Feb. 13, 1945. H. K. FERGER 2,369,224

MARKING DEVICE

Filed May 26, 1944

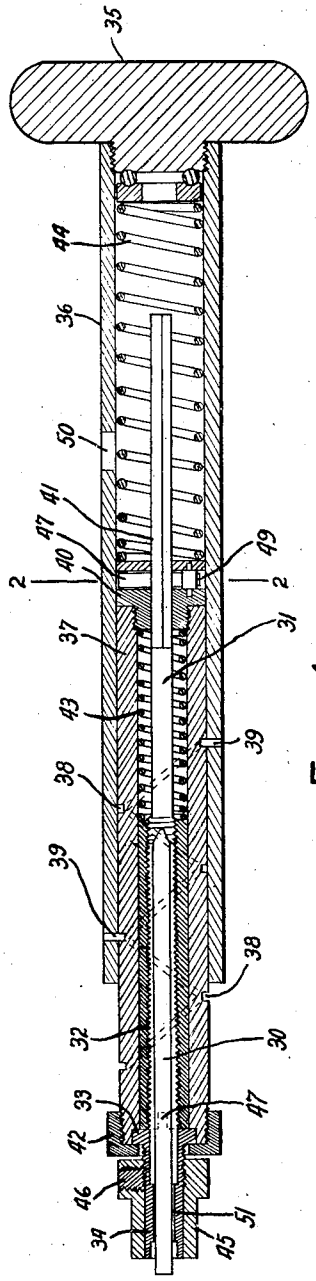


FIG. 1

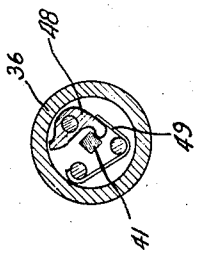


FIG. 2

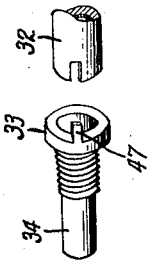


FIG. 3

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MARKING DEVICE

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8 Claims. (Cl. 120—18)

The object of this invention is to provide a marking device or pencil whereof the lead or other marking material provided therein is rotated to effect the marking while the device or pencil itself is held in a stationary position upon the spot to be marked. While of general utility, the invention is particularly applicable to the marking of dots where it is essential or important that they be of a particular size and accurately formed, as in the case of the punching method and apparatus described in my copending patent application filed concurrently herewith.

In the embodiment of my invention shown in the drawing, Fig. 1 is a central longitudinal section thereof, Fig. 2 a transverse section on a plane indicated by the line 2—2 in Fig. 1, and Fig. 3 a detailed view in perspective of a couple of its cooperating parts.

The marking material 30, which will generally be referred to hereinafter as the "lead," will usually have a flat (rather than pointed) end corresponding in size to that of the dots to be marked; and normally this end of the lead will project beyond the end of the pencil, as shown in Fig. 1. The other end of the lead is received and held in the forward end of a plunger 31 in any suitable manner so as to be rotated by the plunger whenever the latter rotates; and the forward end of the plunger is threaded to an internally threaded tubular extension thereof 32 through which the lead passes and which extension normally abuts against and is keyed (Fig. 3) to a shoulder 33 of a tubular fitting 34 from which the lead projects at the end of the pencil. The other end of the pencil comprises a handle 35 and an outer sleeve 36 rigidly secured thereto; the latter having a telescoping fit with an inner sleeve 37 provided with a helical groove 38 in its periphery for engagement with pins 39 carried by the outer sleeve.

In the rear end of the sleeve 37 a plug 40 is secured having a square hole through which the rear end 41 of the plunger extends, such rear end being square-shaped to fit the hole so that when the inner sleeve 37 is rotated by the traverse of the pins 39 in the groove 38, the plunger will also be rotated and, in turn, will rotate the lead. Moreover, the tubular extension 32 of the plunger is closely fitted to the inner sleeve 37 so as to be rotated thereby when unkeyed from the fitting 34. On the forward end of the sleeve 37, a nut 42 is provided to secure the shoulder 33 of the tubular fitting 34 thereto with sufficient clearance between said nut and sleeve to permit said fitting and said sleeve to turn or be turned independently of each other. A compressed spring 43 between the plug 40 and the tubular extension 32 normally keeps the latter in keyed engagement with said fitting. Between said fitting and the lead a resilient bushing 51 may be provided to afford sufficient friction between the fitting and lead to prevent the latter from falling out. Finally, a compressed spring 44 is provided in the head of the pencil, between the handle 35 and the sleeve 37, to keep the pencil normally in its extended position, that is to say, with the parts related to each other as shown in Fig. 1.

When applied to mark dots upon a work-piece or other article, the pencil with its parts in the positions shown in Fig. 1, will ordinarily be used as follows: The tubular fitting 34 on the end of the pencil will be pressed and held flatly against the surface of the article to be marked and where a perforated template is used to locate the places to be marked, a bushing 45 of the proper shape and size to fit the perforations in the template may be secured to said fitting by a set screw 46. Generally, the pencil will be held in a vertical position above the spot to be marked. With the pencil in position for marking, a slight pressure upon the handle will bring the end of the tubular fitting 34, and the bushing 45 if used, flush with the surface of the article to be marked, thus forcing the lead back into the pencil until its flat marking end is flush with the end of the fitting. This rearward movement of the lead, acting as it does upon the forward end of the plunger to which it is attached, will impart a corresponding rearward movement to the plunger and its tubular extension 32 against the pressure of the spring 43, and thereby release the tubular extension from its keyed engagement with said fitting. With the parts in this position, continued pressure upon the handle will cause the outer sleeve 36 to telescope upon and rotate the inner sleeve 37 which, in turn, through the plug 40 and extension 41 of the plunger, will cause the plunger and lead to rotate; while the fitting 34, being now pressed down upon the article to be marked and therefore not freely rotatable, will nevertheless not oppose the rotation of the plunger and lead since it is unkeyed from the tubular extension 32. The marking having been effected by the rotation of the lead, the handle is released and the parts of the pencil are returned to their normal or starting positions through the action of the springs 43 and 44.

An important feature of my improved pencil is that it provides marks of uniform diameter and of uniformly consistent brightness, due to the fact that the marking end of the lead, which is flat and uniform in diameter, is always pressed against the surface to be marked with a constant pressure irrespective of the force exerted on the pencil by the operator, and to the further fact that each marking stroke automatically imparts to the lead the same number of turns.

When, due to the consumption of the lead or for any other reason, the projecting end of the

lead becomes shorter than the length of the key 47, the fitting 34 and the tubular extension 32 of the plunger will remain keyed together so that said tubular extension will not be free to rotate with the inner sleeve 37 when the fitting is held stationary by frictional contact with an article to be marked. In such a case, when the handle is depressed it will cause the plunger, through its threaded engagement with the tubular extension 32, to draw the latter away from the fitting 34 until released from its keyed engagement therewith. This, as will be seen from Fig. 1, will have the effect of feeding the lead forward and thus automatically restore the projecting end of the lead to its proper length for satisfactory operation. Moreover, the lead may be manually moved in either direction by simply turning the fitting 34, and thus the length of the projecting end of the lead may be readily adjusted as desired. And whenever the lead breaks or is practically exhausted, said fitting may be rotated to feed the unused part forward where it can be grasped and removed, whereupon by turning the fitting in the opposite direction the plunger may be restored to the position shown in Fig. 1 for the insertion of a new lead. To prevent the plunger from becoming disengaged from its tubular extension 32 when being restored to this position, it may have a rounded portion adjacent to said tubular extension and of such a length that it will contact the square hole in the plug 40 (through which the rounded portion cannot pass) before the threaded end of the plunger is released from the tubular extension.

Means may also be provided to indicate when the lead is practically exhausted, and may comprise (Fig. 2) a pawl 48 contacting one of the flat sides of the rear extension of the plunger and held thereto by the pressure of a spring 49, while the other end of the pawl bears upon the inner face of the sleeve 36. By making the length of the plunger such that when the usable portion of the lead is exhausted, the rear end of the plunger will pass forward of the pawl, the spring 49 will then force the other end of the pawl into an opening 50 provided in said sleeve 36. When the unused portion of the lead is withdrawn, the end of the pawl 16 is pushed back through the hole while the fitting 34 is being manually rotated to return the plunger to the position shown in Fig. 1.

In the claims appended hereto, the word "lead" is used to denote a stick of marking material of any desired composition.

I claim as my invention:

1. In a marking device, the combination with a pair of telescoping sleeves and means connecting the same whereby upon the telescoping of the outer sleeve upon the inner sleeve the latter will be rotated, a plunger connected to the inner sleeve so as to be rotated thereby while movable longitudinally in relation thereto, means constantly urging the plunger forward in relation to the inner sleeve, means to limit said forward movement, and a lead connected to the plunger so as to be rotated thereby and the forward end of which normally extends beyond the end of said device.

2. In a marking device, the combination with a pair of telescoping sleeves and means connecting the same whereby upon the telescoping of the outer sleeve upon the inner sleeve the latter will be rotated, a plunger connected to the inner sleeve so as to be rotated thereby while movable longitudinally in relation thereto, a tubular extension on the forward end of the plunger, an abutment on the forward end of the inner sleeve, a spring normally holding said tubular extention against said abutment, and a lead within said tubular extension and connected to the plunger so as to be rotated thereby and normally extending beyond the end of said device.

3. In a marking device, the combination with a pair of telescoping sleeves and means connecting the same whereby upon the telescoping of the outer sleeve upon the inner sleeve the latter will be rotated, a plunger connected to the inner sleeve so as to be rotated thereby while movable longitudinally in relation thereto, a tubular extension on the forward end of the plunger, a tubular fitting secured to the forward end of the inner sleeve, a spring normally holding said tubular extension against said fitting, and a lead within said tubular extension and said fitting and connected to the plunger so as to be rotated thereby and normally extending beyond the end of said device.

4. In a marking device, the combination with a pair of telescoping sleeves and means connecting the same whereby upon the telescoping of the outer sleeve upon the inner sleeve the latter will be rotated, a plunger connected to the inner sleeve so as to be rotated thereby while movable longitudinally in relation thereto, a tubular extension on the forward end of the plunger and closely fitted to the inner sleeve, a tubular fitting keyed to the forward end of said tubular extension and secured to the inner sleeve so that the inner sleeve and said fitting are independently rotatable, a spring normally holding said tubular extension and said fitting in keyed engagement, and a lead within said tubular extension and said fitting and connected to the plunger so as to be rotated thereby and normally extending beyond the end of said device.

5. The combination set forth in claim 4 and in which the tubular extension is threaded to the forward end of the plunger.

6. The combination set forth in claim 4 and in which the forward portion of the plunger is of greater area in cross section than its rear portion, and the connection between the plunger and the inner sleeve comprises a plug in the inner sleeve having an opening to fit the rear portion of the plunger and through which that portion of the plunger extends.

7. The combination set forth in claim 1 and in which the means connecting the inner sleeve and the outer sleeve comprise a helical groove in one of the sleeves and a pin in said groove connected to the other sleeve, the outer sleeve carrying a spring to maintain the sleeves normally in their extended position.

8. The combination set forth in claim 1 and in which the inner sleeve carries a pawl one end of which normally rests upon the plunger and a spring pressing the other end of the pawl against the inner surface of the outer sleeve, the outer sleeve having a slot into which said other end of the pawl is forced by said spring when the end of the plunger passes forward of the pawl.

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