

July 1, 1952

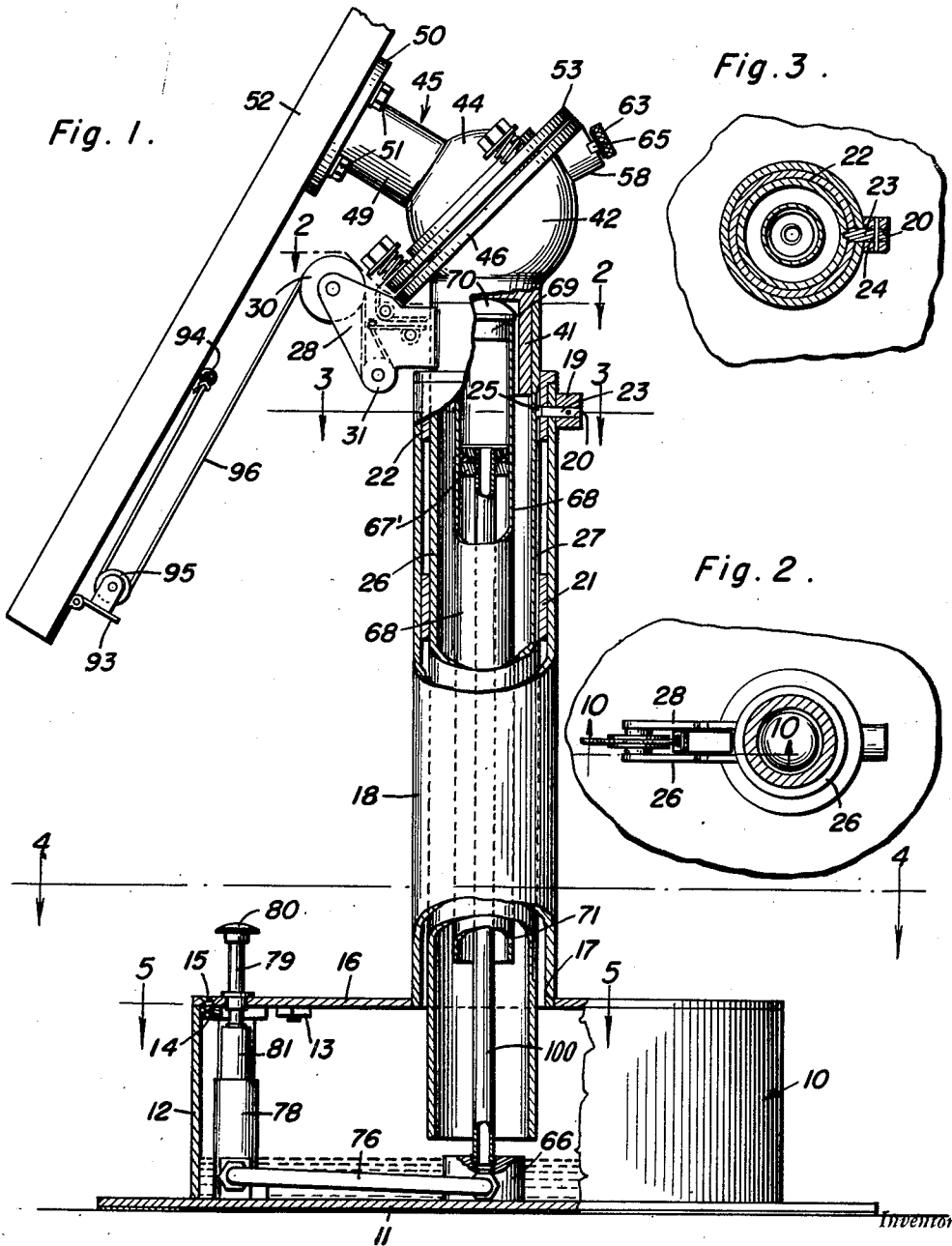
A. S. MURRAY

2,601,998

PEDESTAL DRAFTING TABLE OR THE LIKE

Filed March 31, 1949

3 Sheets-Sheet 1



Aubrey S. Murray

By *Clarence A. O'Brien*
and Harvey B. Jacobson
Attorneys

July 1, 1952

A. S. MURRAY

2,601,998

PEDESTAL DRAFTING TABLE OR THE LIKE

Filed March 31, 1949

3 Sheets-Sheet 2

Fig. 4.

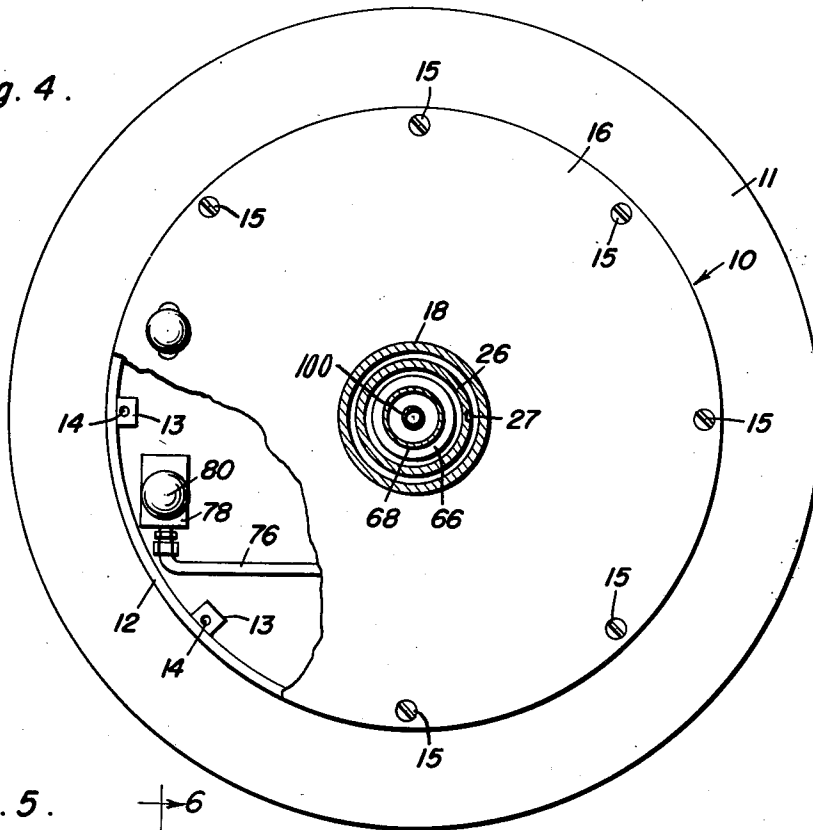


Fig. 5.

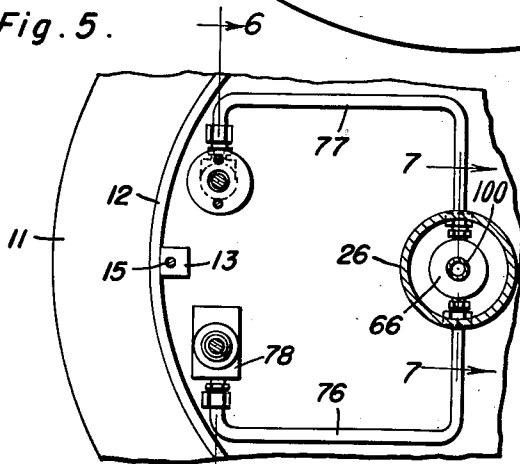


Fig. 6.

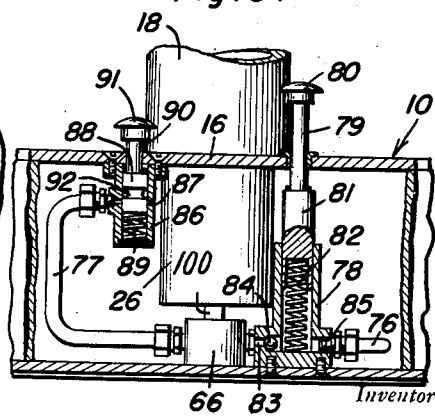
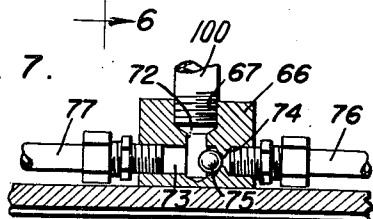


Fig. 7.



Aubrey S. Murray

By

Clarence A. O'Brien
and Harvey B. Jacobson
Attorneys

July 1, 1952

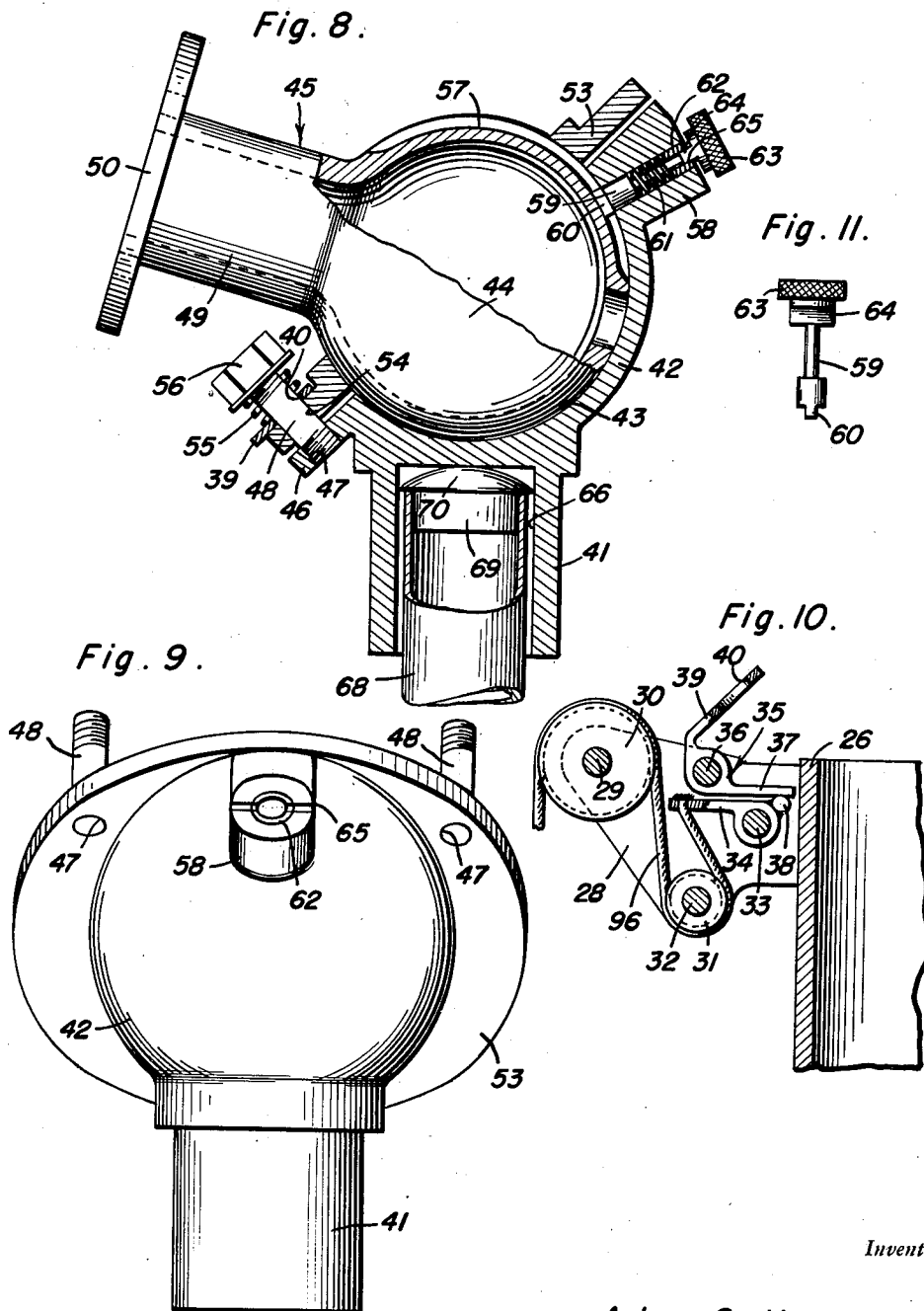
A. S. MURRAY

2,601,998

PEDESTAL DRAFTING TABLE OR THE LIKE

Filed March 31, 1949

3 Sheets-Sheet 3



Inventor

Aubrey S. Murray

By

Clarence W. O'Brien
and Harvey B. Jacobson
Attorneys

UNITED STATES PATENT OFFICE

2,601,998

PEDESTAL DRAFTING TABLE OR THE LIKE

Aubrey S. Murray, Elizabethton, Tenn.

Application March 31, 1949, Serial No. 84,582

4 Claims. (Cl. 287-12)

1

This invention relates to a pedestal drafting table or the like and has for its primary object to provide a working surface which may be tilted to various different angles and locked in its tilted position.

Another object is to enable the working surface to be raised or lowered according to the desires of the user.

A further object is to facilitate the transportation and handling of drafting tables or the like, and to employ a suitable hydraulic fluid as the raising and lowering medium, and at the same time as a ballast for the base of the table.

Still another object is to provide an infinite number of height adjustments within the range of the device, and also to enable the working surface of the table to be tilted to an infinite number of positions so that the user may support his work at the most convenient angle.

A still further and more specific object is to lock the table at the desired height, and in the desired position and at the same time prevent the table supporting column from being elevated beyond a predetermined height above the floor or base of the table.

The above and other objects may be attained by employing this invention which embodies among its features a hollow base adapted to contain an incompressible liquid such as that employed in the conventional braking system of a motor vehicle, a tubular standard rising from the base and communicating with the interior thereof, a tubular column mounted to slide vertically in the standard, a table supporting member carried by the upper end of the tubular column, a table on said table support and lift means within the tubular column and engaging the underside of the table support to elevate said table support and the table thereon along with the tubular column when fluid is forced from the base into said elevating means.

Other features include a pump mounted within the base and actuated from the exterior thereof for introducing fluid from the base into the elevating means, a valve connected with the elevating means and communicating with the interior of the base for returning the liquid pumped into the elevating means to the base when it is desired to lower the table, and means operable through the hollow base for controlling the valve.

Still other features include a substantially spherical socket forming the table support, a substantially spherical head seated in said socket for universal movement, a clamping ring encircling the spherical head and carried by the

2

socket yieldingly to engage the head and clamp it in various adjusted positions in the socket, and means carried by the head and coupled to the table top by which the clamping ring may be released from clamping engagement with the head.

In the drawings:

Figure 1 is a side view of a table embodying the features of this invention, certain portions being broken away more clearly to illustrate certain details of construction;

Figure 2 is a horizontal sectional view taken substantially along the line 2-2 of Figure 1;

Figure 3 is a horizontal sectional view taken substantially along the line 3-3 of Figure 1;

Figure 4 is a horizontal sectional view taken substantially along the line 4-4 of Figure 1;

Figure 5 is a horizontal sectional view taken substantially along the line 5-5 of Figure 1;

Figure 6 is a fragmentary enlarged sectional view taken substantially along the line 6-6 of Figure 5;

Figure 7 is an enlarged fragmentary sectional view taken substantially along the line 7-7 of Figure 5;

Figure 8 is an enlarged sectional view through the table top supporting socket, the table top supporting head being shown partially in section in the socket;

Figure 9 is a rear view of the socket illustrated in Figure 8;

Figure 10 is an enlarged fragmentary sectional view taken substantially along the line 10-10 of Figure 2, and

Figure 11 is a side view of a detail of the invention.

Referring to the drawings in detail, a base designated generally 10 comprises a bottom 11 which is preferably circular in shape and has welded or otherwise secured thereto an upwardly extending cylindrical wall 12 which lies concentric with relation to the outer edge of the bottom 11. This wall is provided adjacent its upper end with inwardly extending brackets 13 which are provided with internally screw-threaded openings 14 for the reception of suitable attaching screws 15 by means of which a cover 16 of circular form is detachably connected to the upper edge of the cylindrical side wall 12. This cover 16 is provided with a centrally located concentric circular opening 17 which lies concentric with relation to the wall 12, and welded or otherwise fixed to the cover 16 in concentric relation in the opening 17 is a tubular standard 18 carrying adjacent its upper end an outwardly extending boss 19 having an opening 20 extending there-

3

through which also extends through the standard 18 as will be readily understood upon reference to Figure 1. Secured in any suitable manner within the standard 18 intermediate its ends is a guide sleeve 21, and fitted in the upper end of the standard 18 is a guide bushing 22 which is held in place by a radial pin 23 which as illustrated in Figures 1 and 3 projects through the opening 20, and is held therein by a cross pin 24. The inner end of the guide pin 23 projects beyond the inner wall of the bushing 22 and is flattened to form a rectangular guide member 25 by means of which the column to be more fully hereinafter described is held against turning within the standard 18.

Mounted for vertical sliding movement in the guide ring 21 and guide bushing 22 is a tubular column 26 which is provided with an elongated longitudinal groove 27 in which the guide member 25 previously referred to is received. It will thus be seen that the tubular column 26 is mounted for vertical sliding movement within the tubular standard 18 and will form an effective guide for the table carrying socket and head to be more fully hereinafter described. Extending outwardly from the tubular column 26 adjacent its upper ends is a pair of spaced parallel bracket arms 28. Extending transversely between the bracket arms 28 near the outer ends thereof is an axle shaft 29 on which a guide pulley 30 is mounted to rotate. A similar guide pulley 31 of somewhat smaller diameter is mounted to rotate on an axle shaft 32 which is supported by the bracket arms 28 below the shaft 29, and carried by the bracket arms 28 near the column 26 is a pivot pin 33 on which a rock arm 34 is rockably supported. A rocking lever designated generally 35 is mounted on a rock shaft 36 carried by the brackets 28 above the shaft 32 and this rock arm is provided with a substantially horizontally extending arm 37 which is engaged by a lug 38 carried by the rock arm 34, so that upon moving the rock arm, the rock lever 35 will move in a vertical arc about the pivot shaft 36. Extending upwardly and angularly from the rock lever 35 is a lever arm 39 which is pierced as at 40 to receive one of the ring supporting studs to be more fully hereinafter described.

Entering the open upper end of the column 26 is the neck 41 of a hemispherical socket 42 which is provided with a hemispherical seat 43 for the head 44 of a table top supporting member designated generally 45. Formed on the socket 42 in a plane with the rim of the hemispherical socket 43 is an outstanding annular flange 46 which is provided at spaced intervals with internally screw-threaded openings 47 for the reception of the threaded ends of outwardly extending studs 48, the purpose of which will more fully hereinafter appear. As illustrated in the drawings, the rim of the hemispherical seat lies in a plane substantially 45 degrees from the vertical. Formed on the head 44 of the table top support 45 is a radially extending neck 49 which carries adjacent its end remote from the head 44 an outwardly extending annular flange 50 which is provided at spaced points with openings for the reception of attaching screws 51 by means of which a suitable table top 52 is mounted on the table top support 45. Surrounding the head 44 adjacent the flange 46 of the socket 42 is an annular clamping ring 53 which is provided at circumferentially spaced points with openings 54 for the reception of the studs 48, and surrounding each stud 48 is a compression coil spring 55, one

4

end of which bears on the ring 53 while the opposite end is engaged by a nut 56 which is threaded on its respective stud 48 so as to hold the ring 53 in yielding contact with the head 44. It will thus be seen that frictional contact between the head 44 and the hemispherical seat 43 will be effected, while the ring 53 will be yieldingly held against the head so that relative movement between the head and the socket 42 will be restrained, until such time as the pressure of one of the springs 55 is relieved. As illustrated in Figures 1 and 8, the arm 39 of the lever 35 is engaged beneath a spring 55, so that when the rock arm 34 is moved, in a counter-clockwise direction when viewed in Figure 10, the rock lever 35 will be moved about its rock shaft 36 in a direction to relieve the pressure of the spring engaged by the arm 39 against the ring 53.

In the preferred form of the invention, the spherical head 44 is provided with a groove 57, and the socket 42 is provided with an outwardly extending tubular boss 58 in which a plunger 59 is mounted to reciprocate. This plunger carries at its inner end an inwardly extending blade 60 which enters the groove 57 and serves to hold the head 44 against movement except in a vertical arc. A compression coil spring 61 surrounds the plunger 59 and one end thereof bears on a stop collar 62 which is mounted in the boss 58, so that the blade 60 will be yieldingly urged to enter the slot 57 so long as the plunger is in the position illustrated in Figure 8. In order that the head 44 may be freed within the hemispherical socket 42 to move in other than a vertical arc, the end of the shank 59 remote from the blade 60 is provided with a head 63, the peripheral surface of which is preferably knurled to form a finger-gripping surface, and formed on the shank immediately adjacent the head is a transversely extending rib 64 which is adapted to engage in a transverse slot 65 which extends across the outer end of the boss 58 and the collar 62. The slot 65 is of a width sufficient to receive the rib 64, so that when the thumb piece 63 is grasped in the fingers and the plunger 59 moved against the effort of the spring 61, the head 63 may be turned to cause the rib 64 to lie across the groove 57 and hold the blade 60 out of the groove 57 in the head 44. In this way, the head 44 may be moved universally upon releasing the pressure on the clamp ring 53. As illustrated in Figure 8, the neck 41 of the hemispherical socket 42 is provided with an axial recess 66 which opens through the outer end of the neck 41 for the reception of the elevating cylinder to be more fully hereinafter described.

Welded or otherwise fixed to the bottom 11 of the base 10 in axial alignment with the column 26 is a fitting 98 which is provided in its upper face with a vertically extending internally screw-threaded bore 67 in which a vertical pipe 100 is threaded. This pipe extends upwardly within the column 26 to a point near the upper end thereof and supported on the pipe adjacent its upper end is a piston 67' of a conventional form. As illustrated in Figure 1, the upper end of the pipe opens through the upper end of the piston, and slidably fitted over the piston is an elevating cylinder 68 into the upper end of which is fitted an end closing plug 69 having a dome-shaped upper surface 70 which engages the inner end of the axial bore 66 in the neck 41 of the spherical socket 42. The plug 69 is secured in the upper end of the elevating cylinder 68 in such a manner as to form a fluid-tight joint so that fluid enter-

5

ing the cylinder through the pipe 100 and confined by the piston 67 will cause the cylinder 68 to rise upwardly, carrying with it the hemispherical socket 42 and the tubular column 26. A suitable by-pass port 71 is formed in the cylinder 68 adjacent its end remote from the plug 69 and serves to permit fluid entering the cylinder through the pipe 100 to escape and fall downwardly through the column 26 into the reservoir formed by the hollow base 10. The inner end of the bore 67 communicates with a reduced bore 72 which opens into a transverse bore 73 formed in the fitting 93 which is interrupted intermediate its ends, and to one side of the bore 72 by an inwardly extending annular rib 74 forming a seat for a ball valve 75. A feed pipe 76 is coupled to the bore 73 to feed liquid into the bore on the side of the rib or seat 74 remote from the bore 72, and a discharge pipe 77 is coupled to the opposite end of the bore 73. A suitable pump 78 is mounted on the bottom 11 within the base 10 and is provided with an actuating plunger 79 which projects upwardly through the top 16 of the base 10 and terminates in a head 80. The plunger 81 of the pump 78 is normally urged upwardly under the effort of a compression coil spring 82 contained within the pump and one port 83 of the pump 78 opens into the interior of the hollow base 10. A suitable ball valve 84 is mounted within the pump 78 near the port 83 to prevent fluid which has entered the pump with the upstroke of the piston 81 from falling back into the base 10 when the plunger 81 is moved downwardly against the effort of the spring 82. The opposite port 85 of the pump 78 is connected to the feed pipe 76 so that by reciprocating the plunger 81 in the pump 78 liquid contained within the hollow base 10 will be expelled by the pump through the pipe 76 and into the pipe 100 past the ball valve 75. It will thus be seen that by manipulating the pump, liquid pressure may be built within the cylinder 68 above the piston 67, to cause said cylinder to move upwardly and carry with it the hemispherical socket 42 and the column 26, the latter serving as a guide within the guide ring 21 and guide bushing 22 of the standard 13 to hold the parts in vertical position. Fitted to the inner surface of the top 16 of the hollow base 10 near the pump 78 is a valve cylinder 86 having opening therein to a pair of diametrically opposed ports 87, one of which is coupled through the medium of the discharge pipe 77 with the pipe 100. A plunger 88 is mounted to slide within the cylinder 87 and is yieldingly held upwardly under the influence of a compression spring 89. The upper end of the plunger is provided with a shank 90 which projects upwardly through the top 16 of the base 10 and is equipped with a suitable head 91 by which the plunger 88 may be moved downwardly against the effort of the spring 89. Formed in the plunger 88 intermediate its ends is an annular groove 92 which, when the plunger is depressed, aligns with the ports 87 to establish communication between the pipe 100 and the interior of the hollow base 10. It will thus be seen that liquid which has been pumped into the cylinder 68 may be discharged therefrom through the pipe 100, passages 72 and 73, pipe 77 and ports 87 into the interior of the hollow base 10, for re-use in elevating the cylinder 68 and its attendant mechanism.

In order to adjust the angularity of the table top 52, a suitable leaf 93 is hingedly connected to the table adjacent its forward edge, and an

6

eye 94 is coupled to the table in spaced relation to the leaf 93. A guide pulley 95 is carried by the leaf 93 and connected to the eye 94 is one end of a control cable 96 which extends around the guide pulley 95 and over the pulleys 30 and 31. The opposite end of the cable 96 is connected to the end of the rock arm 34 remote from the bosses 38, so that when pull is exerted on the cable, the rock arm will move to cause the rock lever 35 to oscillate about the rock shaft 36 and move the arm 39 in a direction to compress the spring 55 beneath which the arm has been positioned. Such compression of the spring 55 will relieve some of the pressure on the clamping ring 53 so as to enable the head 44 to be moved in the hemispherical seat 43 to the desired position. Obviously, with the plunger 59 in the position shown in Figure 8, the movement of the head 44 will be confined to a vertical arc and when it is desired to tilt the table laterally, the plunger 59 is moved against the effort of the spring 61 and rotated about its longitudinal axis to cause the end of the stop member 64 to rest on the outer end of the boss 58, so that the blade 60 will be extracted from the groove 57. Thus when the pressure on the clamping ring 53 is relieved, the head 44 may be moved to tilt the table into the desired position, and upon releasing the pull on the cable 96 the table top 52 will be held against further movement until the pressure of the ring 53 on the head 44 is again relieved.

In use, the device may be transported with the liquid in a container separate from the base 10, and upon arriving at its place of use, one of the screws 15 may be removed and the liquid is introduced into the hollow base through the screw hole 14 after which the screw is replaced. Upon introducing the desired quantity of liquid in the hollow base 10, the top 16 is replaced and upon reciprocating the pump plunger 81 it will be evident that fluid will be extracted from the hollow base 10 and forced upwardly through the pipe 100 into the cylinder 68 above the piston 67. Upon attaining the desired height, of the table 52, further pumping is ceased and the fluid will be held in the cylinder until such time as the valve plunger 88 is depressed to align the groove 92 with the ports 87. Upon so aligning the groove, the fluid which has been pumped into the cylinder 68 will flow backwardly through the pipe 100 and into the hollow base 10.

Owing to the fact that the hollow base 10 serves as the reservoir for the table top elevating fluid, it will be evident that such fluid serves as ballast in weighting the base and thereby steadying the table when the latter is in use.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. In drafting tables or the like, a substantially hemispherical socket member, said socket member having a hemispherical seat opening therein from its upper side, the rim of said seat lying in a plane at an angle to the horizontal, a substantially spherical head mounted in said seat for universal movement relative to the socket member, a clamping ring encircling said head adjacent the socket member, studs carried by the socket member and projecting through the

7

clamping ring, springs carried by the studs and bearing on said clamping ring yieldingly to urge said clamping ring toward the socket member and into frictional contact with the head and the head against movement in the socket member, and manually actuated means carried by the socket member and engaging one of said springs to compress said one spring and relieve the pressure thereof on the clamping ring to free the head in the socket member.

2. In drafting tables or the like, a substantially hemispherical socket member, said socket member having a hemispherical seat opening therein from its upper side, the rim of said seat lying in a plane at an angle to the horizontal, a substantially spherical head mounted in said seat for universal movement relative to the socket member, a platform carried by said head for movement therewith, a clamping ring encircling said head adjacent the socket member, studs carried by the socket member and projecting through the clamping ring, springs carried by the studs and bearing on said clamping ring yieldingly to urge said clamping ring toward the socket member and into frictional contact with the head and the head against movement in the socket member, means carried by the socket member and engaging one of said springs to compress said one spring and relieve the pressure thereof on the clamping ring to free the head in the socket member and manually actuated means carried by the platform and connected to said spring engaging means to relieve the pressure of said spring on the clamping ring.

3. In drafting tables or the like, a substantially hemispherical socket member, said socket member having a hemispherical seat opening therein from its upper side, the rim of said seat lying in a plane at an angle to the horizontal, a substantially spherical head mounted in said seat for universal movement relative to the socket member, a platform carried by said head for movement therewith, a clamping ring encircling said head adjacent the socket member, studs carried by the socket member and projecting through the clamping ring, springs carried by the studs and bearing on said clamping ring yieldingly to urge said clamping ring toward the socket member and into frictional contact with the head and the head against movement in the socket member, a lever pivotally carried by the socket member and engaging one of said springs to compress said one spring and relieve the pres-

8

sure thereof on the clamping ring, and means carried by the platform and connected to said lever to actuate the lever and relieve the pressure of said spring on the clamping ring.

4. In drafting tables or the like, a substantially hemispherical socket member, said socket member having a hemispherical seat opening therein from its upper side, the rim of said seat lying in a plane at an angle to the horizontal, a substantially spherical head mounted in said seat for universal movement relative to the socket member, a platform carried by said head for movement therewith, a clamping ring encircling said head adjacent the socket member, studs carried by the socket member and projecting through the clamping ring, springs carried by the studs and bearing on said clamping ring yieldingly to urge said clamping ring toward the socket member and into frictional contact with the head and the head against movement in the socket member, a lever pivotally carried by the socket member and engaging one of said springs to compress said one spring and relieve the pressure thereof on the clamping ring, a leaf pivotally carried by the platform remote from the head, a flexible member connected to the leaf and to the lever for moving said lever and compressing the spring when the leaf is moved to exert pull on the flexible member.

AUBREY S. MURRAY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
206,393	Ellinger	July 30, 1878
656,256	Leisenring	Aug. 21, 1900
743,508	Hornung, Jr.	Nov. 10, 1903
986,451	Franks	Mar. 14, 1911
1,346,586	Barber	July 13, 1920
1,401,075	Hartwig	Dec. 20, 1921
1,529,022	Fraser	Mar. 10, 1925
1,792,209	Allison	Feb. 10, 1931
1,860,713	Schwarzkoepfe	May 26, 1931
2,028,905	Hein	Jan. 28, 1936
2,132,636	Thoman et al.	Oct. 4, 1938
2,217,783	Bell	Oct. 15, 1940
2,354,937	Barker	Aug. 1, 1944
2,412,414	Mueller	Dec. 10, 1946
2,434,949	Muller	Jan. 27, 1948