A. S. AND R. REID.

ANGLE PLATE.

APPLICATION FILED FEB. 8, 1919. RENEWED MAR. 17, 1920.

1,338,095.

Patented Apr. 27, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

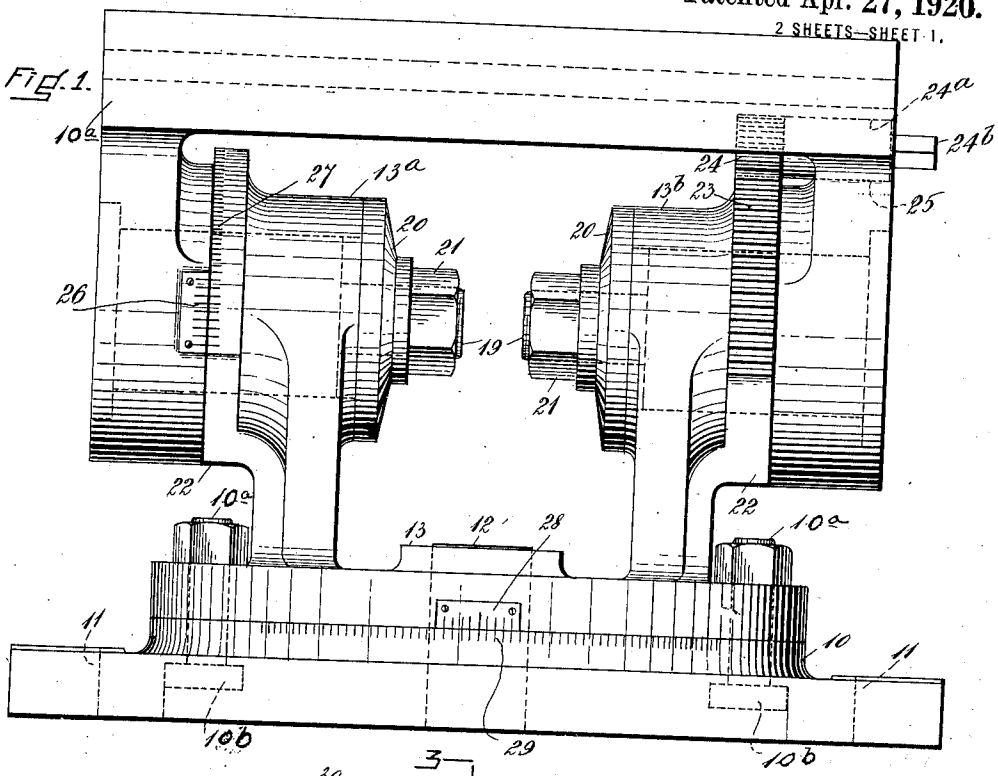
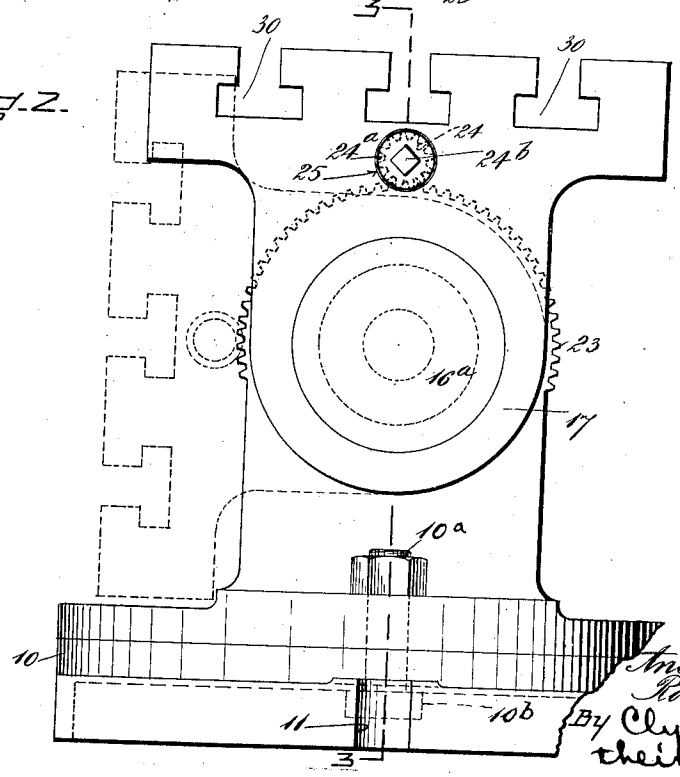



Fig. 2.




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2 SHEETS—SHEET 2.

Fig. 3.

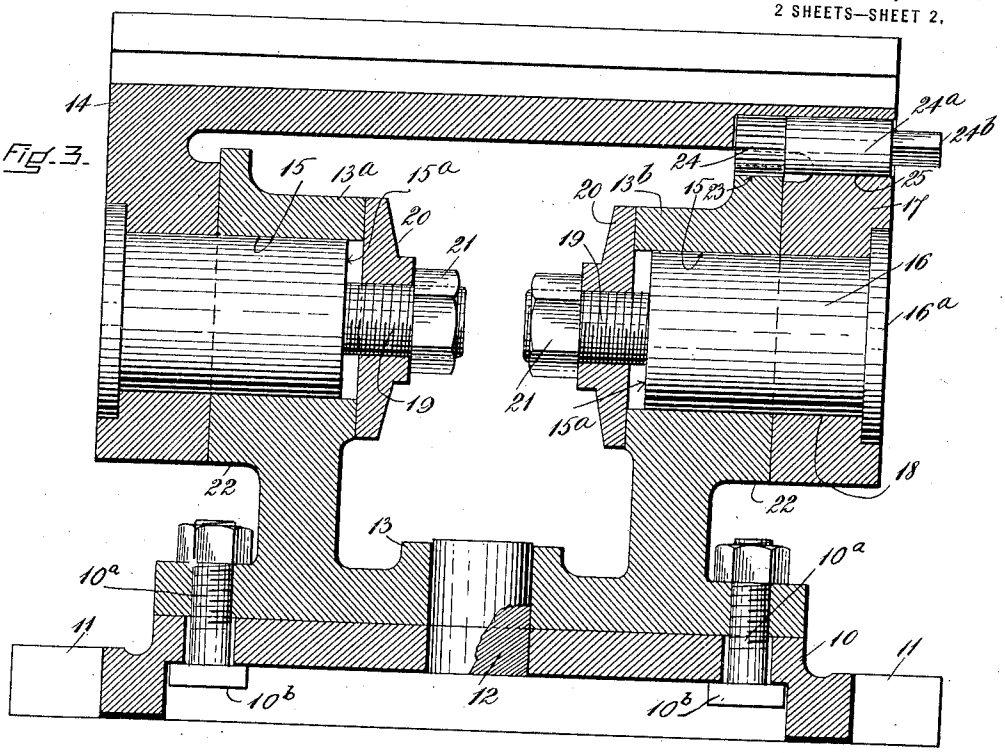
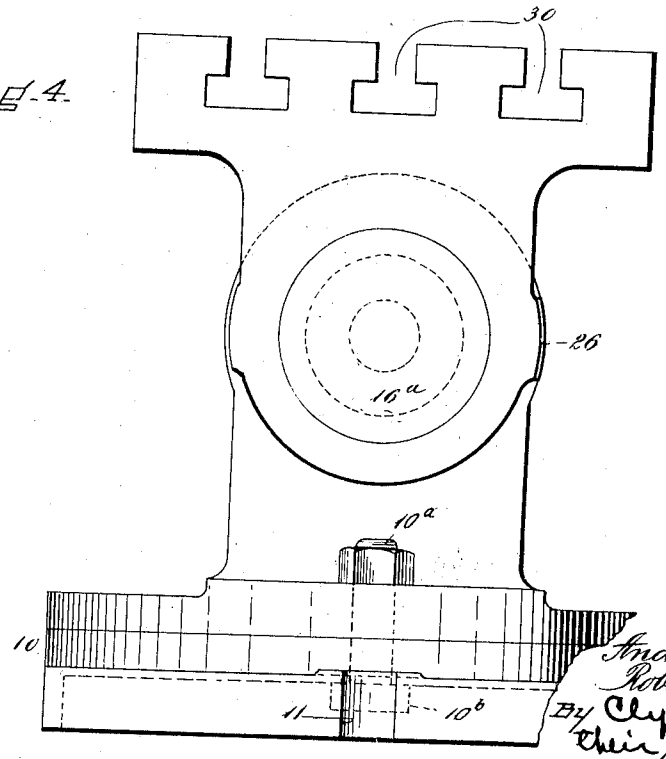



Fig. 4.




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# UNITED STATES PATENT OFFICE.

ANDREW S. REID AND ROBERT REID, OF BEVERLY, MASSACHUSETTS, ASSIGNORS TO REID BROTHERS COMPANY, OF BEVERLY, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## ANGLE-PLATE.

1,338,095. Specification of Letters Patent. Patented Apr. 27, 1920.

Application filed February 8, 1919, Serial No. 275,766. Renewed March 17, 1920. Serial No. 366,691.

*To all whom it may concern:*

Be it known that we, ANDREW S. REID and ROBERT REID, citizens of the United States, and both residents of Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented an Improvement in Angle-Plates, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to universally adjustable work holders of metal working machines commonly known as "angle plates" and consisting generally in a top table or work holder proper that is angularly adjustable about a horizontal axis of an intermediate member that is in turn angularly adjustable about a vertical axis carried by a base plate adapted to be clamped to the main table or base of the machine. A principal object of the present invention is to provide an improved mounting of the top table whereby it is held to turn on horizontal axes consisting of strong and reliable pivot members that are arranged with a capability of clamping the top table in place so that it is secure against casual displacement and capable of withstanding severe strains and usage. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description, and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Figure 1 is a side elevation showing an angle plate constructed in accordance with our invention;

Fig. 2 is an end view thereof looking from the right in Fig. 1;

Fig. 3 is a lengthwise vertical section on line 3—3 of Fig. 2; and

Fig. 4 is an end view looking from the left in Fig. 1.

The base 10 of the device is formed as usual as a flat plate or block adapted to be secured to the table or base of the machine to which the device is applied, for this purpose having slotted lugs 11 at opposite sides through which clamp bolts may be engaged. This base is equipped with a central pivot post 12 to which is pivotally mounted the intermediate yoke block 13 which constitutes a mounting for the top table or work holder proper 14. The mounting 13 has a smooth flat bottom adapted to rest and turn on a corresponding smooth finished top of the base 10. The mounting 13 is adjustably clamped at any desired angle with reference to the base 10 by T-headed bolts $10^a$, the T-heads $10^b$ of which engage in an undercut annular slot formed in the base 10. The mounting 13 is equipped with spaced apart upright projections $13^a$, $13^b$ which have relatively large horizontal bores 15 alined with each other and in which are fitted relatively large and stout pivot studs 16. These studs have flange heads $16^a$ at their outer ends that are countersunk in lugs 17 formed with and depending from the top table 14, these lugs having bores 18 registering with the bores 15 and receiving the outer portions of the pivot studs. The pivot studs 15 are reduced as indicated at $15^a$ just short of the inner sides of the bearings in which they are fitted, with a projecting threaded stem 19 extending inward equipped with a stout clamping washer 20 and with a clamp nut 21. It is to be noted that the two clamp nuts 21 of the respective pivot studs are thus disposed facing each other and relatively close together so that they may be both conveniently reached by the operator at one time. It will thus be noted that we obtain a relatively powerful clamping effect between the lugs 17 of the top table and the mounting projections $13^a$, $13^b$, this consisting in the hold obtained by the relatively large stud flanges $16^a$ and against the lugs 17 in conjunction with the grip obtained by the clamping washers 20 acting on the inner side faces of the projections $13^a$, $13^b$. The pivot studs 16 which are of relatively large dimensions have adequate bearing in the projections $13^a$, $13^b$ which for this purpose are preferably sleeved outward somewhat as indicated at 22. For adjusting the top table 14 on these pivot studs, one of the mounting projections, shown as $13^b$ is equipped on its top with a gear segment 23 which is engageable by a small pinion 24 formed on the end of a round stud $24^a$ adapted to be removably fitted through a bore 25 formed in the upper portion of one end of the top table 14, this stud having a squared end $24^b$ adapted to receive a wrench

or other operating member. To indicate and determine the adjustment of the top table 14 it is equipped with a vernier plate 26 adapted to coöperate with graduations 27 formed on a finished arcuate flanged portion of the projection 13ª. The angular adjustment of the mounting 13 on the base 10 is also indicated by a vernier 28 on the mounting 13 coöperative with graduations 29 on the base. The top table 14 is shown as equipped with usual undercut T-slots 30 for receiving T-bolts to hold the work thereon. We are aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and we therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. An angle plate as described, comprising a base, a mounting vertically swiveled and adjustably clamped to said base, and a top table horizontally pivoted to said mounting by means of pivot studs with heads countersunk into lugs depending from said top table, said studs having reduced threaded stems projecting inwardly therefrom with clamping washers and nuts fitted thereon to engage upright projections of said mounting.

2. An angle plate of the kind described, comprising a base, a mounting vertically pivoted and adjustably clamped to said base and having spaced apart upright projections with alined bores therethrough, a top table having depending lugs with bores alined with those of said mounting, pivot studs fitted in said bores and with heads countersunk in said lugs, said studs having reduced threaded stems at their inner ends, and clamping nuts fitted to said stems.

3. An angle plate of the kind described, comprising a base, a mounting vertically pivoted and adjustably clamped to said base and having spaced apart upright projections with alined bores therethrough, a top table having depending lugs with bores alined with those of said mounting, pivot studs fitted in said bores and with heads countersunk in said lugs, said studs having reduced threaded stems at their inner ends, and clamping means fitted to said stems, said mounting having a gear segment at the top thereof, and said top table equipped to receive a pinion stud to coöperate with said gear segment.

In testimony whereof, we have signed our names to this specification.

ANDREW S. REID.
ROBERT REID.