Feb. 6, 1951 C. BUCHALTER 2,540,861

GEOMETRICAL AND CENTERING DEVICE

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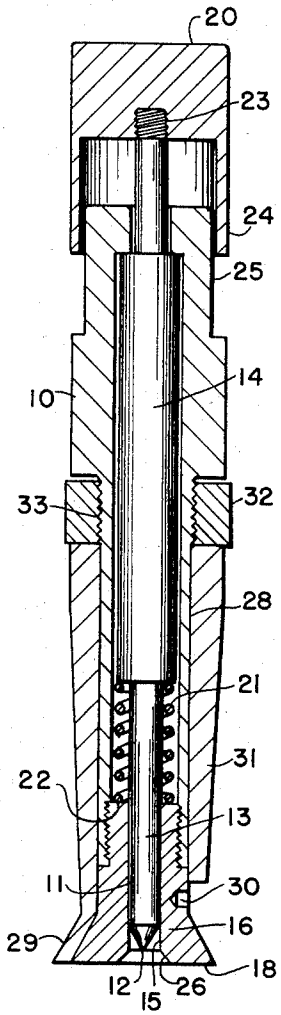

Fig-3-

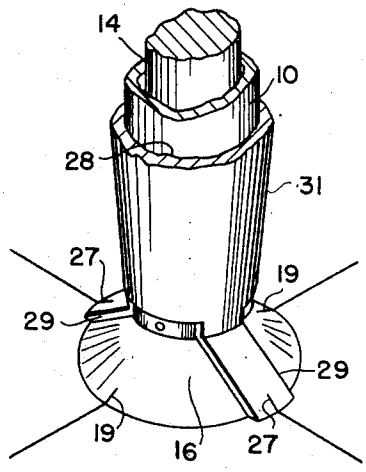

Fig-4-

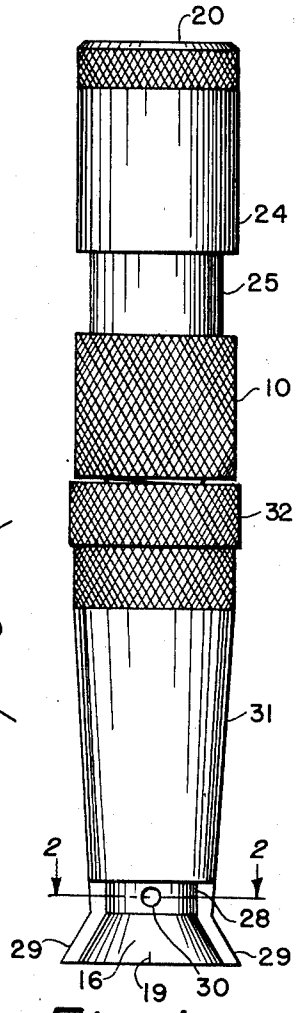

Fig-1-

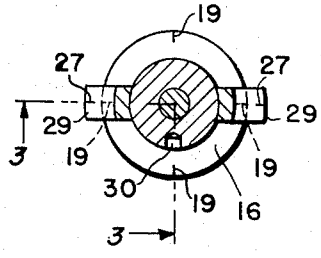

Fig-2-

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GEOMETRICAL AND CENTERING DEVICE

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2 Claims. (Cl. 33—191)

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This invention relates to geometrical and centering devices and is herein illustrated in some detail as embodied in a device adapted to be set on a pair of crossing lines, or a pair of lines that approach each other, so as to enable a punch mark to be accurately located at the intersection, and also as including a separate member for rapidly locating spaced centers.

When it is desired to accurately center work for a tool, such as a drill, on a metal surface, it is customary to locate the center by lines and then bring the drill point to the intersection of the lines. The result is often unsatisfactory. The point of the drill is often made as the end of a fairly flat cone with the result that it is difficult to see the intersection of the lines and therefore almost impossible to bring the drill point to the exact intersection. The difficulties are greatly enhanced when the intersecting lines fail to actually cross or when they cross at an acute angle instead of at right angles.

According to the present invention the foregoing and other difficulties and objections are overcome and a tool is provided whereby the exact center may be readily and permanently marked by a simple hammer blow, and identification of the center is rapid and accurate, irrespective of the angle at which the lines cross.

In the form shown the centering member carries, on a flattened out base, a pair of marks at opposite ends of a diameter which serve to locate the end of the punch rod on a selected line. The centering member is shown as also carrying a revolvable sleeve which fits down over the base and shows by two opposing marks another line through the end of the punch rod.

When the first two marks lie on one line and the second two marks lie on another line, the punch lies on their intersection and a hammer blow on the top of the punch marks the desired center permanently on the surface struck by the punch point. The revolvable sleeve is shown as adapted to be locked at any point where it is to be used at the same angle, several times in succession, as in subdividing a space between two points.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Fig. 1 is a side view.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

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

Fig. 4 is a perspective view of the base with upper parts broken away.

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In the form shown, a housing or centering member 10 encloses a slidable punch member 11 which terminates in a point 12.

The point 12 of the punch member 11 forms the bottom of a reduced extension 13 of the main body 14 of the punch member 11, and the reduced extension 13 fits snugly but freely slidably in the central bore 15 of the base section 16 of the centering member.

In the form shown the base section 16 is threaded into the lower end of the centering member 10, and flares outwardly at its bottom 18 so that indicia shown as narrow radial grooves or scratches 19 at the ends of a diameter or two diameters, may be set on a line scribed on a work piece (not shown), or on two lines at right angles (see dotted lines, Fig. 2).

When thus set on a line, the point 12 lies directly above that line, and the top 20 of the punch member may be struck with a hammer to cause the punch member to be driven down against the work piece and indent it on the line.

The punch member 11 is shown as returned by a coil spring 21 resting on the top 22 of the base section 16 and bearing against the bottom of the main body 14.

The top 20 of the punch member 11 is shown as a hood into the heavy cover of which the threaded top 23 of the punch member 11 is screwed, and as having a skirt 24 which embraces the reduced top 25 of the housing 10 so as to slide freely thereon but with very little play, so that the reduced top 25 guides the upper part of the punch member 11, while main body of the punch member 11 moves clear of the housing 10.

The base 18 is shown as conically enlarged at 26 to allow any metal forced up when the punch member 11 is struck to rise free of the base 18, and the point 12 preferably forms a shallow cone.

To serve as a centering device for crossed lines there are shown a pair of second indicia like radial grooves or scratches 27 so that when the scratches 19 lie on one line and the scratches 27 on another, the punch point lies directly above their intersection and marks the desired center when struck.

In the form shown the scratches 27 lie on a revolvable sleeve 31 which fits closely but easily on the cylindrical outer face 28 of the housing 10 so as to turn without resistance, but not slip too easily.

The scratches 27 are shown on the ends of opposing fingers 29 which overlie the cone bottom 18 and slide easily over it at the surface of the work face.

Thus, when the indicia scratches 19 lie on one

line and the indicia scratches 27 lie on a crossing line, a tap on the head 20 causes the point 12 to accurately mark the crossing point on the work piece.

The fingers 29 are shown of substantial thickness and breadth and thus are less easily injured than thin or pointed fingers, and are protected by the spreading cone bottom 18.

For assembling purposes the punch member 11 is slipped within the housing 10, the top hood 20 screwed on, spring 21 inserted, the sleeve 31 put in place, and then the bottom 16 screwed home by the aid of a tool having a prong adapted to fit in a shallow catch bore 30.

In the form shown in some detail, the sleeve 31 is adapted to be locked against rotation by a lock nut 32 threaded on threads 33 cut in the housing 10 at the upper part of the reduced cylindrical outer face 28, and milled on its outer surface so that it may be readily turned to lock the sleeve 31 by pushing its fingers 29 against the base 16.

The locking of the sleeve is of especial advantage when the workman desires to mark identical lengths along a given line, when the lengths are set off along an intersecting line and indicated by parallel lines drawn from the set-off points so as to indicate the identical lengths on the given line.

The device is especially useful when the scratches 19 are set along the given line and the sleeve 31 is turned so that the scratches 27 lie on one of the parallel lines. If the punch member is struck to mark the work piece at the intersection of those two lines and then locked, the punch member may be set, without readjustment, to mark every other one of the parallel line intersections of the given line.

When this form of device is assembled, the

lock nut 32 is put in place before the sleeve 31 and then the sleeve 31 and other parts follow in the order named.

Having thus described certain embodiments of the invention in some detail, what is claimed is:

1. A centering punch including a housing, a punch member slidable in the housing, a flaring base at the bottom of the housing and carrying indicia at opposite ends of a diameter of the base, a sleeve revolvable on the housing, and mutually aligned fingers at the bottom of the sleeve and lying on the flaring base and carrying mutually aligned indicia at opposite ends of a diameter, of the base.

2. A centering punch including a housing, a punch member slidable in the housing, a flaring base at the bottom of the housing and carrying indicia at opposite ends of a diameter of the base, a sleeve revolvable on the housing, and mutually aligned fingers at the bottom of the sleeve and lying on the flaring base and carrying indicia at opposite ends of a diameter of the base, and a means for locking the sleeve against turning.

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