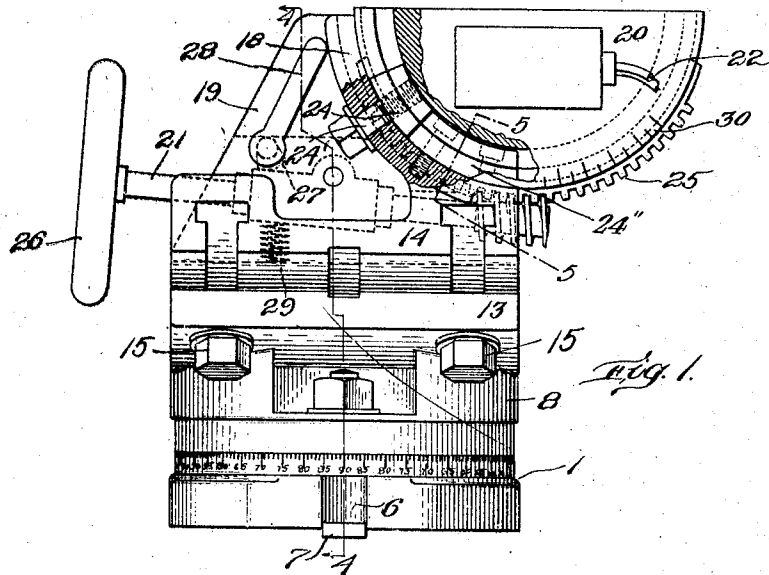
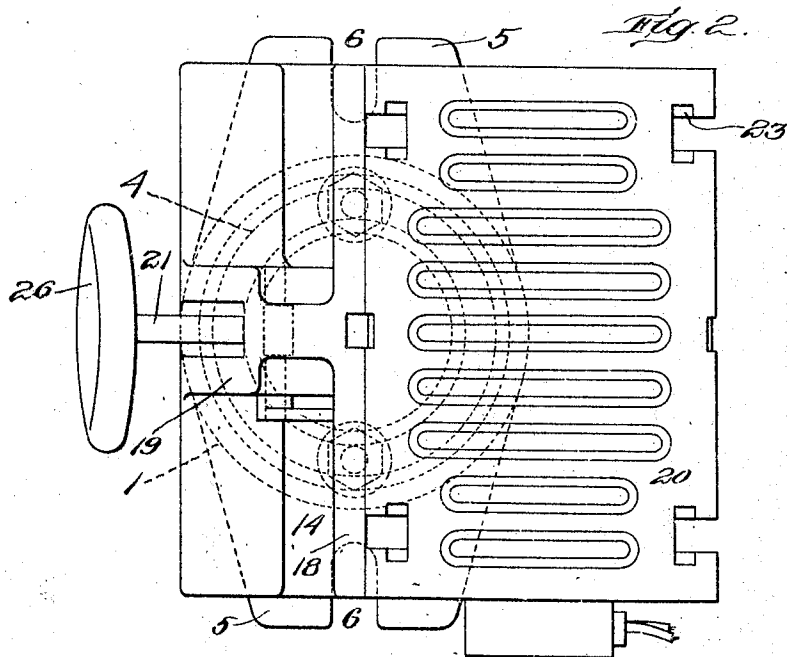


1,292,235.

J. R. BECKETT.
WORK SUPPORT.
APPLICATION FILED JAN. 13, 1917.

Patented Jan. 21, 1919.

2 SHEETS—SHEET 1.



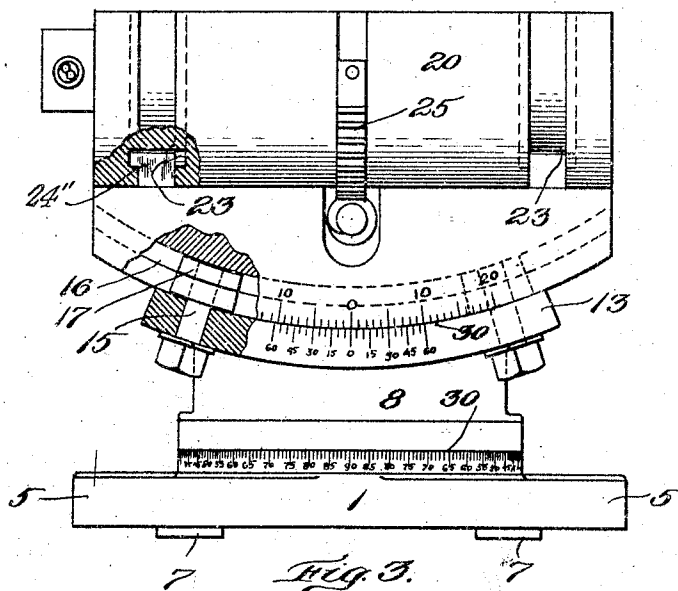
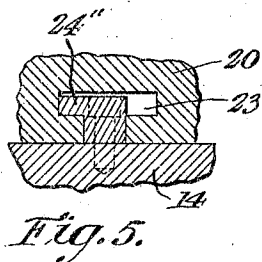
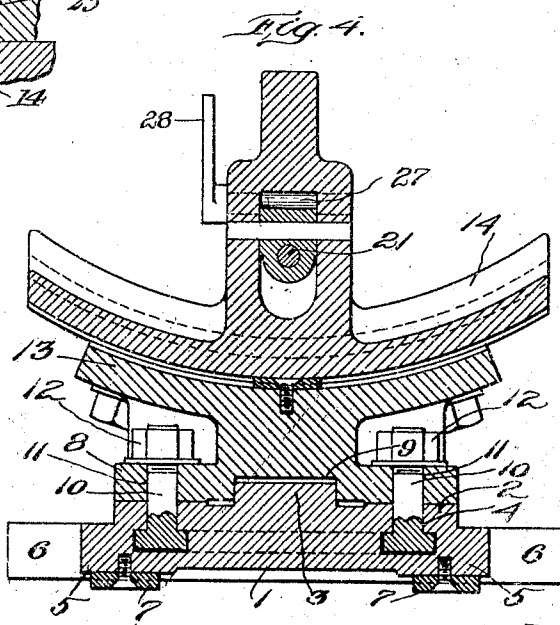
Inventor:
John R. Beckett,
by Jesse A. Holton
att'y

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2 SHEETS—SHEET 2.



Inventor.

John R. Beckett,
by Jesse A. Holton
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UNITED STATES PATENT OFFICE.

JOHN R. BECKETT, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO BOSTON SCALE & MACHINE CO., OF SOUTH BOSTON, MASSACHUSETTS.

WORK-SUPPORT.

1,292,665.

Specification of Letters Patent.

Patented Jan. 21, 1919.

Application filed January 13, 1917. Serial No. 142,140.

To all whom it may concern:

Be it known that I, JOHN R. BECKETT, a citizen of the United States, and resident of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Work-Supports, of which the following is a specification.

This invention relates to work supporting devices and with regard to certain more specific features thereof to work-holders of a character having a capability of substantially universal adjustment.

One of the objects of the present invention is to provide a device of the nature above specified which shall be inexpensive, simple, durable and compact.

Another object of the invention lies in the provision of a universal work holder which may be precisely and quickly operated by relatively unskilled workmen.

Still another object comprises a readily adjustable work-holder offering a possibility of adjustment into a maximum number of different positions so that in many instances it will not be necessary to adjust the work with respect to its holding means, together with means whereby the work may be quickly adjusted with respect thereto when necessary.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the various features of construction, combinations of elements and arrangements of parts which will be exemplified by the construction hereinafter set forth and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is shown one of various possible embodiments of the invention:

Figure 1 is a view in end elevation of a work holder embodying the invention.

Fig. 2 is a plan view of the same.

Fig. 3 is a view in front elevation of the same, and

Fig. 4 is a view in section taken substantially on the line 4—4 of Fig. 1,

Fig. 5 is a view taken on the line 5—5 of Fig. 1.

Referring now more particularly to the drawings wherein similar reference charac-

ters refer to similar parts throughout the several views, there is indicated at 1 a base 55 having a circular top surface, 2 with a central vertically extending hub 3 and an annular groove 4 of T shape in cross section. The base has diametrically oppositely disposed webs 5 each provided with bolt slots 6 and fixture keys 7 for securing the base to a work support table (not shown).

An intermediate member 8 is pivotally mounted on the base 1 as by receiving the hub 3 in a short cylindrical bore 9. This member also receives T bolts 10 upwardly projecting from the base through bolt holes 11. The T heads of said bolts rest in the enlargement of the annular groove 4 and may be drawn into engagement by the securing nuts 12. The intermediate member 8 has an arcuate upper portion 13 to serve as a support for a cradle 14 adapted for rocking movement thereon about a horizontal axis. Bolts 15 project upwardly from the member 8 engaging the cradle through a T-shaped groove 16 therein and are equipped with T nuts 17 whereby the parts are secured in different adjusted positions.

The cradle 14 has an elongated arcuate portion 18 and a web 19. The portion 18 serving as a support and bearing for a magnetic work-holder 20 while within the web is journaled a screw shaft 21 for purposes which will be set forth hereinafter. The lead wires for the coils of the magnetic portion of the work-holder are shown at 22 and the holder is grooved T shape as indicated at 23 for receiving T locking blocks or nuts 24. Bolts 24' engage these T blocks so that the holder may be adjusted and secured in position relatively to the cradle and retaining gibs 24'' fixed to said cradle serve to prevent the holder from falling away when the bolts 24' are loosened yet permit an easy sliding movement of the holder on said cradle. The adjustment between the parts 14 and 20 may be through the instrumentality of a rack 25 provided on the semi-cylindrical base of the holder, and a screw shaft 21 which is adapted to be operated by the handle 26. When desired to effect the adjustment by this means, a cam 27 pivotally mounted within a hollowed portion of the web 19, is actuated by a handle 28 to move the screw shaft into operative

position. A spring 29 is adapted to restore the shaft to a normal position of disengagement of the screw or worm with the rack of the work-holder when the cam is moved to

5 release.

The retaining gibs and hand worm operating device render the present invention extremely convenient in operation and accurate. The structure obviates the possibility of dirt or chips lodging between the work-holder and its supporting means. When the worm is in engaged position the locking bolts may be moved to unlocking position at will and the holder will be maintained in its then position of adjustment provided of course the device is not being subjected to undue vibration. As the handle 26 is moved to adjust the holder through the geared connection comprising the rack 25 and the screw or worm 21, the retaining gibs determine the amount of separation between the work holder and its support. No matter what possible angle is given the table of the holder the latter may not fall away from its support and chips or dirt are prevented from lodging between the parts. In these particulars and others the present invention is an improvement on that shown and described by me in my Patent No. 1,155,987.

30 It will be noted that the work-holder is movable about a horizontal axis which is at right angles to the horizontal axis about which the cradle may be rocked and that the cradle supporting member is movable about a vertical axis.

35 Thus there is brought about in the present device a capability of adjustment in three different directions reducing to a minimum the necessity of changing the relative positions of the work and holder in operations on very complicated pieces. If, however, it is desired to vary the position of the work on the holder the magnetic feature of the latter enables this to be quickly accomplished. 40 Suitable verniers are provided as indicated at 30 for the assistance of the operator in positioning the parts.

As many changes might be made in the above construction and as many apparently 50 widely different embodiments of the invention might be made without departing from the scope as defined by the appended claims thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described the invention what I desire to secure by Letters Patent is:

60 1. In a device of the character described, in combination, a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form, means whereby said cradle may be adjusted around a vertical axis relatively to said base, a

work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, means for clamping the said adjustable parts in positions of different relative adjustment, and means comprising a manually operable feed device adapted to cooperate with said work-holder to effect its adjustment.

2. In a device of the character described, in combination, a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form, means whereby said cradle may be adjusted around a vertical axis relatively to said base, a work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, retaining members for holding the work-holder against its seat particularly during adjustment, means for clamping the said adjustable parts in positions of different relative adjustment, and means comprising a manually operable feed device adapted to cooperate with said work-holder to effect its adjustment.

3. In a device of the character described, in combination, a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form, means whereby said cradle may be adjusted around a vertical axis relatively to said base, a work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, retaining members secured to the cradle and engaging the work-holder for holding the work-holder against its seat particularly during adjustment, means for clamping the said adjustable parts in positions of different relative adjustment, and means comprising a manually operable feed device adapted to cooperate with said work-holder to effect its adjustment.

4. In a device of the character described, in combination, a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form, means whereby said cradle may be adjusted around a vertical axis relatively to said base, a semi-cylindrical elongated work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, means for clamping the said adjustable parts in positions of different relative adjustment, and means comprising a manually operable feed device adapted to cooperate with said work-holder to effect its adjustment.

5. In a device of the character described, in combination, a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form, means whereby said cradle may be adjusted around a vertical axis relatively to said base, a semi-cylindrical elongated work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, retaining members secured to the cradle and engaging the work-holder for holding the work-holder against its seat

particularly during adjustment, means for clamping the said adjustable parts in positions of different relative adjustment, and means comprising a manually operable feed device adapted to cooperate with said work-holder to effect its adjustment.

6. In a device of the character described, in combination, a base, a cradle supported therefrom having an elongated arcuate seat portion and a substantially central vertical web portion, a worm shaft journaled in said web portion, a work-holder having an arcuate base fitted to the seat of said cradle for adjustment relatively thereto about a horizontal axis, and an arcuate rack on said work-holder adapted to cooperate with the worm of said shaft whereby adjustment is effected.

7. In a device of the character described, in combination, a base, a cradle supported therefrom having an elongated arcuate seat portion and a substantially central vertical web portion, a worm shaft journaled in said web portion, a work-holder having an arcuate base fitted to the seat of said cradle for adjustment relatively thereto about a horizontal axis, means for clamping the work-holder to the cradle in different adjusted positions, and an arcuate rack on said work-holder adapted to cooperate with the worm of said shaft whereby adjustment is effected.

8. In a device of the character described, in combination, a substantially flat base member adapted to be applied to the work-table of a machine, said base having a short upwardly-extending pivot post, a cradle supporting member mounted upon said base and adapted for pivotal adjustment about said post, locking means for securing said cradle supporting member in different adjusted positions relatively to said base, an arcuate seat on said cradle supporting member, a cradle adjustably fitted to said seat and having itself a seat of elongated quadrantal form, a work-holder adjustably fitted to the cradle seat, and means comprising locking devices whereby the cradle may be secured in different adjusted positions relatively to said supporting member about a horizontal axis and the work-holder may be secured in different adjusted positions relatively to said cradle about a horizontal axis at right angles to the first said horizontal axis.

9. In a device of the character described, in combination a base, a cradle supported by said base and having a seat of substantially elongated quadrantal form and a bottom of elongated arcuated form substantially at right angles to said seat, means permitting adjustment of said cradle around a vertical axis and relatively to said base, a work-holder fitted to the seat of said cradle for adjustment about a horizontal axis, means for clamping the said adjustable parts in positions of different relative adjustment and

means comprising a manually operated feed device adapted to cooperate with said work-holder to effect its adjustment.

10. In a device of the character described, in combination, a base, a cradle supported therefrom, a work holder seating in said cradle and having an arcuate base, means comprising locking elements for securing the work holder in different adjusted positions relatively to the cradle and means for holding the work holder to the cradle when the locking means are unlocked.

11. In a device of the character described, in combination a base adapted to be attached to a milling table or the like, intermediate supporting means comprising a member interfitting with said base to provide for rotative movement thereon about an axis at right angles thereto, a work-holder comprising a table and means for fitting said table to said supporting means for rotative movement thereon about a horizontal axis, and means for locking the supporting means to the base and the work-holder to the supporting means, which means are operable to unlock said elements to permit adjustment, the means for fitting the work-holder table to the supporting means being of a character to substantially prevent the ingress of dirt irrespective of the extent of operation of the locking means in unlocking the elements.

12. In a device of the character described, in combination, a base, a supporting device thereon which is adjustable into different positions about an axis at right angles to said base, a work-holder mounted on the supporting device and connected thereto by means permitting relative rotative adjustment of these elements about an axis at right angles to the first said axis, means for clamping the work-holder to the supporting means in adjusted position and for unclamping same to permit further adjustment, and a geared connection, hand operable, whereby the relative adjustment of the work-holder and the supporting device may be controlled, said geared connection being movable into or out of effective engagement at the will of the operator.

13. In a device of the character described, in combination, a base having a substantially flat attaching surface, a work-holder having a substantially flat table, intermediate means comprising a pair of swivels at right angles to each other, an arcuate rack or gear on the work-holder, a hand operable gear adapted to be engaged or disengaged with the first said gear at the will of the operator, means for securing the work-holder in different positions of relative adjustment with the intermediate means, and connections between said intermediate means and the work-holder which permit only a limited separation thereof irrespec-

tive of the amount of operation of the securing means to unsecure the parts.

14. In a device of the character described, in combination, a base comprising means by which it may be secured to a table, supporting devices rotatably mounted upon said base and adapted to be secured in different adjusted positions about an axis extending transversely of the plane of said table, a work-holder connected to said supporting devices and adapted to be secured in different adjusted positions about an axis extending transversely of the first said axis, means to secure the parts in different positions of adjustment as aforesaid, and means comprising a handle operated gear and a gear on the work-holder for effecting the adjustment of the latter, the connection between the work-holder and its supporting devices comprising means for preventing the work-holder from falling away from the supporting devices irrespective of the operation of said securing means to unlock the parts.

15. In a device of the character described,

in combination, a base comprising means by which it may be secured in fixed position on a work table, intermediate supporting means carried by the base and rotatable thereon into different positions of adjustment, a work-holder movable about an axis transverse to the axis of rotation of the supporting means and adapted to be secured in different positions of adjustment relatively to said supporting means, means for securing said work-holder in adjusted positions, means for effecting the adjustment between the work-holder and its supporting means comprising a hand operated geared connection, and a connection between the work-holder and its supporting means which restricts them relatively against substantial separation, irrespective of the operation of the said securing means.

Signed at Boston, in the county of Suffolk and State of Massachusetts, this 27th day of December, A. D. 1916.

JOHN R. BECKETT.