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G. J. STERBA ET AL
CENTERING PERFORATOR PUNCH WITH
INTERCHANGEABLE PUNCHES
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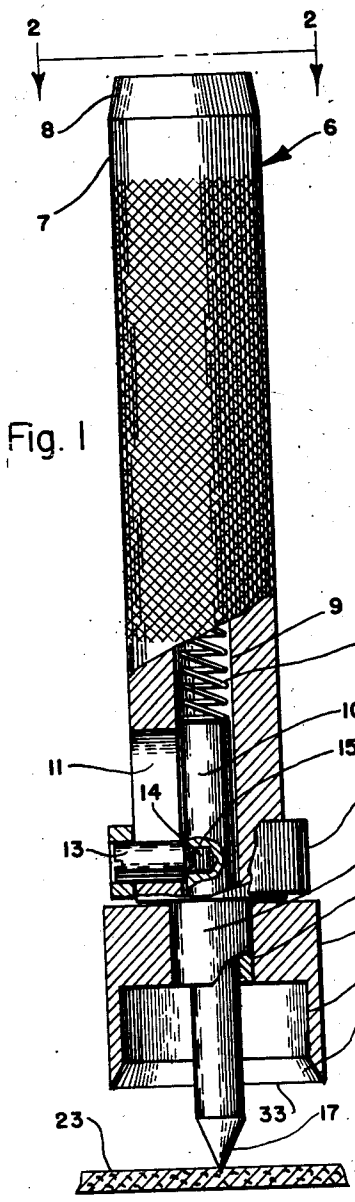


Fig. 1

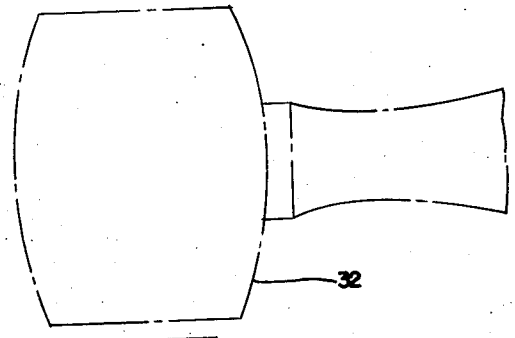


Fig. 4

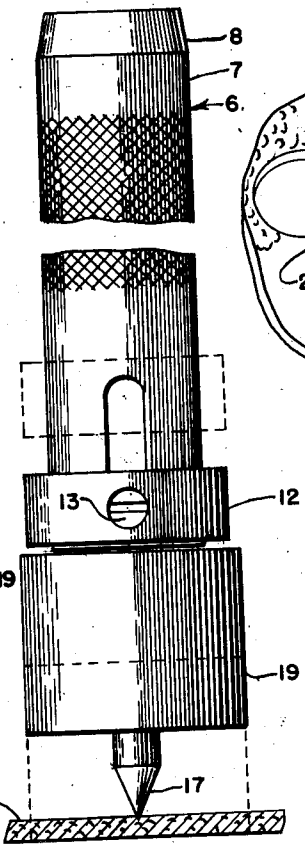


Fig. 3

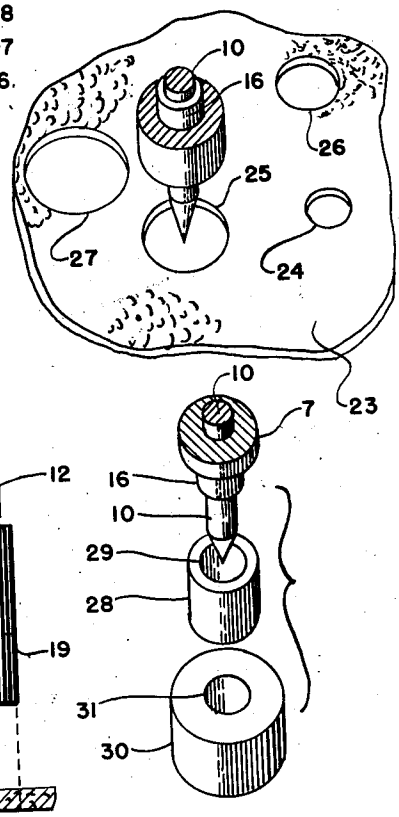


Fig. 5

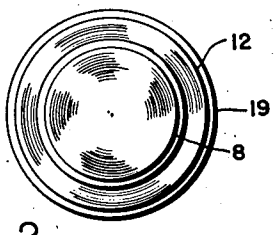


Fig. 2

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CENTERING PERFORATOR PUNCH WITH INTERCHANGEABLE PUNCHES

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8 Claims. (Cl. 164—124)

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Our invention relates to hollow ground perforators or punches, which are preferably used to cut soft metals, leather, rubber, cardboard, etc.

An important object of our invention is to provide a device of the aforementioned character which is provided with pilot means in order to permit the setting of the same at the exact intersection of centerlines of an opening to be punched or perforated so that the said opening will be true and concentric with the center lines thereof.

Another important object of our invention is to provide a device of the aforementioned character which is provided with a number of punches of varied sizes and dimensions so that the same may be interchangeably attached to the body of the device.

A further object of our invention is to provide hollow cutting perforated bushing means which is ground internally with a countersunk section at its cutting portion so that the same may be sharpened or reground without destroying the diametral magnitude thereof.

A further object of our invention is to provide auxiliary manipulated means which may be used to reject any scrap material that may lodge itself within the confines of the countersunk section of the said bushing means.

A further object of our invention is to provide hollow perforator or punch means which has spring-urged gauging pilot and knockout means that will permit the scrap material to be dislodged freely therefrom, in view of the fact that the taper of the cutting portion extends inwardly and upwardly from the cutting section thereof.

A further object of our invention is to provide collar means associated with the said pilot and gauging means in order to actuate the same for rejection of material to be dislodged from the perforating or cutting punch bushing means.

Other objects and advantages made available by our invention will be readily understood, by those familiar with the art, by reference to the accompanying drawings and the ensuing description forming a part of the instant application in which like symbols are used to designate like parts, and in which:

Fig. 1 is a front view of a form of our invention with certain parts thereof broken away in section in order to more clearly illustrate the component elements thereof.

Fig. 2 is a top view looking in the direction of arrows 2—2 on Fig. 1.

Fig. 3 is an elevational view of our invention showing also in dotted lines the movements of

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the elemental structure thereof when pounded by a mallet or hammer.

Fig. 4 is a perspective view of a section of material such as leather being punched showing various sizes of openings which may be punched therein by the interchangeability of the punch or perforator means.

Fig. 5 is an exploded view showing a fragmentary portion of the body, the pilot, and a number of perforated bushings or punches which may be interchangeably secured in a frictional retaining manner thereto.

Referring to the various views, our invention is generally designated 6, and consists of a cylindrical body 7 which is suitably knurled so that it may be handled and held firmly, the said body 7 being provided with a beveled portion 8 so that the same will not be deformed or peened by the hammer or mallet 32 when pounding thereupon.

A blind bore 9 is provided at the lower extremity thereof and occupies a magnitude of substantially the greater part of the length of the body 7, the body 7 having a reduced shoulder portion 16 at the lower terminus thereof.

Within the bore 9, a gauging pilot 10 is slideably mounted and urged outwardly by the spring 18 which is confined in the bore 9.

An elongated slotted portion 11 is provided in order to retain the pilot 10 by virtue of the collar 12 which is secured to a threaded opening 15 in the pilot 10 by means of a shoulder screw 13 having a reduced threaded portion 14 secured to the female threaded portion 15 within the pilot 10.

The punches 19, 28 and 30 are of different sizes. Each punch, such as by reference to the punch 19, is provided with a bored portion 20 to fit frictionally and engage the reduced shoulder 16.

A counterbored portion 21 is provided and a chamfered portion 22 internally, and at the lower edge thereof, is provided which furnishes a cutting edge 33.

The pilot 10 is provided with a conical tip portion 17, the point thereof being used to center the device coincidentally on the center lines of an opening 24, 25, 26 or 27 that is to be punched in the material 23.

The perforator bushing means 19, as can be noted, when it requires sharpening of the cutting edge 33, may be ground on the beveled portion 22.

It will be noted that the auxiliary perforator bushings or punches 28 and 30 are provided respectively with bores 29 and 31 which are adapted to fit frictionally, interchangeably and remov-

ably with respect to the reduced shoulder portion 16 of the body 7.

The advantages to be derived from this particular instrumentality are that the cutting edge of the perforators or punches may be maintained to the same dimension in spite of the grinding that may be required from time to time.

Another advantage to be derived is that the same instrumentality may be utilized for cutting openings of varied sizes, depending on the number of perforator bushings or punches supplied with the equipment to comprise an entire set.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

Having thus disclosed and revealed our invention, what we claim as new and desire to secure by Letters Patent is:

1. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, and cylindrical perforator bushing means provided with a bored portion securable interchangeably to the said reduced shoulder portion.

2. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, and cylindrical perforator bushing means provided with a bored portion securable frictionally and interchangeably to the said reduced shoulder portion.

3. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, cylindrical perforator bushing means provided with a bored portion securable interchangeably to the said reduced shoulder portion, and spring means confined in the said bore between the bottom of the said bore and the top of the said pilot locating and centering means normally urging the said conical centering portion to extend beyond the said perforator bushing means.

4. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, cylindrical perforator bushing means provided with a bored portion securable frictionally and interchangeably to the said reduced shoulder portion, and spring means confined in the said bore between the bottom of the said bore and the top of the said pilot locating and centering means normally urging the said conical centering portion to extend beyond the said perforator bushing means.

5. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, and cylindrical perforator bushing means provided with a bored portion securable interchangeably to the said reduced shoulder portion, the said perforator bushing means being provided with a counterbored portion terminating in an interiorly chamfered portion to form a cutting edge which may be sharpened by grinding the said chamfered portion without altering the cutting dimension thereof.

6. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, and cylindrical perforator bushing means provided with a bored portion securable frictionally and interchangeably to the said reduced shoulder portion, the said perforator bushing means being provided with a counterbored portion terminating in an interiorly chamfered portion to form a cutting edge which may be sharpened by grinding the said chamfered portion without altering the cutting dimension thereof.

7. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body

element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, cylindrical perforator bushing means provided with a bored portion securable interchangeably to the said reduced shoulder portion, and spring means confined in the said bore between the bottom of the said bore and the top of the said pilot locating and centering means normally urging the said conical centering portion to extend beyond the said perforator bushing means, the said perforator bushing means being provided with a counterbored portion terminating in an interiorly chamfered portion to form a cutting edge which may be sharpened by grinding the said chamfered portion without altering the cutting dimension thereof.

8. Centering perforator means, comprising a body element provided with a pounding extension and further provided with a reduced shoulder portion at the opposite end thereof, the said reduced shoulder portion having an axial bore extending partly into the said body element, pilot locating and centering means slidably mounted in the said bore and provided with a conical centering portion, slotted means in the said body element merging with the said bore, collar means slidably mounted on the said body, shoulder screw means securing the said collar means to the upper portion of the said pilot locating and centering means, cylindrical perforator bushing means provided with a bored portion securable frictionally and interchangeably to the said reduced shoulder portion, and spring means confined in the said bore between the bottom of the said bore and the top of the said pilot locating and centering means normally urging the said conical centering portion to extend beyond the said perforator bushing means, the said perforator bushing means being provided with a counterbored portion terminating in an interiorly chamfered portion to form a cutting edge which may be sharpened by grinding the said chamfered portion without altering the cutting dimension thereof.

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