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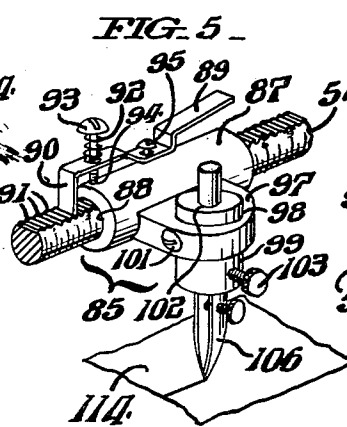
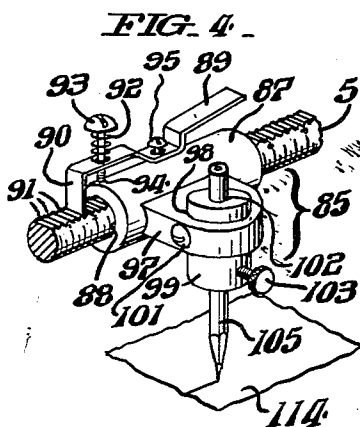
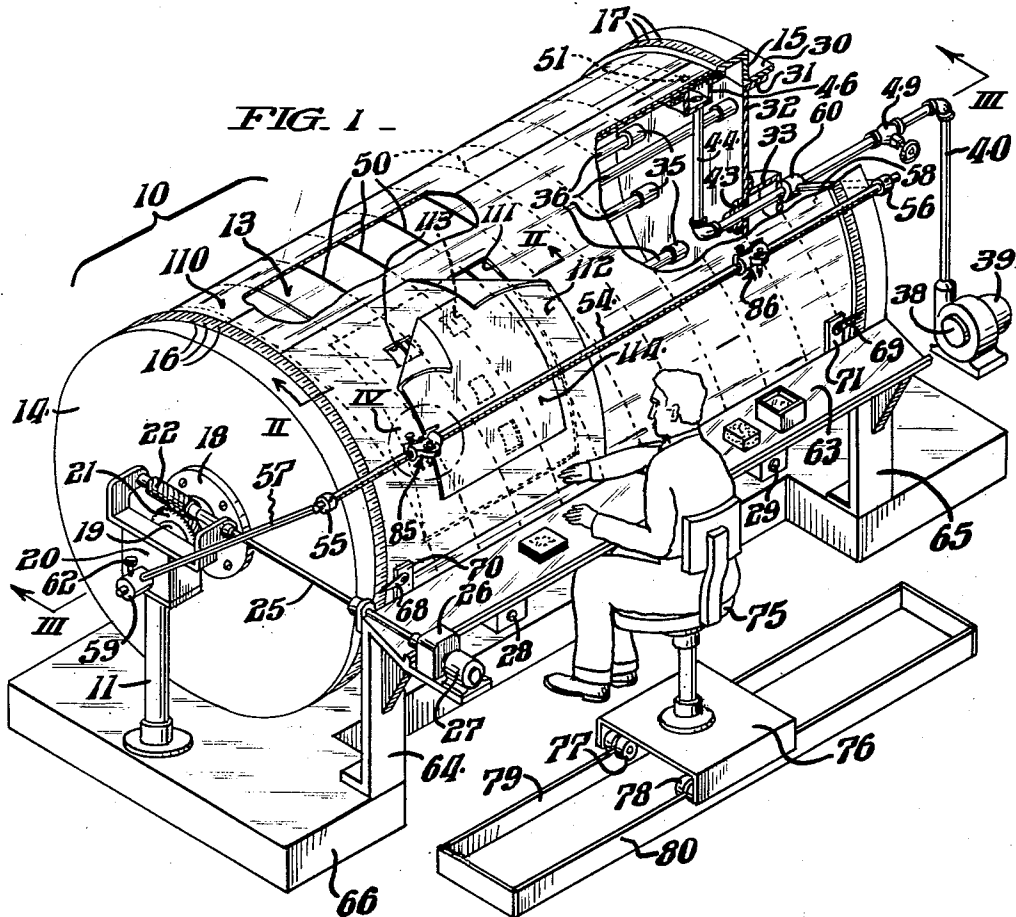
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3,110,107

ROTATABLE CYLINDER

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2 Sheets-Sheet 1



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3,110,107
ROTATABLE CYLINDER
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This invention relates to rotatable work surfaces. More particularly, this invention relates to cylindrical working surfaces adaptable to a variety of purposes such as drafting, the laying out of maps and designs, or the stripping of film for offset printing and the like.

It is a principal object of this invention to provide apparatus having an adjustable working surface, whereby a large layout or other work-piece for map making, offset printing, drafting, and the like, which is contained upon said surface, may be moved at the will of the operator so that the specific portions of the layout are made available to the operator for working purposes without disturbing any other portion of said layout.

It is another object of this invention to provide apparatus of the kind referred to wherein calibrating and locking means are provided for precise measurement and control of the work-pieces contained upon the working surface of said apparatus.

It is another object of this invention to provide apparatus having means for retaining large work-pieces upon the working surfaces thereof, whereby the use of pins, clamps or similar devices may be avoided.

It is another object of this invention to provide apparatus having means for illuminating transparencies contained on the work surface thereof, whereby the transposition and placing of photographic film and the like may be expeditiously effectuated.

Other objects and attendant advantages of the invention will become apparent hereinafter and in the drawings, wherein:

FIG. 1 is a view in perspective of a drafting apparatus as provided in accordance with this invention;

FIG. 2 is a view in cross-section of a part of the apparatus taken as indicated by the lines and arrows II-III of FIG. 1;

FIG. 3 is a view in cross-section of a part of the apparatus taken as indicated by the lines and arrows III-III of FIG. 1;

FIG. 4 is a view in perspective of an element of the apparatus indicated generally by the numeral IV of FIG. 1 and illustrating one specific arrangement thereof;

FIG. 5 is a view in perspective of the same element of the apparatus shown in FIG. 4 and illustrating another specific arrangement thereof; and,

FIG. 6 is a view in perspective of the same element shown in FIG. 4 and illustrating still another specific arrangement thereof.

The following description is directed to the specific form of the apparatus as shown in the drawings and is not intended to be addressed to the scope of the invention itself, which is capable of being practiced in a wide variety of forms and arrangements.

Adverting herewith to the specific form of the invention illustrated in the drawings, the numeral 10 designates a cylindrical drum supported at opposite ends by stands 11 and 12, as seen in FIG. 3, and is arranged for rotation about an axis generally parallel to the floor. The cylindrical shell 13 of the drum is preferably made of plastic, but may be comprised of any suitable rigid and translucent material. Integral with the cylindrical shell 13, are covers 14 and 15, each of which contain circumferential calibrations 16 and 17, respectively, at the inner edge thereof adjacent the plastic shell 13, the purpose of which will be explained more fully herein-

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after. A fitting 18 is secured in axial alignment to the face of the disc or end cover 14, an extension of which forms a hollow axle 19 journaled in bearing 20 supported by the stand 11. Attached on the periphery of the fitting 18 is a gear 21 arranged for engagement with another worm-type gear 22. Worm gear 22 is attached to a shaft 25 extending from a gear reducer 26 and a reversible motor 27. Drive motor 27 is controlled by a forward drive switch 28, and a reverse drive switch 29 for operation of the apparatus in a manner to be more fully explained hereinafter.

As may best be seen in FIG. 3, end cover 15 of the drum 10 is formed with a circular protruding flange 30 which fits concentrically about the outer circumference of a smaller, similarly outwardly extending flange 31 formed in a stationary plate 32. The plate 32 is supported from the stand 12 by means of a hollow cylindrical fitting 33 which is itself secured to plate 32 by bolts 34.

Circumferentially disposed adjacent the periphery of the fixed plate 32 are electrical sockets 35 for the retention of fluorescent lighting tubes 36 which extend longitudinally along the cylindrical wall or shell 13 generally parallel to the axis of the drum 10.

As may be seen in FIG. 1, a vacuum pump 38 having a pump motor 39 in association therewith, is connected to pipe or tubing 40 which passes through the fittings 33 and the fixed plate 32 through openings 41 and 42, respectively provided for that purpose, and extends into the interior of the drum 10. Inwardly of the fixed plate 32 there is provided a fitting 43 for the support of the pipe 40 coaxially with the drum 10. The pipe 40 is provided with a transverse section 44 terminating in a flange 45 secured to a rectangular trough 46 provided adjacent the plastic shell 13. The trough 46 is provided with flanges 47 which are retained in contact with the inner side of the shell 13 by opposed retaining flanges or lips 48 which are themselves secured to the interior surface of the plastic shell 13. It will be clear that the trough 46 forms an annular channel adjacent the interior circumference of the shell 13 and that the aforesaid channel communicates with the piping 40 so that a vacuum can be drawn on the aforesaid channel by means of a vacuum pump 38 in a manner and for a purpose to be explained more fully hereinafter. Exterior of the drum 10 the pipe or tubing 40 is provided with a valve 49 by means of which communication between vacuum pump 38 and trough 46 may be closed off or opened, thereby alternatively closing off or drawing vacuum on the channel formed by the aforesaid trough 46 as desired.

The outer surface of the cylindrical shell 13 is provided with a spiral groove 50 which communicates with a hole 51 extending through the plastic shell 13 and opening into the channel formed by the trough 46.

As may best be seen in FIG. 1, a calibrated bar 54 extends along the entire length of the drum 10 exterior thereof and is supported at opposite ends in fittings 55 and 56 into which are respectively connected transverse supporting rods 57 and 58 located at the opposite ends of the drum 10 parallel to the surface of the end covers 14 and 15. The rods 57 and 58 are respectively set in rotatable fittings 59 and 60 positioned coaxially with respect to the drum 10. Fitting 59 is provided with a set screw 62 which may be loosened or tightened to secure the calibrated bar 54 in position as desired. Forward of the rotatable drum 10 there is provided a work shelf 63 supported at opposite ends by support posts 64 and 65 which in turn stand upon a heavy platform 66. At opposite ends of the work shelf 63 scale pointers 68 and 69 are provided on the stands 70 and 71, respectively, for indicating the position of the calibrated end covers 14 and 15. A chair

75 is mounted on a platform 76 which is provided with rollers 77 and 78 arranged to roll along rails 79 and 80 back and forth in front of the rotatable cylinder 19.

Mounted on the bar 54 and arranged for sliding movement backward and forward thereon is a pair of holders 85 and 86 designed to retain a variety of implements as illustrated in FIGS. 4, 5 and 6. The holder 85 comprises a cylindrical sleeve 87 which has an inner dimension 88 shaped to fit and conform to the outer dimension of the aforesaid bar 54. Mounted to the top surface of the sleeve 87 is a lock lever 89 having a depending flange 90 which is normally urged into one of the grooves 91 in the top surface of the calibrated bar 54 by a spring 92 mounted on the screw 93 set into a threaded hole 94 in the sleeve 87. The lock lever 89 is secured to the top surface of the sleeve 87 by means of a screw 95. Extending from the surface of the sleeve 87 is a lug 97 having a circular opening 98 for the reception of a retaining element 99 of suitable size and dimension to fit the aforesaid openings. The retaining element 99 is secured in the opening 98 by means of a tightened screw 101. Retaining element 99 is also provided with a circular opening 102 for the shank of a working tool which may be inserted thereinto and secured in said opening by means of tightening a screw 103 extending into a threaded opening in the retaining element 99 at right angles to the shank-receiving opening 102. FIG. 4 illustrates the manner in which a pencil or stylus 105 may be retained in the holders 85 and 86; FIG. 5 illustrates the manner in which a ruling pen 106 may be retained in the aforesaid holders; and FIG. 6 illustrates the manner in which a knife 107 may be similarly retained.

FIGS. 1 and 3 illustrate one manner of use of the apparatus as provided in accordance with this invention, as for example, the stripping of film on acetate in connection with the processes of offset printing. Ordinarily when the invention is used in such connection, a plastic sheet 110 is wound upon the drum cylinder 13 adjacent the grooves 50 and the valve 49 is opened and a vacuum drawn on the aforesaid grooves by means of the pump 38. The plastic sheet 110, as a result of the atmospheric pressure on the outer surface thereof, adheres closely to the surface of the cylinder 13. In the "stripping" process, a rectangular cut-out 111 is made in the plastic sheet 110 and a layout sheet 112 is placed over the aforesaid cut-out. Precise positioning of the layout sheet is made possible by means of calibrations 16 and 17 of the end covers 14 and 15. Further cut-outs 113 are made in the layout sheet and over these is placed a stripping sheet 114, all as may be seen in FIG. 1. It will be clear that the aforesaid cut-outs may be made by means of a knife 107 disposed in the holder 85 or 86 and that the cut-outs may be made with the greatest possible precision by positioning the holder as desired on the calibrated bar 54 and locking it into position by means of the lock lever 89. The drum cylinder may then be turned to the specific position desired either by means of the forward switch or the reverse switch and the exact position of the cylinder indicated by means of the scale pointers 68 and 69. When it is desired to adjust the position of the calibrated bar 54 backward or forward, advantage is taken of the rotatable fitting 59 by loosening the set screw 62 so that the arms 57 and 58 may be raised or lowered as desired and then secured in position by again tightening the screw 62.

It will be evident that it is an important advantage of the invention that very large drawings, plans, maps,

and the like up to twenty feet or more in length may be handled and worked upon with relative ease and facility.

It will be further apparent that it is another significant advantage of the invention that it eliminates all need for T-squares and triangles for accurate measurement in stripping film on acetate and the like, and, furthermore, facilitates perfect register of the work-pieces, which is essential when doing color work and the like in the offset printing processes.

Although this invention has been disclosed with references to specific forms and embodiments thereof, it will be evident that a great number of variations may be made without departing from the spirit and scope of this invention. For example, parts may be reversed, equivalent elements may be substituted for those specifically disclosed, and certain features of the invention may be used independently of other features, all without departing from the spirit and scope of this invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A drafting apparatus comprising in combination a translucent cylindrical shell journaled for rotation between a pair of vertical standards, drive means including a reversible motor axially connected to said shell and arranged for rotating said shell in forward and reverse directions, the shell having a spiral groove formed in the exterior surface thereof and communicating with the shell interior to a vacuum line extending to the exterior of said shell, a vacuum pump connected to the line exterior of the shell, a plurality of lighting tubes disposed adjacent the interior surface of the shell, indicator means mounted adjacent an end of the shell and arranged for positioning the shell, and support means adjustably disposed adjacent the exterior surface of the shell along its length for precise positioning of tools adjacent the surface.

2. The drafting apparatus defined in claim 1 wherein said support means comprises a calibrated bar extending longitudinally from one end of said shell to the other end thereof, said bar being supported at the ends thereof by movable rods mounted in rotatable fittings affixed to said vertical standards and an implement holder attached to said rod, said holder being adapted to lock into position in a plurality of locations along said bar, said bar being formed with a plurality of grooves in the surface thereof, said grooves being in one to one correspondence with the calibrated scale markings of said bar, said holder including a lock lever arranged to enter each of said grooves as desired.

3. The drafting apparatus as defined in claim 2 wherein the indicator means comprises a circumferential scale mounted on the exterior surface of the shell at an end thereof and a scale pointer fixed in position adjacent the scale.

References Cited in the file of this patent

UNITED STATES PATENTS

1,041,028	Church	Oct. 15, 1912
1,288,607	Jobke	Dec. 24, 1918
1,569,938	Gresley	Jan. 19, 1926
1,627,205	Seaborne	May 3, 1927
1,705,005	Douthitt	Mar. 12, 1929
1,886,929	Abbott	Nov. 8, 1932
2,414,606	Page	Jan. 21, 1947
2,567,049	Belluche	Sept. 4, 1951
2,674,062	Tull	Apr. 6, 1954
2,753,181	Anander	July 3, 1956
2,895,706	Blatherwick	July 21, 1959