Nov. 1, 1927. 1,647,246

A. G. OGDEN

PHOTOGRAPHIC PRINTING MACHINE

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Fig. 1.

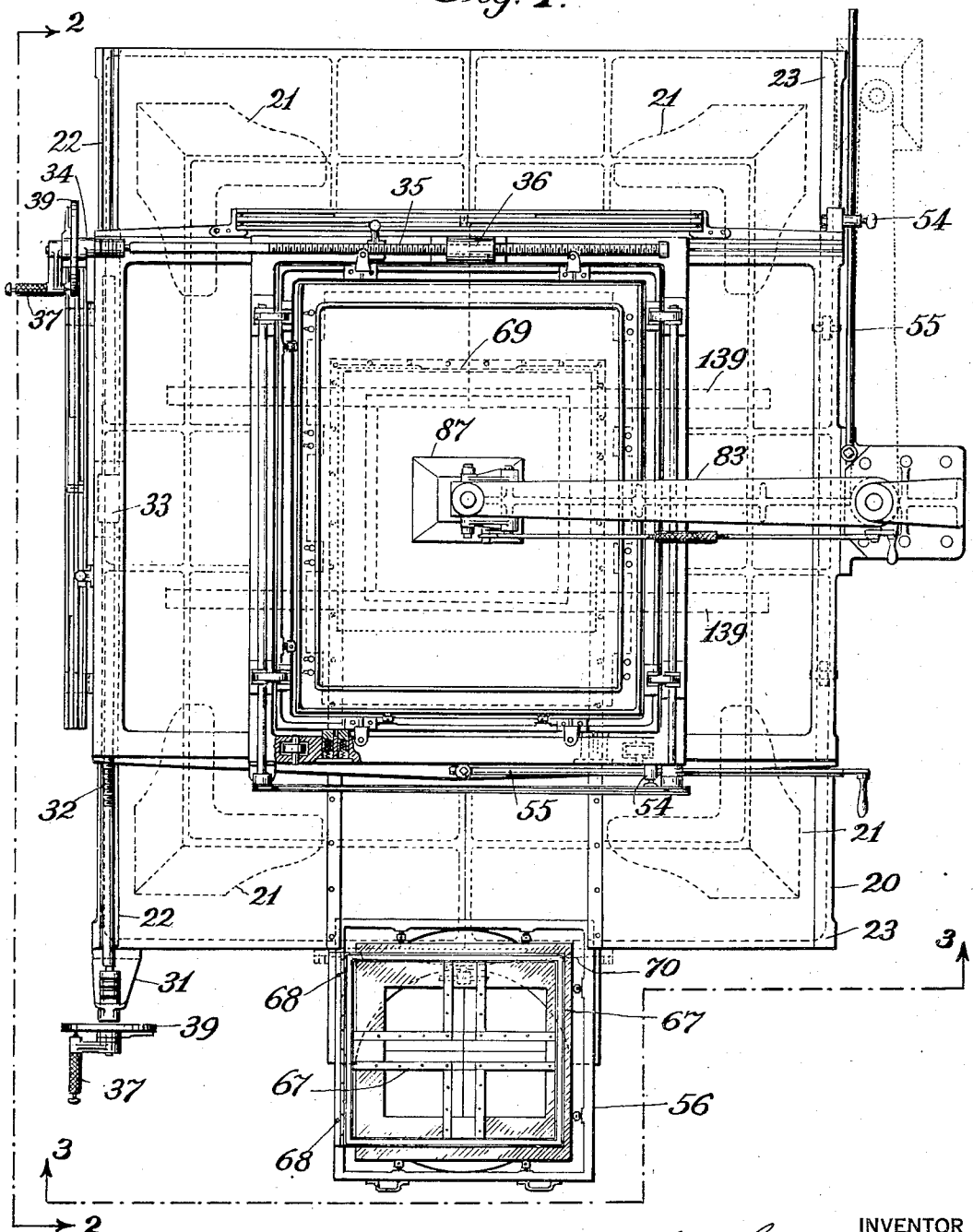
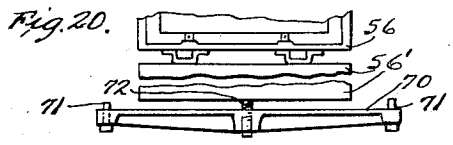


Fig. 2a.



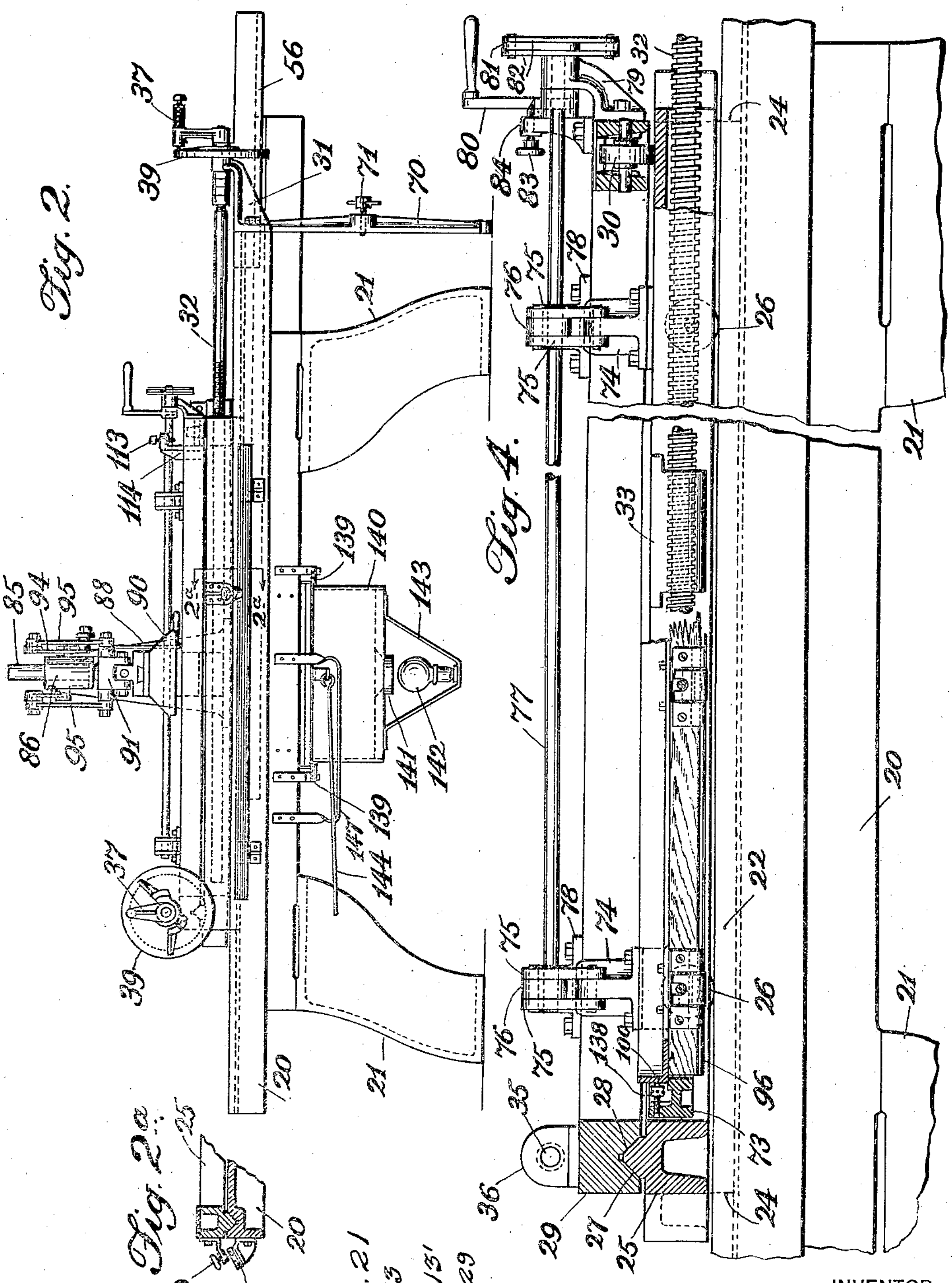
INVENTOR
Ashley Guy Ogden
BY
Sydney D. Percott
ATTORNEY

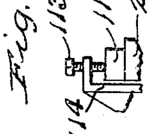
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A. G. OGDEN

PHOTOGRAPHIC PRINTING MACHINE

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INVENTOR

Ashley Guy Ogden

BY

Sydney D. Prescott

ATTORNEY

Nov. 1, 1927. 1,647,246

A. G. OGDEN

PHOTOGRAPHIC PRINTING MACHINE

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Fig. 3.

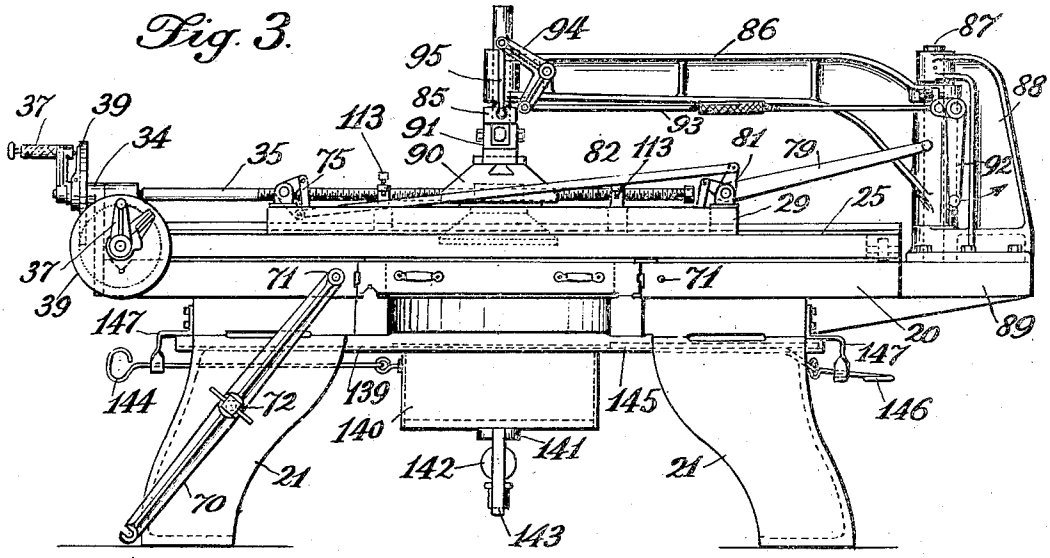


Fig. 5.

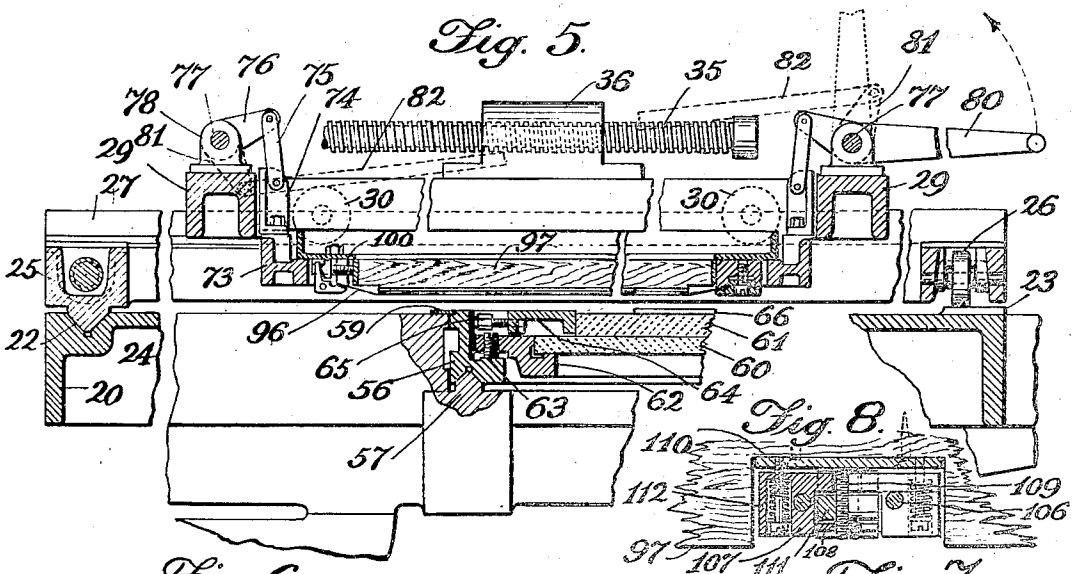


Fig. 8.

Fig. 6.

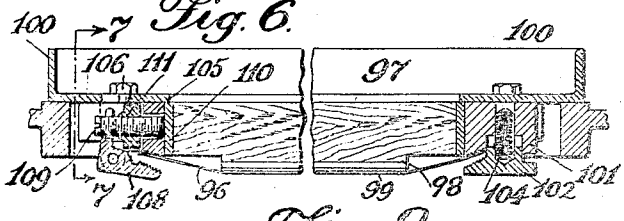


Fig. 7.

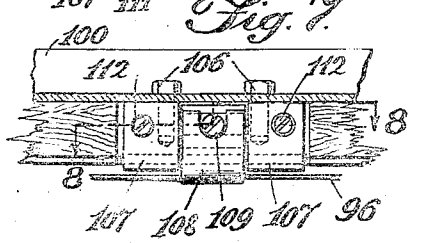
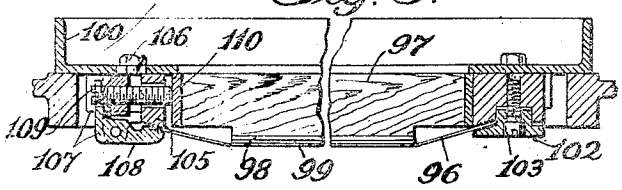


Fig. 9.



INVENTOR
Ashley Guy Ogden
BY
Sydney A. Prescott
ATTORNEY

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A. G. OGDEN

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Fig. 10.

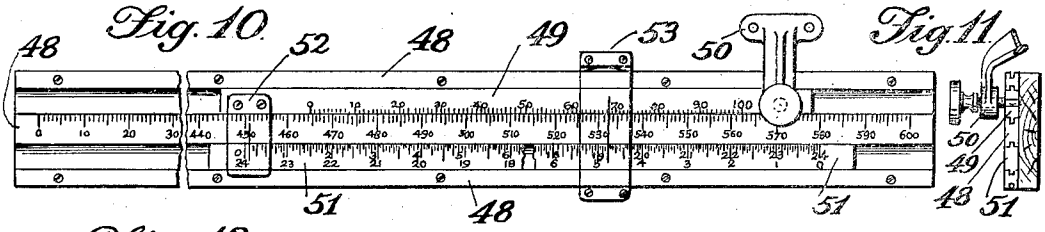


Fig. 11.

Fig. 12.

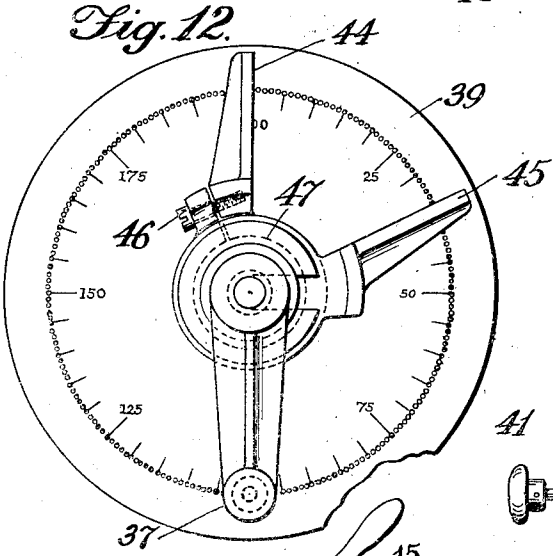


Fig. 13.

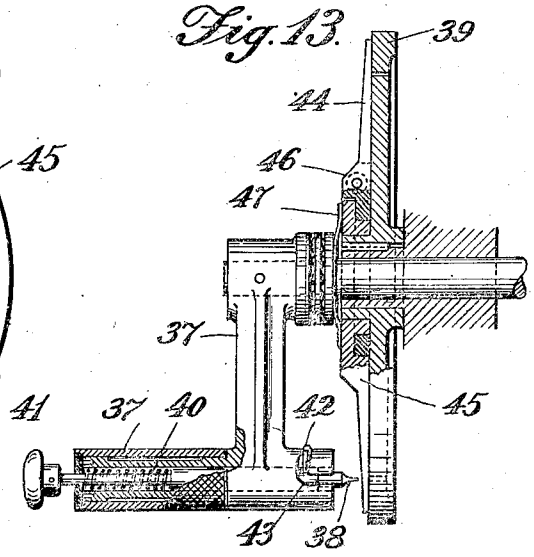


Fig. 14.

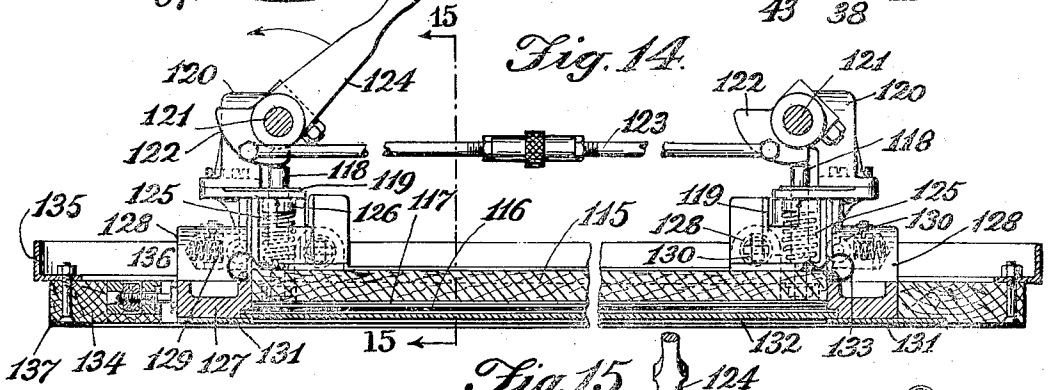
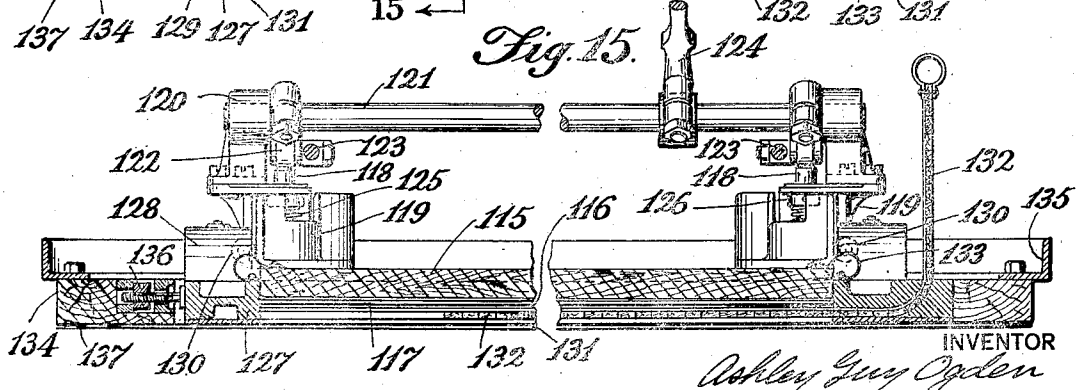


Fig. 15.



INVENTOR

Ashley Guy Ogden

BY

Sydney A. Rescott

ATTORNEY

Nov. 1, 1927. 1,647,246

A. G. OGDEN

PHOTOGRAPHIC PRINTING MACHINE

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Fig. 16.

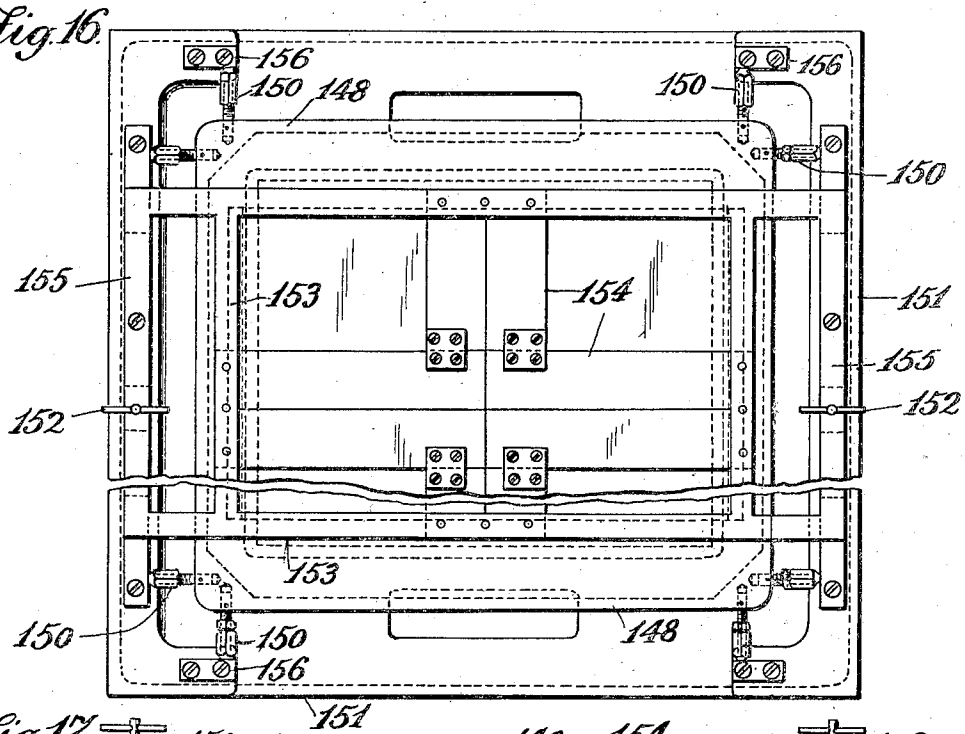


Fig. 17.

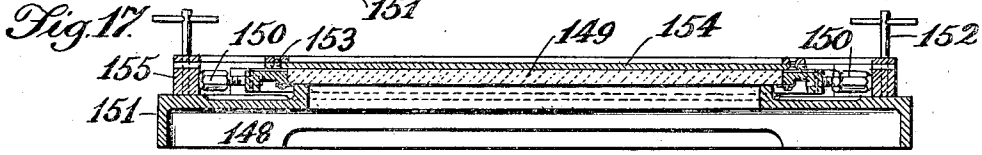


Fig. 18.

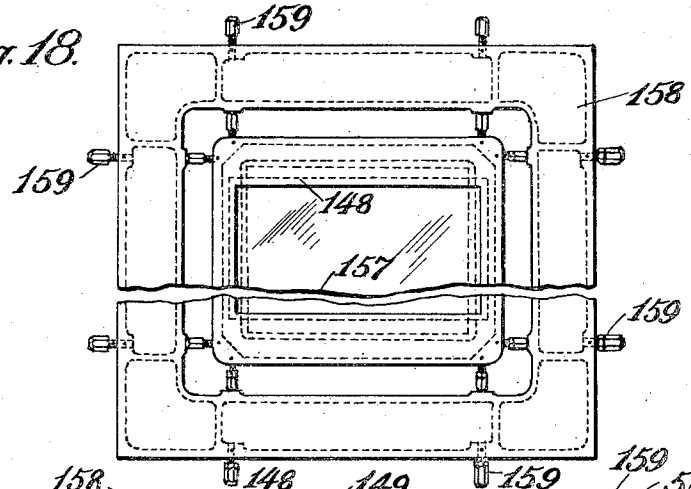
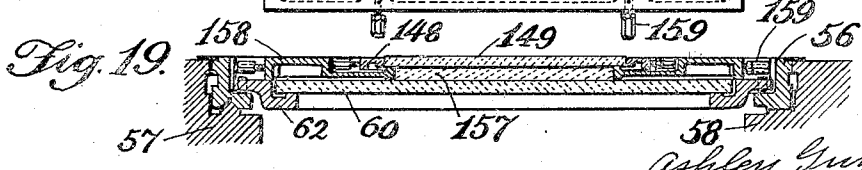


Fig. 19.



INVENTOR
Ashley Guy Ogden
BY
Sydney S. Prescott
ATTORNEY

Patented Nov. 1, 1927. 1,647,246

UNITED STATES PATENT OFFICE.

ASHLEY GUY OGDEN, OF BALTIMORE, MARYLAND, ASSIGNOR TO AMERICAN MACHINE & FOUNDRY COMPANY, A CORPORATION OF NEW JERSEY.

PHOTOGRAPHIC PRINTING MACHINE.

Application filed December 8, 1925. Serial No. 74,122.

This invention relates to an improvement in photographic printing machines of the type wherein a plurality of duplicates of the same negative, or of different negatives, is made in predetermined positions upon a presser-plate to be used for lithographic reproduction.

In certain known machines of this type that are operable in daylight, a stationary light and a stationary negative are used, and means are provided for shifting a sensitized plate to different printing positions relative to the stationary negative. These machines are designed to operate on large presser-plates, and the two devices which must be moved in order to shift the sensitized plate, are of necessity large and heavy. Heretofore, it has been customary to provide each of such devices with two guiding surfaces, one at either side, and with two interconnected screws for moving said devices. It has been found in practice, however, that this construction does not always result in accurate registration, for the reason that the initial machining of the parts is difficult, and their wear permits a waving movement involving difficulties in controlling the registrations with the accuracy desired. It has been discovered that this difficulty can be overcome by the utilization of a single guiding surface and a single screw in close juxtaposition thereto for each plate-shifting element of the machine, located at one side thereof, and by permitting the opposite side of the element to move freely, the rigidity of the element being sufficient to cause both sides of the same to move in absolute unison. In these machines also, the mechanism for operating the screws which move the sensitized plate, and that for showing the exact distance the plate moves, were crude, and inaccurate in operation. Furthermore, they could be used only for duplicating an original negative by time exposures directly on a press-plate.

The main object of the present invention is the production of an improved photographic printing machine that is free from the defects of the earlier machines, and which may be used for preparing, by instantaneous exposures of an original negative, a multiple negative to be duplicated on a press-plate, as well as for duplicating the original negative by time exposures directly on a press-plate, so that economy of time and cost, and higher efficiency through greater accuracy, may be attained. With these and other objects not specifically mentioned in view, the invention consists in certain parts, constructions, and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is a plan view of a machine constructed in accordance with the invention; Fig. 2 is a side elevation of the structure shown in Fig. 1; Fig. 2^a is a fragmentary cross-sectional view taken on the line 2^a—2^a in Fig. 2, showing the vernier attachment to the machine base and lower carriage; Fig. 3 is an end elevation of the structure shown in Figs. 1 and 2; Fig. 4 is a sectional side elevation showing the mount and the carriages and the attachment of the press-plate frame; Fig. 5 is a sectional end elevation showing the press-plate frame lowering device and the negative slide; Figs. 6 to 9 are sectional views showing details of the press-plate tension mechanism; Figs. 10 and 11 are front and end views showing the arrangement of the vernier scales; Figs. 12 and 13 are front and sectional side views showing the screw turning handle, pointer, and index dial; Figs. 14 and 15 are sectional side and end views of the dry-plate holder, combined with raising and lowering device; Figs. 16 and 17 are plan and cross-sectional views showing the outside negative registering device; Figs. 18 and 19 are plan and cross-sectional views showing the insertion of the outside registering frame into the negative slide; Fig. 20 is a detail fragmentary view of the slide, filler block, and bar and screw employed to lock the slide in operative position; and Fig. 21 is a fragmentary view showing the block used in connection with the adjusting screws 113.

Generally speaking, the original negative is first accurately registered (within one-thousandth of an inch) in the centre of a slidable frame which is subsequently placed and held stationary at the exact centre of the machine, which essentially consists of a solid

bed upon which are mounted, one on the other, two rectangular carriages, the lower carriage being slidable on the bed, and the upper carriage being slidable on the lower carriage at right angles to the movement of the latter. The press-plate is attached to a board which is inserted in a depressible frame carried by the upper carriage, and is thus rendered movable in two right-angular directions with reference to the base of the machine, so that any portion of it can be brought into juxtaposition with the negative held stationary at the centre of the machine. The movement of the two carriages is governed by screws, each turned by a handle provided with a pointer traveling over a dial. The press-plate thus accurately controlled is brought into the different predetermined positions with respect to the centre of the negative, and in each position, after the carriages have been locked in place and intimate contact has been established between the press-plate and the negative by lowering the frame carrying the former and pressing it against the latter by swinging into place and operating a pressure-head provided for the purpose, the negative is photographed upon the press-plate, so that, upon completion of the entire manipulation, the press-plate contains the desired number of duplicates, accurately spaced. To check up on the movement of the screws and to accurately read the distance traveled, each of the two carriages is provided with a sliding vernier having three scales.

To expedite the final work of reproduction, in case of small negatives, the duplicating machine may be used to first prepare a multiple negative which is subsequently duplicated on the press-plate. For this purpose, a dry-plate is inserted into the frame carried by the upper carriage and the machine is manipulated as before until the desired number of photographic impressions have been taken from the original negative. Thereupon the dry-plate thus prepared is used in place of the original negative and the process is repeated with a press-plate in the upper carriage. Since the dry-plate process requires instantaneous exposure, while the press-plate work is done with time exposure, the machine is fitted with a removable device having a photographic shutter, this device being pulled out of the way and replaced by an ordinary flexible shutter for press-plate work.

All photographic operations can in this machine be handled in ordinary daylight, suitable means being provided to protect the photo-sensitive surfaces of the negatives and press-plates. The latter, not being in a highly sensitive condition, are kept in the shadow by the frame construction and by suitable curtains dropped from the carriage to the plush cover on the top of the machine base. Dry-plates are protected by special dry-plate holder construction by which light-sealing surface-contact is maintained while the carriages are moved.

The negative being mounted on the glass plate of the negative holder by means of gummed strips, any size, any thickness, any shape, or any type of negative may be used in this machine.

To enable the preparation of negatives for subsequent jobs while the negative slide is in use in the machine, separate outside register frames are employed. When a negative mounted in a metal holder, is accurately registered in a separate registering frame provided for the purpose, it will automatically occupy the centre of the negative slide when inserted into the latter after being transferred from one of these outside register frames.

Referring particularly to Figs. 1 to 5, the base 20 of the machine, which is supported by legs 21, is provided with a V-shaped guiding rail 22 running the entire length of one of its sides, and with a parallel non-guiding rail 23 on the other, these two rails forming a track for the lower carriage. On the guiding rail 22 is fitted a corresponding guiding bearing surface 24 of the lower carriage 25, which, on its opposite side, has a non-guiding bearing surface including anti-friction rollers 26, traveling on the rail 23. The lower carriage 25 has, at right angles to its guiding bearing surface 24, a V-shaped guiding rail 27 on which rests a corresponding guiding bearing surface 28 of the upper carriage 29. The opposite side of said upper carriage is provided with a non-guiding bearing surface including anti-friction rollers 30 resting on a non-guiding rail of the lower carriage. The base of the machine carries a bracket 31 in which the screw 32 for moving the lower carriage is journaled, the screw 32 passing through the threaded socket 33 attached to the lower carriage This screw is thus located in close juxtaposition with the guiding rail which controls the direction of movement of the lower carriage, the thrust of the screw being in exact parallelism with the longitudinal axis of the guiding rail. Wavering movement of the carriage is prevented, even when the guiding rail and screw wear, by the rigidity of the carriage and the freedom with which its unguided side moves.

At right angles to the direction of movement of the lower carriage, said lower carriage carries a bracket 34 which forms a journal for the screw 35 for moving the upper carriage by means of the threaded socket 36 affixed to it. Thus, wavering movement of the upper carriage is prevented in the same way that it is prevented in the lower carriage.

The screws 32 and 35 are turned by means of handles 37 provided with pointers moving over dials 39 keyed to brackets 31 and 34 respectively. The handle 37, Figs. 12 and 13, is hollow, and it carries the pointer 38 which is forced outwardly towards the dial 39 by the spring 40, the end of the pointer engaging one of the division holes of the dial when the spring is released. By turning the knob 41 so that the pin 42, inserted near its end in the pointer 38, engages the vertical portion of the bayonet slot 43, the spring is restrained, and the pointer is held away from the dial, so that the handle can be freely turned. Over each dial are mounted two movable fingers 44 and 45, the split hub of the finger 45 surrounding the hub of the finger 44 and being provided with a lock-screw 46, so that the two fingers can be set and held in any desired relative position at any point on the dial. The fingers 44 and 45 are pressed against the dial by the spring-washer 47 bearing against the hub of the finger 45.

The dial is, or may be, so divided that each hole represents a carriage movement of one-thousandth of an inch. For example, the dial shown in Fig. 12 is used in connection with a screw having a pitch of one-fifth of an inch, and it is divided into 200 divisions. The distance to be traveled by the carriage having been translated into so many complete turns of the handle, plus so many holes of the dial, the fingers 44 and 45 are set the required number of holes apart and then as a unit are turned so that the trailing finger lies over the edge of the hole in which the pointer 38 of the handle has last stopped. To make the given move, then, the handle is turned the required number of full revolutions and advanced to the leading finger, whereupon the pointer is released so as to cause it to enter the indicated hole of the dial. For the next move of equal distance, the finger unit 44, 45, left set as before, is advanced until the trailing finger touches the pointer still in the hole just vacated by the leading finger, and then the handle is turned as before and the pointer inserted in the hole indicated by the leading finger.

The verniers used for reading the distances traveled by the carriages consist of a stationary scale 48, Figs. 10 and 11, attached to the part carrying the journal for the driving screw of the carriage in question, and two movable scales, the upper scale 49 being attached to the sliding carriage by a bracket 50, and the lower scale 51 being free to move anywhere along the stationary scale. By setting the zero of the scale 51 to the starting line of the marker 52 attached to the scale 49, the exact distance moved is obtained by reading scale 51 through the marker 52 and noting the coincidence on the scales 48 and 49 observed through the slide 53.

Having moved the carriages into the exact desired positions for taking the impression on the press-plate, they are held in place against accidental displacement by locking the screw-clamps 54 carried by them on the rods 55 attached to the machine base and lower carriage respectively (Fig. 1).

The negative slide 56 (Figs. 1, 5 and 19), slides on a V-shaped guiding rail 57 and on a parallel non-guiding rail 58 of the machine base, upon which it is held by the overlapping strips 59 affixed to the top of the base. Within the frame 56, two glass plates 60 and 61 are supported, the lower plate 60 being held in a frame 62 which can be leveled by the vertical screws 63. The upper plate 61 is held in a frame 64 which can be centered by the horizontal adjusting screws 65. Upon the upper plate 61, the negative 66 is mounted as near central as possible, and it is then accurately registered in the frame 56 by means of the adjusting screws 65 and of an auxiliary transparent cross-frame 67, temporarily attached to the frame 56 by means of taper-pins 68, the frame 67 being marked with cross-lines locating the exact centre of the frame 56. The slide 56 for this purpose is placed at the end of its track which overhangs the solid part of the base so that a light can be placed below the glass plates 60 and 61. After properly centering the negative, the registering frame 67 is removed and the negative slide 56 is pushed into the machine until it strikes the stop 69, whereupon the centre of the negative slide will be exactly at the centre of the machine in which there is a suitable opening, or window, for exposing the negative and press-plate to a light placed below the base. In this position, the negative-slide is locked by putting the lock-bar 70 on the studs 71 across the end of the track and tightening the lock-screw 72 against an intermediary filler block 56′ placed on the frame to cover up the negative track, and to engage the negative-slide and to be engaged by the lock-screw 72 for locking said slide in stationary position.

From the upper carriage 29 is suspended the inner frame 73, the latter having the brackets 74 to which are pivoted the link 75 connected with the cranks 76 attached to the shafts 77 supported in bearings 78 and 79 affixed to the upper carriage. The shafts 77 can be simultaneously turned by the lever 80 which is pinned to one of them, the motion being transmitted to the other by means of the cranks 81 and the connecting rod 82. When the lever 80 is in full line position, the inner frame 73 is raised so that the press-plate carried by it is clear of the negative and can be moved about without injury to its sensitized lower surface, and

when turned into the dotted position shown in Fig. 5, after the desired position has been reached and the carriages have been locked in place, the press-plate is in contact with the negative, ready to receive the final pressure required for the photographic impression. While in its released position, the lever 80 is prevented from accidentally being raised and thereby lowering the press-plate while the latter is in motion, by the pin 83 (Fig. 4) which is resiliently supported in the bracket 84 attached to the carriage 29, the pin 83 being beveled in such manner that it will automatically recede and allow the lever 80 to pass when depressing the latter.

The pressure for proper photographic exposure is furnished by the pressure-head 85 which is carried by the swivel-beam 86, the latter being fulcrumed on the shaft 87 held by the bracket 88 supported on the lateral projection 89 of the machine base. The pressure-head, which carries the interchangeable press-block 90, slidably held by a universal joint 91, is slidably attached to the beam 86 and is controlled by the crank-lever 92 attached to the hub of the beam 86. The crank 92 is connected to the pressure-head by means of an adjustable rod 93, bellcrank 94, and links 95. When the crank 80 is turned in the direction of the arrow shown in Fig. 3, the press-block 90 is forced into the dotted position, thereby exerting the desired pressure on the press-plate.

The press-plate 96 (Figs. 4 to 9) is mounted on a board 97 which is covered by felt padding 98 and its rubber backing 99, and which is fastened to the metal frame 100. Along opposite edges of the board 97, notches are cut, into which the clamps for fastening and stretching the press-plate are inserted. The clamps along one edge, at the right in Figs. 5, 6 and 9, consist of the stationary blocks 101 which are attached to the carrier-frame 100 and against which the clamp-heads 102 are forced by the screws 103, after the press-plate has been inserted between them. Springs 104 are provided which separate the clamp jaws upon release of the screws 103. The clamps along the opposite edge of the press-plate board consist of the blocks 105, slidably attached to the frame 100 by means of screws 106 passing through slots cut in the holding-flange of the frame 100, the blocks 105 having lugs 107 in which are pivoted the clamp-heads 108. Screws 109, freely passing through the blocks 105, bear against plates 110 attached in the bottoms of the notches of the board 97, and carry the rectangular nuts 111 fitting between and guided by the lugs 107 of the blocks 105 and bearing against the upright arms of the clamp heads 108. By turning the screw 109, the nut 111 is forced against the clamp-head 108, first closing its jaw against the press-plate 96 inserted between it and the block 105, and then pushing the block 105 and clamp-head 108 away from the board 97, thereby stretching the press-plate. Springs 112, provided within the lugs 107 of the blocks 105, pull back the blocks 105 and open the clamp jaws when the screws 109 are released.

When the machine is to be used to make a multiple negative upon a dry-plate, the inner frame 73 is lowered by the lever 80 until the usual plush covering placed around the bottom of the dry-plate carrier just meets the usual plush covering of the top of the machine base, thereby preventing light from entering between them when the carriages are moved. When lowered to the proper position, the inner frame is locked against further downward motion, which would interfere with the movement of the carriages, by the stop screws 113 (Figs. 2 and 3), carried by the brackets 114 attached to the inner frame 73, the latter then hanging from the upper carriage by the brackets 114. In making the adjustment of the stop-screws 113, steel blocks 113′ are interposed between the bearing ends of the screws 113 and the upper carriage, so that the setting of the screws need not be disturbed when the machine is to be used for press-plate work, the mere absence of the blocks permitting the frame 73 to be lowered into contact with the negative.

In order to bring the dry-plate into contact with the negative for printing, a separate depresser device, shown in Figs. 14 and 15, is incorporated with the dry-plate carrier. The board 115 on which the dry-plate 116 is mounted upon the rubber cover 117, has four upwardly projecting studs 118 passing through the corner-brackets 119 which carry the bearings 120 for the rock-shafts 121. Upon these shafts are mounted the oval-shaped cams 122 engaging the upper ends of the studs 118. The cams on the shafts 121 are cross-connected by the adjustable connecting rods 123, so that all cams can be simultaneously actuated by the handle 124 affixed to one of the rock-shafts. When turning the handle 124 in the direction of the arrow, the cams 122 depress the studs 118, thus lowering the dry-plate. On turning back the handle, the springs 125, placed around the studs within the brackets 119 and bearing against the collars 126 pinned to the studs, exert an upward pressure and force the board 115 back into its clearing position. The metal frame 127, carrying the board 115, has brackets 128 containing spring-plungers 129 which press the rollers 130 against the brackets 119 of the dry-plate board, thus taking up all clearance. On two sides of its bottom surface, the frame 127 carries strips 131 upon which slides the shutter 132 for covering the dry-plate. All around the edges of the board

115, opaque strips of focus-cloth are bridged from the board to the frame 127 to form a light seal at this point.

The frame 127 is inserted into the board 134 which is attached to the carrier-frame 135, two perpendicular sides of the board 134 having the press-screws 136 for tightening the frame 127. Around the bottom edge of the board 134, a plush lining 137, for the purpose above referred to, is attached.

The inner frame 73 has press-screws 138 (Fig. 4) inserted along two perpendicular sides, so that the press-plate carrier 100, or the dry-plate carrier 135, inserted into it, can be properly secured by tightening it up against the opposite sides of the frame.

The light control for making press-plate or dry-plate exposures is arranged as follows: At the bottom of the machine base 20, two strips 139 are supported, running across the bed along the central opening of the machine. From these strips is slidingly suspended a light-tight chamber 140 which has a central opening at the bottom covered by a photographic shutter 141, and which carries an electric lamp 142 attached to it by means of the bracket 143. For dry-plate work, this chamber and lamp are pushed by the rod 144 into the centre of the machine, directly below the central window, as in Fig. 3. For press-plate work, the chamber 140 is pushed to one side, exposing the central opening which then is covered by pushing the shutter 145 shown in Fig. 3, which also is supported by the strips 139, into the centre of the base by means of the rod 146. The rods 144 and 146 are hinged to the light chamber and shutter, respectively, so that they can be readily pushed out of the way on the rests 147 when in their drawn-out position. In Fig. 2, the light chamber is set for press-plate work and the rod 144 is shown all the way out and folded back on rest 147, while in Fig. 3 the chamber 140 is in position for dry-plate work, and rod 146 is out, the shutter 141 being drawn back, either to make room for the light chamber in dry-plate work, or to allow an exposure to be made in press-plate work. In the latter case, a separate lamp, not shown, is placed in a stand on the floor below the opening under the negative.

As an important adjunct in the efficient manipulation of the machine, separate negative-registers are provided, as shown in Figs. 16 to 19. In order to enable negatives to be set up for subsequent jobs while the negative slide is still in use in the machine, a metal negative holder 148 carrying the glass plate 149 and having the adjusting screws 150 along its circumference, is placed in the adjustable registering frame 151 to which is fastened by the taper pins 152 the frame 153 having cross pieces 154 marking the exact centre of the frame 151 which coincides with the exact centre of the negative slide. After the negative, placed on the glass plate 149, has been properly centered in the frame 151 by the adjusting screws 150 against the stops 155 and 156, the screws on two sides are locked by the lock nuts provided for this purpose, and the negative holder 148 is removed from the registering frame 151 by loosening the unlocked screws 150, and is then inserted upon the glass plate 157 of the adjusted spacer-frame 158 shown in Figs. 18 and 19, to the inside measurements of which the stops 155 and 156 of the registering frame 151 are adjusted. Hence, by retightening the unlocked adjusting screws 150 of the negative holder, the latter will be accurately centered in the spacer-frame 158, and since the latter has its adjusting screws 159 already set to accurately register in the negative slide, the negative will automatically register in the negative slide when the spacer-frame 158 is placed into the same and its unlocked adjusting screws are tightened up.

In view of the foregoing, a detailed description of the operation of the device is deemed to be unnecessary and is therefore omitted in the interest of brevity.

What is claimed is:

1. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a negative slide movable in and out of operative position and having a guiding bearing surface and a parallel non-guiding bearing surface, a track including a guiding rail and a parallel non-guiding rail supporting said surfaces, and means for locking said slide in operative position including a filler-block engaging said slide and a bar having a screw engaging said filler-block.

2. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a plate carriage having a guiding bearing surface and a parallel non-guiding bearing surface, a track including a guiding rail and a parallel non-guiding rail supporting said surfaces, a screw extending along and in close juxtaposition to said guiding rail and engaging said carriage to move it along said track, and a controlling device for governing the movement of said screw including a dial having a circular series of holes near its periphery, a handle on said screw carrying a pointer for engagement with a selected one of said holes, and means adjustably mounted on said dial for selecting the hole to be engaged by said pointer when shifting said plate.

3. The combination with a device for

printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a plate carriage having a guiding bearing surface and a parallel non-guiding bearing surface, a track including a guiding rail and a parallel non-guiding rail supporting said surfaces, a screw extending along and in close juxtaposition to said guiding rail and engaging said carriage to move it along said track, and a controlling device for governing the movement of said screw including a dial having a circular series of holes near its periphery, a handle on said screw carrying a pointer for engagement with a selected one of said holes, and means adjustably mounted on said dial for selecting the hole to be engaged by said pointer when shifting said plate including two relatively adjustable arms adjustably rotatable about the axis of said dial.

4. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative and including a plate carriage and an actuating screw for said carriage, of a controlling device for governing the movement of said screw including a dial having a circular series of holes near its periphery, a handle on said screw carrying a pointer for engagement with a selected one of said holes, and means adjustably mounted on said dial for selecting the hole to be engaged by said pointer when shifting said plate.

5. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative and including a plate carriage and an actuating screw for said carriage, of a controlling device for governing the movement of said screw including a dial having a circular series of holes near its periphery, a handle on said screw carrying a pointer for engagement with a selected one of said holes, and means adjustably mounted on said dial for selecting the hole to be engaged by said pointer when shifting said plate including two relatively adjustable arms adjustably rotatable about the axis of said dial.

6. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a vernier device for graphically indicating the movement of said plate including a stationary scale, a second scale movable with said plate, and a third scale freely movable along said stationary scale.

7. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a negative slide movable in and out of operative position and having a lower glass plate and means for leveling the same in said slide, and also having an upper glass plate and means for centering the same in said slide.

8. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a negative slide movable in and out of operative position and having a lower glass plate and means for leveling the same in said slide, and also having an upper glass plate and means for centering the same in said slide including an auxiliary registering device having crosslines marking the exact centre of said slide.

9. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a negative slide movable in and out of operative position, and an auxiliary registering device including a spacer-frame in which a negative may be centered while said slide is in use and later transferred to said slide.

10. The combination with a device for printing sensitized plates and having a stationary light, a stationary negative, and means for shifting a sensitized plate to different printing positions relative to said stationary negative, of a removable plate holder comprising a board having a covering of yielding material engaging the plate, and spring-opened and screw-closed clamps carried by said board and engaging opposite edges of the plate to hold it against said yielding material.

In testimony whereof, I have signed my name to this specification.

ASHLEY GUY OGDEN.