

No. 833,917.

PATENTED OCT. 23, 1906.

B. T. BURCHARDI.

DRILL JIG.

APPLICATION FILED NOV. 24, 1905.

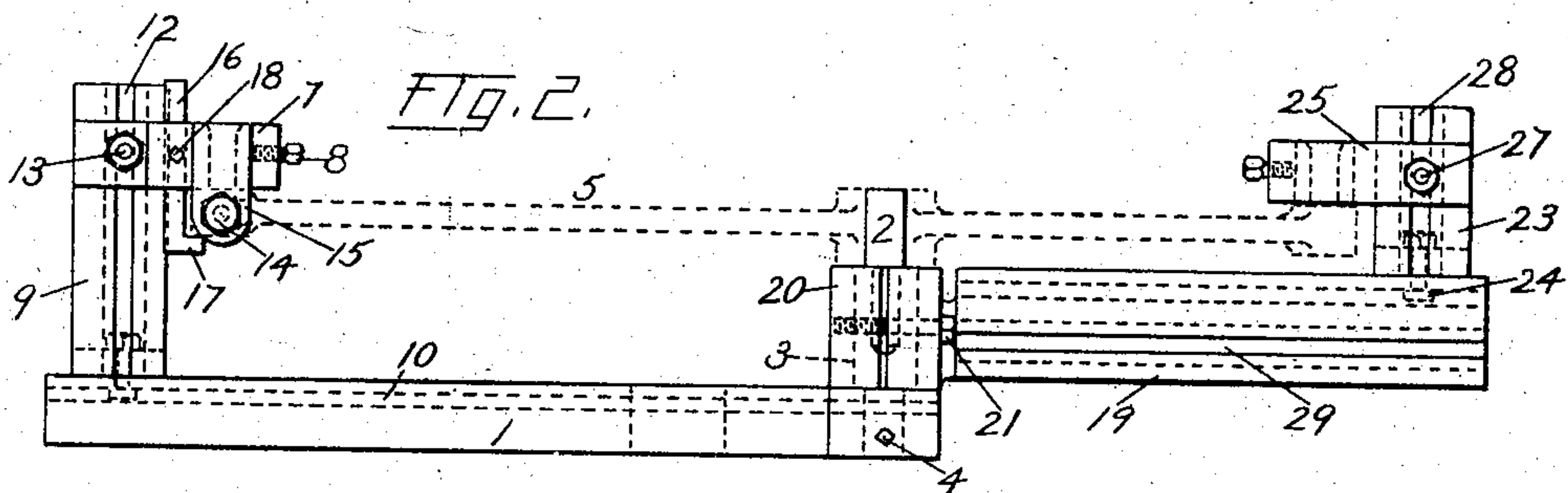
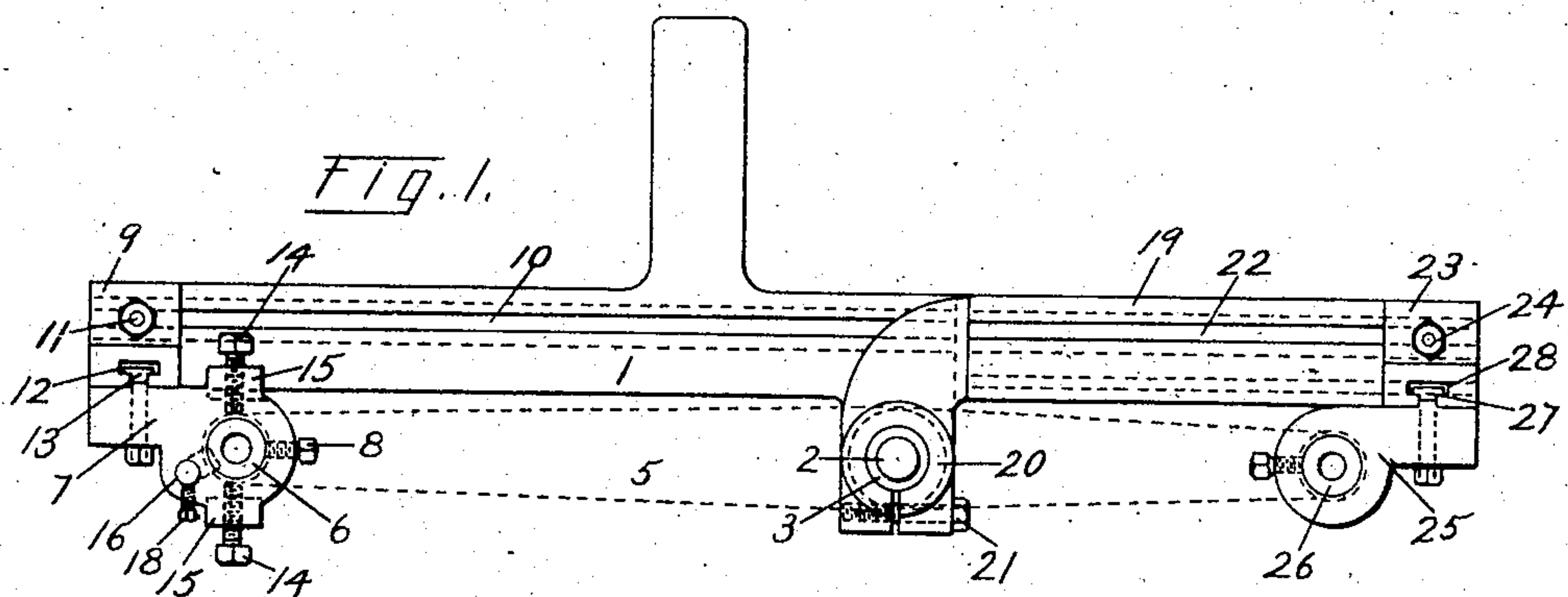


Fig. 3.

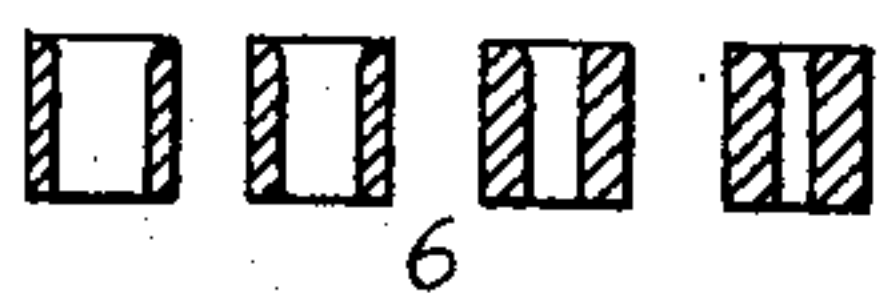
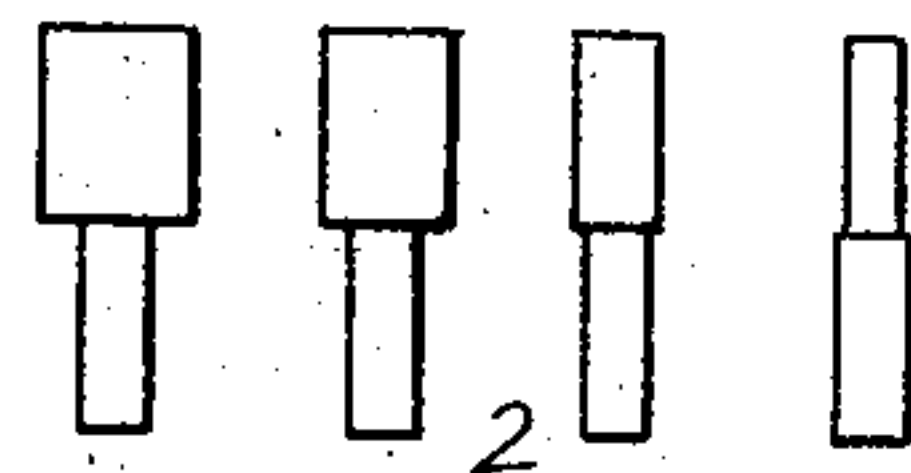


Fig. 4.



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DRILL-JIG.

No. 833,917.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed November 24, 1905. Serial No. 288,895.

To all whom it may concern:

Be it known that I, BERNHARD T. BURCHARDI, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Drill-Jig, of which the following is a specification.

This invention relates to an improvement in drill-jigs.

In constructing machines the parts of which are to be interchangeable it has been customary to drill the holes in the several machine elements in jigs, each jig being adapted for use with one element only. The cost of these jigs is considerable, and where a few machines only are to be built they are not used, their cost being prohibitive. It is of material advantage to have all like machine elements drilled in jigs, for it reduces the initial cost of the machines and assists to render the parts of the various machines interchangeable, which lessens the cost of maintenance.

It is one of the objects of this invention to provide a drill-jig which is simple, durable, and capable of use in drilling parts of different shapes and sizes, so that a single jig may be used in drilling many different parts.

Another object is to provide a drill-jig that can be used for drilling holes of different sizes in parts of different shapes and sizes.

With these and other objects in view the invention consists in certain constructions and combinations, which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a plan view of a drill-jig constructed in accordance with the invention. Fig. 2 is a side elevation of the structure shown in Fig. 1. Fig. 3 illustrates a group of bushes fitting the jig and having holes of different sizes therein, and Fig. 4 illustrates a group of positioning-studs fitted to the jig and of different dimensions.

In carrying out the invention there is provided a support which may vary widely in construction. Upon the support a device is located for the purpose of positioning the work to be drilled, and this positioning device may vary widely in construction. For the purpose of guiding the drill as it enters the work a bush, usually of hardened metal, is used, and this bush may be mounted on

the support in any convenient manner. Means are provided for adjusting the bush with respect to the positioning device, so that the jig may be used with parts of different shape and dimensions by simply readjusting it. This adjusting means may vary widely in construction.

In the device selected to illustrate the invention a support 1 is used, which consists of a cast-iron block adapted to rest upon the table of a drill-press and to which the positioning device is secured. As shown, the positioning device consists of a stud 2, fitted in a post 3, rigidly secured to the support 1 by means of a set-screw 4. It is to be understood, however, that the positioning device varies with the character of the work to be drilled.

To illustrate the action of the positioning device, a lever (indicated by dotted lines at 5) is shown in position to be drilled. The work or lever has previously had one hole drilled in its hub, and this hole is used in positioning it on the support. The hub of the lever rests on the post 3, the hole fitting the positioning-stud 2. It is obvious that work having a hole in its hub of a different size may be positioned on the support by substituting another stud for that shown. The jig is supplied with and a group of such studs is shown in Fig. 4.

The bush 6 for guiding the drill is so mounted that it may be adjusted toward and away from the positioning device or stud to accommodate work requiring holes at different distances apart and so that it may be adjusted in a plane which does not intersect the stud to accommodate work having sections to be drilled in different planes—as, for instance, a bent lever. As shown, the bush 6 is held in a slide 7 by means of a set-screw 8, a hole being formed in the slide for this purpose, the hole being large enough to permit the substitution of other bushes supplied to the jig having larger or smaller guiding-holes therein, as indicated in the group of bushes illustrated in Fig. 3.

While the slide 7 might be mounted directly upon the support 1, as shown, it is mounted on a carriage 9, movable upon the support 1. The movement of the bush toward and away from the stud is effected by moving the carriage, while the movement in a plane which does not intersect the stud is effected by moving the slide on the carriage in a vertical direction. In order to effect

the adjustment of the carriage 9 on the support 1, the support is provided with a T-shaped slot 10 along its upper face, and the carriage 9 is provided with a square-head bolt 11 of a well-known form, fitting the slot 10 for holding the carriage in position when adjusted. Similarly the carriage 9 is provided with a T-shaped slot 12, and the slide 7 has a square-head bolt 13, fitting the slot 12 for holding it in position on the carriage when adjusted.

Means for clamping the work in position are provided and may vary widely in form. Preferably the clamping means is carried by the slide 7, before referred to. A pair of screws 14, threaded in lugs 15, depending from the slide, is used for this purpose, and while under certain conditions the screws alone might be depended upon to hold the work preferably a dog 16 is also mounted on the slide 7 and has a hooked projection 17, which engages the work and holds it against the slide. The dog is held in place by means of a set-screw 18.

Where work is to be drilled in more than one place while in the jig, the jig is provided with a plurality of bushes, and both bushes will be adjustable toward and away from and in a plane which does not intersect the stud, as in the case of a single bush. It is desirable, however, that the bushes be also adjustable with respect to each other, so that the jig may be used with levers of the first and second order and other work varying in shape and dimensions. It is also desirable that means be provided for adjusting the angular positions of the bushes with respect to the stud. While this might be done otherwise, as shown, the angular positions of the bushes is varied by swinging one of the bushes around the positioning device or stud. An arm 19 is pivoted to the support 1 by means of its hub 20, which surrounds the post 3, before referred to. The hub 20 is split in a well-known manner and is clamped firmly to the post by a screw 21 after having been adjusted to its proper position. The arm 19 has a T-shaped slot 22 along its upper face and supports a carriage 23, similar to the carriage 9, and which is held in position by means of a square-head bolt 24, fitting the slot 22. Upon the carriage 23 a slide 25, carrying a bush 26, is mounted and held in place by means of a bolt 27, fitting a T-shaped slot 28, formed in the carriage 23.

Where one hole is to be drilled at an angle to another or a peculiarly-shaped piece of work is to be drilled, it may be desirable to mount the carriage or slides upon the side of

the arm or support. The arm 19, as shown, has a T-shaped slot 29 on its side for this purpose, and the support may also be provided with side slots, if desired.

The bushes having been set in their required positions, a piece of work is positioned on the stud 6 and clamped to the slide 7, the jig placed in position on the table of a drill-press, and the holes drilled, after which the work is removed and another piece of work put in its place.

Changes and variations may be made in the structure without departing from the invention. The invention, therefore, is not to be restricted to the precise construction shown and described.

What is claimed is—

1. In a drill-jig, the combination with a support, of a positioning device on the support, a bush mounted on the support for guiding the drill, means for adjusting the bush with respect to the positioning device, and a dog and pair of screws movable with the bush for clamping the work in position, substantially as described.

2. In a drill-jig, the combination with a support, of a positioning device on the support, a carriage mounted on the support adjustable toward and away from the positioning device, a slide mounted on the carriage adjustable in a plane which does not intersect the positioning device, a bush carried by the slide for guiding the drill, and a dog and pair of screws fitted to the slide for clamping the work in position, substantially as described.

3. In a drill-jig, the combination with a support, of a positioning device immovably held on the support, a plurality of bushes mounted on the support for guiding the drill, and means for adjusting the angular positions of the bushes with respect to the positioning device, substantially as described.

4. In a drill-jig, the combination with a support, of a positioning device immovably held on the support, a plurality of bushes mounted on the support for guiding the drill, means for swinging one of the bushes around the positioning device, and means for adjusting the bushes toward and away from the positioning device, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNHARD T. BURCHARDI.

Witnesses:

J. D. H. BERGEN,
THEODORE FISHER.