

Jan. 2, 1923.

1,440,388

M. L. JEFFREY.
WORK HOLDING MECHANISM.
FILED DEC. 29, 1919.

2 SHEETS-SHEET 1

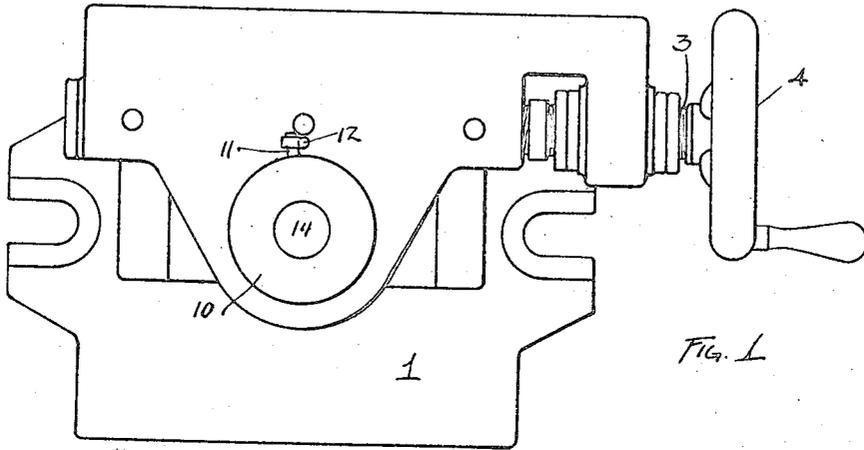


FIG. 1

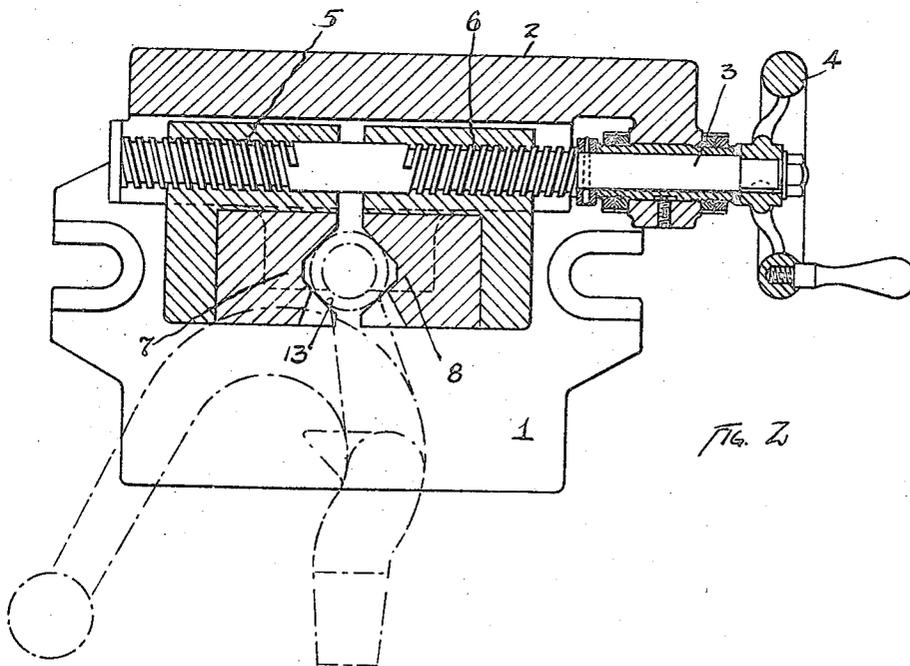


FIG. 2

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2 SHEETS-SHEET 2

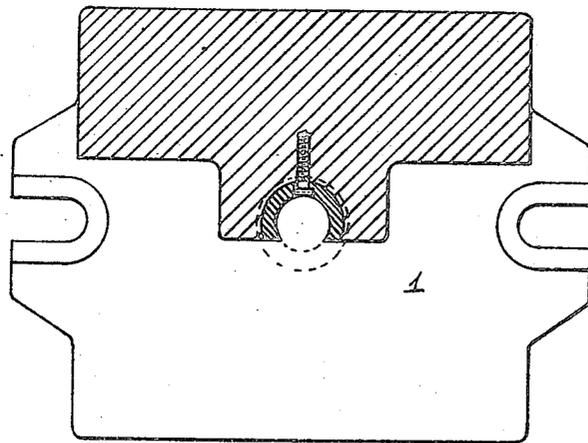
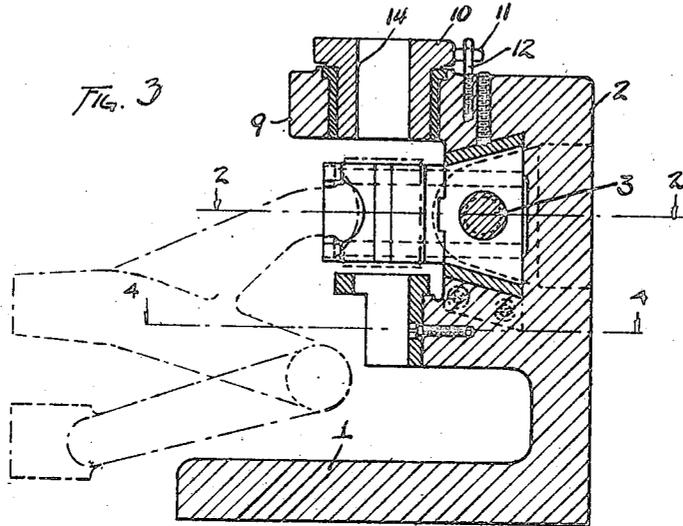


FIG. 4.

INVENTOR
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

MAX L. JEFFREY, OF CLEVELAND, OHIO, ASSIGNOR TO THE COLUMBIA AXLE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

WORK-HOLDING MECHANISM.

Application filed December 29, 1919. Serial No. 348,156.

To all whom it may concern:

Be it known that I, MAX L. JEFFREY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Work-Holding Mechanism, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention, relating, as indicated, to work-holding mechanism, is particularly directed to an improved means for holding and fixing in position such small articles as steering rod connections for motor vehicles, in which holes have to be drilled through the ends or knuckles of the rods. In such cases it is essential that the holes be drilled exactly centrally in the ends, and jigs or templates are usually provided for this purpose. The present mechanism is adapted, however, to accomplish this same purpose accurately and conveniently, and is also constructed to permit the use of a number of sets of work-engaging members or jaws to adapt the mechanism to various work and to allow it to hold different articles. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is a plan view of my improved mechanism; Fig. 2 is a longitudinal horizontal section on the line 2—2, in Fig. 3; Fig. 3 is a central transverse vertical section; and Fig. 4 is a section on the line 4—4, in Fig. 3.

The mechanism includes a base member 1 which is adapted to be suitably attached to the base or work table of the machine on which the present mechanism is to be used, such for example as a drill press. Mounted in the upper portion 2 of the base is an actuating member 3 provided with a hand wheel 4 and having oppositely formed threaded portions 5 and 6. Engaged with

these two threaded portions are work-engaging members or jaws 7 and 8, respectively, which are suitably mounted in guide-ways formed transversely of the base member and are adapted to be actuated outwardly or away from each other by the operation of the actuating member 3 through the hand wheel 4. The upper portion of the base 2 is provided with an extending flange 9, in which is set a drill guide 10, which is held in position against movement or rotation by means of a rod 11, and bolt 12. The two jaw members 7 and 8 are constructed, as shown in Fig. 2, to grip a member such as the end 13 of a steering knuckle connection for the steering mechanism of an automobile. Such an article must be drilled with a vertical hole through the end 13, and the jaws which are shown in the present figures are designed to receive such an article and to grip the cylindrical end 13 thereof and hold the same securely during the drilling operation.

The entire mechanism is mounted below the movable drill of a drill press in such a position that the drill when brought downward will pass through the opening 14 in the guide 10. The work-engaging members 7 and 8 and the actuating member 3 are so constructed and assembled that the work-engaging jaws will grip the article 13 and clamp the same against movement in a position which is directly below and aligned with the opening 14 in the guide 10. The article 13 which is to be drilled is thus brought into exact alignment with the descending drill, since all parts of the mechanism have been constructed to grip this member at a predetermined position, which is directly in line with the movement of the drill. In operation, assuming that the jaws are initially spaced or opened, the article to be drilled is inserted and the hand wheel turned to clamp the jaws against the article, this movement also automatically centering the article beneath the drill guide 10. The threads on the actuating shaft are coarse and only a slight turning of the handwheel is needed to bring the jaws into action. The drill is then lowered and operated and the jaws are next returned to release the article.

One very important advantage of the present improvement is that it is adapted to receive various sized and shaped jaws to hold a number of different articles, and that

so long as the jaws are duplicates the actuation of the shaft 3 serves to exactly center the work beneath the drill guide in position to be operated upon.

5 Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such
10 stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a device of the character described,
15 a base plate, a vertically supported plate formed integrally with one side of said base plate, a longitudinal keyway formed on one side of said vertically supported plate, cooperative work-engaging members having
20 lugs slidably engaging said keyway, a single actuating member engaging each of said work-engaging members and serving to simultaneously move them toward or away from each other, an extension flange integral with the vertically supported plate
25 and overhanging the central portion of the base plate, an aperture formed in said extension flange to provide a drill guide seat, an interchangeable drill guide rotatably
30 mounted in said seat, and a pair of interlocking studs mounted upon said drill guide and flange respectively, to permit of the rotation and unlocking of said drill guide.

2. In a device of the character described,
35 a base plate, having a vertical section

formed integrally therewith, an extension flange formed integral with said vertical portion and overhanging the central portion of the base plate, a longitudinal key-way formed on one side of said vertical section,
40 an extension lug formed on one side of said vertical section beneath said key-way, a drill guide formed in said lug, a removable drill guide seated in the central portion of said extension flange, and work engaging mem-
45 bers secured within said key-way.

3. In a device of the character described, a base plate, a vertically supported plate formed integrally with one side of said base plate, a longitudinal keyway formed on one
50 side of said vertically supported plate, cooperative work engaging members having lugs slidably engaging said keyway, removable jaws keyed in registering position to said work engaging members, a single ac-
55 tuating member engaging each of said work engaging members and serving to simultaneously move them toward or away from each other, an extension flange integral with the vertically supported plate and overhang-
60 ing the central portion of the base plate, an extension lug integral with the vertically supporting plate and overhanging the central portion of the base plate, and drill receiving apertures in said extension flange and pro-
65 jecting lug respectively, in vertical alignment upon opposite sides of said keyway.

Signed by me, this 22 day of December, 1919.

MAX L. JEFFREY.