Sept. 4, 1956 G. G. WAITE 2,761,415

DIAL HAND AND METHOD OF MAKING SAME

Filed Dec. 28, 1953

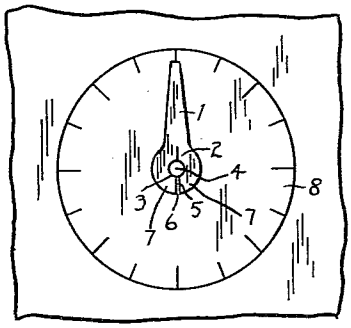


Fig. 1.

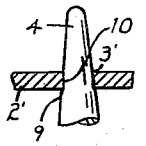


Fig. 7A

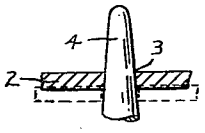


Fig. 7B.

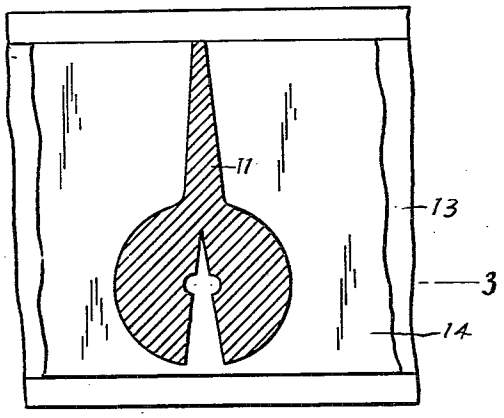


Fig. 2.

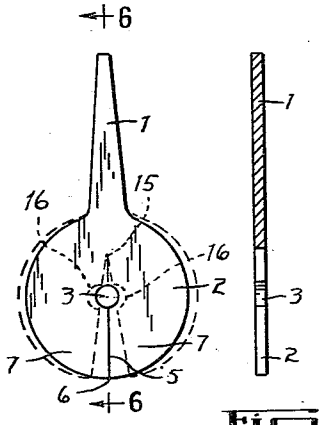


Fig. 5.

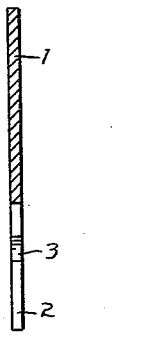


Fig. 6.

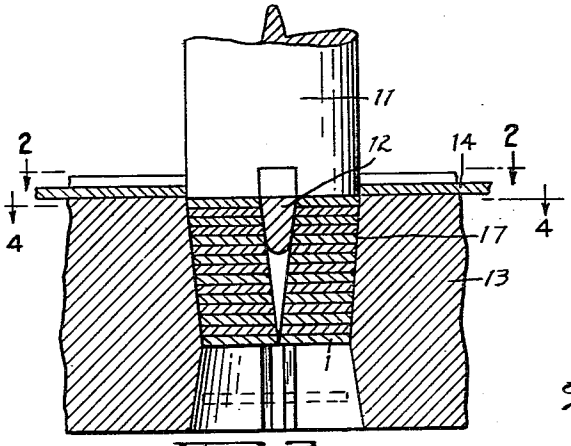


Fig. 3.

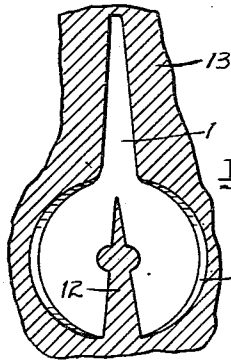


Fig. 4.

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DIAL HAND AND METHOD OF MAKING SAME

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6 Claims. (Cl. 116—136.5)

This invention relates to improvements in dial hands, such as used in meters and other indicating devices, instruments, and method of making same.

The present conventional pointers or hands used on meters, instruments or the like are provided with a perforation to receive the conical or tapered tip of a drive shaft and the hand is forced on the tip until it jams in oriented position. The jamming of the hand gives it a relatively secure initial setting but it effects a burring of the shaft tip and tends to knock off the edges of and enlarge the perforation. In time the hand is prone to become loosened, and as a result of the damage to the shaft and to the hand it cannot be properly tightened by forcing it on the taper. Similarly, once the hand has been set on the shaft it cannot be conveniently reset to a different position and effectively tightened.

The principal object of the present invention is to provide a dial hand or pointer which will afford a resiliency to allow it to be forced on the tapered shaft and without damage to the shaft or hand, yet will more efficiently grip the shaft than conventional pointers and can be reset as often as desired to different positions on the shaft without affecting its ability to grip the shaft.

A further important object is to produce such an improved pointer or hand in an extremely economical manner.

According to the invention the hand is formed with a body portion having a central perforation to receive the tapered shaft tip and having the material of the body parted along a line running from the perforation to the body periphery, the parted material being closed together to complete the perimeter of the perforation while providing a resiliency to the walls of the perforation to expand and grip the tapered shaft.

The invention further resides in the method of forming the hand, which method consists of a simple press operation in which the hand is stamped into a restricting die with the body having a wedge-shaped slit therein diverging from an apex interiorly of the body to the periphery thereof with opposite walls of the slit being correspondingly notched, and the slit is progressively closed by advance of the hand through the die under introduction of subsequent stampings into the die to close the slit and bring the notches together to form a perforation through the body.

Referring to the accompanying drawings,

Figure 1 is an elevational view of a dial having a dial hand constructed in accordance with the present invention.

Figure 2 is an enlarged plan sectional view of the punch for stamping out the blank in the first step of forming the hand, this section being taken on the line 2—2 of Figure 3.

Figure 3 is a vertical section taken on the line 3—3 of Figure 2.

Figure 4 is a horizontal section taken on the line 4—4 of Figure 3.

Figure 5 is an enlarged plan view of the completed

hand showing in dotted line the shape of the blank from which it was formed.

Figure 6 is a section on the line 6—6 of Figure 5.

Figure 7A is an enlarged part-elevational, part-vertical sectional detail illustrating the effect of forcing the conventional dial hand onto the driving shaft.

Figure 7B is a view similar to Figure 7A but illustrating a hand according to the invention forced on the shaft.

Referring to Figures 1 and 5, it will be seen that the dial hand or pointer 1 according to the invention is provided with a body portion 2 which has a central perforation 3 adapted to receive the tapered or conical tip 4 of a drive shaft, as particularly illustrated in Figure 7B.

The material of the body 2 is parted along a line 5 which extends from one side of the perforation diametrically across the perforation 3 to a point at the periphery of the body 2. Preferably the part line 5 is aligned with the pointer 1 and extends to the periphery of the body at a point 6 diametrically opposite the pointer portion.

The material of the body is brought together so that there is no separation between the portions 7 on opposite sides of the part line. The perimeter of the perforation is substantially complete and continuous, while at the same time the portions 7 are completely severed throughout the length of the part line.

The advantage of this construction will be readily apparent with reference to Figure 1 and particularly Figures 7A and 7B.

The pointer 1 is normally forced on the drive shaft tip 4 in oriented relation with respect to a dial 8. It will be understood it may be necessary to re-set the dial hand for calibration and if the hand becomes loose.

With present pointers or hands, illustrated in Figure 7A, the body portion 2' corresponding to the body portion 2 is provided with a perforation 3' corresponding to the perforation 3 but the material is not parted. On jamming the body 2' onto the shaft tip 4 it is burred or scored as indicated at 9, and also there is a tendency to knock off the edges 10 around the perforation 3'. The result is that when it is desired to re-set the hand the burred surface 9 prevents movement of the hand up the taper of the shaft for tightening, and any rounding of the perforation edges further reduces the ability of the hand to grip the shaft.

With the present dial hand 1 the complete severance of the portions 7 on opposite side of the part line 5 provide a spring or resiliency to the body portion 2 to enable it to expand and grip the shaft tip 4 without biting into and destroying its surface.

Further, there is a constant gripping action applied by the pointer as an inherent feature of its body construction with the parted portions 7, whereas with conventional pointers the rounding of the edges of the perforation 3' and the taper of the surface of the shaft tip tend to cause the hand or pointer to loosen on the shaft.

To form the body to provide this part line 5 giving a severance of the body portions without their being separated I employ an extremely simple and effective method, as will be understood with reference to Figures 2 to 4.

The pointer 1 is first blanked by a punch 11 which forms the pointer portion of the hand 1, and the body portion 2 is in the form of the dotted line showing of Figure 5. A co-operating die part 12 carried by a die block 13, over which the stock 14 from which the hands are punched is fed, forms a V-shaped slit in the body portion diverging from an apex 15 interiorly of the body adjacent the pointer portion to the periphery of the body.

The edges of the slit have corresponding notches 16 at opposite sides thereof which, when the slit is closed, form the perforation 3.

After being punched out from the stock 14 the hand enters the block 13 which is formed with a constricting

chamber 17 to receive the body portion of the pointer. As each subsequent hand is stamped it is delivered at the end of the stamping stroke into the block 13 to force the preceding hands downwardly. By this manner the hand is advanced through the block with the body portion 2 moving through the restriction constituted by the chamber 17 to progressively force the portions 7 of the body on opposite sides of the slit towards each other until the slit is closed to form the part line 5.

In this closing of the portions 7 the material of the body is stressed beyond its elastic limit so that the hands 1, dropping from the bottom of the block 13, have a set in which the portions 7 are parted by the part line 5 but are in firm engagement to complete the perimeter of the perforation 3 so that the hand can grip the shaft tip 4 substantially throughout a full 360°. At the same time the part line 5 provides for that measure of resiliency and flexibility which will permit of yielding of the body before it bites into and damages the tip 4 and at the same time the resiliency maintains a constant grip on the shaft tip.

It will be understood that, by first forming the body portion 2 as a spread formation and then closing it through a restricting die 13, the hand can be formed in a simple punching operation where the first blow of the punch stamps the blank and subsequent punch strokes in stamping subsequent blanks forms the feed means for delivering the hand through the restriction of the die.

What I claim as my invention is:

1. A dial hand or the like having a body portion and a perforation therein adapted to receive a driving shaft, the material of the said body having a slit therein parting said body portion along a line extending from a point within the said body portion removed from said perforation and through the said perforation continuing on the opposite side of said perforation to the periphery of said body, the parted material being substantially closed together to complete the perimeter of said perforation.

2. A dial hand or the like having a perforation and slit therein adapted to receive a driving shaft the said slit parting along a line extending from a point within the body of said dial hand removed from said perforation, through the perforation and continuing on the opposite side of said perforation to a point at the perimeter of said hand while leaving the perimeter of said perforation substantially continuous.

3. A dial hand or the like having a body portion and a perforation therein adapted to receive a driving shaft, the material of said body being parted along a line extending from a point within the said body portion of said dial hand removed from said perforation centrally across said perforation and to the perimeter of said body at the opposite side of said perforation, the material on opposite sides of said part line being closed together to complete the perimeter of said perforation.

4. A method of forming a dial hand or the like comprising stamping out a hand with a body portion having a V-shaped slit therein diverging from an apex interiorly of the body to the periphery of the body and having corresponding notches in opposite edges of said slit removed from said apex, introducing said hand at the end of the stamping stroke into a die having a gradual restriction for said body portion, and forcing said body portion through said restricting die by the subsequent introduction of successive stampings into said die to close said slot and bring said notches together to form a perforation through said body.

5. A method of forming a member to be sprung on a shaft or the like comprising stamping out said member, said member having a portion with a V-shaped slit therein, the edges of said V-shaped slit diverging from a point interiorly of said portion to the perimeter thereof and having corresponding notches in the said diverging edges of said slit removed from the apex of said V-shaped slit and subsequently forcing said portion through a restricting die compressing the said portion to bring the said edges of said slit into contact thereby bringing said notches together to form a perforation to receive a shaft or the like.

6. A method of forming a dial hand or the like comprising stamping a pointer with a body portion having a V-shaped slit therein, the edges thereof diverging from a point interiorly of the body to the perimeter of the body and having corresponding notches in said diverging edges of said V-shaped slit spaced from the apex thereof and subsequently closing said slit whereby said notches form a perforation through said body, to receive a shaft or the like.

References Cited in the file of this patent

UNITED STATES PATENTS

382,911	Shipley	May 15, 1888
1,571,672	Jayne	Feb. 2, 1926
1,979,288	Smith	Nov. 6, 1934
2,496,179	Schwartz	Jan. 31, 1950
2,566,028	Linn	Aug. 28, 1951