June 5, 1956 R. TAUBER 2,748,491

CENTER PUNCH AND GAUGE

Filed June 30, 1955

FIG. 1

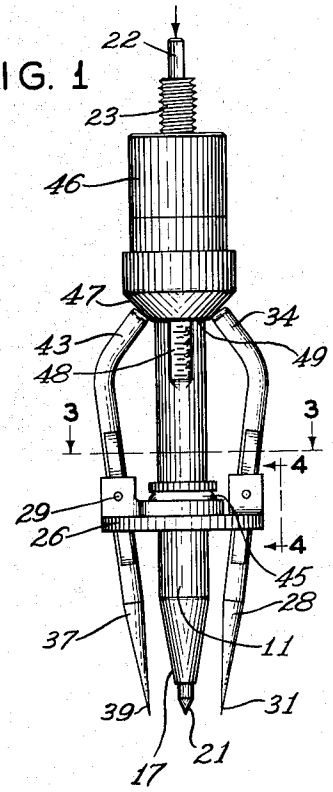


FIG. 2

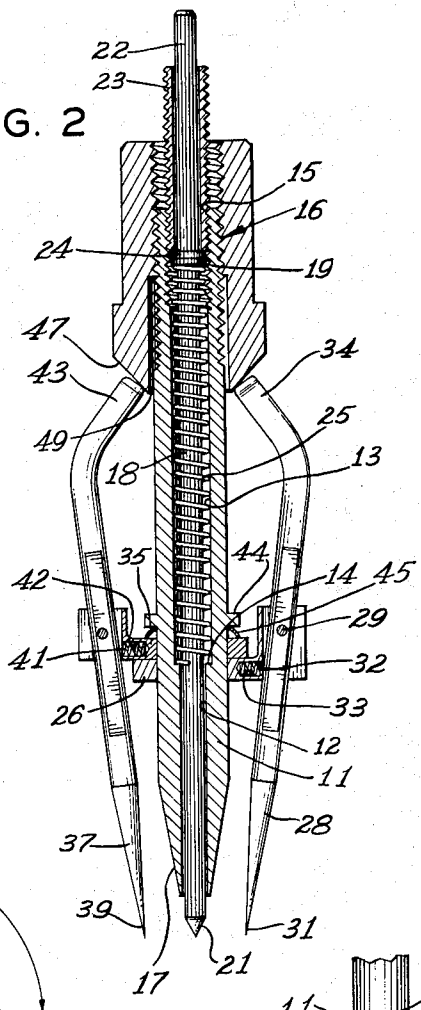


FIG. 3

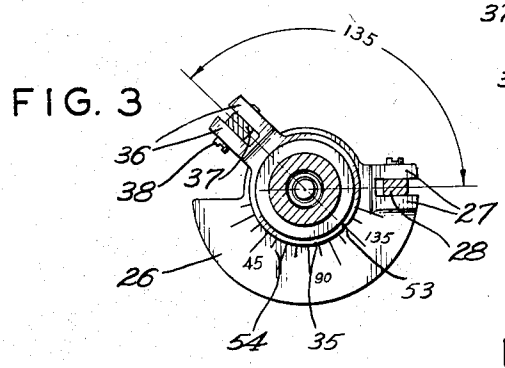


FIG. 4

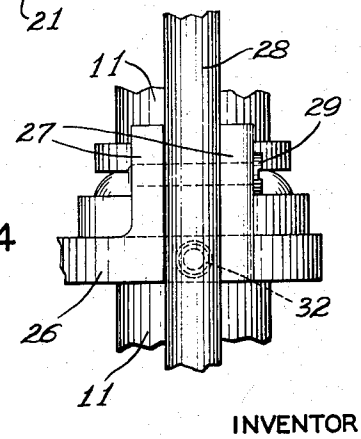
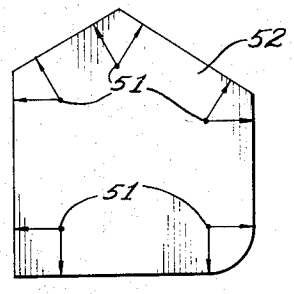


FIG. 5



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CENTER PUNCH AND GAUGE

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14 Claims. (Cl. 33—191)

The invention relates to improvements in tools and is particularly concerned with the novel construction of a center finder or punch.

The center finder is characterized by having a sleeve provided with a strike pin and center punch. The sleeve carries means to manually adjust a pair of caliper arms which are carried by the sleeve and are circumferentially adjustable through approximately 180° so as to permit them to be positioned relative to each other for cooperating with two angularly disposed contiguous edges of or lines on a body, such as a block or sheet of metal or of wood, when it is desired to center punch such body a distance equally spaced from said edges or lines. Applicant is aware of prior art tools of this general character, but no such prior device, to applicant's knowledge, incorporates means to adjust the caliper arms circumferentially so as to adapt the tool for use in locating a center line equidistant from two contiguous lines that are non-parallel.

It is therefore an object of the invention to provide a center finder having these characteristics.

Another object of the invention is to provide a center punch with circumferentially adjustable caliper arms and calibration markings for easy setting of said arms.

Another object is to provide a center finder with calibration markings thereon for setting the two caliper arms with respect to the punch therein.

Another object is to provide a center finder with a punch and a cooperating strike pin and a means to adjust the normal retracted position of said punch.

Another object is to provide a center finder of the character described which is inexpensive to manufacture, may be adjusted easily, quickly and accurately, and which is very easy to use and highly practical in use.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is an elevational view of a center finder embodying the features of the present invention.

Fig. 2 is a central longitudinal sectional view thereof.

Fig. 3 is a horizontal sectional view taken substantially on line 3—3 of Fig. 1.

Fig. 4 is an enlarged detail of a caliper arm bearing, as viewed along line 4—4 of Fig. 1.

Fig. 5 is a schematic view of a blank of sheet material of irregular outline, illustrating various uses of the center finder.

Referring to the accompanying drawings the center finder embodying the present invention is characterized by the presence of a sleeve 11 having a bore 12 extending therethrough and suitably provided with an enlarged bore section 13 defining an internal shoulder 14. The end of the sleeve having the large diameter bore 13 therein is internally threaded, as at 15, and it has external threads 16 at said end. The other end of the sleeve preferably is tapered at at 17.

A punch 18 having a head 19 is longitudinally slidable within the bores 12 and 13 and said punch is adapted to have its pointed working end 21 normally projected outwardly beyond the tapered end of the sleeve 11. A strike pin 22 is longitudinally slidable in a nipple 23 that is threadingly engaged with the internal threads 15. As shown, the strike pin 22 has a head 24 that rests against the innermost end of the nipple 23 to prevent its withdrawal, and said head is normally held in tight abutment with the punch head 19, owing to the presence within the bore 13 of a spring 25. It should be quite obvious at this time that the amount of extension of the working end 21 of the punch may be varied by adjusting the nipple 23 longitudinally of the sleeve 11. The need for such adjustment may arise when the punch becomes worn or when caliper arms forming a part of the device and to be described presently are resharpened, thus reducing their effective length and most important when the caliper arms 37 and 28 are adjusted for different center distances.

Firmly secured adjacent to the tapered end of the sleeve 11, as by welding, is a plate segment 26 having an overall circumferential length approximating one-half the diameter of a complete circumferential flange and said plate is provided adjacent one of its radial edges with a pair of upstanding ears 27 which are suitably spaced apart to receive between them a caliper arm 28. As is best illustrated in Fig. 4, the caliper arm 28 is pivotally mounted between said ears, preferably by means of a threaded pintle 29, so as to permit said caliper arm to be rocked inwardly or outwardly to dispose its working end 31 close to or spaced from the punch end 21. A spring 32, suitably seated in a recess 33 provided in the body of the plate 26 in the area of the ears 27, normally urges the pointed end 31 of the caliper arm 28 outwardly so as to locate its other end 34 closely adjacent to the sleeve 11.

Rotatably mounted on the sleeve 11 and in face-to-face contact with the plate 26 is a collar 35. This collar has upwardly projecting spaced apart ears 36 between which is arranged a second caliper arm 37. The arm 37 is pivotally mounted between the ears 36, as by a threaded pintle 38, so that its pointed end 39 may be positioned close to or spaced from the punch end 21. A spring 41 is seated in a recess 42 provided in the collar 35 in the area of the ears 36 to normally urge the pointed end 39 of the caliper arm 37 away from the punch end 21 so as to locate the other end 43 of said caliper arm closely adjacent to the sleeve 11.

A flange 44 is firmly secured on the sleeve above the caliper arm-carrying collar 35 to define a shoulder and a spring washer 45 is interposed between said shoulder and caliper arm-carrying collar 35 to maintain the collar in tight face-to-face contact at all times with the plate 26.

In order to move the pointed ends 31 and 39 of the respective caliper arms 28 and 37 inwardly, there is pro-

vided on the threaded end of the sleeve **11**, an internally threaded nut **46**. This nut is suitably formed with a conical end face **47** which is adapted to be carried into sliding contact with the curved ends 34 and 43 of the caliper arms when said nut is screwed downwardly along the sleeve **11**. In order to quickly and easily adjust the nut **46** along the sleeve **11** so as to locate the pointed ends **31** and **39** of the caliper arms in a pre-determined position with respect to the punch end **21**, there is provided on the face of the sleeve **11** adjacent to the lower end of the nut **46**, a series of calibrated graduations **48** each of which may be representative of one thirty-second of an inch and which calibrations coact with the lowermost edge **49** of the nut **46**.

In use, the center finder is particularly adapted for locating a center mark **51** on a sheet or block of material **52** preferably at equi-distances from contiguous non-parallel edges of said sheet or block. In Fig. 5 there is shown such a sheet or block upon which is illustrated a plurality of selectively located center marks each being positioned equi-distance from contiguous non-parallel edges thereof. Now, in order to quickly and easily determine the relative circumferential positioning of the caliper arms **28** and **37** the angular disposition of contiguous edges of the sheet or block is first determined. If, for example, said edges are the right angles to one another, the arms **28** and **37** are positioned 90° apart. In order to accomplish this, the collar **35** is rotated about the sleeve **11** with respect to the plate **26** and exact positioning of said collar relative to the plate is easily and quickly obtained by aligning a calibration marking **53**, preferably formed or otherwise provided on the vertical edge of the collar **35**, in register with the 90° calibration marking **54** provided on the top face of the plate **26**. Clearly, the collar **35** may be rotated about the sleeve throughout substantially 180°.

After the caliper arms **28** and **37** have been positioned circumferentially at the desired locations and the nut **46** has been moved downwardly a distance sufficient to space the pointed ends **31** and **39** of said arms the desired distance from the punch end **21**, the strike pin **21** is adjusted so that the three points are planular and said pointed ends **31** and **39** are then placed on or in contact with the contiguous edges of the sheet or block thus positioning the punch **18** at the desired location. The strike pin **22** is then struck with a hammer blow to cause the punch end **21** to dent or otherwise mark the plate or block.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. A center finder comprising a sleeve externally and internally threaded at one end and tapered at its other end, a punch longitudinally movable in said sleeve and extending beyond the tapered end, a nipple threaded into the sleeve, a strike pin longitudinally movable in said nipple, a head on the strike pin preventing its withdrawal through the nipple, a spring within said sleeve to normally hold the punch retarded and in contact with the strike pin, an external circumferential plate segment on said sleeve, a collar rotatable on the sleeve, caliper arms one pivotally mounted between its ends on said plate and the other on said collar, a conical nut threaded over said sleeve to coact with the arms for retracting the working ends thereof, and a spring means to urge the arms into contact with said nut.

2. A center finder comprising a sleeve externally and internally threaded at one end and tapered at its other end, a punch longitudinally movable in said sleeve and extending beyond the tapered end, a nipple threaded into the sleeve, a strike pin longitudinally movable in said nipple, a head on the strike pin preventing its withdrawal through the nipple, a spring within said sleeve to normally hold the punch retarded and in contact with the strike pin, an external circumferential plate segment on said sleeve, a collar rotatable on the sleeve, means to hold the collar in face-to-face contact with the plate, caliper arms one pivotally mounted between its ends on said plate and the other on said collar, a conical nut threaded over said sleeve to coact with the arms for retracting the working ends thereof, and a spring means to urge the arms into contact with said nut.

3. A center finder of the character recited in claim 2, in which the nipple is adjustable to vary the retracted position of the punch.

4. A center finder of the character recited in claim 2, in which the collar and plate have complemental gauge markings to facilitate accurate positioning circumferentially of the caliper arms.

5. A center finder of the character recited in claim 2, in which the ends of the caliper arms coacting with the nut are curved.

6. A center finder of the character recited in claim 2, in which the arms are removable.

7. A center finder of the character recited in claim 2, in which the spring means for said caliper arms consists of compression springs arranged close to their pivots.

8. A center finder of the character recited in claim 2, in which the sleeve has caliper markings thereon to cooperate with the nut.

9. A center finder of the character recited in claim 2, in which the sleeve has an external shoulder and the means to hold the collar in contact with the plate consists of a spring washer interposed between said collar and said shoulder.

10. A center finder comprising a sleeve externally threaded at one end, a punch longitudinally movable through the sleeve, a substantially semi-circular plate secured firmly on said sleeve, a collar adjacent said plate rotatably on said sleeve, caliper arms mounted one on the plate and one on the collar pivotally mounted between their ends, a nut threaded on said sleeve to coact with complemental ends of said arms, said nut being adjustable along the sleeve in one direction for retracting the arms, and spring means to urge said arms into expanded position when the nut is adjusted in the other direction.

11. A center finder of the character recited in claim 10, in which spring means is provided to hold the punch retracted.

12. A center finder of the character recited in claim 10, in which the punch consists of two headed parts arranged with their heads in abutment.

13. A center finder of the character recited in claim 10, in which a spring washer urges the collar into bearing contact with the plate.

14. A center finder of the character recited in claim 10, in which the plate and collar have complemental gauge calibrations thereon.

No references cited.