

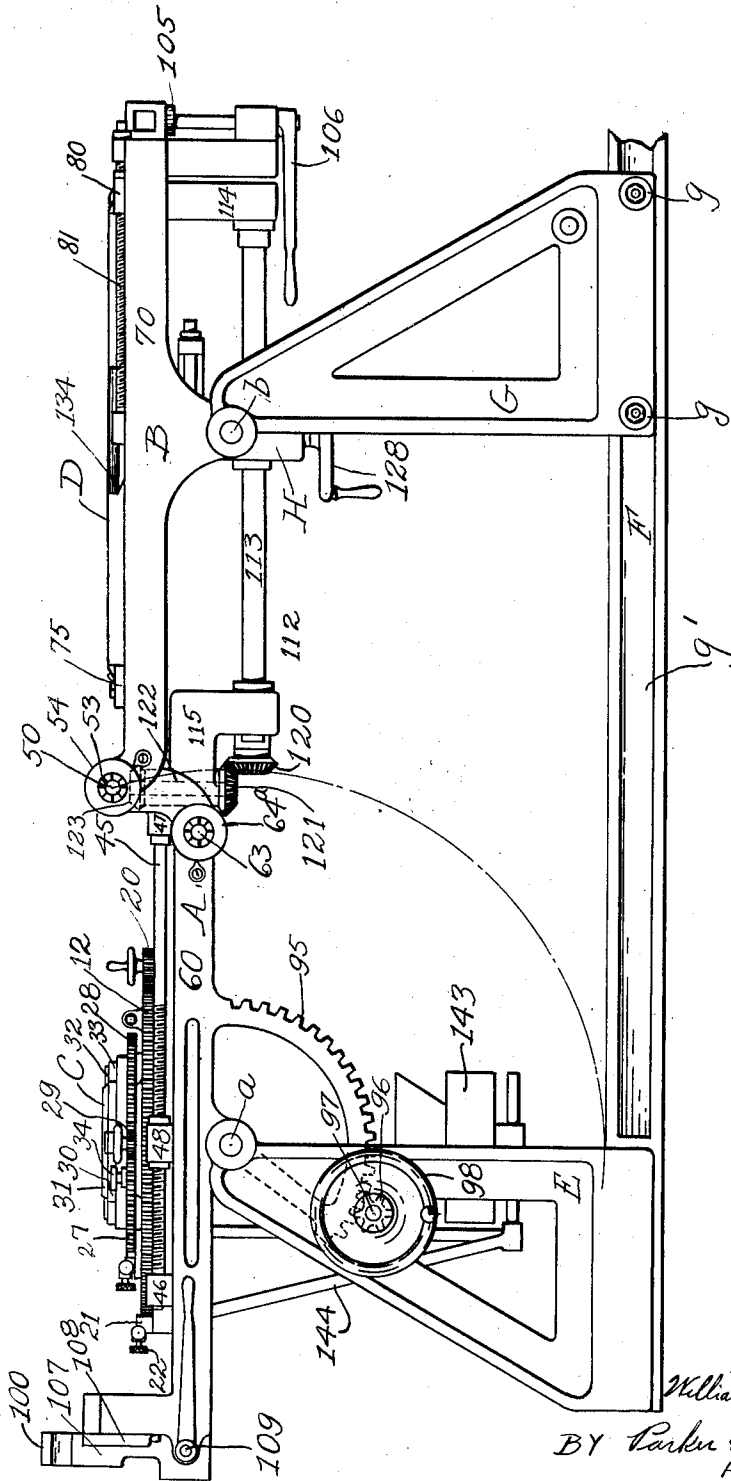
W. C. HUEBNER.
 PHOTOGRAPHIC PRINTING APPARATUS.
 APPLICATION FILED MAR. 12, 1920.

1,414,280.

Patented Apr. 25, 1922.

7 SHEETS—SHEET 1.

Fig. 1.



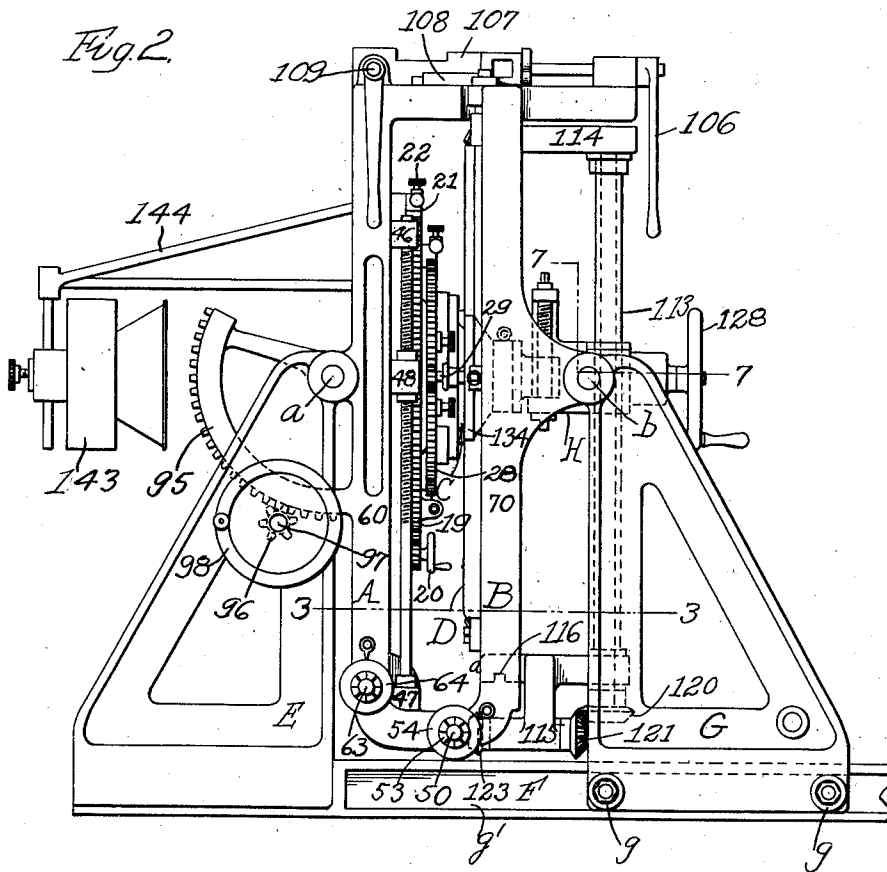
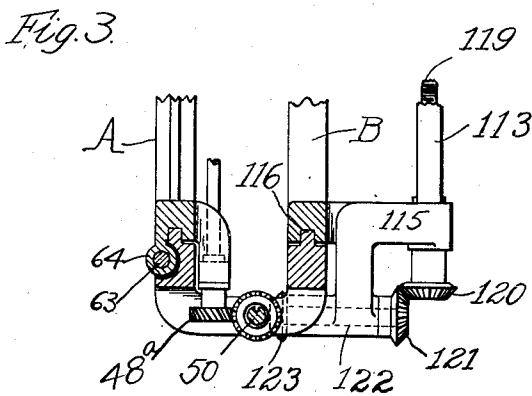
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7 SHEETS—SHEET 2.



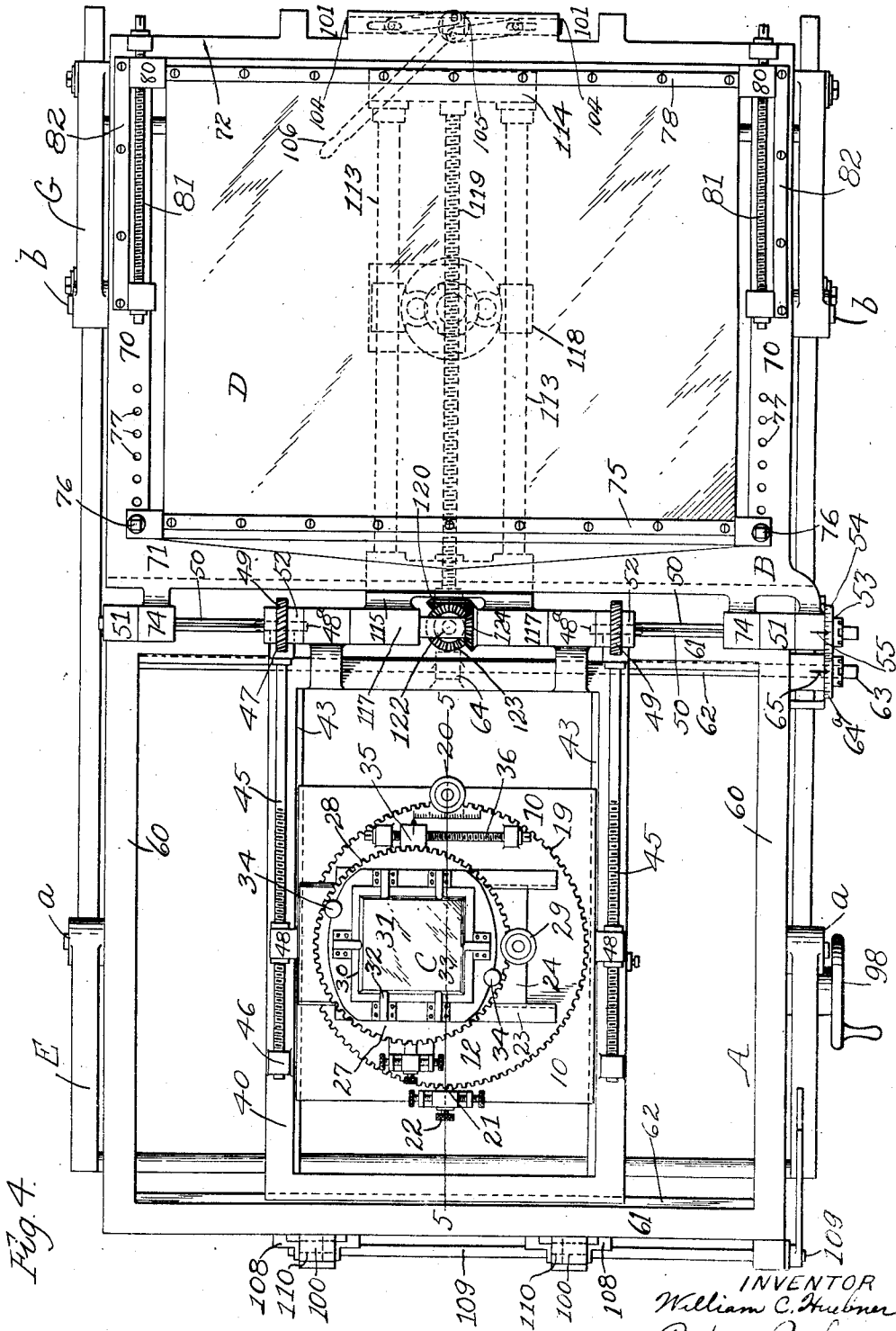
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7 SHEETS—SHEET 3.



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7 SHEETS—SHEET 4.

Fig. 5.

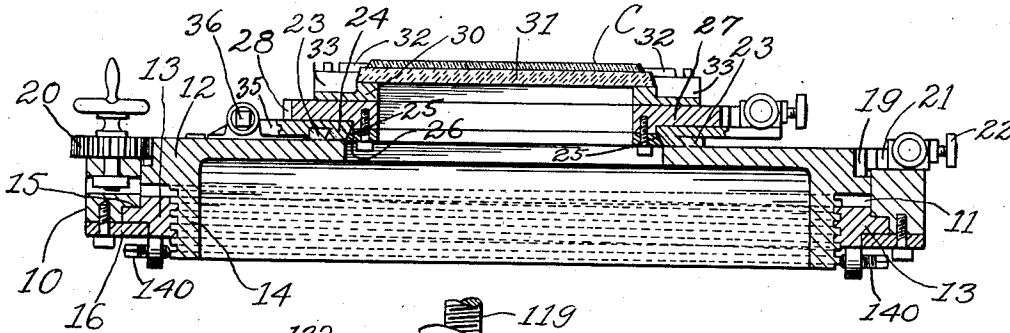


Fig. 6.

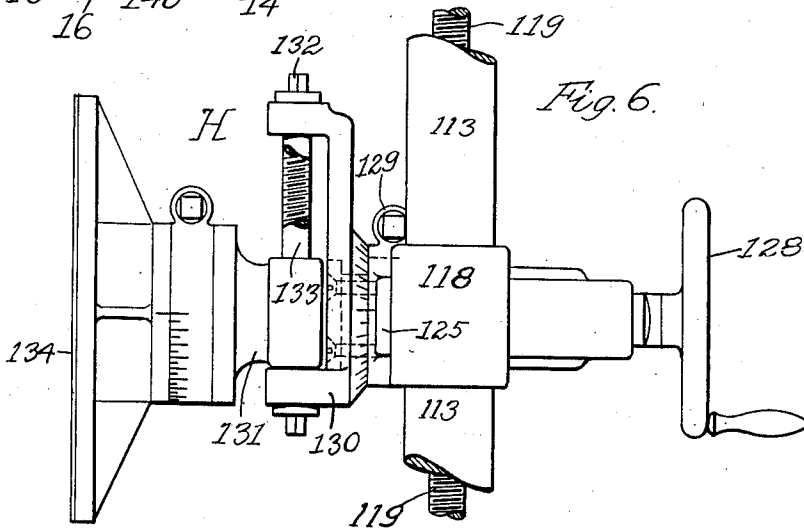
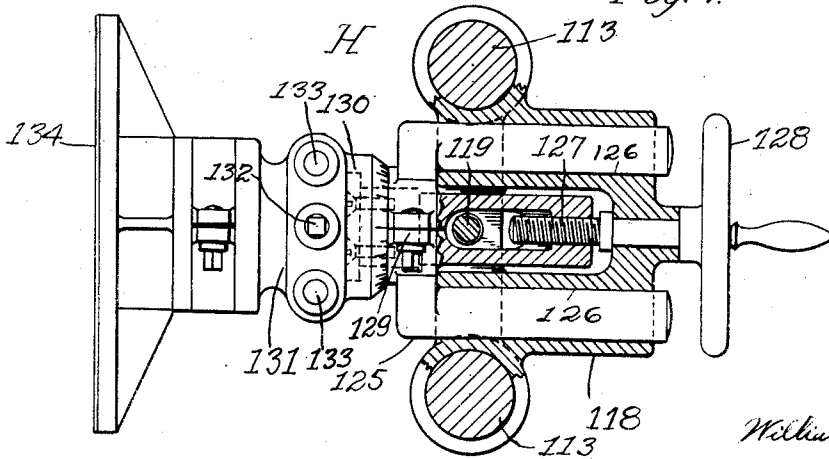


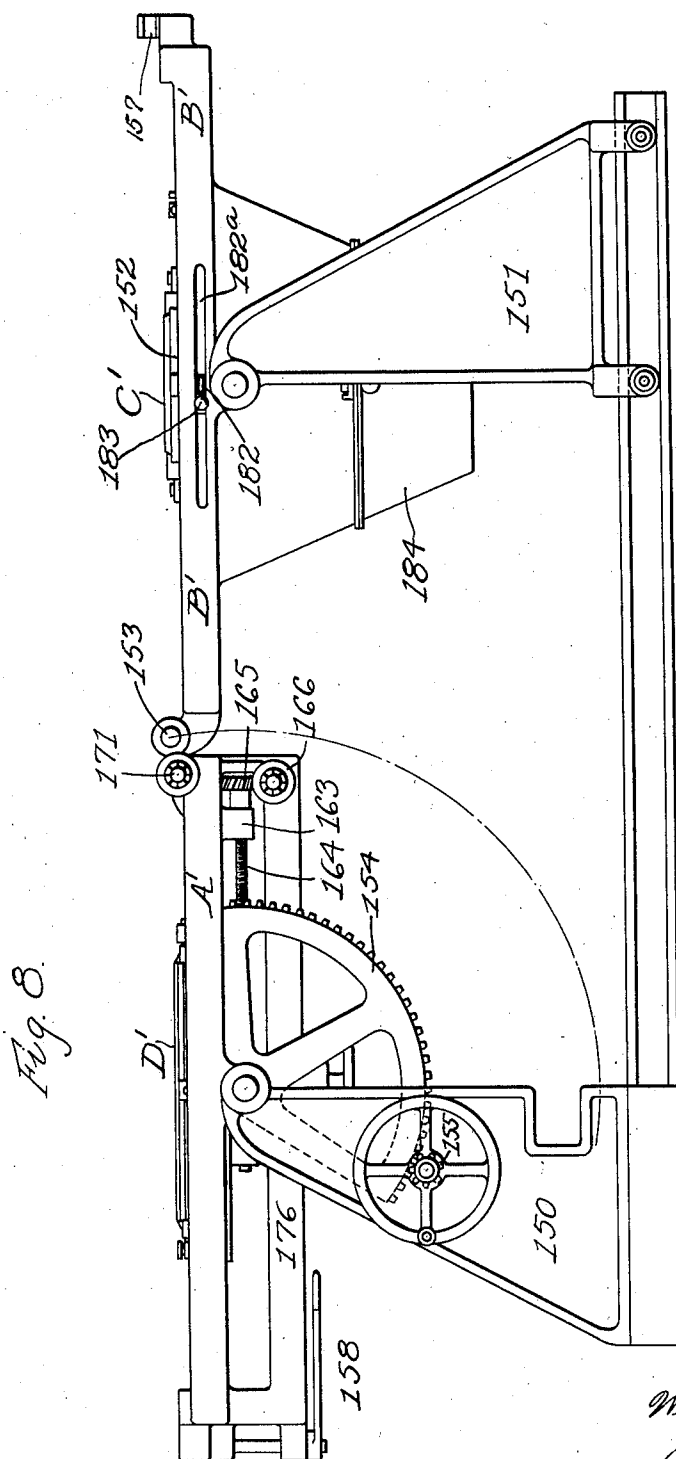
Fig. 7.



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7 SHEETS—SHEET 5.



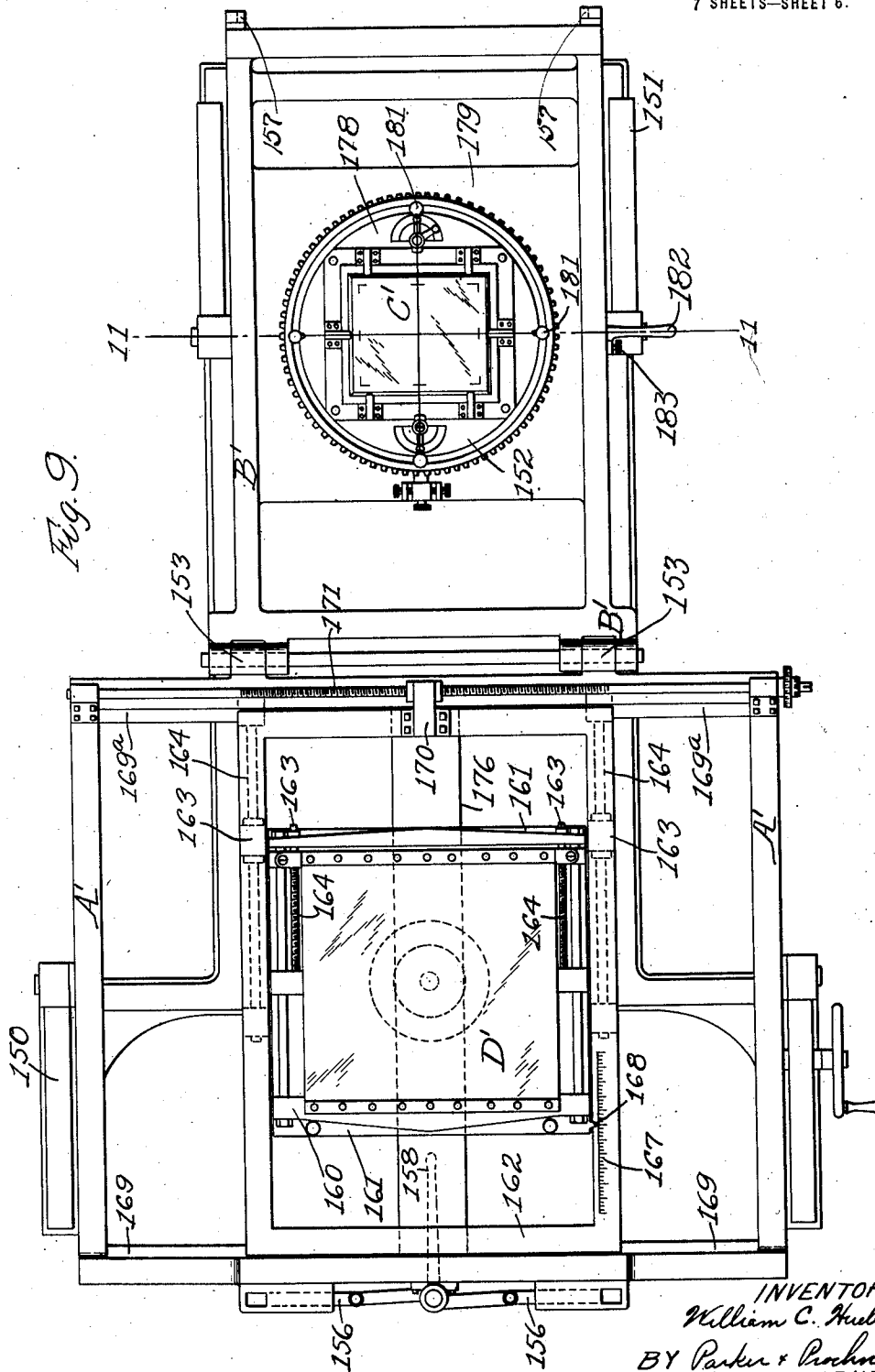
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 APPLICATION FILED MAR. 12, 1920.

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7 SHEETS—SHEET 6.



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7 SHEETS—SHEET 7.

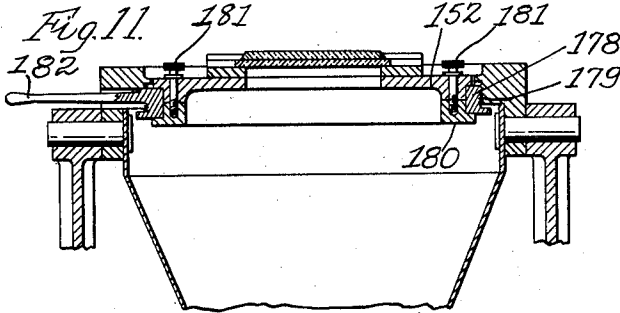
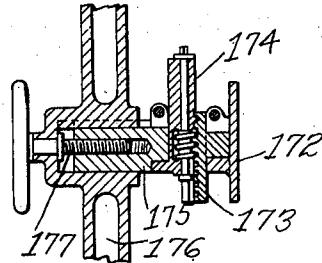
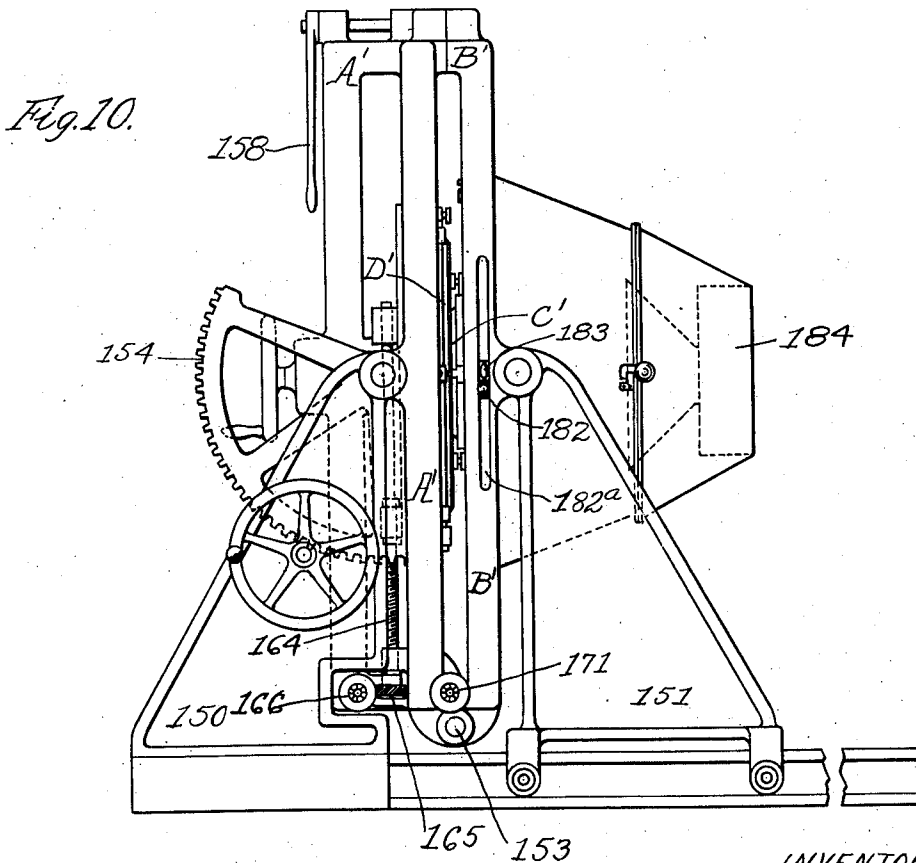


Fig. 12



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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-PRINTING APPARATUS.

1,414,280.

Specification of Letters Patent.

Patented Apr. 25, 1922.

Application filed March 12, 1920. Serial No. 365,244.

To all whom it may concern:

Be it known that I, WILLIAM C. HUEBNER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Photographic-Printing Apparatus, of which the following is a specification.

This invention relates more particularly to improvements in photographic printing or composing apparatus of the general nature heretofore invented by me. These apparatus are intended for photographing any desired number of like or different original prints in any required predetermined and registered position and relative arrangement directly upon the sensitized surfaces of press plates which may be afterwards suitably finished and used in mechanical printing presses for printing in one or more colors. These apparatus are adapted for various purposes, such for instance as repeating prints from the same transparent printing plate or negative in a required arrangement on a single sensitized press plate, which after development, is used for mechanically printing a plurality of impressions; for composing work where it is desired to place different subjects in a predetermined arrangement on the press plate; and for making press plates for multicolor printing where it is necessary to photograph prints in exact register on the different sensitized press plates that are used in presses for printing the different colors. Such apparatus ordinarily comprise a support for the sensitized press plate; a support for holding a transparent photographic negative or positive printing plate (hereinafter called the "printing plate") in contact with the sensitized surface of the press plate, a pressure device or back support for causing an intimate, uniform contact of the sensitized surface with the printing plate; means for causing light to act through the printing plate for photographing the print on the sensitized surface; and adjusting means for producing a relative movement between the sensitized and printing plates parallel with the sensitized surface to enable prints to be made in desired predetermined locations on the sensitized plate and for producing a relative movement between the sensitized and printing plates toward and from each other to place said plates into and out of contact.

One object of this invention is to provide

a simple and inexpensive apparatus of this character wherein the printing and sensitized plates are arranged on swinging supports which are hinged together and pivotally mounted so that they can be quickly swung or opened and closed like a book to place the supports horizontally with both the printing plate and the sensitized metal plate facing upwardly and closed to place the plates in contact face to face. In the open horizontal position both the sensitized plate and the transparent printing plate can be quickly and conveniently removed, replaced or adjusted, or otherwise made ready for exposure, after which the supports can be quickly folded into the vertical position for register adjustment and for making the exposures.

Another object is to provide a novel, quick acting means for effecting an accurate, relative adjustment of the printing plate, sensitized surface and pressure device toward and from each other, and to determine the forward position of the surface of the printing plate quickly and accurately to function as a limit stop and as a clearance device.

Another object is to provide an apparatus of this sort, of novel construction, wherein relative adjustments of the printing plate, the sensitized plate and the pressure device can be utilized so that any desired portion of the sensitized surface can be caused to stand opposite the transparent printing plate, or the sensitized plate can be held stationary, and the printing plate and pressure device adjusted to stand opposite the face and back respectively of any desired portion of the stationary, sensitized surface.

Another object is to provide a main and an auxiliary index head or supporting device for the printing plate, whereby the printing plate can be angularly adjusted thereon, concentrically with the main index head, and by moving the auxiliary head on the main head the printing plate can also be adjusted to positions eccentric with regard to said main head and turned to any, desired, angular position in such eccentric locations, so that small prints can be made in any position in locations near the edges of the sensitized plate.

Other objects are to arrange the main and auxiliary heads so that all of said adjustments may be made, either when the plate is facing upwardly in the apparatus, or

when in a vertical position and opposite the sensitized plate, and to improve photographic printing apparatus in the other respects hereinafter described and set forth in the claims.

In the accompanying drawings:

Fig. 1 is a front elevation of a photographic printing apparatus constructed in accordance with one embodiment of the invention and showing the sensitized and printing plates facing upwardly in adjusting position.

Fig. 2 is a similar view thereof, but with the parts in printing position.

Fig. 3 is a fragmentary transverse sectional elevation thereof, on line 3—3, Fig. 2, but with the parts in printing position.

Fig. 4 is a plan view of the apparatus with the parts in the same position as shown in Fig. 1.

Fig. 5 is a transverse vertical sectional view of the adjusting and supporting devices for the printing plate, on line 5—5, Fig. 4, on an enlarged scale.

Fig. 6 is an enlarged side elevation of the pressure device for providing a close and uniform contact between the printing and sensitized plates, and with the parts in the position shown in Fig. 2.

Fig. 7 is a plan view thereof, partly in section on line 7—7, Fig. 2.

Fig. 8 is a front elevation similar to Fig. 1, of another embodiment of the invention.

Fig. 9 is a plan view thereof.

Fig. 10 is a side elevation thereof, but with the parts in printing position.

Fig. 11 is a longitudinal vertical section on line 11—11, Fig. 9, showing the adjusting and supporting devices for the printing plate.

Fig. 12 is a vertical sectional elevation of the pressure device.

Briefly stated, the photographic printing apparatus, of which two different constructions embodying the invention are shown in the drawings and hereinafter described, comprises a frame pivoted to swing vertically on an upright support, and hinged at one end to the adjacent end of a second frame which is pivoted to swing vertically on a support that is movable relatively to the first support, so that the two frames are adapted to be swung like the leaves of a book, from an open position in which they extend horizontally end to end, to a closed position in which the frames stand vertically face to face.

One of the frames carries the transparent printing plate with its holder, registering and adjusting means, and the other frame carries the sensitized plate with its holder. When the frames are open both of the plates are exposed horizontally face uppermost, and are readily accessible for adjusting and changing them.

Means are provided for swinging one of the frames to and from the vertical positions, and as the other frame is hinged thereto and pivoted on a movable support this frame will also swing on its pivot and at the same time will approach and contact with the first frame in a vertical plane and they are then locked together by suitable means. This places the printing and sensitized plates into operative relations facing each other and the plates are pressed into close contact for printing by a suitable pressure device. Means are also provided for moving one of the plates to a clearance position a short distance from the other plate to permit relative adjustment of the plates in planes parallel to the sensitized surface for making prints on different portions of the sensitized plate.

In the construction shown in Figs. 1-7, the printing plate, and pressure device are adapted to be adjusted in directions at right angles to each other to place them opposite different, desired portions of the sensitized plate, whereas in the other construction shown in Figs. 8-12, the sensitized plate is adapted to be adjusted in two directions between the printing plate and pressure device for this purpose.

Referring first to Figs. 1-7, A and B represent the two swinging frames carrying respectively the transparent printing plate C and the sensitized plate D. The frame A is suitably pivoted, as by opposite trunnions *a*, to swing vertically on an upright support E, preferably fixed on a horizontal base F, and the frame B is similarly pivoted by trunnions *b* in an upright support G which is movable toward and from the support E, the support G preferably having rollers *g* arranged to travel in horizontal guide grooves *g'* in the opposite sides of the base. The adjacent ends of the frames A and B are hinged together as hereinafter explained.

The printing plate C is adjustably mounted on the frame A, preferably as follows (see Figs. 1, 4 and 5):

10 represents a substantially rectangular carrier provided with a circular opening in which is rotatably secured a main index head 12. This index head has an annular flange 14 screwed into an adjusting ring 13 provided with a reduced peripheral flange confined against an undercut annular shoulder 15 on the carrier 10 by a retaining ring 16. The index head has a circular top plate provided with a central opening and peripheral gear-teeth 19. It is rotated by a pinion 20 meshing with said teeth and is locked in the required position by a dog 21 which is adapted to be moved into and out of engagement with the teeth 19 by a screw 22 which is adjustable tangentially relative to the index head to provide a fine, accu-

rate adjustment thereof. The upper side of the index head is provided on opposite sides of its opening with transverse, parallel guide ribs 23, between which is slidably confined a slide 24 over the central opening in the index head. The slide 24 is provided with a circular opening 25 having an undercut edge which overhangs a bevelled annular shoulder 26 on an auxiliary rotary index head 27. This auxiliary index head is in the form of an annular plate, but smaller than the main index head and is provided with peripheral gear teeth 28 with which a pinion 29 is adapted to mesh for rotating it. The printing plate C is secured on the auxiliary index head by suitable means, preferably consisting of a plate holder 30, carrying a fixed glass or transparent supporting plate 31 on the face of which the printing plate C is adjustably secured by holding devices 32 which engage the bevelled edges of the printing plate and are movably secured on blocks 33 which hold the glass supporting plate in position. The plate holder 30 is preferably removably and detachably secured in a predetermined position on the auxiliary head by suitable means such as locking pins 34 secured in holes in the auxiliary head.

For adjusting the slide 24 in the guides 23 radially relatively to the index head, the slide is provided (see Figs. 4 and 5) with a lateral extension 35 having a screw-threaded hole through which passes an adjusting screw 36 journaled parallel with the guide 23, on the index head 12. The ends of the adjusting screw are suitably formed for the engagement of a crank or the like (not shown) for turning it. A pointer or index mark on the extension 35 cooperates with a scale on the index head 12 to indicate the adjustment of the slide and the scale is preferably graduated to read alike in opposite directions from a zero point on the transverse axis of the index head.

The construction above described enables the printing plate C to be turned to any position concentric with the axis of the carrier 10, by turning the main index head 12. The plate can also be adjusted radially to any desired distance to either side of the center of the carrier and turned about a center eccentric to the axis of the carrier 10 and the index head 12 by means of the slide 24 and auxiliary index head 27. The printing plate can, therefore, be turned to any required angular position in any required location with reference to the center of the main index head, either concentrically or eccentrically thereof.

In addition to the above adjustments, the carrier 10 is arranged to be adjusted in directions at right angles to each other parallel with the sensitized plate for placing the printing plate opposite different, required portions of the sensitized plate. Any suit-

able means for this purpose can be used. In the construction shown, the carrier 10 is mounted to slide longitudinally of the apparatus in a carriage 40, which in turn is movable transversely of the apparatus on the swinging frame A.

The carriage 40 comprises an open, rectangular frame having side bars provided with guide ribs 43 on their inner faces which enter grooves in the sides of the carrier 10, so that the carrier may slide thereon. The means preferably provided for moving the carrier comprise two, oppositely disposed, parallel, screw shafts 45 journaled at their ends in bearings 46, 47 respectively, on the carriage 40, and having opposite threads which work in nuts 48 on the carrier 10, and are adapted to move the carrier when the shafts are simultaneously rotated. For so rotating the shafts 45, each shaft has secured at one end a spiral gear 48^a meshing with a spiral gear 49, splined on a shaft 50 journaled in brackets 51 on the swinging frame A. Bearing brackets or lugs 52 extending from the adjacent end of the carriage 40 serve to position and retain the spiral gears 49 in operative relation to the spiral gears 48^a. The shaft 50 is rotated for turning the screw shafts 45 to actuate the carrier 10, by a suitable crank or handle (not shown), which is adapted to engage a clutch collar 53 or the like on the front end of the shaft 50. The front end of the shaft 50 is also preferably provided with a graduated disk or scale 54 which cooperates with a fixed pointer 55 to indicate the adjustment of the carrier 10.

The transverse adjustment of the carriage 40 is attained as follows:—

The swinging frame A is also an open, rectangular frame, having front and rear bars 60 and opposite end bars 61, and these end bars 61 are provided with suitable guides 62 on which the carriage 40 is adapted to slide. The carriage is adjusted by a transverse screw-threaded shaft 63 journaled on the frame A parallel with the shaft 50, and a nut 64 on the adjacent end bar of the carriage 40 engaging the shaft 63 is adapted to move along said shaft 63 when said shaft is rotated. The shaft is rotated by a crank or the like (not shown), which is adapted to engage a clutch collar or other means on the front end of the shaft. This shaft is also preferably provided at its front end with a graduated disk 64^a, cooperating with a pointer 65 on the swinging frame A for indicating the transverse adjustments of the carriage 40.

The sensitized plate D can be secured on the swinging frame B in any suitable manner. As shown, the frame B which is an open, rectangular frame, substantially similar to the frame A, and comprising front and rear bars 70, and opposite end bars 71

72, is hinged to the swinging frame A by the shaft 50, which passes through lugs 74 on the frame B. A gripper bar 75 is secured to one edge of the sensitized plate and pins 76 at its opposite ends are adapted, according to the size of the plate used, to enter one or another of a series of pairs of holes 77 in the front and rear bars 70 of the frame B. The opposite edge of the sensitized plate C is secured to another gripper bar 78 which is provided at its ends with nuts 80, engaging oppositely-threaded screws 81 journaled on the front and rear bars 70 of the swinging frame B. The screws have their outer ends formed for the engagement therewith of a suitable crank (not shown) for turning them, to move the bar 78 away from the bar 75 for drawing the sensitized plate taut. The outer sides of the nuts 80 engage parallel guide members 82 which aid in aligning or retaining the gripper bar 78 in position.

This invention is not restricted to any particular holding means for the sensitized plate, and means such as shown in my application No. 279,492, filed February 27, 1919, for this purpose can be employed, but the sensitized and printing plate holders are both preferably of such construction that all parts of the holding means for each plate are disposed back from the plane of the operative surface of such plate, so that the surface of the printing plate C can have a perfect contact with the sensitized surface irrespective of whether either plate may be adjusted so as to project beyond the edges of the other plate.

In order to move the swinging frames from their horizontal position shown in Figs. 1 and 4, to the vertical position to place the printing and sensitized surfaces into contact for making the prints, the front bar 60 of the swinging frame A is preferably provided with a gear sector 95 which is concentric with the axis of the trunnions, and is adapted to mesh with a pinion 96 secured on a shaft 97 which is journaled in the front of the support E. The outer end of the shaft is provided with a hand wheel 98 or the like for rotating the pinion. If the pinion is rotated counter-clockwise, the sector will cause the right hand end of the swinging frame A to swing downwardly and as the other swinging frame D is hinged thereto and is also journaled on the movable support G this frame will be simultaneously actuated and its left hand end will move downwardly with the right hand end of the frame A. At the same time the movable standards G will travel to the left on the base of the apparatus so that the upper surface of the sensitized plate D will be brought into a vertical plane adjacent the printing surface of the printing plate C. A reverse operation of the hand wheel 98

will return the parts to the horizontal position.

The two swinging frames A and B are locked together in their adjacent, vertical positions and the printing and sensitized surfaces permitted to be separated sufficiently to allow relative movements therebetween without unlocking the frames, preferably as follows:—

In the position of the parts shown in Fig. 2, latches 100 on the swinging frame A are adapted to enter recesses 101 on the adjacent side of the swinging frame B (see Fig. 4), and be locked to the frame B by sliding bolts 104 on the latter frame. The bolts are linked eccentrically to a rotatable member 105 actuated by a hand lever 106 or the like. When the latches 100 are in position in the recesses 101, the actuation of the lever 106 will cause the bolts 104 to enter notches in the latches and lock the frames A and B together. In this position the printing surface will be just in contact with the sensitized surface. The latches 100 are not rigid with the swinging frame A but are preferably formed on or secured to slides 107 movable in guides 108 on the frame. A shaft 109 journaled on the frame A is provided with eccentric portions 110 engaging in apertures in the slides. When, therefore, the latches are locked to the frame B, the rocking of the shaft 109 in one direction or the other will cause a limited relative movement of the frames A and B towards or from each other on the hinges 50, and sufficient clearance will thus be given between the printing and sensitized plates to permit the necessary adjustments of the printing plate B in a plane parallel to its surface for placing it opposite successive, predetermined portions of the sensitized plate.

When the printing plate C has been properly positioned opposite and in contact with the sensitized plate D, it is necessary to apply pressure, preferably to the back of the sensitized plate, to ensure an even and close contact between the printing and sensitized surfaces. A suitable pressure device H for this purpose is provided, constructed as follows:

A support 112 for the pressure device is arranged on the under or back side of the swinging frame B and comprises a pair of longitudinal parallel guide rods 113 (see Figs. 1, 4, 6 and 7), secured at opposite ends in sliding brackets 114 and 115. The bracket 114 extends from the end of the frame B and has a sliding connection with the end rail 72 thereof and the bracket 115 preferably has a groove 116 adapted to slide on a rib on the other end rail 71 of the frame B. This bracket 115 is provided with bearing sleeves 117 surrounding the pivot shaft 50 between and engaging the bearing brack-

ets 52 of the carriage 40 for the printing plate. Consequently, any transverse movement of the carriage 40 along the shaft 50 will be imparted to the pressure device H, support 112, and the pressure device will always occupy the same relative position transversely of the apparatus as the printing plate. The pressure device is mounted on a carrier block 118 which is arranged to slide on the rods 113 and is adapted to be adjusted thereon longitudinally of the apparatus, as follows:

A screw-threaded shaft 119 journaled in the brackets 114 and 115 turns in a threaded hole in the carrier 118, and is connected at one end by bevel pinions, 120, 121 with a short shaft 122. This shaft is journaled in the bracket 115 and has a bevel pinion 123 meshing with a bevel pinion 124, which is journaled in the sleeve 117 of the bracket 115 and is splined on the hinge shaft 50. The rotation of this shaft 50 for adjusting the carrier 10 of the printing plate C will, therefore, produce a like longitudinal adjustment of the pressure device on the rods 113. It will thus be seen that when the printing plate is adjusted either longitudinally or transversely the pressure device will be simultaneously and correspondingly adjusted. The pressure device H is substantially similar to those previously designed by me, and may be briefly described as follows:

The guide block 118 supports a sliding head 125 movable thereon towards and from the back of the sensitized plate in guides 126 and is actuated by a screw-threaded shaft 127 swivelled in the block 118 and having a hand wheel 128 or the like for rotating it. The outer end of the sliding head 125 has a split ring or the like 129 adapted to be clamped on a cylindrical stud on rotatable head 130, and another head 131 is radially adjustable on the head 130 by means of a screw shaft 132 and suitable guide rods 133. The head 131 carries a pressure block 134 of any suitable sort having a yielding pad or surface, and which is rotatable on the head 131 as by means of a shank on the block clamped in a split ring on the head 131 to permit angular adjustments thereof. The radial and two rotatable adjustments described permit the pressure head to be located directly opposite and in the same angular position as the printing plate in any adjustment of the latter and allow the use of small printing plates to produce an image in the extreme corners of the sensitized plate, and permits the printing plate to overlap the edges of the sensitized plate.

It is desirable in contact printing apparatus of this sort to provide means whereby printing plates which may differ in thickness can be properly positioned in the apparatus so that the printing and sensitized plates

will always contact in the same predetermined plane and thus prevent the deflection and loosening or creasing of the sensitized plate. For this purpose means are provided for giving the printing plate holder a limited initial adjustment perpendicular to the printing surface. As previously explained the index head 12 has a screw-threaded connection with an adjusting ring 13. This ring 13 is held from endwise movement, but is capable of turning in its confining groove in the carrier 10, so that the index head 12 can be advanced or retracted by turning the ring 13 in one direction or the other relatively to the index head. The ring is normally locked to the index head so as to turn therewith when the latter is rotatably adjusted, as for instance by one or more set screws 140 carried by the ring 13 (see Fig. 5) and adapted to engage the threaded flange 14 of the index head. The ring can be loosened and turned to advance or retract the index head and again locked to the index head by means of a suitable tool applied to the set screws 140. Any other suitable means may be used for this purpose.

A suitable illuminating device, such as an arc lamp 143, mounted on a bracket 144 on the swinging frame A to move therewith provides means for illuminating the printing plate C when making an exposure.

In the modified form of the apparatus shown, in Figs. 8-12, two swinging frames A' B' are pivoted to swing vertically on a fixed support 150 and a movable support 151 respectively, and are hinged together as before, but in this construction the frame A' supports the sensitized plate D' which is adjustable in two directions perpendicular to each other parallel to the sensitized surface, and the frame B' supports the printing plate C', which is rotatably adjustable on the frame by means of an index head 152.

The swinging frames A' B' are hinged together at 153 and are swung to adjacent parallel vertical positions by a gear sector 154 and pinions 155 arranged and operated as in the first construction. The frames are locked in their closed, vertical positions by sliding bolts 156 on the frame A', which engage keepers 157 on the frame B'. The bolts are actuated by a lever 158.

As shown, the sensitized plate D' is mounted on a plate holder 160 removably secured on a carrier 161 which is adjustable longitudinally of the apparatus in a carriage 162, which in turn is adjustable transversely of the apparatus in the frame A'. The carrier 161 and the carriage 162 both move in planes parallel to the sensitized surface. For moving the carrier 161, it is provided on opposite sides thereof with nuts 163 having screw-threaded engagement with opposite screw-threaded shafts 164 journaled in the carriage 162 and connected by spiral gears 165, Figs. 120

8 and 10, to a transverse shaft 166. The shaft is provided on its front end with a clutch collar or is otherwise fashioned for the engagement therewith of a suitable crank 5 for turning the shaft. A scale 167 on the carriage 162, cooperating with a pointer 168 on the carrier, see Fig. 9, or any other suitable means can be used to indicate the adjustment of the carrier.

10 The carriage 162 shown, comprises an open, rectangular frame slidable on guides 169, 169^a on the frame A' and provided with a nut 170 engaging a transverse screw shaft 171, which is journaled on the frame A' and 15 is rotated by a suitable crank for adjusting the carriage, and is provided with a graduated disk for indicating the adjustment. The pressure device shown comprises a pressure block 172 rotatably secured on a head 173 20 which is adjustable radially on a second rotatable head 174, mounted for rotary adjustment on a shank 175. This shank is arranged to slide toward and from the sensitized plate with its axis coincident with the axis of the 25 printing plate when in printing position on a supporting bar 176 of the frame A'. A screw 177 serves to move the shank 175 for pressing the sensitized plate against the printing plate and relieving the pressure.

30 In this construction the circular index head 152 is arranged to turn in an adjusting ring 178 which is screwed in a threaded, circular opening in a plate 179 on the frame B'. The adjusting ring is confined in a peripheral 35 groove formed partly in a clamping ring 180 secured by screws 181 to the index head. By loosening these screws 181 the index head can be rotatably adjusted in the adjusting ring 178 to any required position and there locked 40 by tightening the screws. By turning the adjusting ring 178 relatively to the index head when the latter is loose in the ring, the index head can be advanced or retracted to adjust the printing plate C' toward or from the 45 sensitized plate D'. The adjusting ring 178 is provided with a lever 182 for rotating it relatively to the index head. This lever extends through a slot 182^a in one side of the frame B' and is adapted to be secured to hold 50 the ring 178 stationary by a set screw or other device 183. This construction can be used to move the printing plate toward the sensitized plate to provide clearance between the plates to permit the desired adjustments of the sensitized plate parallel with the printing plate 55 when the frames A' B' are locked together. Or, if desired, the frames A' B' could be moved toward and from each other by means of movable keepers for the bolts 156, and the 60 adjusting ring 178 only used for the adjustment of the printing plates to compensate for plates of different thickness, as in the first construction described.

An arc lamp or other illuminating device is 65 arranged in the hood 184 secured between the

printing plate on the frame B' to swing therewith, and is used to illuminate the printing plate when making an exposure.

I claim as my invention:

1. In a photographic printing apparatus, 70 the combination of a holder for a transparent printing plate, a holder for a sensitized plate, a support on which one of said holders is pivoted, and a movable support on which the 75 other holder is pivoted, said holders being hinged to each other and adapted to swing on their pivots from positions in which said printing and sensitized plates face in substantially the same direction to printing positions in which the plates face each other and 80 are adapted to contact for making prints from the printing plate.

2. In a photographic printing apparatus, the combination of a support for a transparent 85 printing plate, a support for a sensitized plate, a fixed standard on which one of said supports is pivoted, a movable standard on which the other support is pivoted, said supports being hinged to each other and adapted 90 to swing on their pivots from positions in which said printing and sensitized plates are held face upwards to positions in which the printing and sensitized plates face each other and are adapted to contact, and means for 95 swinging said supports.

3. In a photographic printing apparatus, the combination of a support for a transparent 100 printing plate, a support for a sensitized plate, a fixed standard on which one of said supports is pivoted to swing vertically, a 105 standard on which said other support is pivoted and which is movable towards and from said fixed standard, said supports being hinged to each other so that the swinging of 110 one of said supports on its standard will cause said movable standard to approach said fixed standard and said supports to swing from 115 positions in which said printing and sensitized plates are held face upwards to positions in which they are face to face and 120 adapted to contact, means for locking said supports together in said latter positions, and means for swinging said supports.

4. In a photographic printing apparatus, the combination of a holder for a transparent 125 printing plate, a holder for a sensitized plate, a support on which one of said holders is pivoted, a movable support on which the 130 other holder is pivoted, said holders being hinged to each other and adapted to swing on their pivots from positions in which said printing and sensitized plates face in substantially the same direction to printing positions in which the plates face each other 135 and are adapted to contact for making prints from the printing plate, and means for locking said holders together in said printing position.

5. In a photographic printing apparatus, the combination of a holder for a transparent 140

printing plate, a holder for a sensitized plate, a support on which one of said holders is pivoted, a movable support on which the other holder is pivoted, said holders being hinged to each other and adapted to swing on their pivots from positions in which said printing and sensitized plates face in substantially the same direction to printing positions in which the plates face each other and are adapted to contact for making prints from the printing plate, means for locking said holders together in said printing position, and means for separating said plates a limited distance to permit relative adjustments thereof without unlocking said supports.

6. In a photographic printing apparatus, the combination of a holder for a printing plate, a holder for a sensitized plate, means for supporting said holders, substantially horizontally end to end with the printing and sensitized plates facing upwardly and for moving said holders to upright positions in which they face each other and in which the printing and sensitized plates are adapted to contact face to face, and means for locking said holders together when in said upright positions.

7. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, and means for pressing said plates into firm contact.

8. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, means for locking said members together in said upright positions, and a pressure device for pressing said plates into firm contact.

9. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, means for locking said members together in said upright positions, a pressure device for pressing said plates into firm contact, means for securing relative adjustments between said printing and sensitized plates, and means for

separating said plates for permitting said relative adjustments thereof without unlocking said members.

10. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and sensitized plate face to face, said printing plate supporting member having means for adjusting said plate in directions at right angles to each other parallel with the surface of said printing plate, and means for pressing said plates into firm contact.

11. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, said printing plate supporting member having means for adjusting said plate in directions at right angles to each other parallel to the surface of the printing plate, means for adjusting said printing plate in a direction perpendicular to its surface, and means for pressing said plates into firm contact.

12. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, said printing plate supporting member comprising a rotatably adjustable index head, means for securing said printing plate thereon, means for adjusting said index head in directions at right angles to each other parallel with the surface of the printing plate, and means for pressing said plates into firm contact.

13. In a photographic printing apparatus, the combination of two members arranged to swing vertically from substantially horizontal positions, one of said members adapted to support a printing plate and said other member adapted to support a sensitized plate, means for swinging said members to upright positions with said printing plate and said sensitized plate face to face, a main index head rotatably mounted on said printing plate supporting member, an auxiliary index head which is adjustable on the main index head to different relations to the axis of said main index head and on which said printing plate is secured, said auxiliary index head

being also rotatably adjustable, whereby said printing plate may be rotatably adjusted concentrically or eccentrically relative to the axis of said main index head in a plane parallel to the surface of the printing plate, and means for pressing said plates into firm contact.

14. In a photographic printing apparatus, the combination of two supports, one for a printing plate and the other for a sensitized plate, a rotatable main index head on one of said supports, an auxiliary index head which is adjustable radially and also rotatably on said main index head, said adjustments being parallel with the surface of the printing plate, means for securing the printing plate on said auxiliary index head, and means for pressing said plates into contact.

15. In a photographic printing apparatus, the combination of two supports, one for a printing plate and the other for a sensitized plate, a rotatable main index head on one of said supports, an auxiliary index head which is adjustable radially and also rotatably on said main index head, said adjustments being parallel with the surface of the printing plate, means for securing the printing plate on said auxiliary index head, means for adjusting the printing plate perpendicular to its surface, and means for pressing said plates into contact.

16. In a photographic printing apparatus, the combination of two supports, one for a printing plate and the other for a sensitized plate, a rotatable main index head on one of said supports, an auxiliary index head which is adjustable radially and also rotatably on said main index head, said adjustments being parallel with the surface of the printing plate, means for securing the printing plate on said auxiliary index head, means for adjusting the main index head in directions at an angle to each other parallel with the sensitized surface, and means for pressing said plates into contact.

17. In a photographic printing apparatus, the combination of a fixed base, a standard rigid thereon, a second standard movable on said base toward and from the fixed standard, a support for a transparent printing plate pivoted on one of said standards, a support for a sensitized plate pivoted on the other standard, a hinge connecting said supports, and means on one of said standards for swinging said supports on their pivots from substantially horizontal positions in which said printing and sensitized plates are facing upwardly to upright positions in which said printing and sensitized plates are in contact, means for applying pressure to said contacting surfaces, and means for illuminating said printing plate for producing an image on said sensitized plate.

18. In a photographic printing apparatus,

the combination of two members, one for a printing plate and the other for a sensitized plate, said members being mounted to swing from positions in which said printing and sensitized plates are held face upwards to positions to place said printing and sensitized plates face to face for printing, a pressure device for pressing said plates into firm contact, and means for moving said printing plate and said pressure device relative to said sensitized plate to corresponding predetermined positions.

19. In a photographic printing apparatus, the combination of two members, one for a printing plate and the other for a sensitized plate, said members being mounted to swing from positions in which said printing and sensitized plates are held face upwards to positions to place said printing and sensitized plates face to face for printing, a pressure device for pressing said plates into firm contact, said printing plate and said pressure device being operatively connected to move simultaneously to like predetermined positions relative to said sensitized plate, and means for moving said printing plate and said pressure device.

20. In a photographic printing apparatus, the combination of two members, one for a printing plate and the other for a sensitized plate, said members being mounted to swing from positions in which said printing and sensitized plates are held face upwards to positions to place said printing and sensitized plates face to face for printing, a pressure device for pressing said plates into firm contact, said printing plate and said pressure device being operatively connected to move simultaneously to corresponding predetermined positions parallel to said sensitized plate in either of the two positions of said swinging members, and means for adjusting said printing plate and said pressure device.

21. In a photographic printing apparatus, the combination of two members, one for a printing plate and the other for a sensitized plate, said members being mounted to swing from positions in which said printing and sensitized plates are held face upwards to positions to place said printing and sensitized plates face to face for printing, a pressure device for pressing said plates into firm contact, said pressure device being mounted on and movable with one of said members, and means for adjusting said printing plate and said pressure device parallel with and relative to said sensitized plate.

Witness my hand this 9th day of March, 1920.

WILLIAM C. HUEBNER.

Witnesses:

W. B. PRITCHARD,
M. J. PITMAN.