(No Model.) 2 Sheets—Sheet 1.

M. H. McARTHEY.

JIG FOR DRILLING BOLT HOLES.

No. 595,404. Patented Dec. 14, 1897.

Fig. 1.

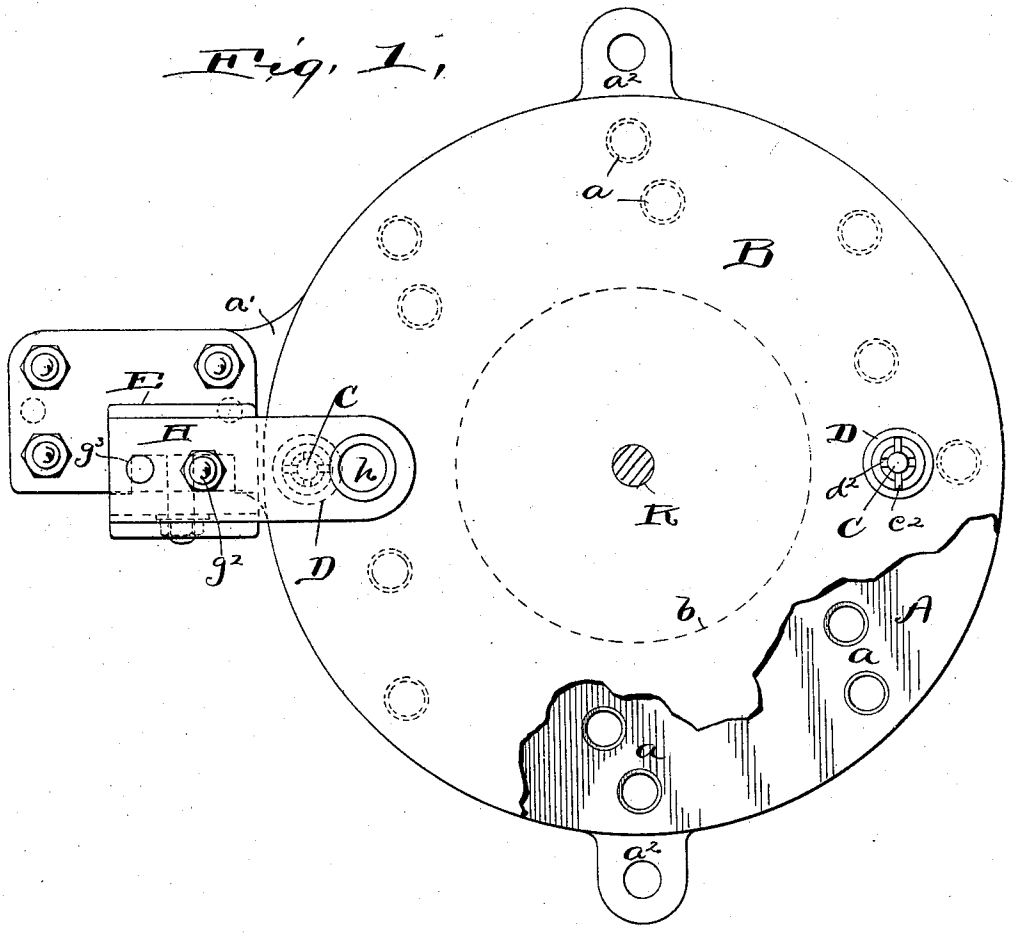
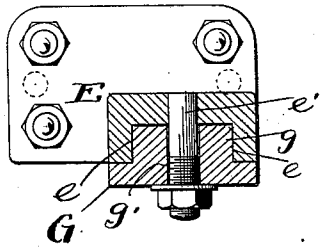


Fig. 3.



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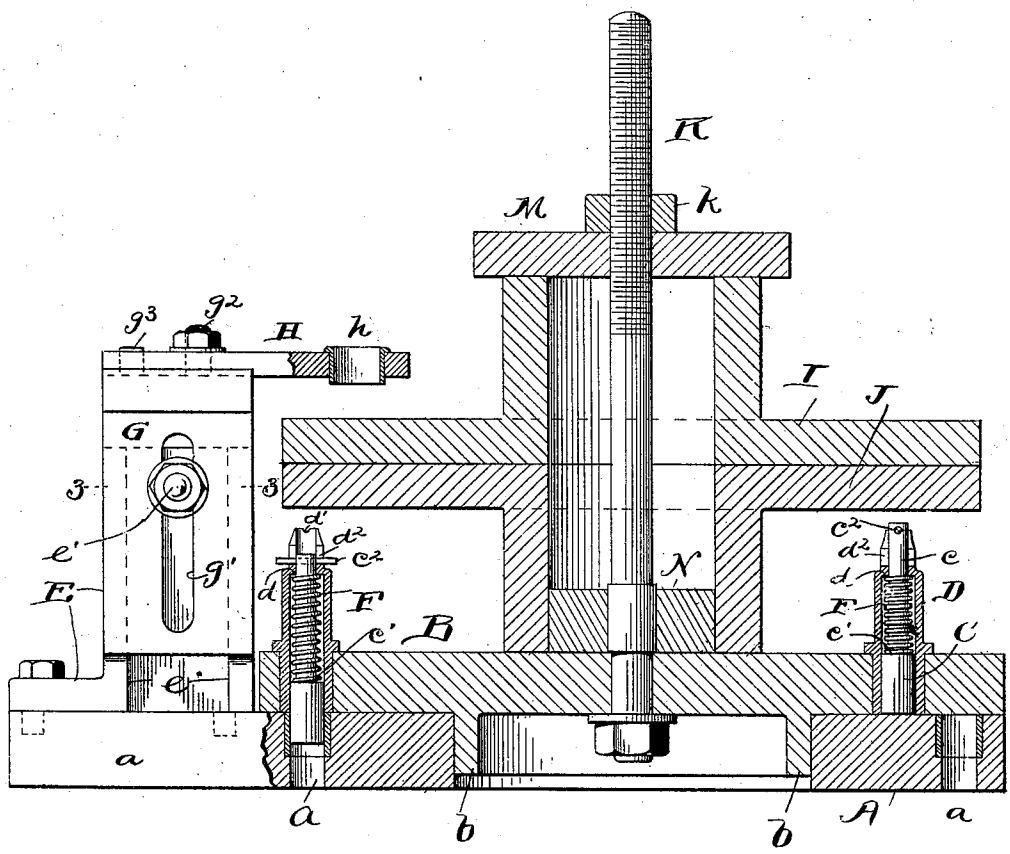


Fig. 2.

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UNITED STATES PATENT OFFICE.

MICHAEL H. McARTHEY, OF CLEVELAND, OHIO.

JIG FOR DRILLING BOLT-HOLES.

SPECIFICATION forming part of Letters Patent No. 595,404, dated December 14, 1897.

Application filed November 18, 1896. Serial No. 612,617. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL H. MCARTHEY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Universal Jigs for Drilling Bolt-Holes in Flanged Couplings and other Analogous Articles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The customary practice in shops engaged in the business of making flanged couplings of different sizes requiring bolt-holes at different distances from the center and from each other is to have a special jig or templet for each size and each variety in respect to the distance of the holes from the axes and from each other. Such practice involves the making and care of a large number of such templets or jigs.

The object of my invention is to avoid the necessity of making and carrying a multiplicity of such jigs; and to that end the invention consists in the construction and combination of parts constituting the universal jig shown and described, whereby the bolt-holes may be drilled at regular intervals and at any desired distance from the axis and from each other, regardless of the diameter of the flanges of said couplings or the length of their hubs.

In the drawings, Figure 1 is a plan view of my universal jig, the top plate being partly broken away. Fig. 2 is a central vertical sectional view thereof, and Fig. 3 is a horizontal sectional view on line 3 3 of Fig. 2.

Referring to the parts by letters, A represents an index-plate, and B a carrier-plate which is pivoted to said index-plate, preferably by means of the cylindrical flange *b*, which enters a corresponding hole in the index-plate.

In the index-plate are formed one or more rows of holes *a*, which are concentric with the axis of rotation of the carrier-plate and are placed at regular intervals apart. Two rows of such holes are shown, the outer row containing eight holes and the inner row six holes. The number of rows and the number of holes in each row may be varied as much as necessary to best adapt the jig to the requirements of the shop in which it is to be used. With the construction shown three, four, six, or eight holes may be drilled at regular intervals in any flanged couplings and at any desired distance from their axes. This index-plate is intended to be bolted to the bed-plate of the drill-press, and for this purpose two ears a^2 project from its sides.

The carrier-plate is provided with spring-actuated latch-pins C, which are adapted to enter any of the holes *a* when said pin is in line with said holes. Each pin is movable vertically in a sleeve D, which is seated in a properly-placed hole in the carrier-plate, above which it projects more or less. The shank *c* of the pin C is reduced in size, and a spring F, which surrounds the shank within the sleeve, thrusts endwise against a shoulder *d* within the sleeve and the shoulder *c'* on the pin, whereby the pin is constantly pressed downward. In the top of the sleeve are two deep slots d^2, having outwardly-inclined edges, and a transverse bar c^3 on the spring-pin enters these slots when the pin descends to enter one of the holes *a*. In the top of the sleeve are notches *d'*, which will receive the bar c^2 when the pin C has been lifted and turned one-quarter around.

The described latching device for connecting the index-plate and carrier-plate in different relative but positively-determined positions is simple and effective; but it is believed that the substitution of any other latching device adapted to lock the two plates together at regular intervals in their relative rotation would not be a departure from the invention.

The index-plate is provided with a laterally-projecting arm *a'*, to which is secured the standard E. A vertically-adjustable support G for the drill-guide arm H is secured to this standard. The standard, as shown, has a vertical groove *e*, which receives a vertical rib *g* on the support. The support has a vertical slot *g'*, through which passes the bolt *e'*, by means of which the support is secured at any desired elevation to the standard.

The drill-guide arm H is fixed to the support G by the bolt g^2 and pin g^3 or any other suitable means. In its end is a vertical cylindrical hole, in which preferably a hardened

sleeve *h* is secured. The drill is guided by this sleeve.

Two flanged couplings I and J may be clamped upon the carrier-plate B by means of a threaded rod K, which is secured axially to said plate B and passes up through the hubs of the couplings, the bar M, which embraces the bolt above the couplings, and the arm *k*, which clamps this bar M down upon the top coupling-hub.

The couplings are centered upon plate B by a sleeve N, through which the rod K passes and over which the hub of the coupling fits. A variety of these sleeves to fit different coupling-hubs and a plurality of arms H, by means of which the distance of the hole to be drilled from the axis may be determined, are necessary to adapt the device to different jobs, but all of the other mechanism remains unchanged. Having drilled one hole in the two coupling-flanges the latch-pin is raised and the carrier-plate is turned until the pin may enter another hole *a* and another hole drilled, and so on. The holes drilled are of course equally spaced, whatever may be their distance from the center. The support G is raised or lowered as the coupling-hubs are long or short, whereby the guide-arm may be placed at the desired distance from the flange to be bored.

Having described my invention, I claim—

1. In a universal jig, in combination, an index-plate, a substantially circular relatively-rotatable carrier-plate, an axially-disposed rod extending from said carrier-plate, means for causing said rod to clamp to said carrier-plate a flange-coupling surrounding said rod, and a latching device carried by one plate and adapted to engage at regular circumferential intervals with the other plate, substantially as described.

2. In a universal jig, in combination, an index-plate, a relatively-rotatable carrier-plate, means for clamping a flanged coupling axially upon said carrier-plate, means for holding a tool in proper position to engage with the flange of the coupling so held, and a latching device adapted to temporarily hold the carrier-plate in the desired position, substantially as described.

3. In a universal jig, in combination, two relatively-rotatable horizontal plates, means whereby the devices to be drilled may be clamped axially to the top plate, a latching device for temporarily connecting said plates at regular circumferential intervals, a laterally-projecting arm on the lower plate, a standard secured thereto, and an inwardly-extended horizontal drill-guide arm, secured to said standard, substantially as and for the purpose specified.

4. In a universal jig, in combination, two relatively-rotatable horizontal plates, means whereby the devices to be drilled are clamped to the top plate, a latching device for connecting said plates at regular intervals, a vertically-adjustable support, means for holding the same stationary with respect to the bottom plate, and a drill-guide arm secured to said support, substantially as and for the purpose specified.

5. In a universal jig, in combination, the bottom index-plate having an annular row of evenly-spaced holes, a carrier-plate mounted on the index-plate axially with respect to said row of holes, a spring-latched pin carried by the carrier-plate, means for clamping the devices to be drilled upon said carrier-plate, a fixed drill-guide arm, and means for supporting the same in desired relation to the devices to be drilled, substantially as and for the purpose specified.

6. In a universal jig, in combination, the bottom index-plate having an annular row of evenly-spaced holes, and a laterally-extended arm, a standard secured to said arm, a vertically-adjustable support mounted upon the standard, a drill-guide arm secured to said support, a carrier-plate pivoted to the index-plate, a spring-actuated latch-pin carried thereby, and a clamping device, substantially as and for the purpose specified.

7. In a universal jig, in combination, an index-plate, a carrier-plate pivoted thereon, an axially-disposed rod carried by said carrier-plate, a removable and exchangeable collar thereon, a latch for connecting said plates at regular intervals, a fixed drill-guide arm, and means for holding the same stationary with respect to the index-plate, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL H. McARTHEY.

Witnesses:
E. L. THURSTON,
E. B. GILCHRIST.