

E. ALBERT.  
 APPARATUS FOR MAKING AUTOTYPE PRINTING BLOCKS.  
 APPLICATION FILED JULY 23, 1908.

926,376.

Patented June 29, 1909.

4 SHEETS—SHEET 1.

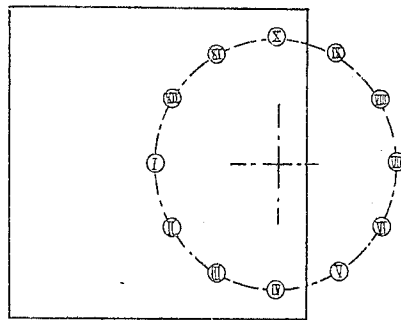


Fig. 1.

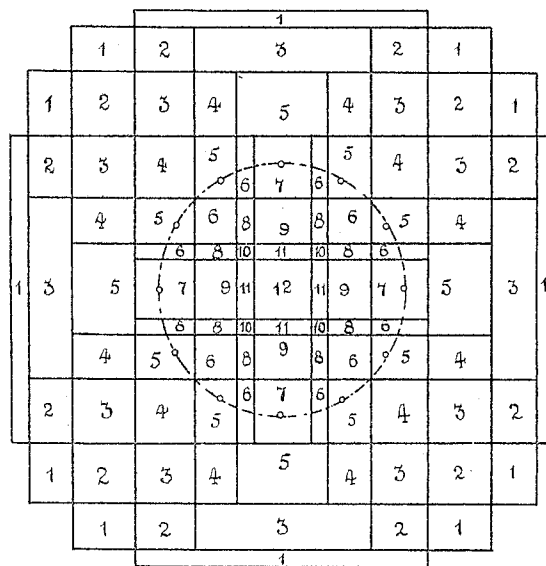


Fig. 2.

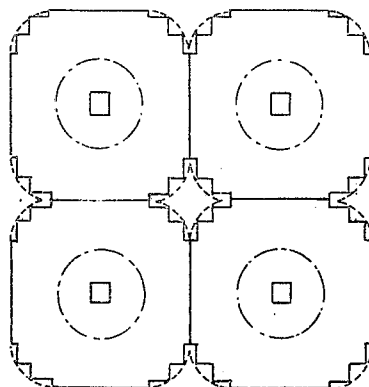


Fig. 3.

Witnesses

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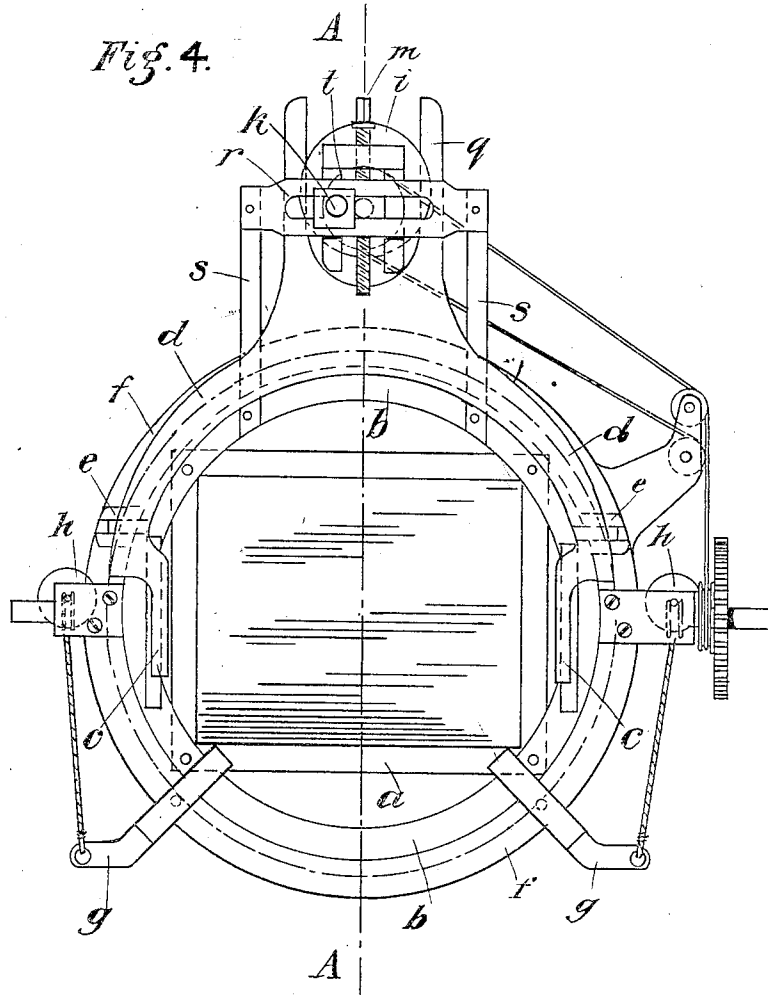
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4 SHEETS—SHEET 3.

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 4 SHEETS—SHEET 4.

Fig. 8.

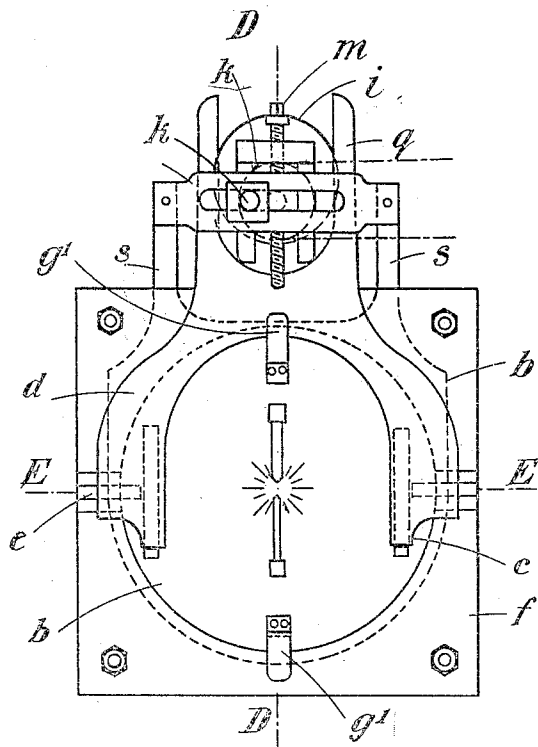


Fig. 9.

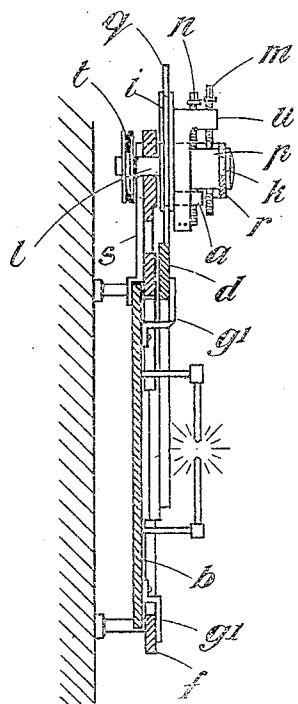
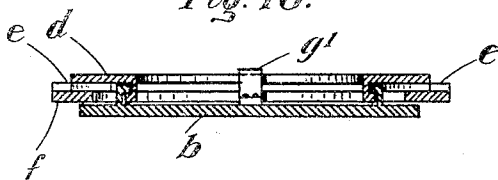


Fig. 10.



Witnesses.

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# UNITED STATES PATENT OFFICE.

EUGEN ALBERT, OF MUNICH, GERMANY.

## PROCESS FOR MAKING AUTOTYPE PRINTING-BLOCKS.

No. 926,376.

Specification of Letters Patent.

Patented June 29, 1903.

Application filed July 23, 1902. Serial No. 444,934.

*To all whom it may concern:*

Be it known that I, EUGEN ALBERT, a subject of the Emperor of Germany, residing at Munich, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Apparatus for Making Autotype Printing-Blocks, of which the following is a specification.

This invention relates to improvements in apparatus for carrying into practical effect my improved process for making auto-type printing blocks by means of cross screens, for which an application for a United States patent was filed July 23, 1902 under Ser. No. 444,935.

The process consists in effecting the projection of the transparent spaces of the cross screen upon the sensitive layer of the block by continuously altering the relative positions of the screen and the sensitive plate with reference to the source of light so that the central points of the projections of the transparent spaces of the screen form a closed annular shaped path.

The object of the invention is to provide apparatus for supporting the copying frame and screen so that they can be moved in an annular, or elliptical path, and also to provide means for adjusting the size or diameter of the path. I attain these objects by the mechanism illustrated in the accompanying drawing, in which:

Figure 1 is a diagrammatic view showing the projection of a single transparent aperture of the screen much enlarged and the path it is required to follow; Fig. 2, shows the effect produced by the successive displacement of the central point of the square at the several points marked in Roman figures in the circle path in Fig. 1; Fig. 3, shows the effect of the movement of four adjacent screen apertures; Fig. 4, shows the rotatably mounted part of the apparatus on the side which is turned toward the source of light; Fig. 5, is a view partly in section on the line A A of Fig. 4; Fig. 6, is a partial section on the line B B of Fig. 5; Fig. 7, is a partial section on the line C C of Fig. 5; Fig. 8 is a front view of the apparatus in which the source of light is caused to describe an annu-

lar path; Fig. 9 is a view partly in section on the line D, D of Fig. 8; and Fig. 10 is a section on the line E, E of Fig. 8.

Similar letters refer to similar parts throughout the several views.

Referring to Figs. 1, 2, and 3 it will be seen that by moving the screen in an endless path as shown by the twelve points in Fig. 1, a dot is formed as shown in Fig. 2 having the copying intensities as given by the numerals thereon. From these figures there is obtained the form of the decline of the intensity curve, and as regards the shape of the dot it is clear that the corners on the outer sides will disappear by increasing the number of the points of displacement; by a continuous operation of displacement there is obtained the form shown by dotted lines in Fig. 3 at four adjacent screen points. If the annular path is exactly a circle then round shaped screen points are formed, but if the path is lengthened somewhat then the so-called egg shape, or oval bar shape, is formed.

The preferred form of apparatus for causing the copying frame and consequently the screen point projection to follow such an annular path is shown in Figs. 4 to 7.

The invention consists essentially in mounting the frame carrying the copying frame movably in the straight guide of a second frame which moves in a slide placed at an angle of 90° to the first slide, the arrangement being such that by means of eccentrics, or lever rods, the two straight movements at right angles to each other are changed to an annular movement either circular, or elliptical, according to the relative adjustment of the movements.

*a* is the copying frame carrying the screen and the film to be exposed along with the negative, and in its turn the frame *a* is carried by the frame *b*. This frame *b* is mounted to slide in the slides *c* of a second semicircular frame *d* in such a way that it can be moved upward and downward. The frame *d* itself on the contrary is so arranged, by the aid of slides *e*, upon a fixed frame *f*, that it can be moved sidewise only. The arms *g* attached to the frame *f* for the cords leading to the weights *h*, or it may be chains or the

like, are formed at the same time to act as guide forks for the movable frame *b*. The weights *h*, which can also be replaced by springs, are intended to keep the frame *f* in equipoise in the sloping or other position requisite for exposure in order to relieve the eccentric *k*. The movement of the two frames *b* and *d* is effected in this case by means of eccentrics *i* and *k* which are adjustably connected with the driving shaft *l*. The displacement of the eccentrics is effected by the aid of screw spindles *m* and *n* which are mounted in the part *w* firmly attached to the shaft *l*. Of these screw spindles the spindle *n* has its female thread in a lug *o* mounted on the eccentric *i*, while the second spindle *m* engages with the slide *p* carrying the eccentric *k*. The eccentric *i* must of course be provided with a slot *x* in order to accommodate the shaft *l* in any position of the eccentric. As may be seen from Fig. 5 the screw spindle *n* for the slide *o* passes through a sufficiently wide opening or hole on the slide *p*. The slides can also be provided with scales which permit of an exact adjustment of the throw of the eccentrics to give the desired diameters of the ellipses or circles respectively. The eccentric *i* engages with a fork shaped prolongation *q* of the frame *d* and moves the latter laterally to and fro on operating the eccentric shaft *l*, while the second eccentric *k* moves in a slotted guide *r*, which is rigidly connected with the frame *b* by means of rods *s*. By a suitable adjustment of the eccentrics in relation to each other, and by the operation of the eccentric shaft *l* through the cord pulley *t*, according to the adjustment of the lift of each individual eccentric, a circular or elliptical movement of the whole system is secured.

Any suitable means of driving the apparatus through the spur wheel *u* may be employed and also suitable means for tilting the whole apparatus, it being explained that it will be carried by trunnions *v* in order to allow of this.

Instead of moving the copying frame by the aid of the device described, the device could instead be used for moving the source of light in a similar manner in relation to a fixed copying frame. Figs. 8, 9 and 10 illustrate the apparatus modified in this way, the parts of the apparatus correspond with the same parts in the movable copying frame, being marked with the same reference letters. The main difference is that the movable element *b* is a solid plate instead of being a frame and a light—in this case an electric arc lamp—is carried thereby and describes an annular path. The plate *b* is provided with guide brackets *g'* which keep it in position relative to the fixed plate *f*. In this case it will be obvious that no mechanism is needed to tilt the apparatus which may be attached directly to a wall, or other fixed support.

What I claim as my invention and desire to secure by Letters Patent is:—

1. Apparatus for making autotype printing blocks, consisting of means for causing the projections of the transparent spaces of a cross-screen upon the sensitive layer of the block to follow a closed annular-shaped path, substantially as and for the purpose set forth.

2. Apparatus for making autotype printing blocks, consisting of means for causing the projections of the transparent spaces of a cross-screen upon the sensitive layer of the block to follow a closed annular-shaped path, and means for limiting the maximum diameter of said path to that of one side of the projected transparent space, substantially as and for the purpose set forth.

3. In apparatus for making auto-type printing blocks from half tone negatives or positives by means of a cross screen, a first frame carrying the copying frame including the cross screen, a fixed frame supporting the same so that it will move in any direction in one plane, a second frame mounted on the fixed frame so as to move sidewise thereon and connected to the first frame so as to move the latter sidewise with itself while allowing of the independent up and down motion of the first frame, means for moving the first frame up and down, and means for moving the second frame sidewise, all substantially as and for the purpose set forth.

4. In apparatus for making auto-type printing blocks from half tone negatives or positives by means of cross screens a first frame carrying the copying frame including the cross screen, a fixed frame supporting the same so that it will move in any direction in one plane, a second frame mounted on the fixed frame so as to move sidewise thereon and connected to the first frame so as to move the latter sidewise with itself while allowing of its independent up and down motion, a slotted cross bar firmly attached to the first frame, an eccentric pin moving in the said slot and attached to the driving shaft, a fork attached to the second frame, and an eccentric rotating in the said fork and attached to the driving shaft, substantially as described herein.

5. In apparatus for making auto-type printing blocks from half tone negatives or positives by means of a cross screen, a first frame carrying the copying frame, a fixed frame supporting same by means of projecting guide pieces, a second frame having projecting lugs sliding in horizontal slides on the fixed frame, fixed up and down slides on this second frame coöperating with movable up and down slides on the first frame, a slotted cross bar firmly attached to the first frame, an eccentric pin moving in the said slot and attached to the driving shaft, a fork attached to the second frame, an eccentric attached to the driving shaft rotating in the said fork, and balancing means for maintaining the

whole apparatus in equipoise on its trunnions, substantially as described herein.

6. The eccentric *k* for operating the first frame, having the slide *p* connected with the  
5 part *w* of the driving shaft *l* by means of the adjusting screw *m*, substantially as shown for the purpose specified.

7. The eccentric *i* for operating the second frame, having the lug *o* connected with the

part *w* of the driving shaft *l* by means of the 10 adjusting screw *m*, substantially as shown for the purpose specified.

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

EUGEN ALBERT.

Witnesses:

LOUIS F. MUELLER,  
ALMA MAAS.