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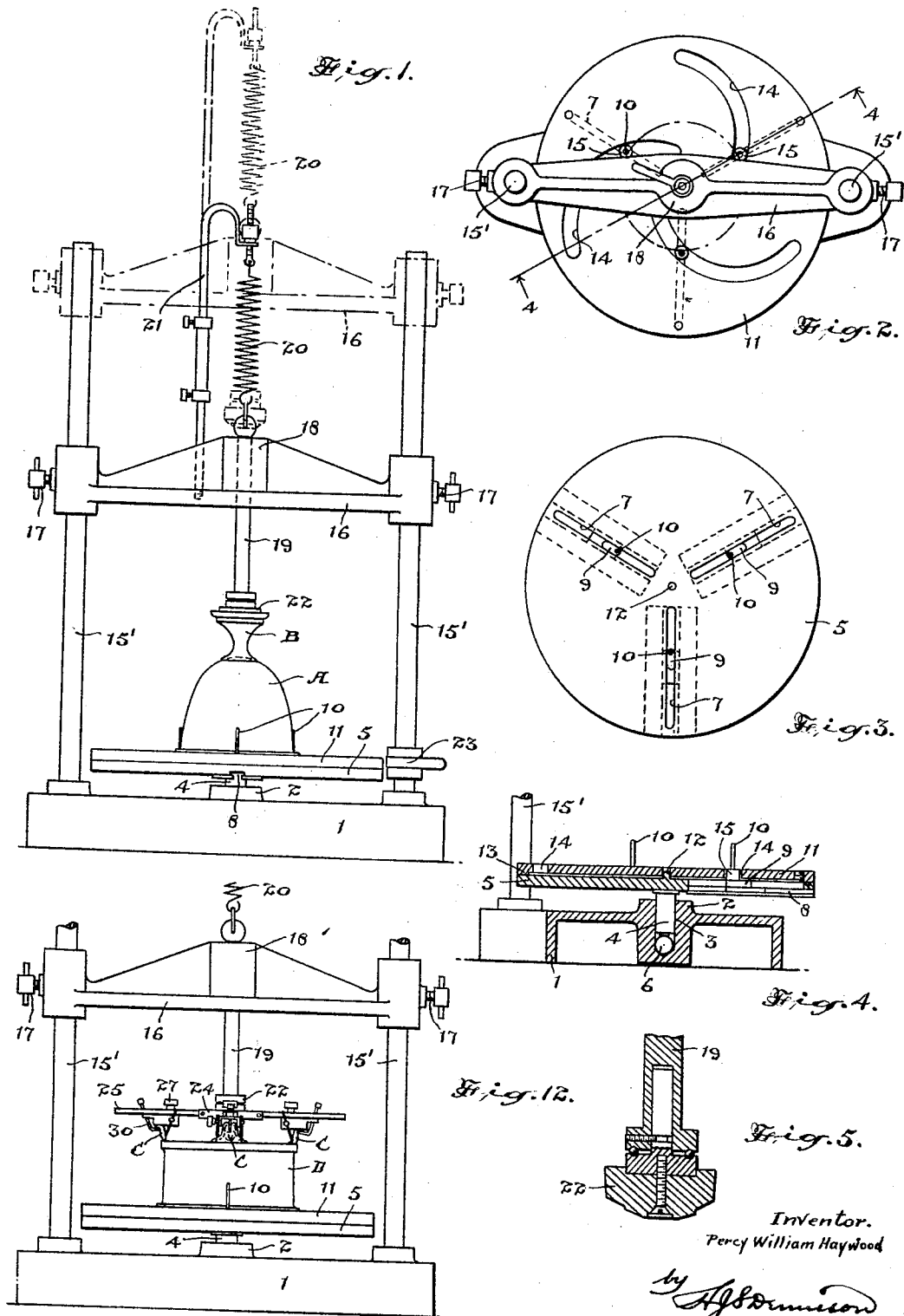
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1,889,986

CENTERING DEVICE

Filed Aug. 8, 1930

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

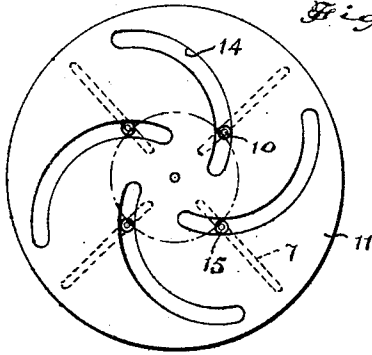


Fig. 7.

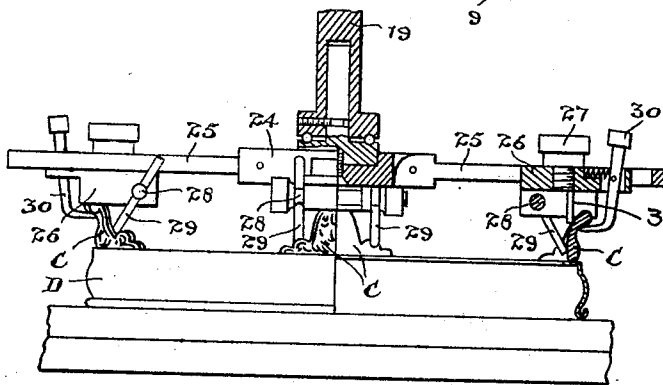
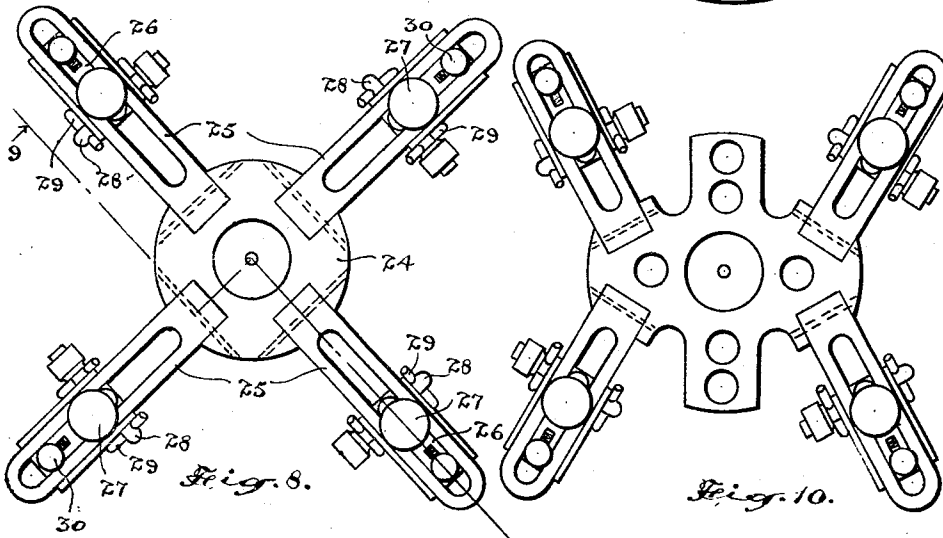
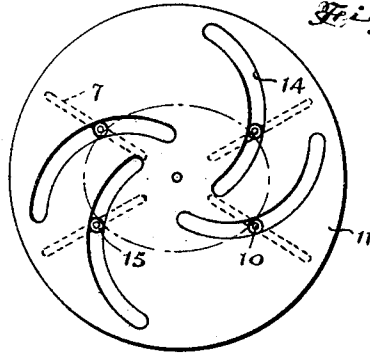


Fig. 9.

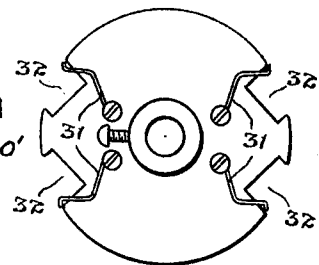


Fig. 11.

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UNITED STATES PATENT OFFICE

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CENTERING DEVICE

Application filed August 8, 1930. Serial No. 474,032.

The principal objects of the invention are to provide a device, particularly applicable to the manufacture of metal cups, vases and like articles, which will accurately assemble and hold the various parts of the article while they are being permanently secured, effecting a considerable saving in time and labor and ensuring uniformity in the articles being produced.

10 The principal features of the invention consist in the novel construction of a turntable for holding the main portion of the article being assembled whereby a plurality of pins radially movable are operated in unison and with equal movements toward or from the centre of the table, and in the novel construction and arrangement of a frame and a member adjustably mounted axially above the table whereby parts may be assembled on the main portion of the article in true axial position.

20 A further important feature of the invention consists in the novel construction of an attachment for the axially adjustable member whereby a plurality of parts may be placed and held in position for attachment to the main member centred and held on the turntable.

25 In the accompanying drawings, Figure 1 is an elevational view of the centering device illustrating the manner of using same in assembling a pair of axially arranged members to be permanently connected.

Figure 2 is a plan view of the device.

30 Figure 3 is a plan view of the under plate of the turntable.

Figure 4 is a vertical sectional view of the turntable and base taken on the line 4—4 of Figure 2.

40 Figure 5 is a vertical sectional detail of the contact end of the adjustable axial centering member.

Figure 6 is a plan view of a modified form of turntable having four equally spaced centering pins.

Figure 7 is a plan view of a further modified form of turntable having two pairs of centering pins spaced for holding elliptical forms of articles.

50 Figure 8 is an enlarged plan detail of jig

for holding a plurality of parts to be assembled on a main member.

Figure 9 is an elevational part sectional view of the jig shown in Figure 8 taken on the line 9—9 and showing part of the axial holder and the turntable supporting a part to which the several members held by the jig are to be attached.

Figure 10 is a plan view of a modified form of jig for use in placing parts on elliptical structures.

Figure 11 is a small plan view of a holder used with the jig shown in Figure 10.

Figure 12 is a view similar to Figure 1 illustrating the use of the device in accurately positioning a plurality of parts.

In the art of making silver, pewter and other metal dishes, cups and other utensils, it is the practice to form various parts and then assemble and permanently secure such parts together and it is customary to place the main part upon a turntable and while being rotated, the member is tapped into a substantially central position so that the supplementary parts may be axially assembled and soldered while the table is rotated to heat the metal uniformly and flow the solder in a neat joint completely therearound. The turntable also enables the ready placing of small parts such as feet or handles in position.

This ordinary practice requires considerable skill and even with the most skillful considerable time is wasted in the centering operation.

It is the purpose of this invention to eliminate this non-productive waste and to enable the operator to almost instantaneously and without the exercise of skill, place the parts in a perfectly central position on the turntable and then proceed with the soldering operation.

In the form of the device herein shown the base 1 has a boss 2 formed centrally thereof which is bored vertically to form a bearing 3 to receive a stud 4 on which the lower plate 5 of the turntable is axially mounted. A centre ball-bearing 6 is preferably arranged at the bottom of the bearing 3.

A plurality of radial slots 7 are formed in the plate 5 and guide slots 8 are arranged be-

neath same to slidably support the blocks 9 which carry the vertical pins 10.

A plate 11 is rotatably mounted on a centre stud 12 on the plate 5 and the outer edge of the plate 11 is provided with a shallow contact flange 13 to steady the plate 11 and permit its easy rotation on the plate 5.

Arc-shaped slots 14, arranged in involute form to cross over the radial slots 7 in the plate 5, are cut through the plate 11 and the pins 10, which extend therethrough are provided with rollers 15 to form rolling contacts with the walls of said slots 14.

It will be seen that by rotating the plate 11 upon the plate 5, or by rotating the plates in opposite directions, the involute slots 14 will move across the slots 7 from their inner to their outer ends or vice versa and this movement slides the pins 10 radially inward and outward in unison. In Figures 3 and 4 a triple arrangement of slots and pins is shown and in Figure 6 four slots are arranged in diametrically opposite pairs. In Figure 7, however, the radial slots are placed in pairs set at an angle of about 30° and the involute slots are arranged accordingly. These modified constructions will be useful for handling forms of articles other than circular as will be hereinafter explained.

By rotating the turntable plates in opposite directions the pins 10 are moved outwardly to permit the article A to be centred, being placed loosely therebetween and the reverse movement moves the pins inwardly simultaneously and the article is immediately pushed into a perfectly centralized position and held.

A pair of standards 15' extend vertically upward from opposite sides of the base and a cross bar 16 is slidably mounted thereon, it being held in any desired position above the base by suitable clamping members 17. A central boss 18 on the cross bar is bored vertically to slidably support a rod 19 which is preferably supported by a spring 20 carried on a support 21 the latter being adjustable in length to provide for varying the spring tension.

The lower end of the rod 19 has mounted on ball bearings a centering block 22 which is adapted to enter the hollow stem member B which is to be placed upon the member A. This member B is set on top of the member A and by pulling down on the rod 19 the ball-bearing end draws the member to its centralized positions. The article is then assembled ready for soldering and the turntable is then used to turn the article which is however, held centrally by the pins 10.

The turntable may be held from turning if desired by the eccentric clamp 23 mounted on one of the standards 15.

The four-pin arrangement shown in Figure 6 will readily centre circular or square articles, while the arrangement shown in

Figure 7 is particularly devised to hold elliptical-shaped articles.

Various forms of articles require the placing of feet and to facilitate the proper spacing and placing of these a jig as shown in Figures 8 and 9 is attached to the rod 19. This jig is formed of a central hub member 24 upon which are pivotally mounted the radially arranged and longitudinally slotted arms 25.

Blocks 26 are slidably mounted in the slotted arms and are secured in adjusted positions by the thumb screws 27. Cross pins 28 mounted in the blocks 26 carry the guide pins 29 against which the feet or other attachments C are placed. These are held in position by spring-held fingers 30 pivotally mounted in a central slot in each block.

The operator lifts the pivotal arms 25 and pressing back the finger 30 inserts the attachment C to abut the guide pins 29 and upon releasing the finger 30 it springs into place and holds the article securely. Short rod members 30' suitably secured in the blocks 26 extend downward to engage and support the attachment C at the opposite side to the finger 30 and preferably slightly above the point of contact of the finger 30. The members 29, 30 and 30' thus positively position and hold the attachment C. When all the articles C are thus placed the rod 19 is raised, and the base or ring D to which the legs are to be secured is placed on the table between the pins and centred. The rod 19 is then pressed down till the attachments C engage same and they are then soldered quite expeditiously as the turntable can be revolved and the jig carrying the legs C turns with it on the ball-bearing support.

The jig shown in Figure 10 is precisely the same as that illustrated in Figures 8 and 9 except that the arms are not radial but are arranged to hold the attachments for placing on an oval base.

These jigs permit a great latitude of adjustment by reason of the slotted arms and blocks adjustable therein.

The device shown in Figure 11 is merely a holder for holding the slotted arms of the jig shown in Figure 10 raised, the spring clips 31 engaging the arms when raised to extend into the notches 32.

The device is extremely simple in construction and is operated with great ease and celerity and enables an ordinary operator to greatly increase the quantity of production of any form of article which may be assembled thereon and in addition to effecting a great saving in cost of production it facilitates more accurate work.

Further, the device permits of a very wide range of adjustment for a great variety of sizes of articles and it can be adapted practically instantaneously to handling articles of greatly differing dimensions.

What I claim as my invention is:

1. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of means including a vertically slidable support rod for temporarily supporting the remaining part or parts in positioned relation to the first-mentioned part, and means for effecting a substantial counterbalance of the weight of said rod and temporary supporting means to facilitate operation of the device.

2. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of means including a vertically slidable support rod for temporarily supporting the remaining part or parts in positioned relation to the first mentioned part, a counterbalance tension spring connected with said vertically slidable rod, and adjustable means engaging said spring to control its counterbalancing influence.

3. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, spaced upright guide members, a cross frame slidably mounted on said guide members, means for securing said cross frame in adjusted positions on said guides, a rod slidably mounted in said cross frame, means removably mounted on said rod for temporarily supporting the remaining article or articles in predetermined positioned relation to the first-mentioned member, and spring means connected with said cross frame and slidable rod for substantially counterbalancing the temporary supporting means and rod.

4. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a rod slidably mounted, a head rotatably mounted on one end of said rod, means detachably secured to said rotatable head for temporarily supporting the remaining part or parts in positive positioned relation to the first mentioned part, said latter means being detachable from said rotatably mounted head to permit ready replacement thereof by another, and means for facilitating longitudinal sliding of said rod.

5. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of spaced upright guide members, a cross frame slidably mounted on said guide members, means for securing said cross frame in adjusted positions on said guides, a rod slidably mounted in said cross frame, means removably mounted on said rod for temporarily supporting the remaining article or articles in predetermined positioned relation to the first-mentioned member, and an adjustable spring suspension member supported from said cross frame and connected to the

upper end of said rod to support it and the means carried thereby in a substantially balanced position.

6. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, a plurality of blocks adjustably mounted on said jig, stop members adjustably mounted in said block each adapted to contact a different one of the remaining parts, and spring actuated holding members mounted one on each of said blocks for holding the remaining parts against their respective stop members to position the same in predetermined angular relation relative to each other and to said first-mentioned part.

7. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of means for temporarily supporting the remaining parts in predetermined spaced relation and in positioned relation to the first-mentioned part, said latter means including a plurality of relatively adjustable gripping devices each presenting a plurality of spaced positioning contacts with a respective one of said remaining parts to determine its angular disposition to the remaining parts.

8. In a device for positioning a plurality of parts in assembled relation, the combination with means for centering one of said parts, of a jig adjustably mounted on an axis concentrically of the axis of the centered part, said jig having means for holding the remaining parts individually in spaced relation to each other about said central axis to position same in accurately spaced relation on the first-mentioned part, said jig means comprising a plurality of gripping units relatively adjustable toward or away from each other and to the first-mentioned positioned part to determine the relative location of all of said parts.

9. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, said jig comprising a block having a plurality of arms extending therefrom, and means mounted on said arms and adjustable toward or away from each other relative to each of said arms for individually gripping the respective remaining parts to determine the angular relation of said last-mentioned parts with each other and with said first-mentioned part.

10. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, said jig comprising a block having a plurality of arms extending therefrom, each slotted longitudinally from the end inwardly, and

holding devices adjustably mounted one in the slot of each arm and each adapted to hold a respective one of the remaining parts in accurately spaced and predetermined angular relation to the others and to position the same on said first-mentioned part, said holding devices being adjustable in their respective slots to determine the spacing of the respective parts held thereby in accordance with the shape or size of the first-mentioned part.

11. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, said jig comprising a block having a plurality of arms extending therefrom, and means adjustable relative to said arms for gripping the remaining parts and supporting the same in spaced relation to each other and in accurate relation to the first-mentioned part, said arms being disposed in substantial radial relation and each hinged to said block whereby they may be swung upwardly to facilitate placing of the parts to be held in said holding devices.

12. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, said jig comprising a block having a plurality of arms extending therefrom, means adjustable relative to said arms for gripping the remaining parts and supporting the same in spaced relation to each other and in accurate relation to the first-mentioned part, said arms being pivotally connected to said block to be swung upwardly, and holding means for gripping said arms to support same in their raised position.

13. In a device for positioning a plurality of parts in assembled relation, the combination with means for supporting one of said parts, of a jig adjustably mounted, said jig comprising a block having a plurality of arms extending therefrom, means adjustable relative to said arms for gripping the remaining parts and supporting the same in spaced relation to each other and in accurate relation to the first-mentioned part, said arms being pivoted to swing upwardly, and a plurality of spring clips co-operating with said arms for holding same in their raised position to facilitate placing of said parts in said gripping means.

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