutch.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 is the casing of the pencil, 6 is a guide tube for the leads, the same being slotted longitudinally thereof along one side at 7 and fixedly positioned in the casing at its front end by means of an alignment tube 8 which has a cylindrical portion 9 forming a tight fit in the casing 5, a conical portion 10 connecting said cylindrical portion 9 to a cylindrical portion 11 in the bore of which the front end of the guide tube 6 forms a tight fit. By this means the front end of the guide tube is fixedly positioned relatively to the casing, and the rear end of the guide tube is adjacent to a disc 12 located in a tube 13. The rear end of the tube 13 has another tube 14 fast thereto preferably by a frictional fit and constituting, in effect, a part thereof, said tube 14 projects at its rear end beyond

the rear end of the casing 5 and has fastened thereto by a frictional fit a sleeve 15 which is of an interior diameter equal to the interior diameter of the casing 5 so that it is possible for said sleeve 15 to receive an eraser 16 of comparatively large diameter. The tube 13 is corrugated to form a screw thread 17 from about midway of its length to its front end, and in this screw-threaded portion of the tube a screw-threaded collar 18 is located. The collar 18 is slidably mounted upon the outside of the guide tube 6 and has a hole 19 therein into which a laterally projecting arm 20 on a push rod 21 extends. The push rod 21 is slidable in the interior of the stationary guide tube 6 and acts to push the lead 22 forwardly and out of the pencil. An auxiliary guide tube 23 constitutes a floating clutch member. This floating clutch member 23 is illustrated in detail in Fig. 3 and consists of a tube split longitudinally thereof throughout its entire length at 24 and throughout a part of its length on the opposite side from the slot at 24'. This construction allows the lower end of the floating clutch to be bent inwardly to render the same conical and to enable the forward end of the floating clutch to grip the lead 22. The extreme forward end of the bore of the floating clutch is rounded or bevelled at 25 to assist in guiding the lead when it is first inserted in the pencil. The floating clutch has an ear 26 thereon formed preferably of two sections of the tube 23 which are closed together to form said ear. The ear 26 projects through the slot 7 in the guide tube 6 and into a hole 27 provided in the cylindrical front end portion of the alignment tube 8. The rear end of the floating clutch member projects into a chamber 28 formed in the forward end of the guide tube 6, the rear end of this chamber being bevelled at 29 so that the lead when being inserted may be guided thereby into the bore 6' of the guide tube 6. The front end of the floating clutch is free to move in any direction without engaging the conical inner walls of the casing 5. The rear end of the floating clutch is free to move to a limited extent in the slot 27 and in the chamber 28, so that when the lead is inserted in the pencil it is free to tip on the extreme outer end of the pencil casing, as illustrated in Fig. 5, until its rear end engages the inner wall of the guide tube 6, as illustrated in said Fig. 5, the pencil lead 22 being a loose fit in the bore 6' of said guide tube.

By this construction it will be obvious that as the lead is inserted in the pencil the rear end thereof will pass into the bore of the floating clutch and by it will be guided into the counterbored chamber portion 28 of the guide tube and thence will pass upwardly into the bore 6' of said guide tube and if it should not be exactly in alignment with said

bore 6' it will be guided thereinto during the process of inserting it in the pencil by the conical portion 29, and if the lead should not be exactly straight, or if the median axial line of the guide tube should not be exactly in alignment with the median axial line of the casing, or with the center of the lead opening at the forward end of the casing, then the floating clutch will accommodate itself to these variations from an exact theoretically and geometrically perfect construction to allow the lead to bear against the edge of the lead opening of the casing at its front end and against the inner wall of the bore 6' of the guide tube 6 without exerting any strain upon the lead, tending to break the same, thus any differences in diameter within certain limits and any inaccuracies in the alignment of the lead feeding instrumentalities relatively to the lead opening 30 will be overcome.

The general operation of the device hereinbefore specifically and to some extent in general described is as follows: The lead 22 is inserted through the bore in its floating clutch member 23 which has the front end bevelled to assist in guiding the lead into said clutch member and said lead is pushed into the pencil until it projects through the clutch member and into the guide tube 6. As hereinbefore described the push rod 21 is moved forwardly and rearwardly for the purpose of ejecting the lead from the pencil and for the purpose of making room for the lead to be inserted in the pencil by rotating the sleeve 15 and tube 13. The screw-threaded portion of the tube 13 which engages the screw-threaded collar 18 will then cause the collar to travel along said screw-threaded portion carrying with it the push rod 21 and propelling the lead toward the front end of the pencil. After the lead has been used up and it is desired to insert a new lead, the direction of rotation of the tube 13 is reversed, thus carrying the rod 21 backwardly and leaving a space in the guide tube for the insertion of the lead 22. The construction and arrangement of parts hereinbefore described renders it possible to easily insert a lead in the pencil, and when said lead is inserted it is firmly gripped by the floating clutch 23; to prevent it from rotating and from falling out of the casing while at the same time no cramping motion is brought to bear upon the lead whereby it may be broken. This is due to the freedom of movement of the clutch member relatively to the other parts of the device, and especially to the freedom of movement of the front end of the floating clutch member laterally thereof and relatively to the lead opening in the front end of the pencil casing. Applicant's device differs from a construction in which the rear end of the clutch tube is joined to the guide tube by a ball and

socket joint or its equivalent, in that the front end and rear ends of the guide tube are movable laterally thereof in the same direction to a limited extent and also, the auxiliary guide tube, which constitutes a clutch, is loosely mounted to permit its entire body to have a slight lateral movement and preferably a slight lateral and longitudinal movement.

10 I claim:

1. A pencil having, in combination, a casing, a guide tube for leads therein, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the front end of said guide tube and its rear and front ends free to move laterally thereof in the same direction to a limited extent.

2. A pencil having, in combination, a casing, a guide tube for leads therein, a push rod slidably mounted in said guide tube, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the front end of said guide tube and its rear and front ends free to move laterally thereof in the same direction to a limited extent.

3. A pencil having, in combination, a casing, a guide tube for leads therein, a push rod slidably mounted in said guide tube, means to impart a reciprocatory motion to said push rod, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the front end of said guide tube and its rear and front ends free to move laterally thereof in the same direction to a limited extent.

4. A pencil having, in combination, a casing, a guide tube for leads therein, an auxiliary guide tube constituting a clutch member located adjacent the front end of said casing loosely mounted at its rear end to move laterally in said casing adjacent the front end of said guide tube and with its front end free to move laterally thereof in the same direction.

5. A pencil having, in combination, a casing and a floating clutch member adapted to receive a lead, said clutch member being loosely mounted adjacent the front end of said casing with its rear and front ends free to move laterally thereof in the same direction.

6. A pencil having, in combination, a casing, a guide tube for leads therein, an alignment tube fitting in the front end of said casing the front end of said guide tube fitting the bore of said alignment tube whereby said guide tube is fixedly positioned in said casing, an auxiliary guide tube constituting a clutch located adjacent the front end of said guide tube and a lateral projection on said auxiliary guide tube projecting into a hole provided in said align-

ment tube, said auxiliary guide tube being free to swing laterally at its front end.

7. A pencil having, in combination, a casing, a guide tube for leads located in said casing, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing and mounted to move laterally thereof at its front end, said auxiliary guide tube being split longitudinally thereof, an ear on said auxiliary guide tube projecting laterally therefrom and a stationary member located in said casing and provided with a hole into which said ear projects.

8. A pencil having, in combination, a casing, a guide tube for leads therein, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the front end of said guide tube and loosely mounted to permit its entire body to have a slight lateral movement thereof.

9. A pencil having, in combination, a casing, a guide tube for leads therein, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the front end of said guide tube and loosely mounted to permit its entire body to have a slight lateral and longitudinal movement thereof.

10. A pencil having, in combination, a casing, a guide tube for leads therein, the forward end of the bore of said guide tube being enlarged to form a chamber, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into said chamber and loosely mounted to permit a slight lateral movement thereof within said chamber, its front end being free to move laterally thereof and positioned at all times out of direct engagement with said casing.

11. A pencil having, in combination, a casing and a floating clutch member adapted to receive a lead, said clutch member being loosely mounted adjacent the front end of said casing with its front end positioned at all times out of direct engagement with said casing and free to move laterally thereof, said clutch member being split and tapered toward its front end.

12. A pencil having, in combination, a casing, a guide tube for leads therein, an alignment tube fitting in the front end of said casing, the front end of said guide tube fitting the bore of said alignment tube, whereby said guide tube is fixedly positioned in said casing, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing, the rear end of said clutch projecting into the front end of said guide tube and a lateral projection on said clutch projecting into a hole provided in said alignment tube, said projection forming a loose fit in said hole, whereby said clutch is allowed

a limited lateral movement at its rear end, the front end of said clutch being out of engagement with said casing and free to swing laterally thereof.

5 13. A pencil having, in combination, a casing, a guide tube for leads therein, an auxiliary guide tube constituting a clutch located adjacent the front end of said casing with its rear end projecting into the  
10 front end of said guide tube and loosely mounted to permit its entire body to have a

slight lateral and longitudinal movement thereof while being prevented from rotating about the axial line of said casing.

In testimony whereof I have hereunto set  
my hand in presence of two subscribing wit- 15  
nesses.

WILLIAM P. DE WITT.

Witnesses:

CHARLES S. GOODING,  
FRANKLIN E. LOW.