

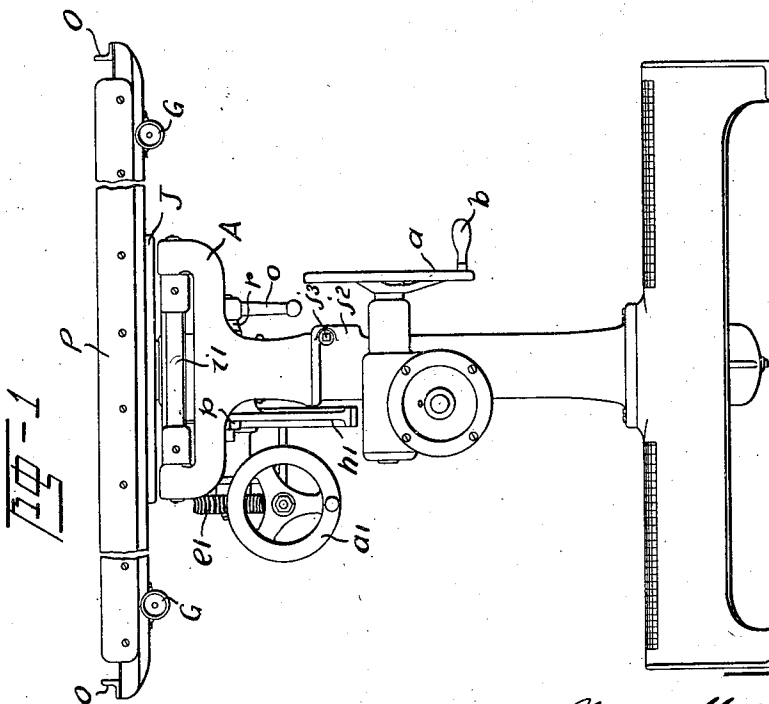
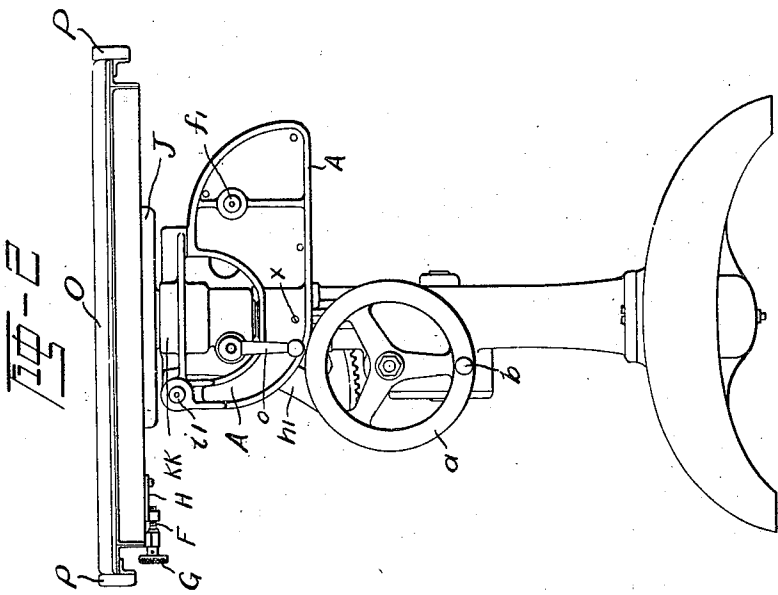
July 10, 1928.

1,676,746

M. REID

UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922 6 Sheets-Sheet 1



Inventor
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By *Shull, Brock & West*
Attys

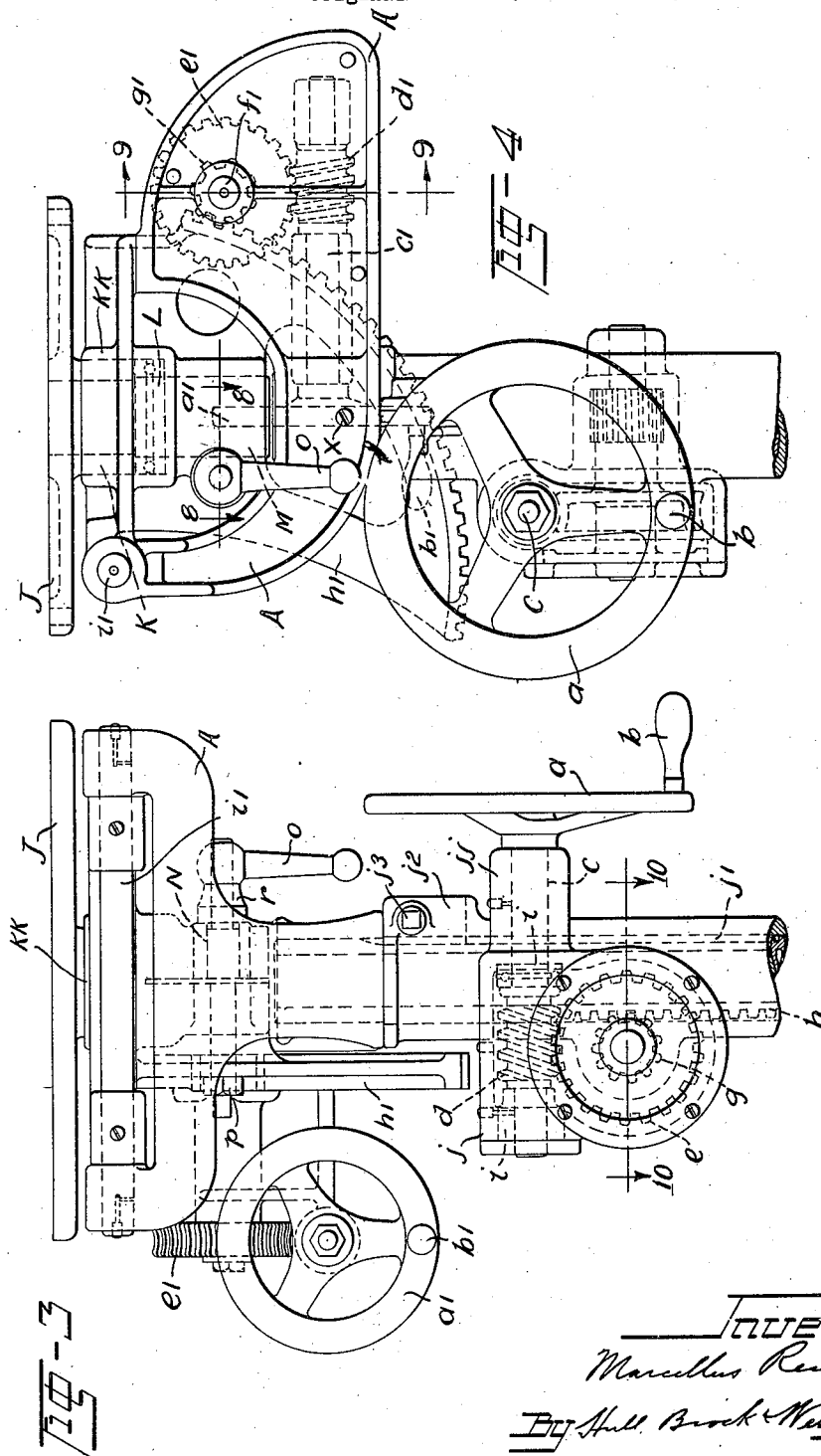
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M. REID

UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922 6 Sheets-Sheet 2



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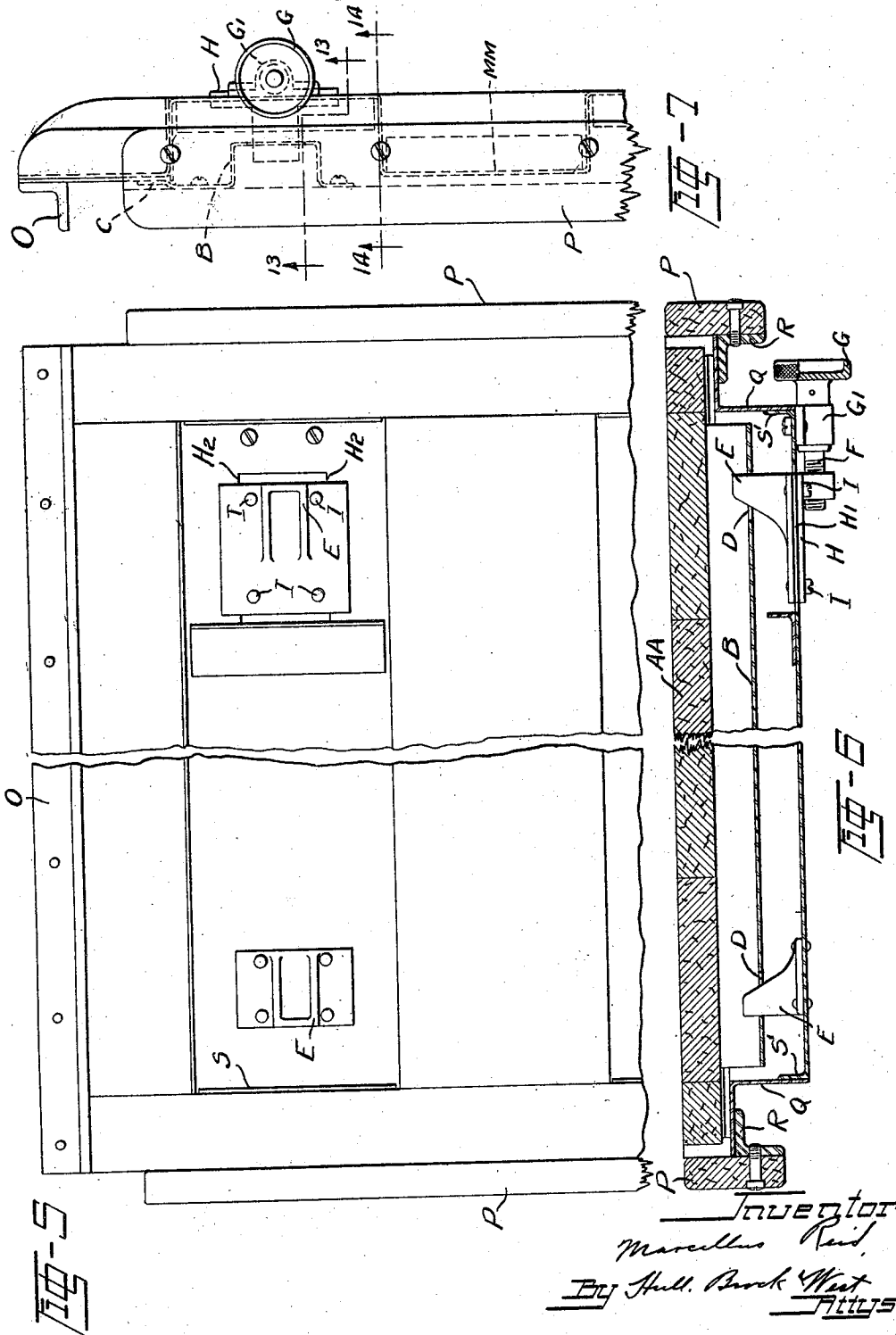
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UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922 6 Sheets-Sheet 3



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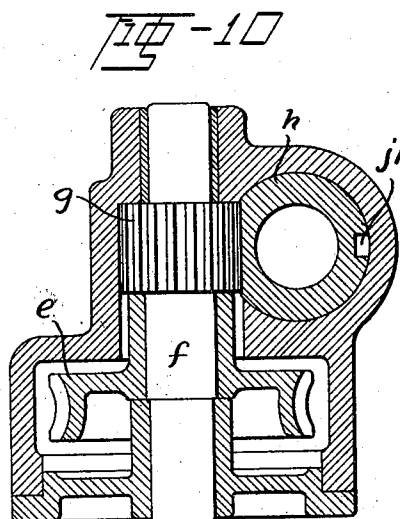
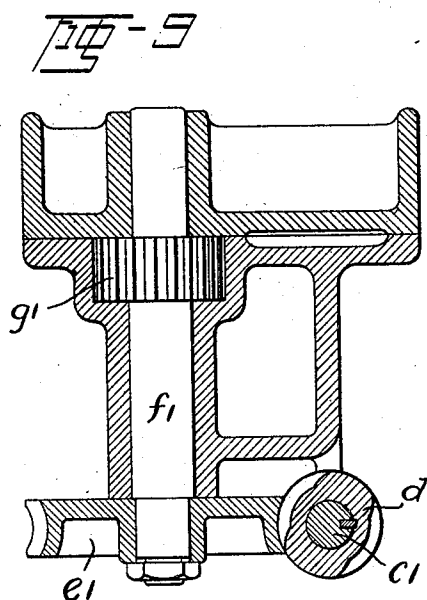
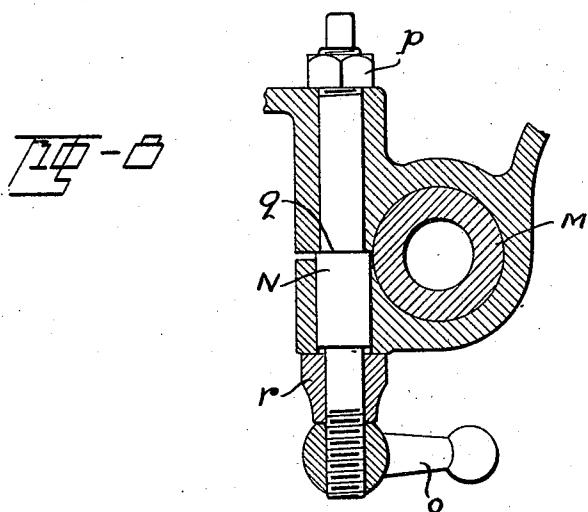
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M. REID

UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922

6 Sheets-Sheet 4



Inventor

Marcellus Reid

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Attys

July 10, 1928.

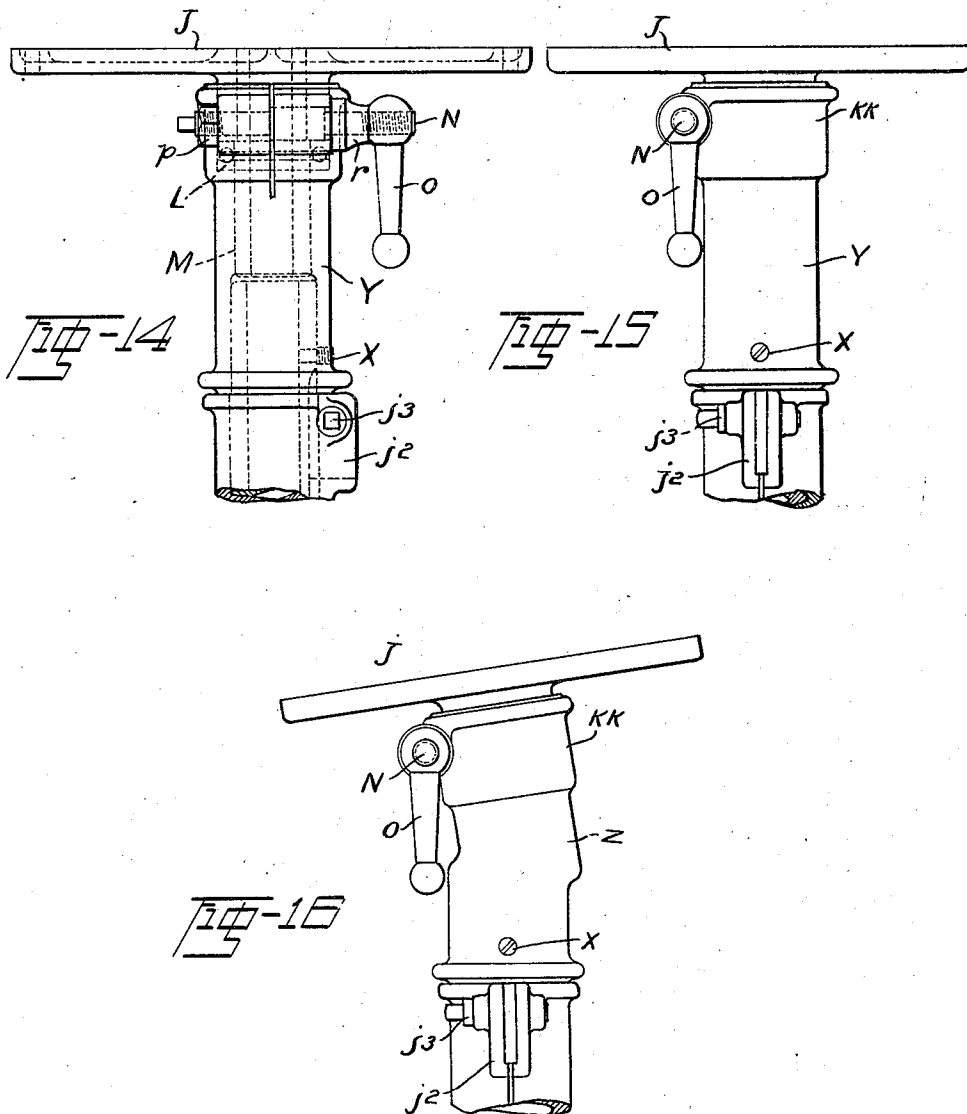
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M. REID

UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922

6 Sheets-Sheet 6



Inventor
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July 10, 1928.

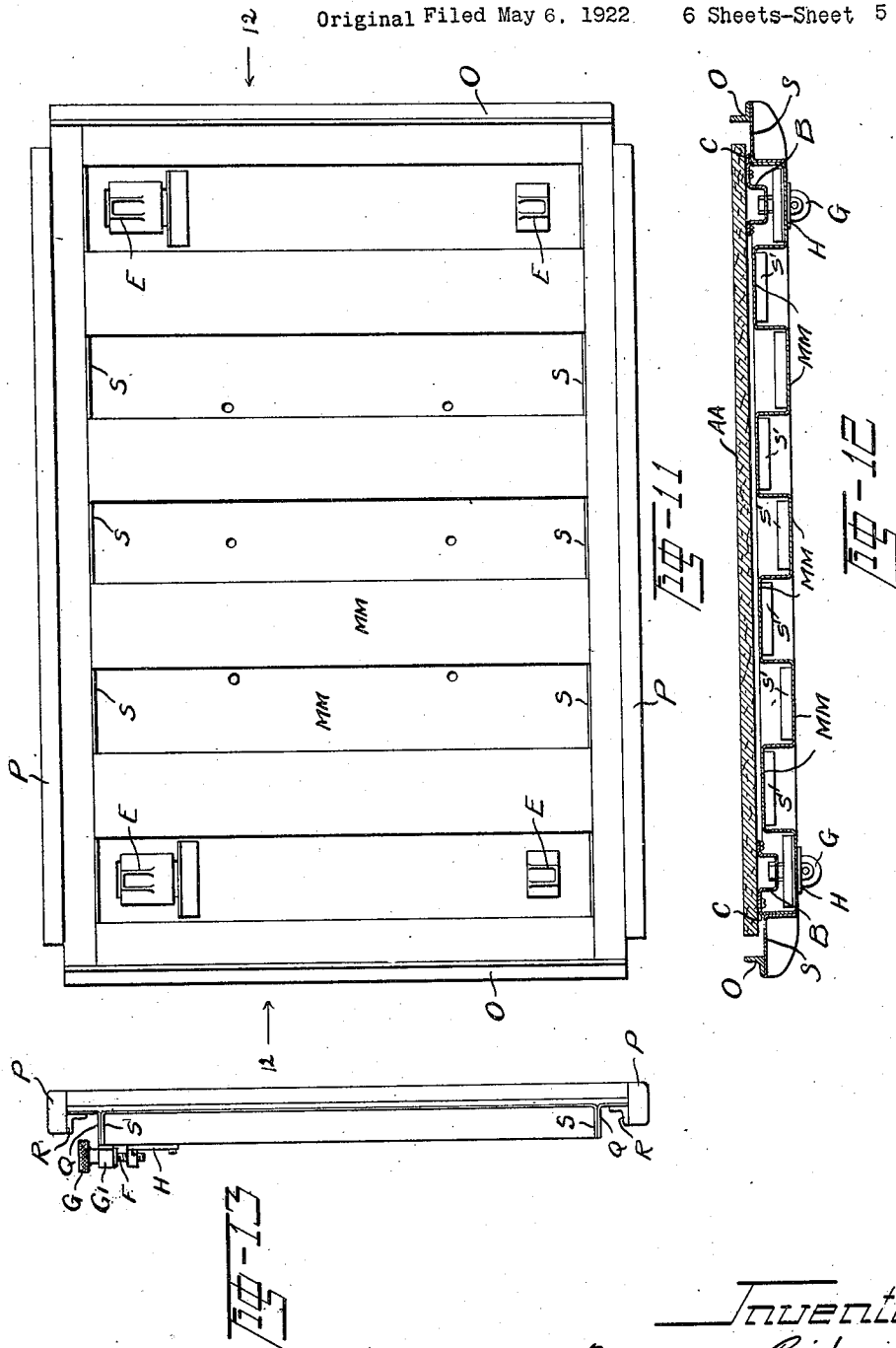
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M. REID

UNIVERSAL DRAFTING TABLE

Original Filed May 6, 1922

6 Sheets-Sheet 5



Inventor
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Patented July 10, 1928.

1,676,746

UNITED STATES PATENT OFFICE.

MARCELLUS REID, OF CLEVELAND, OHIO.

UNIVERSAL DRAFTING TABLE.

Application filed May 6, 1922, Serial No. 559,004. Renewed April 20, 1927.

My invention relates to improvements in universal tables for engineers, architects, artists and draftsmen, and it is designed to give the greatest convenience and efficiency to the user and to avoid and eliminate the unhealthy conditions connected with the use of the ordinary table for drafting, used by engineers, draftsmen and architects, and is of substantial construction.

To provide the ideal conditions for working over a table of this kind, the following main features are provided in my invention:

1st. A substantial base and column with means for rapidly elevating and lowering the table.

2nd. Means for conveniently and rapidly inclining the table from a horizontal position to a vertical position.

3rd. A table consisting of a metal frame, designed so as to give the greatest strength and rigidity, with minimum weight, being made principally of sheet steel and spot-welded or riveted together, the table containing parallel working angles or strips at opposite ends on which T-squares or other instruments are used, thus avoiding the errors due to the inaccuracy and changing conditions of drawing boards when only the edge of the board is depended upon.

4th. Means for revolving or turning the table in any position and means for holding a drawing board within a frame with means for quickly detaching or removing the drawing board so as to use one or more boards without removing the drawings from the boards.

In the accompanying drawings Fig. 1 is a front elevation or view of the apparatus; Fig. 2 is a side elevation or view of the same; Fig. 3 is an enlarged view of a section of Fig. 1, showing the means for elevating or lowering the table, and means for inclining the table or support for the drawing board frame. Fig. 4 is a side view of Fig. 3—both these views containing dotted lines showing the construction of the gearing for operating or providing the various movements required to adjust the table in any position, thereby providing universal adjustment; Fig. 5 is a sectional plan view of the table frame; Fig. 6 is a vertical section of the table frame shown in Fig. 5 looking in direction of the arrows on dotted line 13—13 (Fig. 7) the strips of wood "P" and angles "R" being shown on a section at the

dotted line 14—14 in direction of the arrows; Fig. 7 is a part front sectional view of the table frame; Fig. 8 is a sectional view of the clamping device taken on a horizontal section at 8—8 (Fig. 4) looking in direction of arrows; Fig. 9 is a vertical section at 9—9 (Fig. 4) looking in direction of the arrows; Fig. 10 is a sectional view of the elevating gear shown at 10—10 (Fig. 3) in direction of the arrows; Fig. 11 is a top view of the complete table frame with the drawing board detached; Fig. 12 is a sectional view at 12—12 (Fig. 11) including the drawing board; Fig. 13 is an end view of the drawing board frame or table; Fig. 14 is a front view and Fig. 15 is an end view of a construction above the column to be used when no inclining adjustment is used and substitutes the mechanism for inclining adjustment of the table, shown in Figs. 3 and 4; Fig. 16 shows a similar construction to that shown in Figs. 14 and 15, to be used when a fixed incline to the table is required.

In operation of this table, vertical adjustment is provided by the hand wheel "a" and handle "b" (Figs. 1, 2, 3 and 4) which is fastened to the end of the worm spindle "c"—said spindle being integral with the worm "d" which meshes with the gear "e", also shown on Fig. 10 in section—said worm gear being fastened to the spindle "f" which is integral with the pinion "g"—said pinion meshing in the rack "h" shown in dotted lines on Fig. 3 and in section on Fig. 10.

For ease of operation, a ball thrust bearing is provided at *i* (Fig. 3) which takes the thrust of the spindle *c* and the outer end of the spindle *c* supported in the bearing *j*, the opposite end supported in the bearing *jj*. It will be evident that turning the hand-wheel *a* in one direction will elevate the rack spindle *h* and in the opposite direction will lower same. The rack spindle is provided with a spline or keyway *ji* shown in dotted lines (Fig. 3) and in section (Fig. 10). Engaging this keyway or spline is a block or key *j²* (Fig. 3) held in place by the clamping screw *j³* (Fig. 3). The screw *j³* is used to clamp the key *j²* and also to clamp the elevating spindle *h*. At the upper end of the rack spindle *h* is fastened the table supporting frame A (Figs. 1, 2, 3 and 4) which is fastened to this spindle by the screw *x* and otherwise keyed to hold the frame rigid to the rack spindle *h*.

For tilting the table, the hand wheel *a¹*

(Figs. 1, 3, and 4) is fastened to the end of the worm spindle c^1 (Figs. 4 and 9) on which is keyed the worm d^1 (Figs. 4 and 9) which meshes with the gear e^1 (Figs. 4 and 9). Worm gear e^1 is fastened to the spindle f^1 (Figs. 4 and 9) which is integral with the pinion g^1 . The gear g^1 (Fig. 9) meshes with the rack h^1 (Figs. 1, 2, 3 and 4) as the rack h^1 is supported by the spindle i^1 (Figs. 1, 2, 3 and 4). It is evident that turning the hand wheel a^1 in one direction will transmit motion thru the worm d^1 to the worm gear e^1 fastened to the spindle f^1 will thru the pinion g^1 raise or lower the rack h^1 and swing it around the center supporting spindle i^1 thereby tilting the table which is fastened to the top plate J to which the table frame (Fig. 11) is fastened. The top plate J is constructed with a sleeve K projecting downward into the hub KK of the casting or inclining segmental rack h^1 which rests on the ball bearing L. Inside of this sleeve is provided the stud or spindle M (Fig. 4) and as shown in cross section Fig. 8.

This stud or spindle M is preferably made of a tubular construction to reduce the weight, and the upper end rigidly fastened in the hub of the top plate J. The clamping device shown in cross section (Fig. 8) consisting of the spindle N which is threaded on opposite ends—one end for the binding lever o and the opposite end for the nut p . The spindle N is provided with a shoulder q which by the binding nut p is rigidly clamped in the hub of the segment casting h^1 which is partly shown in cross section (Fig. 8). The binding lever o bearing against the bushing r compresses the casting which is slotted at the shoulder of the spindle N, and thus binds the spindle M, thereby holding the table in any position around the axis of the spindle M.

The drawing board AA shown in longitudinal section (Fig. 12) and cross section (Fig. 6) is preferably made of several strips or boards, and is held together by the steel channel shaped cleats B fastened to the under side of the board, and the cleats B have an extended flange C (Fig. 7) at opposite ends of the board, which support the board on the metal frame. At the lower part of the channels B in opposite ends of same, there are square or rectangular holes D (Fig. 6). At one side of the board supporting frame there is a pair of angle shaped lugs E (Figs. 5, 6 and 11). These lugs fit into the holes D of the channels B (Fig. 6). On the opposite side there are similar lugs made adjustable by the screws F (Figs. 6 and 13) on the outer end of which is fastened the knurled handles G (Figs. 1, 2, 6, 7, 12 and 13). These adjustable lugs are fastened to the plates H (Figs. 6, 7, 12 and 13) which are fastened to the adjustable angle lugs by the screws I (Figs. 5 and 6). The plates

H are made so as to form a recess H^1 (Fig. 6) which engages the opposite sides of the opening in the metal frame at H^2 (Fig. 5). The screw lugs G^1 (Figs. 6 and 7) rotatably support the screws F. It will be understood that adjusting the screws F outward will clamp the lugs E at opposite ends of the channels B in the holes D of same, thus holding the drawing board rigidly in the supporting frame and reversing the operation, or unscrewing the screws F will release the drawing board from the metal frame. Thus it will be easy to attach or detach the drawing boards from the metal frame, and exchanging one board for another very quickly.

The metal frame is made of light sheet steel, but by the novel construction is very strong and rigid; the main section being made of one piece as shown in Fig. 12, which is formed in the shape of a series of channels MM in reverse direction of each other. The outer ends of the frame are formed with the angles S on which are fastened the parallel angles O. These angles O are made accurately parallel to each other so that a T-square can be used on these angles instead of bearing against the end or side of the drawing board, and in this way the T-square or other instruments can be used at either end of the board. It will be understood that similar angles could be placed on all four sides of the metal supporting frame, thereby providing accurate means of supporting the T-square on any of the four sides of the drawing board, but in this case, I prefer to use on the front and back of the metal frame the wood strips P (Figs. 5, 6, 7, 11, 12 and 13) and these wood strips to be used the same as the metal angles on the ends of the frame if desired. The sides of the metal frame are constructed of the angles Q (Figs. 6 and 13) on which are attached the angles R (Figs. 5 and 13) and on these angles are attached the wood strips P (Figs. 1, 2, 5, 6, 7, 11 and 13). These angles Q are spot-welded or otherwise fastened to the main section MM. The end angles O reach the whole width of the frame and are fastened to the ends of the side angles Q and the edge or upper face of the end angles S. The side angles Q in turn are spot-welded or otherwise fastened to the flaps S' on the ends of the channel member MM. It will be thus understood that by comparatively light weight sheet metal, a rigid frame is provided, all parts being spot-welded, riveted or otherwise fastened together, and that the inaccuracy of the edges of a drawing board, due to the expansion and shrinking of the board, will have no effect on the accuracy of the work, as the board is rigidly held in the metal frame by which the T-square or other instruments are controlled when in use.

The above description of providing means for fastening and clamping the top plate J which supports the table frame, (Figs. 11, 12 and 13) applies also to Figs. 14, 15 and 16 in which similar letters apply to similar parts, except where this construction is used the sleeve Y is used for a horizontal non-inclinable table, and the sleeve Z is used for a fixed inclined table.

10 What I claim is:

1. A drawing table comprising a vertically disposed support, a horizontally disposed frame fastened to said support, said frame being formed of sheet metal bent to define a series of reversely disposed channels, T square guides carried by said frame, a drawing board detachably connected to said frame, and means for clamping said drawing board to said frame.

20 2. A drawing table comprising a vertically adjustable support, a horizontally disposed frame fastened to said support, said frame being formed of sheet metal bent to define a series of reversely disposed channels, angle irons fastened to opposite sides of said frame and forming T square guides, a drawing board adapted to rest on said frame, and means carried by said frame and adapted to engage said drawing board to clamp said board to said frame.

30 3. A drawing table comprising a vertically adjustable support, a horizontally disposed frame fastened to said support, said frame being formed of sheet metal bent to define a series of reversely disposed channels, angle irons fastened to opposite sides of said frame and forming T square guides,

a drawing board adapted to rest on said frame, said board having metal cleats provided with apertures therein, lugs carried by said frame and adapted to engage in the apertures in said cleats, and means for moving certain of said lugs thereby to fasten said board to said frame.

4. A drawing table comprising a vertically adjustable support, a horizontally disposed frame fastened to said support, said frame being formed of sheet metal bent to define a series of reversely disposed channels, angle irons fastened to opposite sides of said frame, wood strips fastened to said angle irons, a drawing board adapted to rest on said frame, said drawing board having cleats provided with apertures therein, lugs carried by said frame and adapted to engage in said apertures and means for moving certain of said lugs thereby to fasten said board to said frame.

5. A drawing table comprising a vertically adjustable support, a horizontally disposed frame fastened to said support, said frame being formed of sheet metal bent to define a series of reversely disposed channels, angle irons fastened about the sides and ends of said frame, one pair of said angle irons serving as guides for a T square, the other pair of said angle irons having wood strips fastened thereto, a drawing board adapted to rest on said frame, and means for detachably connecting said board to said frame.

In testimony whereof, I hereunto affix my signature.

MARCELLUS REID.