

(No Model.)

2 Sheets—Sheet 1.

S. J. LAUGHLIN & J. HOUGH.
DRAWING, SKETCHING, AND DESIGNING TABLE.

No. 543,492.

Patented July 30, 1895.

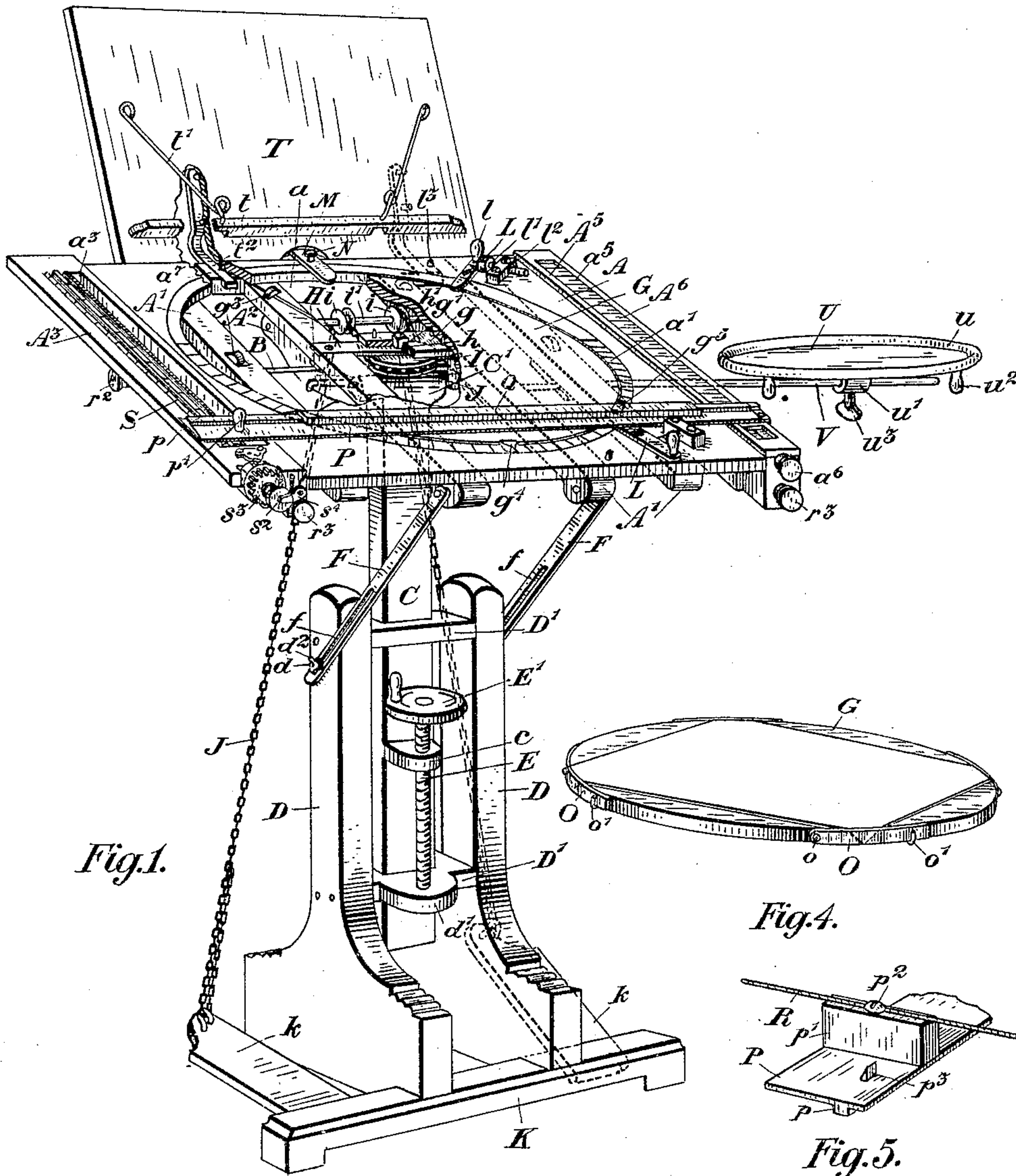
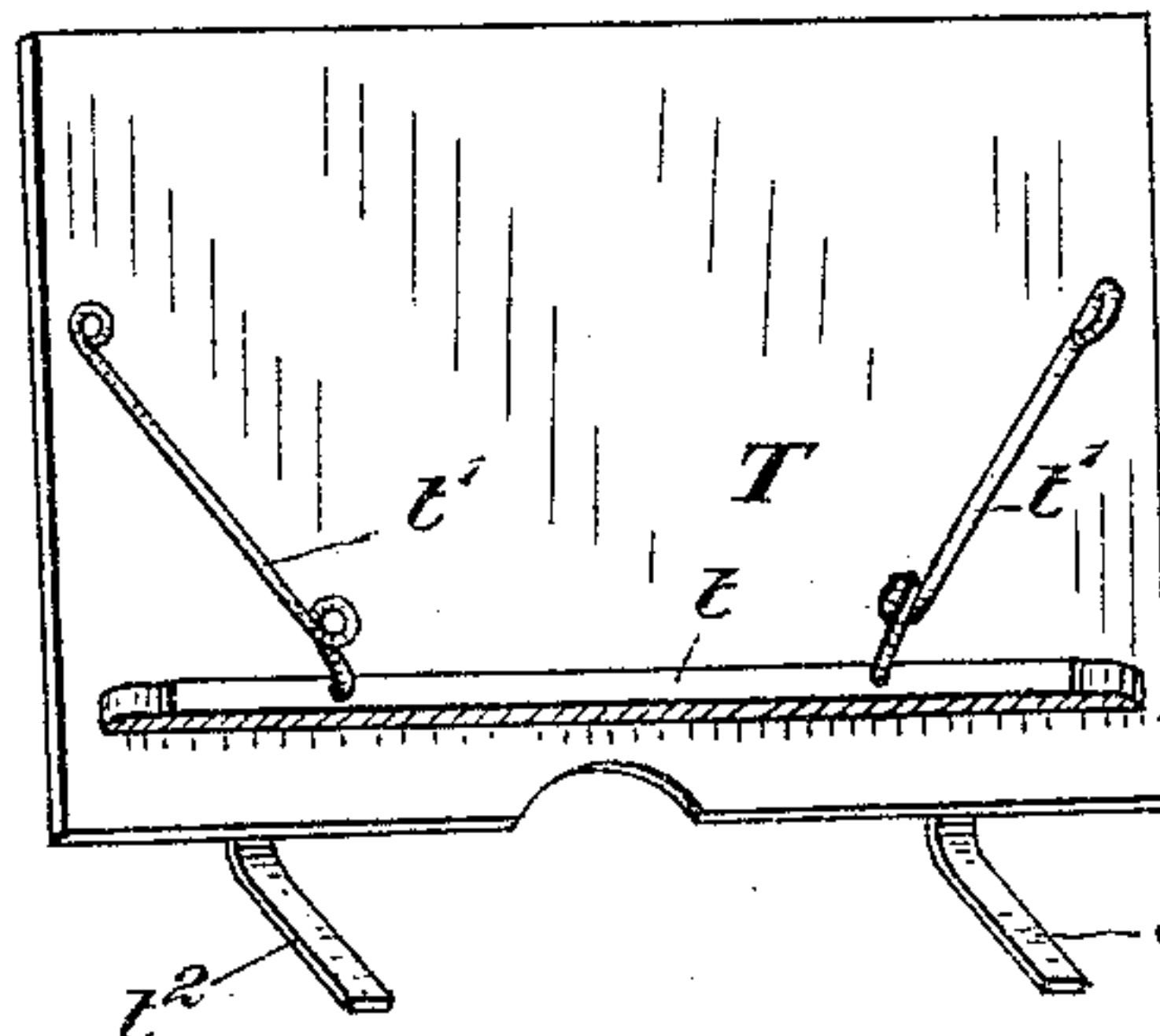
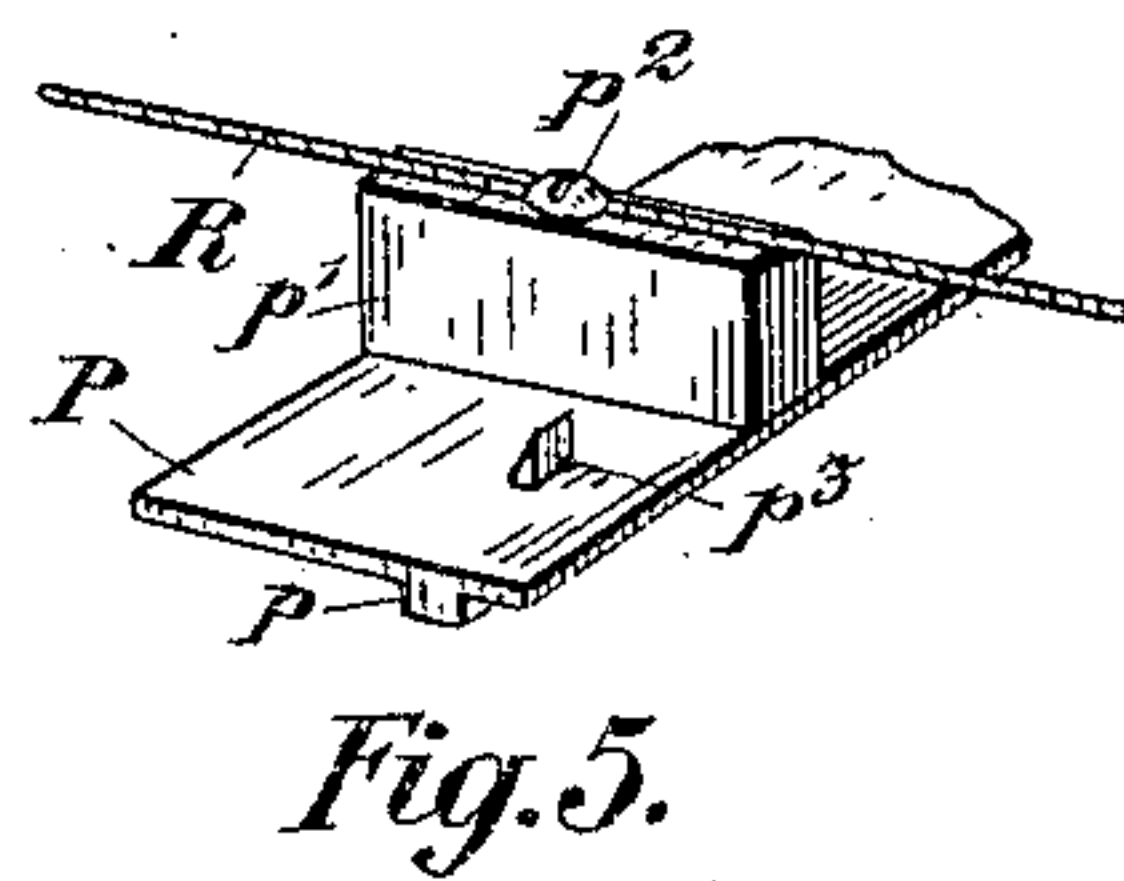


Fig. 4.



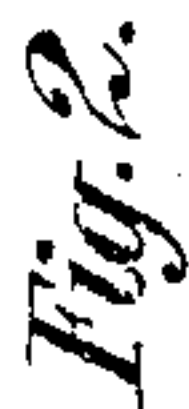
Witnesses.
W. M. Throw
E. R. Case

Inventors.
S. J. Laughlin
James Hough
by Peterson & Hough
Attys

2 Sheets—Sheet 2.

No. 543,492.

Patented July 30, 1895.



Inventors.

S. J. Laughlin
James Hough
by Peterson & Co
atyp

UNITED STATES PATENT OFFICE.

SAMUEL JOHN LAUGHLIN AND JAMES HOUGH, OF GUELPH, CANADA.

DRAWING, SKETCHING, AND DESIGNING TABLE.

SPECIFICATION forming part of Letters Patent No. 543,492, dated July 30, 1895.

Application filed July 17, 1894. Serial No. 517,836. (No model.) Patented in Canada September 13, 1894, No. 46,973.

To all whom it may concern:

Be it known that we, SAMUEL JOHN LAUGHLIN and JAMES HOUGH, of the city of Guelph, in the county of Wellington, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Drawing, Sketching, and Designing Tables, of which the following is a specification.

This invention has been patented to us in the Dominion of Canada under date September 13, 1894, No. 46,973.

Our invention relates to improvements in drawing, sketching, and designing tables; and the object of the invention is to design such a table as can be readily manipulated by the draftsman in order to rapidly, accurately, and easily make any desired class of drawings; and it consists, essentially, of a table provided with a circular opening with a protracting scale extending, preferably, half-way around the edge of the same and within which is supported a circular board, means being provided for holding the paper on the board, controlling the rotation and position of the same, and a rule peculiarly controlled being arranged to be moved across the board at will with or without reference to peculiarly adapted movable or adjustable scales, as hereinafter more particularly explained.

Figure 1 is a perspective view of our drawing-table with a portion of the board broken away to exhibit the peculiarities of construction. Fig. 2 is a plan view of the table. Fig. 3 is a side sectional elevation through the lines xy and yz , Fig. 2. Fig. 4 is a detail of the drawing-board. Fig. 5 is a detail showing means of fastening the controlling-cord to the adjustable rule and catch. Fig. 6 is a detail of the copy-holder.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the drawing-table provided with a circular opening a and cross-bars A' .

A^2 are brackets secured beneath the two central cross-bars.

B is a spindle, which extends through the brackets A^2 and the enlarged top C' of the adjustable standard C. The standard C is held in cross-bars D' , connecting the supporting-standards D, which are flared out at the bottom to provide a stable base.

E is a screw-spindle provided with a hand-

wheel E' . The screw-spindle is secured at the bottom in the bracket d' , forming part of the cross-bar D' , and extends through a threaded hole made in the bracket c , attached to the standard C. It will thus be seen that by manipulating the hand-wheel the height of the table may be changed to suit the draftsman.

F F are two stays pivotally connected at the top to the front end of the central cross-bars $A' A'$, and having slots f made in the lower portion of the stays, through which extends the screw d , provided with thumb-nuts d^2 . By loosening the thumb-nuts d^2 the position or incline of the table A may be varied to any desired slant.

G is a circular board, which is preferably raised slightly above the level of the table A and is provided with a central plate g , in which is made a square hole g' , directly in the center of the board.

h is a spindle journaled in the bars H, extending between the central cross-bars A' , centrally between the front and rear sides of the board. The top h' of the spindle is square and fits within the square hole g' made in the plate g . Between the plates H H, upon the spindle h , is secured a pulley I.

$i i$ are guiding-pulleys, which are loose on the spindle i' , extending between the central cross-bars $A' A'$.

J is a chain, which is secured to and passes around the pulley over the guiding-pulleys $i i$, down to the pedals k , which are hinged to the front cross-bar K, secured to the bottom of the standards D D.

a' is a protractor preferably formed of celluloid around the nearer edge and half of the circular hole a . The protractor is divided into a scale of ninety degrees from each side of the zero-point, which is opposite the center of the front of the table.

The board G is supported upon friction-rollers g^3 , and is provided with a pointer g^4 , which is normally directly opposite the zero-point in the protractor, and has also a catch g^5 , extending from the edge thereof. The catch g^5 is designed to be brought alternately into contact with each pivoted stop L, when thrown in the position shown in Figs. 1 and 2. The edges of the stops with which the catch comes in contact are exactly ninety degrees apart, so that when the board is

swung around by pressing on one or other of the pedals k one position of such board is exactly at right angles to the other. The outer ends of the stops L are provided with knobs l and about the adjustable screw-pins l' , which extend through the blocks l^2 , secured to the top of the table A . By means of these screw-pins the contact edges of the pivoted stops L may be trued to an exact distance of ninety degrees. Stop-pins l^3 are also provided to limit the movement of the stops L in the opposite direction, as indicated by dotted lines in Fig. 2, when desired to rotate the board freely.

M is a clamp, which is secured to a block m , hinged at m' to the back of the table.

m^2 is a spring extending between the block m and the back of the table A .

The clamp M extends over the edge of the circular board G , and has a screw-pin n extending through a hole in it from the table A . The knob N is provided, which is screwed onto the top of the pin n , and is designed to bring the clamp to press against the board G , so as to hold it in any position to which it may be rotated. Immediately upon the knob being loosened, however, the spring m^2 will force the clamp upwardly from the board G and allow it to be rotated to any position desired.

The circular board G is provided with arc-shaped clasps O , which are pivoted at o and fit down upon the retaining bent pins o' , so as to grasp the turned-down edge of the drawing paper or card between the clasp and the edge of the board.

It will be seen that by manipulating the pedal and placing the pointer q^4 in the position shown in dotted lines the drawing-paper is set with its edge at an angle to the sides of the table, and consequently lines may be drawn on the same at an angle to its edges, (in this instance the angle being thirty degrees,) a rule or rules being employed for this purpose, which rules we shall now describe.

The rule P is provided with an upwardly-extending tongue p , which fits into a groove q in the scale-marked rule, so as to permit of its longitudinal adjustment upon the rule P and yet hold it perfectly parallel and connected with same.

p' are downwardly-extending blocks secured to the bottom of the rule P . The block p' at the left-hand side of Fig. 2 extends through a slot a^3 , which is made in the end A^3 , which is substantially flush with the surface of the board G . The other block p' at the opposite end of the board extends down at the outside edge of the board. Each of the blocks p' has secured to it by a screw p^2 the endless cord R , which extends over the front and back grooved pulleys r and r' and is wound around a central pulley r^2 , which is journaled on the outer end of the central spindle B , which is journaled at its outer end in the bearing-block A^4 . The pulley r is shown in dotted lines, so as to exhibit means whereby

it is adjusted so as to tighten or slacken the cord R . This means consists of the thumb-screw r^3 , which extends through the head portion A^5 of the table and the slot r^4 into the plate r^5 to the inside of a slot r^6 of the bearing-block r^7 , in which the pulley r is placed. The other pulley r' is journaled in a slot r^8 in the bearing-block r^9 .

Within the slot a^3 in the end A^3 , we journal a rotatable longitudinally scale notched and grooved bar S , the notches being ratchet-shaped and cut on the strips between the longitudinal grooves S^2 , which are arranged alternately with the strips S^3 . The scale-marked notches are varied as to distances apart from one thirty-second or even less to any desired size. On the outer end of the spindle s of the bar S is secured a collar s' on which is indicated opposite the strips S^3 the particular scale of each strip. The turning-knob s^2 is secured on the end of the spindle, so as to enable any desired scale on the collar s' to be turned opposite the pointer S' . In order to insure all the points of the collar being held securely opposite the pointer, we provide a toothed wheel s^3 , which is engaged by a spring-dog s^4 . The top of the collar s' and bar S are necessarily below the level of the top of the end A^3 . The bar S is shown in the drawings with one of the grooves S^2 opposite the pointer.

p^3 is a catch-tooth secured in the bottom of the rule P . (See full lines in Fig. 5 and dotted lines in Fig. 2.) The catch-tooth p^3 has one edge slanting, so that it will readily slide downwardly or to the front of the table over the correspondingly-formed ratchet-shaped notches in the strips S^3 of the bar S . In cross-sectioning or other similar work in drawing it will be seen that any desired distances may be equally spaced very expeditiously. The rule P is of course moved back along the bar S , preferably by raising the handle p^4 . At the right-hand side of the board is another raised end A^5 , which is substantially flush with the board, and is provided with a longitudinal recess a^5 , in which is fitted the scale A^6 , which is adjustable by means of a thumb-screw a^6 , extending through the front end of the board. By means of this adjustable scale A^6 we are enabled, if we have a certain line on the paper, to adjust the scale so as to bring a definite point on it directly opposite the line and then set off from this line any number of equal distances.

In order to provide for the holding of a copy we provide a holder T , which is provided with rests t and swiveled spring-fingers t' , and is held to the table by the forwardly-extending bars t^2 , secured to the back of the holder and fitting within sockets a^7 , secured to the bottom of the rear end of the table. (See Figs. 1 and 6.) We also provide an instrument-holder U , which is provided with a raised edge u and a centrally-located sleeve u' , secured to the bottom of it. The instrument-holder U is supported upon a rod V , which extends

through the sleeve u' , and is secured in any desired position in the rod by the set-screw u^3 . The inner end of the rod is squared at the top and fits beneath the cross-bars A' , to which it is held by the cleats v . (See dotted lines, Fig. 1, and full lines, Fig. 3.) The instrument-holder U is also provided with legs u^2 , which extend below the bottom of the sleeve u' , so that when it is removed from the rod it will rest level upon any table upon which it may be placed.

It will be seen from the construction of the table hereinbefore described that it is extremely simple and cheaply made and has a minimum number of parts, to enable the draftsman to conveniently, accurately, and rapidly accomplish any desired adjustment for any class of work.

What we claim as our invention is—

1. In a drawing table, the combination with the table A having a circular opening, of a removable circular drawing board, a square socket in the center of the bottom thereof, a spindle with a square head fitting into the socket, means for rotating the spindle, and cross bars secured to the under side of the table and extending beneath the opening and friction rollers journaled in the cross bars and forming the supports for the board, substantially as described.

2. The combination with a circular drawing board, G , of the arc-shaped clasps, O , pivoted at, o , on the edge of the board and designed to fit between the bent retaining pin, o' , and the edge of the board over the turned down corner of the paper as and for the purpose specified.

3. The combination with a drawing table having a circular opening and a circular drawing board within such opening, of a spindle, h , journaled in the bars, H, H , extending between the central cross bars, A', A' , and having a square upper end extending into corresponding hole in the plate at the bottom of the board, a pulley, I , on the spindle h , guiding pulleys, i, i , on the spindle, i' , extending between the cross bars, a chain secured to the pulley, I , and extending over the guiding pulleys, i, i , the lower end of the chain being connected to the forward end of the pedals, k , and the cross bar, K , secured to the lower portion of the standard and extending out each way and having the pedals hinged to it as and for the purpose specified.

4. The combination with a table provided with a circular opening and a circular board supported within the opening with its surface above the level of the table and provided with a catch, g^5 , in its edge and means for rotating the table, of stops adjustably held at each side and within the sweep of the catch, the stops being located at approximately ninety degrees apart so as to permit of a ninety degree swing to the board as and for the purpose specified.

5. The combination with a table provided

with a circular opening and a circular board supported within the opening with its surface above the level of the table and provided with a catch, g^5 , in its edge and means for rotating the table, of the pivoted stops, L , adjustably held at each side and within the sweep of the catch, the stops being located at approximately ninety degrees apart and screw pins, l' , extending through blocks, l^2 , provided to adjust the stops to a nicety as and for the purpose specified.

6. The combination with a drawing table having a circular opening, of a circular drawing board having the surface extending above the table, and a pivoted spring clamp secured at the rear of the table and having its free end extending over the board, a screw pin extending from the top of the table through the clamp and a pressure knob screwed upon the screw pin above the clamp as and for the purpose specified.

7. The combination with the table, A , provided with cross bars and pivotally supported upon the spindle, B , having bearings beneath the cross bar upon the upper enlarged end of the vertical single standard, C , the standards, D, D , having cross bars, D' , through which the standard, C , extends, the bracket, d' , forming part of the cross bar, D' , the bracket, c , forming part of the standard, C , the screw spindle secured in the bracket, D' , and extending through the bracket, c , and provided with a hand wheel as and for the purpose specified.

8. The combination with the table, A , provided with cross bars and pivotally supported upon the spindle, B , having bearings beneath the cross bar upon the upper enlarged end of the vertical single standard, C , the double standards, D, D , supporting the single standards in the cross bars, D' , extending between them, the slotted stays, F, F , pivotally connected to the cross bars, A' , and secured to the standards, D, D , by the thumb screw, d , d , extending through the slots as and for the purpose specified.

9. The combination with the table, A , having the raised ends, A^3 , and, A^5 , and a circular opening, a , and circular board, G , rotatably supported within the opening and having its surface flush with the surface of its raised ends, of the rule, P , extending across the board and raised ends and connected at both ends to cords by depending blocks and means whereby the cords are given a uniformity of movement so as to keep the rule when being moved parallel to the rear and front of the table as and for the purpose specified.

10. The combination with the table, A , having the raised ends, A^3 , and, A^5 , and a circular opening, a , and circular board, G , rotatably supported within the opening and having its surface flush with the surface of the raised ends, of the rule, P , extending across the board and raised ends and connected at both ends to cords by depending blocks, the

5 cords being endless and extending around front and rear pulleys, r , and, r' , and wound around central pulleys, r^2 , which are secured at each end to the common spindle, B, as and for the purpose specified.

10 11. The combination with the table, A, with raised ends, A^3 , and, A^5 , and having a circular opening provided with a circular board rotatably supported and suitably secured therein and having the surface flush with the raised ends, of the rule, P, and the scale, A^6 , held securely within the longitudinal recess, a^5 , in any definite position by the adjusting screw a^6 , as and for the purpose specified.

15 12. The combination with the table, A, with raised ends A^3 , and, A^5 , and having a circular opening provided with a circular board rotatably supported and secured therein, and having the surface flush with the raised ends, 20 of the rule, P, rotatable bar journaled in the recess, a^3 , and provided with longitudinal ratchet-shaped notched strips and grooves longitudinally arranged, a catch tooth, p , depending from the rule and designed to engage

with a notched strip of the bar when under- 25 neath the tooth as and for the purpose specified.

13. The combination with the table, A, with raised ends, A^3 , and, A^5 , and having a circular opening provided with a circular board 30 rotatably supported and secured therein, and having the surface flush with the raised ends, of the rule, P, rotatable bar journaled in the recess, a^3 , and provided with longitudinal ratchet-shaped notched strips and grooves 35 longitudinally arranged, a catch tooth, p , depending from the rule, the scale marked collars, s' , on the supporting spindle, s , the pointer, s' , knob, s^2 , toothed wheel, s^3 , and dog, s^4 , all arranged as and for the purpose 40 specified.

SAMUEL JOHN LAUGHLIN.
JAMES HOUGH.

Witnesses:

ROBERT HILL,
WM. O. SMITH,
STANLEY FRENCH,
HUGH CUTHBERTSON.