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M. RABATINE
DIVIDING PROTRACTOR
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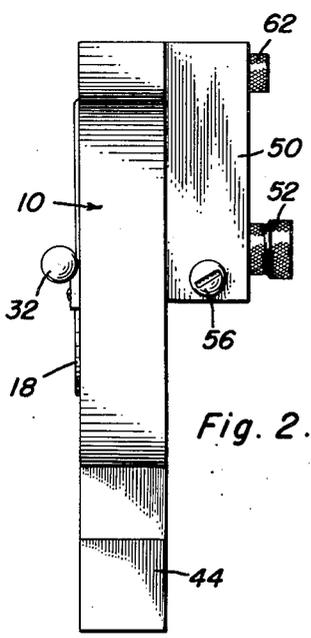
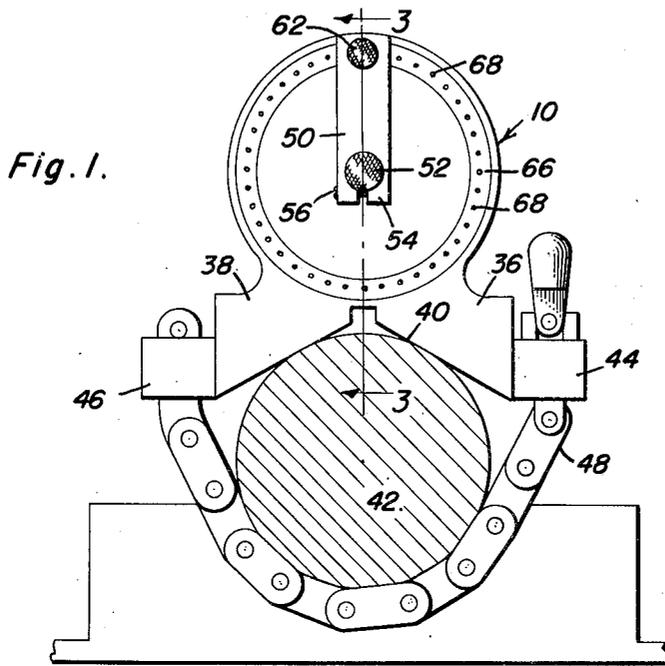


Fig. 2.

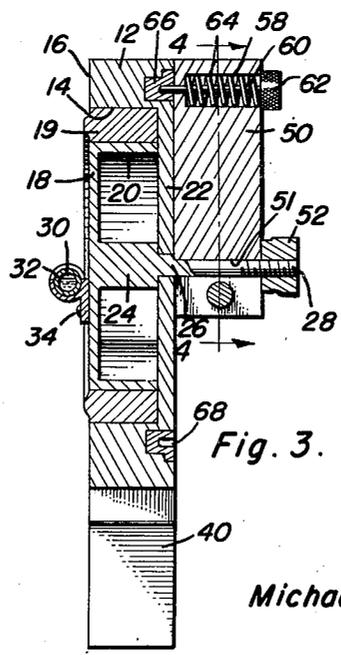


Fig. 3.

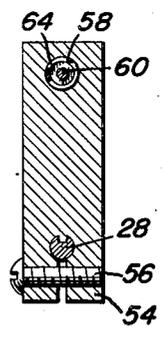


Fig. 4.

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UNITED STATES PATENT OFFICE

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DIVIDING PROTRACTOR

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4 Claims. (Cl. 33—1)

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This invention relates to an instrument adapted for use in performing successive operations on a work piece to determine the correct distance and relationship between the successive operations performed on the same work piece and is by way of improvement over my co-pending application Serial No. 40,331 filed on July 23, 1948.

The primary object of the instant invention is to provide a dividing protractor that may be easily attached to shafts or work pieces of various diameters and which will enable successive cuts or similar operations to be performed or made in a work piece at exactly the proper and accurate position from other cuts formed thereon.

By way of improvement over the protractor disclosed in my pending application, I have provided an apertured ring which can be fastened on the rear of the protractor in such a manner that it will be located about the shaft which rotates the graduated dial on the face of the protractor. Thus, after the first operation is performed on the shaft, a finger fastened on the shaft at the rear face of the protractor may be rotated around the ring to the desired point wherein it would be inserted and locked and the next operation could be performed. Thus, this invention has for one of its objects to provide means for automatically setting the degree of the graduated dial without watching the dial. The dial may be set by merely counting the holes or openings on the spacing ring on the reverse side thereof.

These and ancillary objects and structural features of merit are attained by this invention, a preferred embodiment of which is set forth in the following description and illustrated in the accompanying drawings, wherein:

Figure 1 is a front elevational view of this invention, showing the same in operative association with a round or circular work piece for properly aligning a section thereof with a tool during a machining process;

Figure 2 is a side elevational view of the implement;

Figure 3 is a vertical sectional view taken substantially on the line 3—3 of Figure 1; and

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 3, looking in the direction of the arrows.

This invention generally designated by the character reference 10 comprises a circular body section 12 having central annular recess 14 disposed in the front wall 16 thereof.

A circular plate 18 is rotatably mounted in the recess and is formed with a lateral annular

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flange 20 directed inwardly and bearing against the rear or back wall 22 of the body section and spaced from the side walls of the recess by a bearing ring 19. A spindle or shaft 24 is formed integrally with the plate and extends inwardly parallel to the side wall 20, the same being formed with a reduced extending portion 26 terminating in an externally threaded portion 28. A spirit level gauge 30 is disposed in a tubular casing or housing 32, having a cut-away portion to expose the same, the gauge being secured to the face of the plate by suitable securing means 34.

A pair of downwardly and outwardly inclined blocks 36 and 38 are formed integrally with the lower end of the body section and form a cradle 40, whereby the same is mounted upon a work piece 42. Lateral extensions 44 and 46 extend from the lower ends of the blocks, the extensions being vertically apertured for receiving suitable locking means 48, the locking means being adapted to embrace the underside of the work piece and securely lock the implement thereon. As seen in Figure 1, the locking means includes a chain having one end secured in the extension 46 and the other end slidably disposed in the extension 44, the latter being lockable in the extension by positioning the links passed through the extension in a lateral position with respect thereto.

It can be seen that this invention is designed for accurately determining the proper position for successive cuts or other machine operations to be performed on the same work piece. For example, the dividing protractor is fastened to the shaft by the locking means 48 and successive cuts or similar operations are determined by means of the graduated dial having the precision level gauge. The protractor is set and is disposed at right angles to its previous position, after which the shaft is rotated, until the spirit level gauge is disposed on a level plane.

The means provided for adjusting the dial comprises a block 50, which is formed at its lower end with a transverse bore 51, whereby the same may be disposed on the extending reduced end 28 of the spindle. A locking nut 52 is threadingly engaged on the externally threaded end of the spindle and retains the block thereon. Further retaining means is provided, the block being formed with a bifurcated head 54 from the transverse bore 51 and a fastening member 56 being disposed through the bifurcations. A transverse bore 58 is formed adjacent the upper end of the block and a pin 60, having an enlarged

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knurled head 62 is slidably disposed in the bore. A spring 64 is disposed concentrically around the pin and anchored to the pin and the head for urging the pin inwardly into engagement of a series of perforations 68, which are circumferentially spaced on an annular spacing ring 66. The ring 66 is seated in the rear face of the circular body section 12, as seen in Figures 1 and 3.

The perforations formed in the spacing ring are spaced in a predetermined manner in various multiples or divisions to correspond to the graduated dial formed on the face of the plate 18.

Thus, the dial plate can be adjusted to the desired position, by means of the indexing finger or block 50 and locked in the position by means of the pin, engaged in one of the openings 68 in the spacing ring. With the spacing ring marked or formed with the openings in a predetermined pattern, after the first cut or keyway was machined in the work, the indexing finger would be rotated a predetermined number of openings on the spacing ring relatively showing 90 degrees on the graduated dial and the pin would then be positioned within the openings. Thus, the dial would be locked in the desired position. After each machining process, the shaft is freely rotated, so that the level gauge will be disposed on a level plane.

The lock nut 52 will be securely positioned against the index finger or block to eliminate lateral movement thereof. Since the indexing finger is fixed to the spindle formed integrally with the graduated dial, the dial and finger are relatively locked together, so that rotation of the finger will produce a corresponding rotative movement of the dial.

It can thus be seen that, by way of improvement over my co-pending application, I have provided a means for adjusting the dial plate in an accurate manner, without the necessity of sealing the same.

Having described the invention, what is claimed as new is:

1. A device for determining accurate working points on a work piece comprising a body section having a central recess, a dial plate rotatably disposed in said recess, a level gauge carried by the face of said dial plate, a spindle extending integrally from said dial plate rotatably extending through the body section, an indexing finger secured on the extending end of said spindle for rotating said dial plate, means carried by said finger and detachably secured to said body section for locking the plate in a desired position, and means for securing the body section on a work piece, said locking means

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including a spring-urged pin carried by the free end of the indexing finger, a spacing ring associated with said body section and having a series of circumferentially spaced openings, said pin being engageable in said openings.

2. The combination of claim 1, wherein said means for securing the body section on a work piece includes a saddle plate integrally formed on said body section, lateral extension plates on said saddle plate, flexible connecting means carried by said extension plates, said flexible connecting means having one end fixed in one of said extensions and the other adjustably secured to the other of said extensions.

3. A measuring instrument of the type described for determining work points on a work piece comprising a circular body section having a central circular recess in one side, a circular protractor rotatably disposed in said recess and having an integral spindle rotatably extending through the back wall of said body section, a level gauge carried by the outer face of the protractor, an indexing finger locked on the extending portion of the spindle and adapted to rotate said protractor, a spacing ring secured in the rear face of the body section and having a series of circumferentially spaced openings, a locking pin carried by the free end of the indexing finger, and means for retaining said pin in engagement with one of said openings.

4. The combination of claim 3, wherein said last means includes a spring concentrically disposed about the pin and secured thereto for urging the same inwardly into engagement with the openings.

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