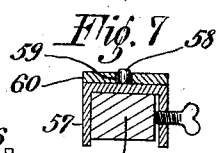
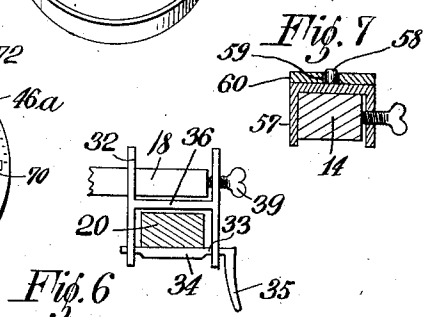
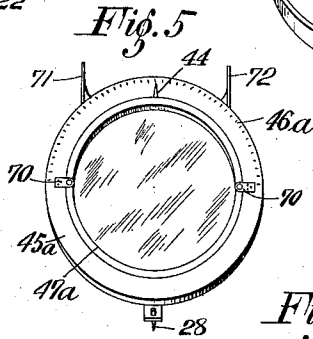
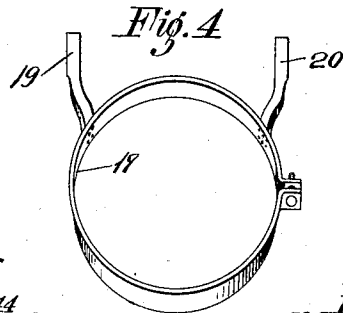
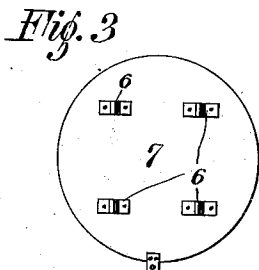
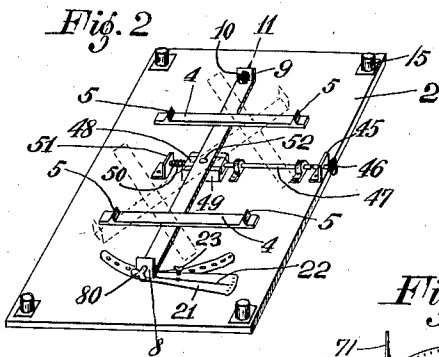
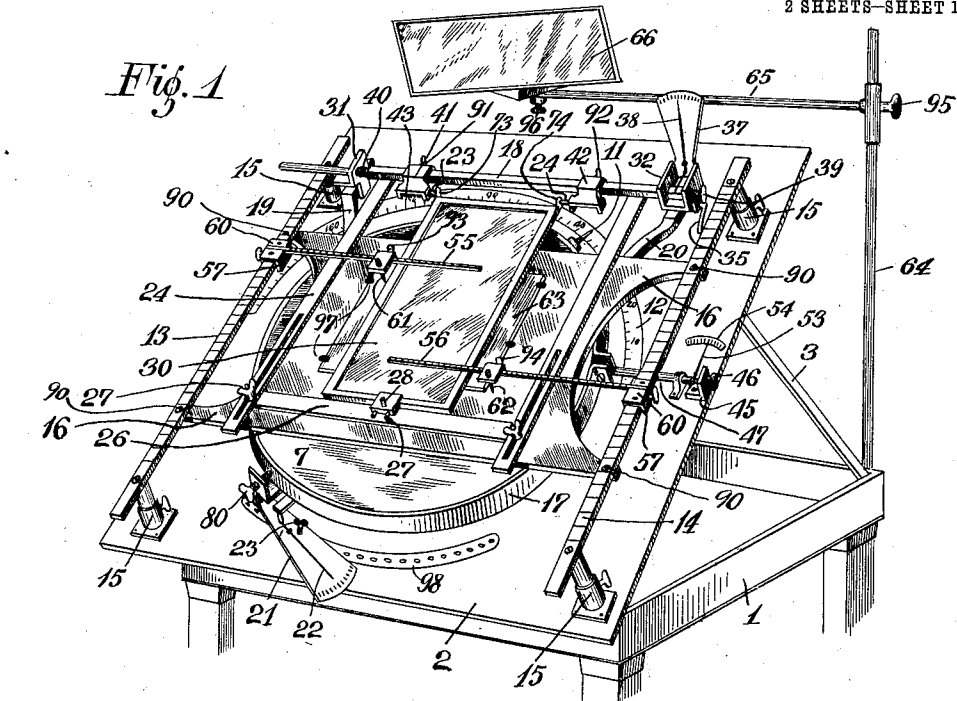


T. S. FOX.
PRINTING.
APPLICATION FILED NOV. 16, 1904.

1,063,525.

Patented June 3, 1913.

2 SHEETS-SHEET 1.



Witnesses
Ivan Honigsberg
Vincent Victory.

Thomas S. Fox, Inventor
By his Attorney
Thomas A. Hill.

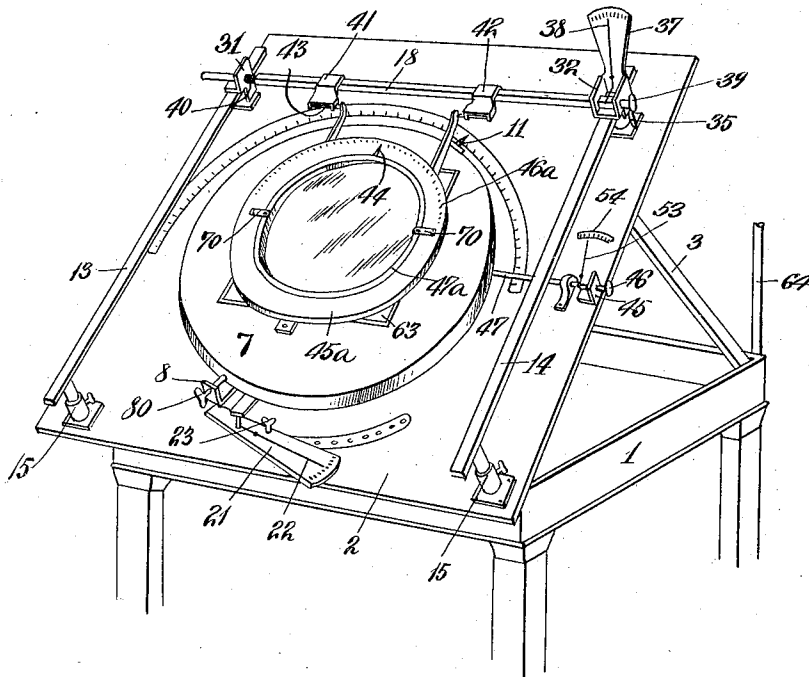
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2 SHEETS—SHEET 2.

Fig. 8



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UNITED STATES PATENT OFFICE.

THOMAS S. FOX, OF BROOKLYN, NEW YORK.

PRINTING.

1,063,525.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed November 16, 1904. Serial No. 232,999.

To all whom it may concern:

Be it known that I, THOMAS S. FOX, a citizen of the United States of America, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Printing, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in apparatus used in the preparation of printing surfaces, and is particularly adapted for use in carrying out the process of preparing printing surfaces set forth in my application for United States Letters Patent filed 18th day of July, 1906, and bearing Serial No. 326640.

In the accompanying drawings, I have illustrated an apparatus in perspective indicated as Figure 1, which may be employed for the preparation of printing surfaces according to my invention. Fig. 2 is a view in perspective of the base-board of the apparatus showing an adjustable framework or support mounted thereon for carrying a rotatable disk. Fig. 3 is an under view of such a disk. Fig. 4 is a band-support attachable to, and adapted to be carried by said disk. Fig. 5 is a circularly framed marking member rotatable within an outer frame. Fig. 6 is a sectional view of a binding device which may be employed for attaching the bar carrying the framed marking member to said band frame, or to other supports to be hereinafter described. Fig. 7 is a sectional view of one end of a finder showing the manner in which same may be attached, and Fig. 8 is another view of Fig. 1 with some of the attachments left off.

1 is a table or bench of any suitable construction provided with a top or base-board 2 preferably hinged at one end so that it may be inclined at any desired angle and held in position by suitable supporting means such as the stick or prop 3.

4 is a frame work or support of iron or any other suitable material provided with projections 5 adapted to fit into and provide track bearings for the recesses 6 in the underside of the disk 7, and having turned up ends 8 and 9, the end 8 being provided with a threaded hole for the passage of a screw 80, said screw providing means for moving the disk 7 against the action of the spring 10 held against the other end 9.

21 is the dial of a scale attached to or

formed with the end of the frame work, said dial having pivoted thereon, or rotatably fastened thereto, a pointer 22, one end of which is loosely connected to and adapted to be moved by the disk 7 when the screw 80 is turned, thereby measurably indicating the radial movement of said disk. 23 is a peg or screw which may be passed through the dial 21 into the perforated plate 98 to prevent the movement of the disk after adjustment. 11 is a pointer or finger fastened to and projecting from the opposite end of the frame work or support for the purpose of passing over the dial of the scale 12 marked off on or attached to the base-board 2 thereby indicating the amount of rotation of said disk.

45 is a clip provided with a screw 46 adapted to operate the rod 47 connected to or forming a part of the bearing 48 attached to the frame work or support 4 by the pin 52 and movable within the groove 49 against the spring 50 attached to the base-board in any suitable manner as by clip 51. A needle or pointer 53 may also be formed with or attached to the rod 47 for indicating upon a suitable dial such as 54 the amount of movement imparted to the frame work or support 4.

13 and 14 are parallel bars provided with a scale and vertically adjustable in the supports or standards 15 of the base-board, and 16 is a work-board which may be rigidly fastened to said bars in any suitable manner as by screws 90.

In a modification, Fig. 8, of the construction shown, the work-board 16 may be abandoned, and the band-support 17, shown to advantage in Fig. 4, may also be left out, but in such modified construction, the bar 18, to be hereinafter more fully described, would preferably be adjustably mounted in like manner upon said parallel bars 13 and 14 instead of upon the arms 19 and 20 of said band support.

The ends of the bar 18 are supported in bearings 31 and 32 and said bearings are adapted to slide over the arms 19 and 20 of the band-support 17, or over the bars 13 and 14 according to the manner in which the apparatus is to be used. The said bearings are illustrated upon the arms 19 and 20 of the band-support 17, and each of said bearings are provided with binding means preferably such as are illustrated in Fig. 6 in which 33 is a shaft provided with an en-

largement 34 adapted to force an arm or bar against the bottom 36 of the bearing when the lever 35 is turned, thereby securely binding same. One of the bearings is also provided with a suitable scale having a dial 37 and needle 38 preferably pivoted thereon, one end of said needle being attached to the bar 18 and adapted to indicate the amount of movement of said bar when the screw 39 is turned, thereby forcing said bar against the action of the spring 40 mounted thereon, fastened thereto, and backed by the other bearing 31.

41 and 42 are supports adjustably mounted upon the bar 18 and bindable thereupon by the screws 91 and 92, each support preferably being provided with pivot bearings for engaging a frame, one of said pivots preferably being projected into place by a spring 43. The frame engaged by the pivot bearings of the supports may be either round or square, and if round, preferably of the construction shown in Fig. 5 in which 47^a is a circular frame having a pointer or finger 44 and detachably held within an outer frame 45^a by the clips 70, or by any other suitable means, the scale 46^a upon the outer frame indicating, according to the position of the pointer or finger 44, the amount the inner frame has been turned.

71 and 72 are ears upon the outer frame for engaging the pivot bearings of the supports 41 and 42, the ears of the square frame being indicated as 73 and 74.

The round and square frames are each provided with a fixed point 28 adapted to engage a hole or recess 27 in the adjustable bar 26 of the secondary frame 24 and prevent lateral movement.

55 and 56 are the rods or finders which may be provided with a scale and which may be used for successively placing each printing member to be used in the same colored picture in exactly the same position. In Fig. 7, the manner in which these finders are preferably attached is shown. 57 is a three sided member adapted to engage either of the parallel bars 13 or 14 and has projections 58 projecting from the top adapted to engage holes 59 in the plate 60. The plates 60 are attached to or formed with the bars 55 and 56, and upon each of the finder-bars are adjustable members movable along and bindable thereon by the screws 93 and 94.

64 is a standard attached to the table or bench and provided with an arm 65 adjustable thereon by the binding screw 95 and carrying mirror 66 adjustable by the screw 96 and which may be shifted as desired.

Unless the printing surfaces to be treated are small, I prefer to employ a film framed similar to the one shown in Fig. 1 and fasten the bearings 31 and 32 upon the bars 13 and 14, and the band frame-support 17 and work-board 16 may then be left off.

I will now show the working of my invention in the production of a set of color plates to print in three colors with a block, and as I prefer the half-tone as a black, I will use that for the black or "key plate." The ordinary half-tone marks run in parallel diagonal rows of 45° and also at right angles to 45° which is 135°, but to avoid confusion I shall only refer to them as running at 45° although either angle may be used in practice and this order may be changed and the marks run in rows horizontally or vertically, but as the ordinary half-tone screen is ruled diagonally, I shall consider this way only.

After a half-tone key-plate has been prepared from a suitable subject and provided with register marks, and transfer duplicate impressions from the same are made upon the other plates of the set, the disk 7 may be turned until the pointer or finger 11 points to 15 degrees. A printing member, say of zinc, showing the transfer duplicate impression is now fastened upon the disk 7 in an upright position when the transferred marks upon it will, of course, be seen at an angle of 45°. A marking member, such as a printing film having a design face composed of uniformly spaced points so held under tension upon the frame that the points run in rows at an angle of 15° is now engaged by the bearings 41 and 42. By reference to the manner of inking and applying pressure to the films described in Letters Patent to Benjamin Day (214,493 and 250,211) it will be seen that by adjusting the binding members 31 and 32 along the scale upon the bars 13 and 14 and by turning the screw 39, the film may be brought into position for marking the printing surface 63 fastened to the disk by suitable means, such as pins 97, and any of the dots marked upon the said printing surface may now be elongated into lines for shading effect by turning the screw 80 and repeating the application of pressure upon the film, and any of the dots may also be thickened by turning the screw 39. The thickening and elongating effect may also be produced by substituting a line film for the dotted film, said line film adapted to print the same number of lines to the inch as said dotted film is adapted to print rows of dots to the inch, the main object being to simplify the operation of thickening and elongating any number of the dots produced upon the printing surface at the same time instead of thickening and elongating said dots by additional dots. When sufficiently modeled, this plate which I may use for the blue may be removed. The disk 7 is now turned, say 60° when the pointer 11 will indicate 75° on the dial of the scale 12. One of the remaining zinc plates is now fastened upon the disk 7 in the same upright position, the finders 60 enabling the operator to secure an exact register by the aid of the register

marks upon the plate. Another film is so mounted that the angle at which the points run corresponds with the angle indicated by the finger 11, or where the printing plates are small, and a circular film is used throughout the process, the inner frame may be rotated through 60° instead of turning the disk, and in either case the films employed should be such that the marks imprinted upon the several printing surfaces will preferably be the same number to the inch, and preferably the same to the inch as the number of the points to the inch upon the key-plate used in the same set, or the number of marks to the inch upon one printing surface may be a multiple of the number of marks or points to the inch upon any other printing surface. By turning either of the screws 39 or 80 the same thickening or elongating effect may be produced upon any of the dots imprinted by the second film application the same as in the former. When completed, the second plate which may have been made for the yellow is removed, and the disk 7 turned 30° more when the finger 11 will point to 105° on the dial 12. Then the third plate may be fastened to the disk as the former ones were and prepared in the same way. It will now be seen that I have produced several color plates from one pattern of design faced film with graduation of values from the highest which may be represented by small dots, and middle tones where the dots are longer or thicker, to the more solid masses where lines comprising dots greater or less in thickness are formed to run at definitely calculated angles.

A proof may be taken from the key-plate and colored by hand to serve as a guide for the color to be deposited by the different printing members and is preferably reflected by the mirror 66 so that the picture is presented to the operator exactly as it is to be reproduced upon the surfaces of printing members, that is to say, by reflecting the picture it is seen exactly as it should appear upon the printing surfaces instead of being seen backward, and for convenience it may be supported in any suitable manner so that its reflection can be observed in the mirror. By the arrangement of my apparatus it will be seen that each printing surface may be kept in an upright position throughout the modeling operation.

When the binding members 31 and 32 are fastened to the arms 19 and 20 of the band-support 17, the movement intended for the elongation of dots into lines for shading effect will be imparted to the film instead of to the printing member which in that case would be fastened to the work-board 16, but the result would be the same.

Of course it will be understood that the work supporting member 7 and the circular marker 47^a may be revolved in either direc-

tion, together or independently; also that the bar 18 carrying the marking member, and the bar 47 carrying the work supporting member 7, may be moved laterally in either direction, together or independently, hence, either of these members may be said to be relatively movable, either rotatively or laterally to the other, or each to the other.

Various modifications may be made without departing from the spirit of the invention.

Having described my invention, what I claim and desire to secure by Letters Patent, is:

1. In marking apparatus, a marking member and a work supporting member, one of said members above the other, and means for measurably adjusting, rotatably and laterally, either of said members.

2. In marking apparatus, a marking member and a work supporting member, one of said members above the other, and means for measurably adjusting, rotatably and laterally, said work supporting member.

3. In marking apparatus, a marking member, and a work supporting member, one of said members above the other, said marking member provided with marks having definite angular relation, means for relatively rotating the said members and means for imparting relative movement to said work supporting member in a line with said marks.

4. In marking apparatus, a marking member and a work supporting member, one of said members above the other, said marking member provided with marks having definite angular relation, means for relatively moving said members in a rotary manner, means for imparting movement to said work supporting member in a line with said marks, and said members relatively movable laterally.

5. In a marking apparatus, a marking member, and a work supporting member, one of said members above the other, said marking member provided with marks having definite angular relation, means for relatively moving said members in a rotary manner, means for determining the angular relation of said marks upon said marking member to said work supporting member, and means for relatively moving said work supporting member along a determined radial line.

6. In marking apparatus, a support provided with an adjustable platform adapted to carry a plate, a marker adjustably supported above said plate, said plate and said marker normally parallel, and means for measurably adjusting, rotatably and laterally, said platform.

7. In marking apparatus, a support provided with an adjustable platform adapted to carry a plate, means for supporting a

marker above said plate, said plate and said
marker normally parallel, means for meas-
urably rotating said platform and said
marker, and means for measurably adjust-
5 ing said platform radially.

8. In marking apparatus, a support, a rev-
oluble board mounted thereupon, a marker
above said revoluble board, a vertically ad-
justable bar adapted to carry said marker,
10 said marker and said board located normally
in parallel planes, said board and said
marker rotatably and laterally movable, said

marker provided with angularly arranged
marks, means for determining the angular
relation of said board and said marker while 15
in said parallel planes, and said board and
said marker relatively movable along the
line of the marks of said marker.

In testimony whereof I affix my signature
in presence of two witnesses.

THOMAS S. FOX.

Witnesses:

THOMAS A. HILL,
BEATRICE UNGER.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."**