Dec. 2, 1952 H. C. CARTER 2,619,730

DEVICE FOR LOCATING MULTIPLE BORES FOR GANG DRILLING

Filed Dec. 29, 1948 4 Sheets-Sheet 2

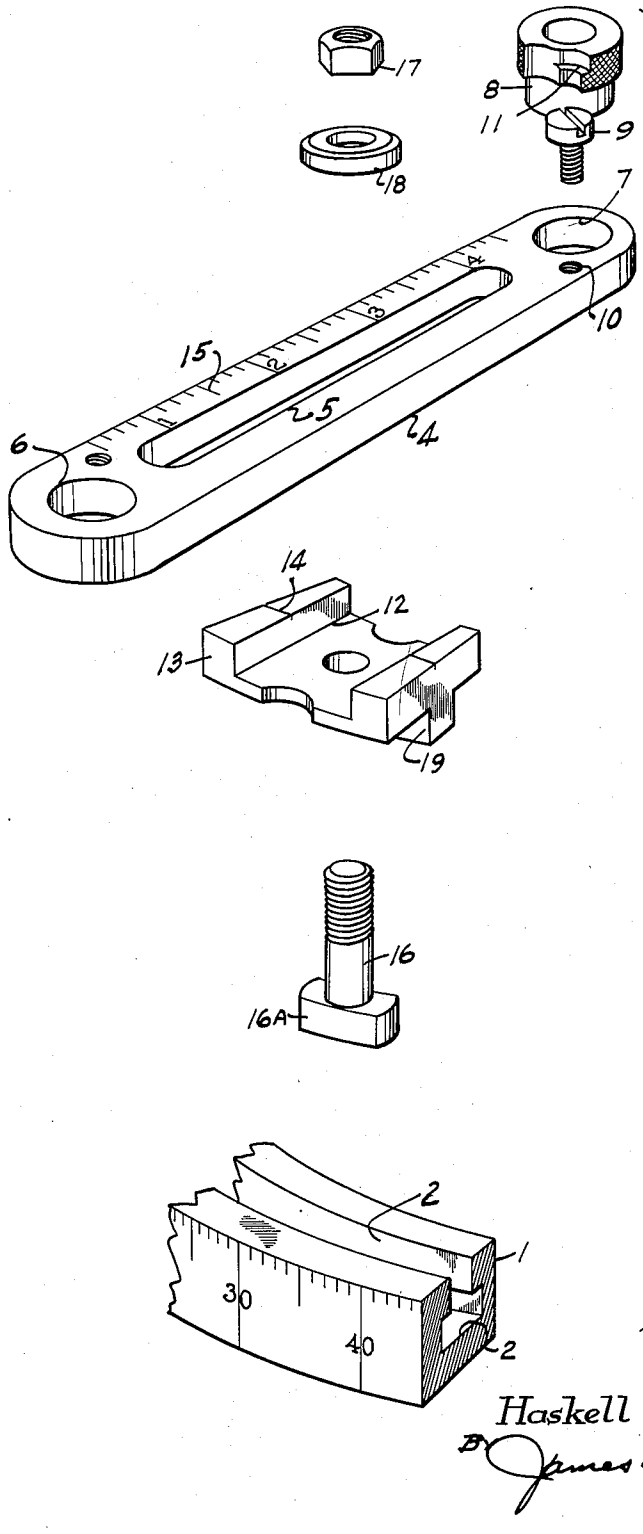


Fig. 2.

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DEVICE FOR LOCATING MULTIPLE BORES FOR GANG DRILLING

Filed Dec. 29, 1948 4 Sheets-Sheet 1

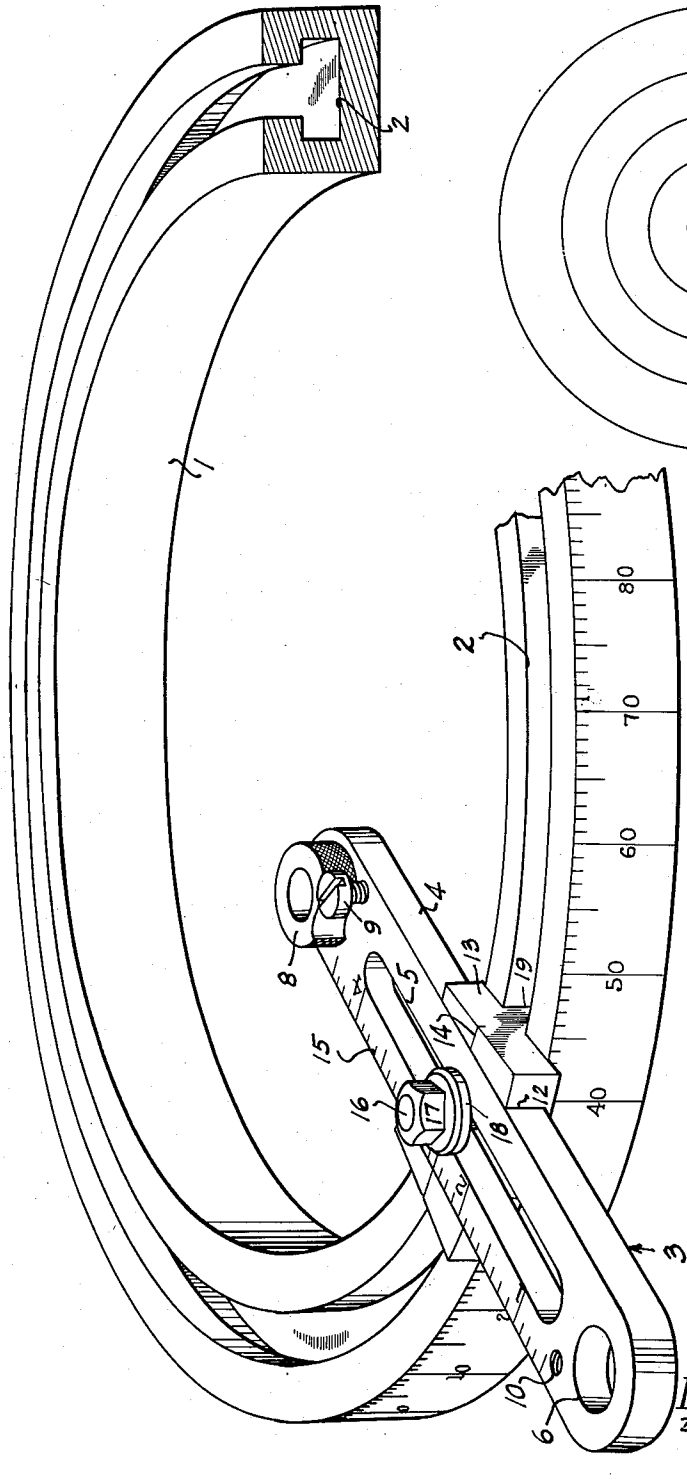


Fig. 1.

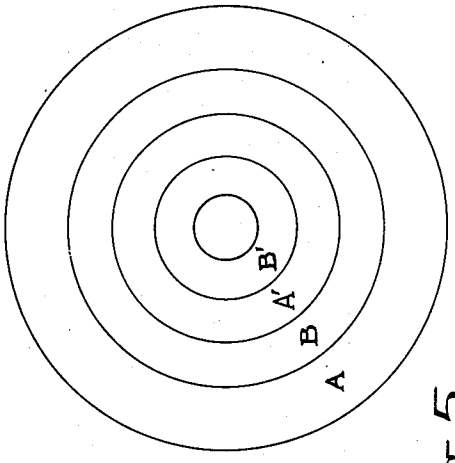


Fig. 5.

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DEVICE FOR LOCATING MULTIPLE BORES FOR GANG DRILLING

Filed Dec. 29, 1948 4 Sheets-Sheet 3

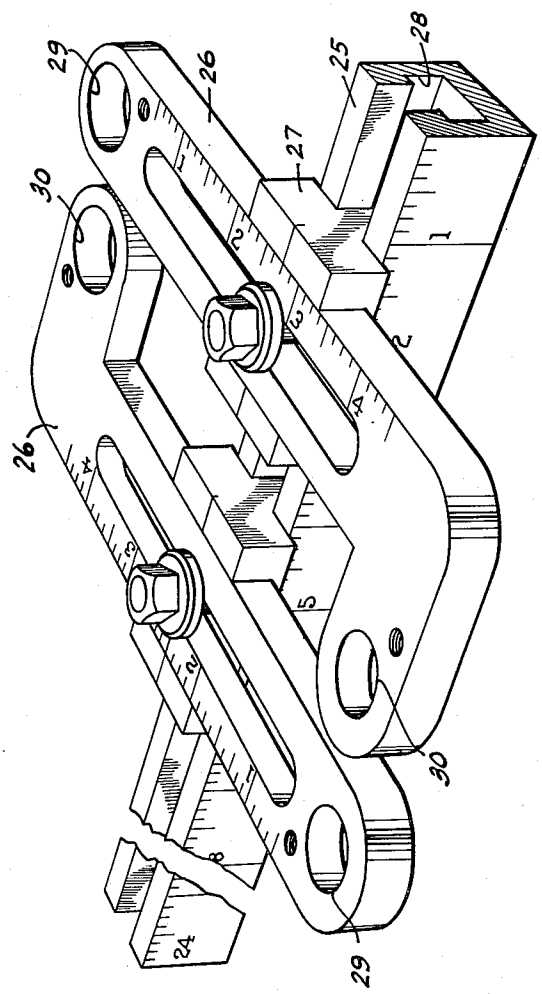


Fig. 3.

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Filed Dec. 29, 1948 4 Sheets-Sheet 4

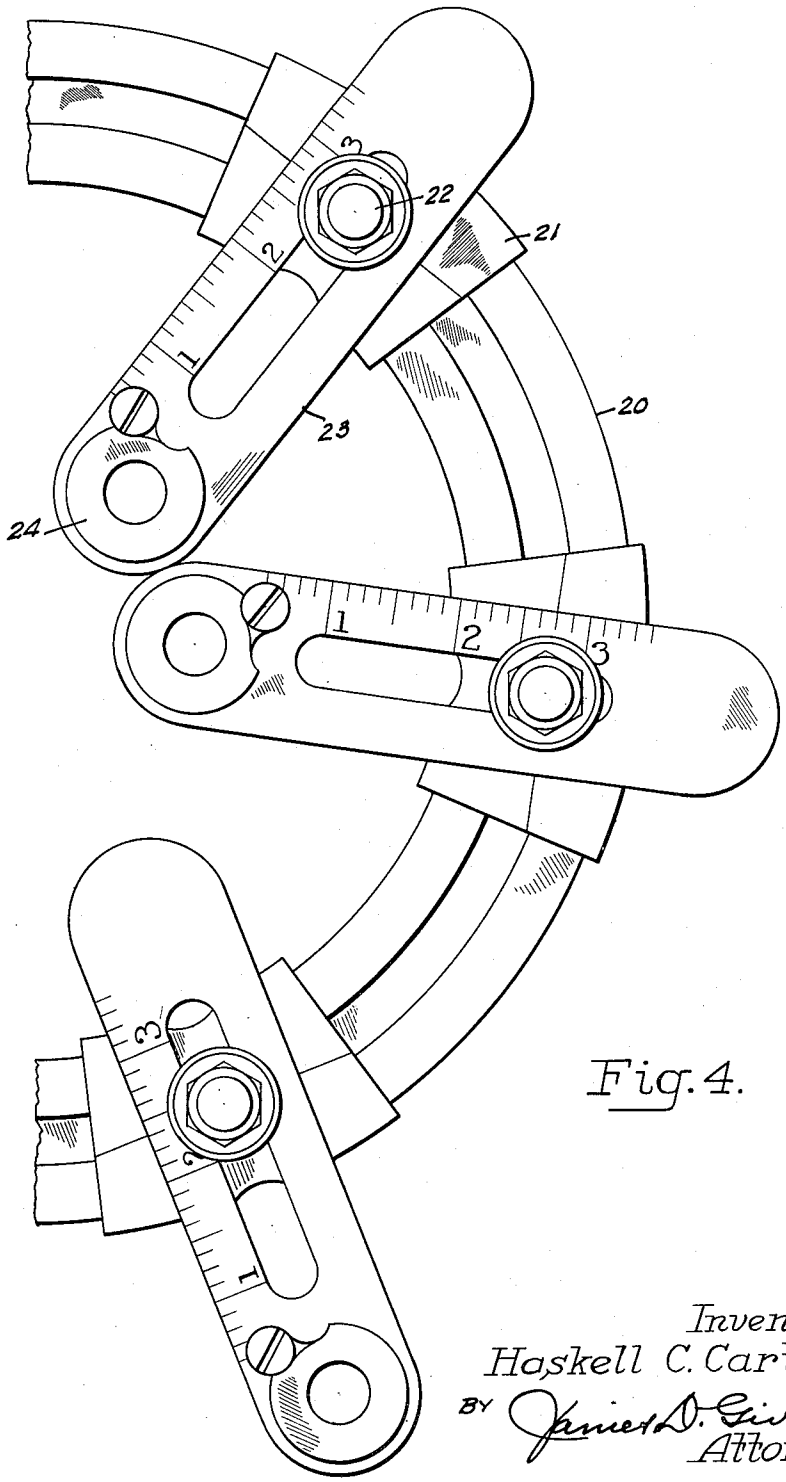


Fig. 4.

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Patented Dec. 2, 1952 2,619,730

UNITED STATES PATENT OFFICE

2,619,730

DEVICE FOR LOCATING MULTIPLE BORES FOR GANG DRILLING

Haskell Clarence Carter, Portland, Oreg.

Application December 29, 1948, Serial No. 67,998

3 Claims. (Cl. 33—189)

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This invention relates to a device for indexing, plotting, locating and laying out points on steel plates, die plates, and the like, for drilling and other operations.

It is one of the principal objects of the invention to provide an index and layout device of simple, efficient, durable and inexpensive construction and wherein its several parts may be quickly, conveniently and accurately arranged, within the limits of the device to serve as a drilling jig at points located by the device on a work piece.

These and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawing and finally pointed out in the appended claims.

In the drawings:

Figure 1 is a perspective view of an annulus showing one of several radially and circumferentially slidable bore locating members mounted thereon.

Figure 2 is a composite view of the component parts of the bore locator in position to be presented to each other for attachment to the annulus.

Figure 3 is a perspective view of a modified form of the invention.

Figure 4 is a fragmentary plan view of a secondary annulus showing a plurality of a modified form of bore locators operatively attached thereto.

Figure 5 is a reduced diagrammatic view illustrating the relation of the areas capable of being dealt with or covered by both said annuli and their respective bore locating elements.

Referring now more particularly to the drawings:

In Figures 1 and 2, reference numeral 1 indicates the main body of the device in the form of an annulus having an inverted T-shaped groove 2 formed therein and extending entirely thereabout. To the annulus 1 attach a plurality of circumferentially adjustable and radially slidable bore locating members generally indicated at 3 and comprising a bar 4 slotted as at 5 for the major portion of its length and apertured as at 6 and 7 at its ends. These apertures extend vertically at right angles to the plane of the work being dealt with, and are provided with suitable hardened bushings 8 for guiding drills or center punches to the work piece. The bushings may be of different inside diameters to accommodate drills or other tools of various sizes. Each bushing is locked in place and against rotation by means of set screws 9 in threaded openings 10 formed in the bar 4. The head of each set screw bears

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against a shoulder 11 formed in the flange of the bushing 8.

The bar 4 is slidably and adjustably mounted in a channel 12 formed in a carriage generally indicated at 13. The top edge of each wall of the channel is scored as at 14 for alignment with graduations 15 along one or both edges of the top surface of the bar 4. The bar and carriage are held together and to the annulus by means of a bolt 16 and nut and washer 17 and 18. The head 16A of the bolt is of rectangular shape for engagement with the correspondingly shaped groove 2 of the annulus. The carriage 13 is formed with a depending portion 19 of arcuate shape to fit between the upper portions of the groove 2. When the parts are thus assembled the bar is adjustable with respect to the carriage for radially positioning the bushing 8 with respect to the annulus and with the work being dealt with. The bar and carriage are circumferentially adjustable with respect to the annulus by movement of the bolt in the groove of the annulus. When the bar and carriage are moved into predetermined positions they may be locked securely in place by advancing the nut 17 on the threads of the bolt 16. Of course any number of bars and carriage assemblies may be used, and obviously the above description of one will suffice for all.

In drilling or other operations the annulus is securely clamped to the work being dealt with by any approved means. The annulus 20 illustrated in Figure 4 is of lesser diameter than the annulus 1, but otherwise structurally identical, and so also is the construction of the carriages 21, locking bolts 22, bars 23, and the bushings 24 insertable in the ends of the bars, the same as those shown in Figures 1 and 2. Said carriages and bars are movable and adjustable circumferentially and radially with respect to the annulus 20 in the same manner as those elements related to the annulus 1.

The modification of the invention in Figure 3 takes the form of an inverted T-channel 25 of straight length and within which bore-locating cross members or bars 26 are slidably adjustable and lockable in predetermined positions by means of carriages 27 of similar shape to those indicated at 13 and 21 in Figures 1 and 4, respectively. Each of said bars 26 is graduated as shown along one or both of its edges and turned at right angles to itself as shown, and both ends are apertured as at 29 and 30 to receive bushings for guiding drills, punches, or other tools. The T-channel 25 is also graduated along one or both of its sides

for accurately locking the bars with respect to the T-channel and the work being dealt with.

In Figure 5 the circles marked "A," "A'" and "B'" indicate the areas capable of being dealt with by the form of invention illustrated in Figure 1, and their relation to those marked "B" and "B'" coverable by the form of the invention of lesser size illustrated in Figure 4.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A tool of the class described comprising in combination, a single annulus having graduations formed about its periphery, a circumferential inverted T slot formed in the annulus, a carriage slidably mounted in said T slot for circumferential adjustment with respect to said annulus, a bar slidably mounted transversely of the carriage and radially adjustable with respect to the annulus, graduations formed on the top surface of said bar, a tool guide extending through one end of said bar, and means for locking said bar to said carriage in any of its adjusted positions and for simultaneously locking said carriage to said annulus in any of its adjusted positions.

2. A tool as in claim 1 wherein said locking means comprises a projection extending downwardly from the carriage and embraced by the vertical portions of said inverted T slot, a bolt having its head embraced by the horizontal section of said T slot and extending upwardly through said carriage and said bar and provided at its upper end with a locking nut.

3. A tool of the class described comprising in combination, a single annulus having graduations formed about its periphery, a circumferential inverted T slot formed in the annulus, a plurality of carriages slidably mounted in said T slot for circumferential adjustment with respect to said annulus, a bar slidably mounted transversely in each of said carriages and radially adjustable with respect to the annulus, graduations formed on the top surface of each of said bars, a tool guide extending through one end of each of said bars, and means for locking said bars to their respective carriages in any of their adjusted positions and for simultaneously locking said carriages to said annulus in any of their adjusted positions.

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