

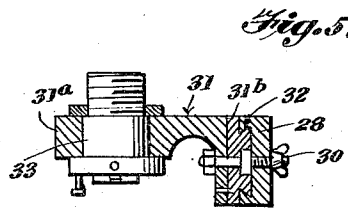
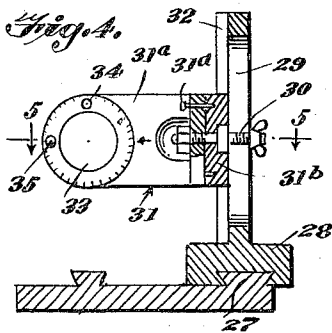
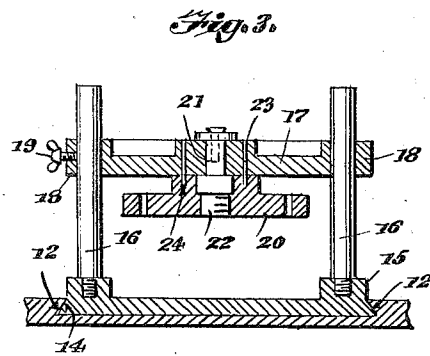
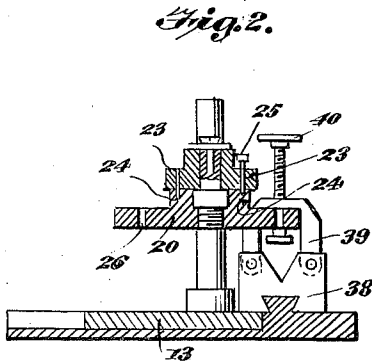
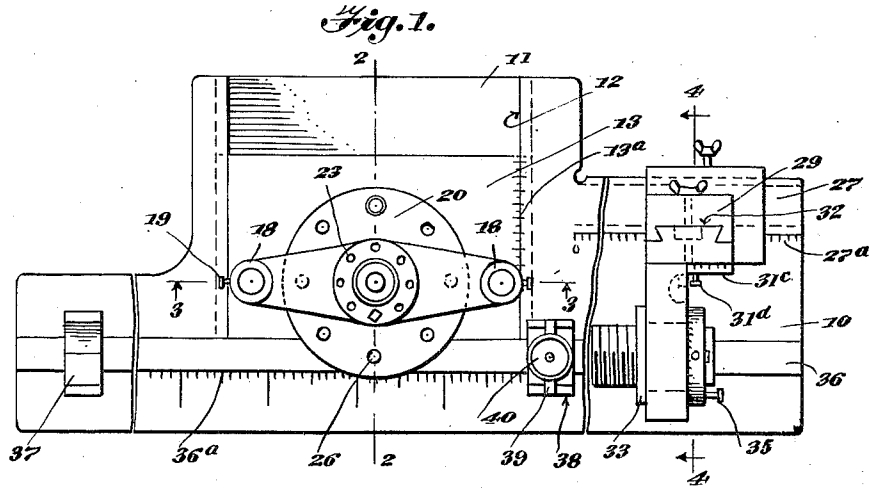
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AUTOMATIC DRILLING JIG

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AUTOMATIC DRILLING JIG

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3 Claims. (Cl. 77-62)

This invention relates to automatic drill jigs and more particularly to drilling fixtures, and has for one of its objects the production of a simple and efficient means for quickly changing the different sized bushings for drilling round shafts and the like.

A further object of this invention is the production of a drilling fixture, the various parts of which are adjustable, to facilitate the accurate drilling of round shafts and the like.

Other objects and advantages of this invention will appear throughout the following specification and claims.

In the drawing:

Figure 1 is a top plan view of the drilling fixture;

Figure 2 is a transverse sectional view taken on line 2-2 of Figure 1;

Figure 3 is a fragmentary longitudinal sectional view taken on line 3-3 of Figure 1;

Figure 4 is a vertical sectional view taken on line 4-4 of Figure 1;

Figure 5 is a horizontal sectional view taken on line 5-5 of Figure 4.

By referring to the drawing, it will be seen that 10 designates the base of the drilling fixture which is provided with a cut-out channel 11 upon its upper face extending transversely thereof as shown in Figure 1, the side edges being undercut to provide dove-tail flanges or trackways 12. A sliding platform 13 is slidably mounted within the channel 11 and is provided with beveled side edges 14 for slidably engaging the overhanging dove-tail flanges 12. This platform 13 carries a plurality of upstanding studs 15 which are internally threaded for supporting the standards 16, as shown in Figure 3. A slidable hanger 17 is carried by the standards 16, the hanger 17 having circular collars 18 at the ends thereof for slidably fitting over the circular standards 16. A set screw 19 is carried by one of the collars 18, for engaging one of the standards 16 for the purpose of locking the hanger 17 in a vertically adjusted position.

A circular guide disc 20 is rotatably suspended under the hanger 17 upon the journal pin 21, which journal pin is secured to the hanger 17, as shown in Figures 2 and 3. This journal pin 21 is provided with a threaded end 22 to which the guide disc 20 is secured, as shown. The hanger 17 is provided with a plurality of apertures 23 arranged along the circumference of a circle which are adapted to register with the sockets 24 formed in the upper face of the disc 20. A lock pin 25 is adapted to fit into the apertures 23 and the

sockets 24 for locking the disc 20 in a set position with respect to the hanger 17 as will be obvious by considering Figure 2. The disc 20 is provided with a plurality of aligned apertures 26 for receiving bushings through which suitable drills of the conventional type are to pass as is common with drilling fixtures of the type illustrated and described. These apertures 26 are in radial alignment with the apertures 23 formed in the hanger 17 and the sockets 24 formed in the disc 20, whereby the apertures 26 may be properly located over the work as will be obvious by considering Figure 1 when the pin 25 is placed in position for anchoring the disc 20 in a set position. From the foregoing description, it will be seen that the hanger 17 may be adjusted vertically whereby the drills may be properly positioned over the work and the disc 20 may be properly rotated to bring the drills into proper position over the work. Furthermore, the sliding platform 13 may be adjusted toward and from the work as may be required.

As will be obvious by considering Figures 1 and 4, the base 10 is provided along one side edge with a longitudinally extending upwardly projecting dove-tail rib 27 upon which is slidably mounted for longitudinal movement a standard 28, the standard being provided with a vertical slot 29 through which the anchoring bolt 30 extends, the anchoring bolt 30 being carried by the chuck supporting arm 31 which chuck supporting arm 31 is vertically slidable upon the standard 28 through the medium of the dove-tail rib and channel formation 32, shown in Figure 1. The chuck supporting arm 31 comprises a projecting section 31^a and an anchoring section 31^b pivotally connected by the anchoring bolt 30. The section 31^a is in this way swiveled upon the section 31^b and is provided with an index 31^c having an anchoring pin 31^d. This structure will permit a shaft to be drilled at any desired angle and the pin 31^d may hold the index parallel to zero. A suitable work-engaging chuck 33 is carried by the arm 31 having a screw 34 for fixing the chuck in a set position upon the arm 31, the chuck 33 being graduated in the conventional manner. A stop pin 35 is carried by the chuck 33. The chuck 33 is of the conventional type having three jaws with any desired type of sleeve to receive small pieces of work or small chucks. The chuck 33 is a conventional chuck and is made to conform to the standard threaded three-jaw universal or independent chuck and with a taper inside to fit a number of sleeves or a Jacob chuck for drilling small studs, small shafts and the like. The dove-

tail rib 27 is provided with a suitable index 27^a adjacent thereto.

An upstanding longitudinally extending rib 36 is formed adjacent the forward edge of the base 10 and extends parallel to the rib 27, the rib 36 extending the full length of the base 10. This rib 36 is located in a position so that its central longitudinal axis is directly below the center of the chuck 33, as shown in Figure 4, and also directly below the center of one of the apertures 26 when the same is brought directly over the work and the anchoring pin 25 is placed in position, such as is indicated in Figure 1. A V-block 37 is located near one end of the rib 36 for providing a rest for the work, and a V-block 38 is placed near the opposite end adjacent the chuck 33. The V-block 38 is provided with a releasable clamp 39 of an inverted U-shape type having a clamping screw 40 of the conventional type, whereby the work may be firmly clamped in position, when desired.

It should be understood that the present fixture is adapted for quick changing of different sized bushings for drilling round shafts. The sliding platform 13 is provided with suitable graduations 13^a along one side edge to facilitate the proper adjustment of the platform when desired, and the chuck 33 is also suitably graduated. Suitable graduations may be located along one side of the rib 36 as indicated at 36^a. It should be understood that the discs may be replaced with any number of discs having different sized holes in the bushing or the hanger 17, and the hanger 17 may be adjusted vertically and tightened in position for the desired adjustment. The revolving disc 20 is for the purpose of locating any number of holes in a shaft and the clamp 39 is in the nature of an index head. This clamp is used for work only requiring one hole, so that the work may be firmly clamped in position. The purpose of the present device is to provide an automatic drill jig for drilling the smallest size holes in shafts to the largest size with a quick way of changing the sizes merely by revolving the disc 20. It should be understood that any suitable types and sizes of drills may be supported upon the disc for this purpose.

What is claimed is:

1. A device of the character described comprising a base, an upstanding rib carried by said base, work supports carried by said rib and shiftable along the same to set positions, said base being formed with a recess in its upper face having its inner end terminating at said rib and its opposite sides undercut to provide undercut side walls, a second rib rising from said base at one side of said recess in spaced parallel relation to the first rib, a platform in said recess slidably engaged with the undercut side walls thereof and shiftable in the recess towards and away from the inner end thereof, posts rising from said platform adjacent opposite sides thereof, a cross bar extending between said posts and shiftable vertically thereon to adjusted positions, a bearing at the center of said cross bar formed with a vertical bore, a guiding disk formed with drill-receiving passages about its peripheral portion, a stem screwed into a threaded socket formed centrally of said disk and projecting upwardly therefrom and rotatably engaged through the bore of said bearing, the bearing being formed with circumferentially spaced openings and the disk having sockets for registering with the openings as the disk is turned to dispose a predetermined drill-receiving pas-

sage over the first rib in centered relation to work carried by the work supports, a pin for passing through the registering openings and sockets to hold the disk in a set position; a block carried by the second rib and shiftable along the same, a standard rising from said block and formed with a vertically extending slot and undercut groove; an arm, a chuck carried by one end of said arm and extending over the first rib longitudinally thereof for receiving and holding work resting upon the work supports; a head at the other end of said arm, a mounting slidable in the undercut groove; a stem loosely passing through said head and said mounting and having a threaded portion passing through the slot of said standard, a securing nut carried by the threaded portion of said stem for holding the mounting in a vertically adjusted position upon the standard, a nut carried by said stem for holding the head thereon and permitting turning to adjust said arm, and a set screw carried by said head for engaging the mounting and holding the head stationary in a set position.

2. A device of the character described comprising a base, an upstanding rib carried by said base, a second upstanding rib carried by said base in spaced and substantially parallel relation to the first rib, work supports carried by the first rib and shiftable along the same, a clamp carried by one support, a block carried by the second rib and shiftable along the same, a standard rising from said block and formed with a vertically extending recess and a vertical slot intermediate the width of the recess, an anchoring member shiftable vertically in the recess of said standard, an arm having a head at one end, a bolt pivotally connecting the head to said anchoring member and passing through said slot to secure the anchoring member in a vertically adjusted position, a fastener carried by the head for engaging the anchoring member and securing the arm in an angularly adjusted position, a chuck carried by said arm for engaging work carried by said supports, a platform carried by said base and shiftable towards and away from the first rib between the work supports, posts rising from said platform, a cross bar carried by said posts and adjustable vertically thereon, a guide disk under said cross bar having drill-receiving openings, a stem suspending said disk from said cross bar for rotary adjustment to dispose a predetermined opening of the disk over work carried by the work supports, and means for securing the disk in a set position.

3. A device of the character described comprising a base, work supports shiftable along said base to positions in predetermined spaced relation to each other, a standard adjustably carried by said base for adjustment parallel to the adjustment of said work supports, an arm adjustably carried by said standard and projecting laterally therefrom in crossed relation to one work support, a chuck carried by said arm for engaging work carried by said work supports, a platform carried by said base and shiftable towards and away from work carried by the work supports between the work supports, posts rising from said platform, a cross bar carried by said posts and adjustable vertically thereon, a hub at the center of said cross bar formed with a bore and openings surrounding the bore, a stem journaled through said bore and having a collar engaging the under face of the hub and a threaded portion below the collar, a guide disc under the

cross bar having a hub formed with a socket receiving the shoulder and a threaded opening receiving the threaded lower portion of the stem to suspend the disk from the stem, said disk having its peripheral portion formed with drill-receiving openings to be selectively disposed over work by turning the disk about the stem, sockets

being formed in the hub of the disk to register with the openings in the hub of the cross bar, and a fastener for engaging in registering openings of the hubs to releasably secure the disk in a set position.

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