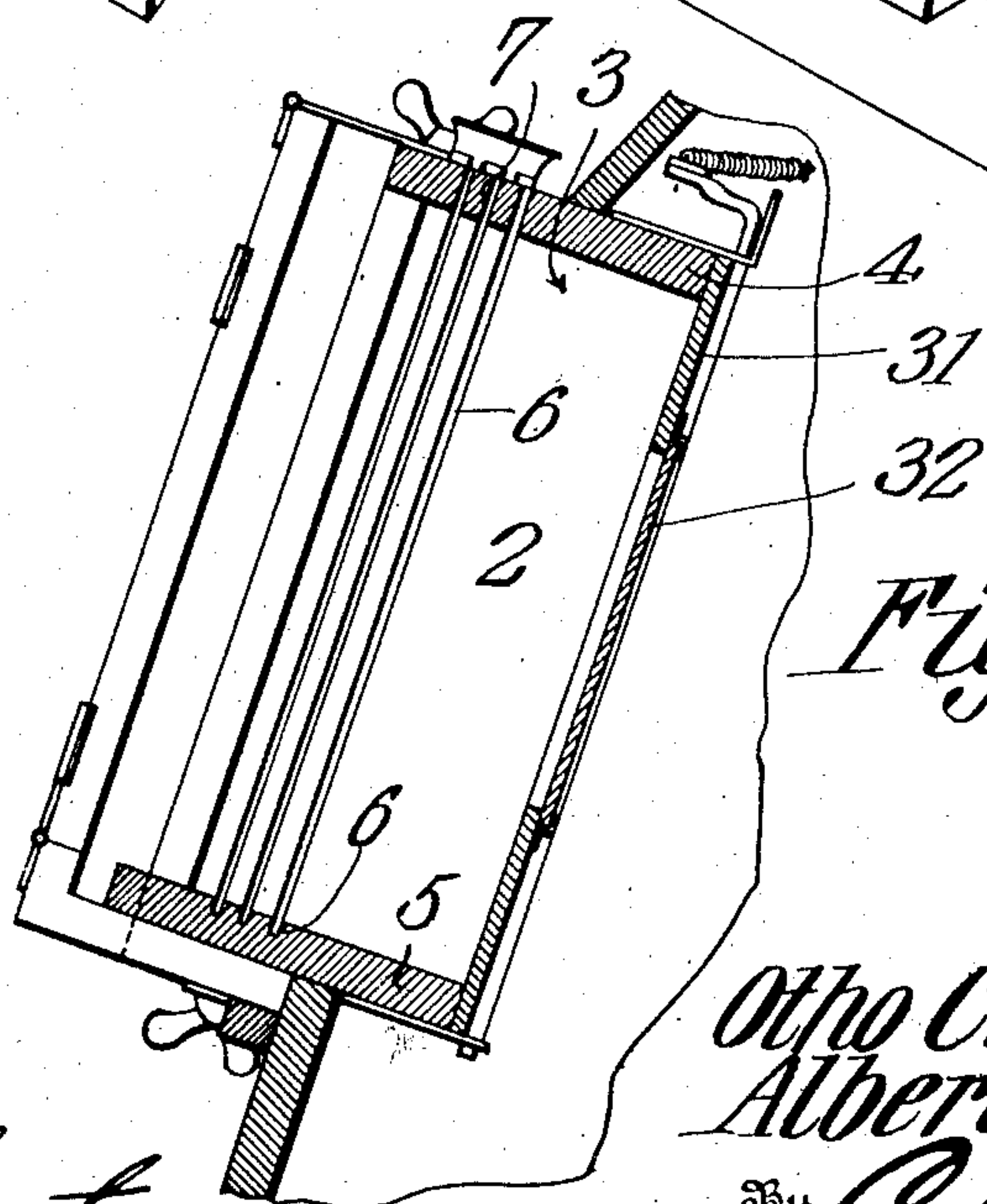
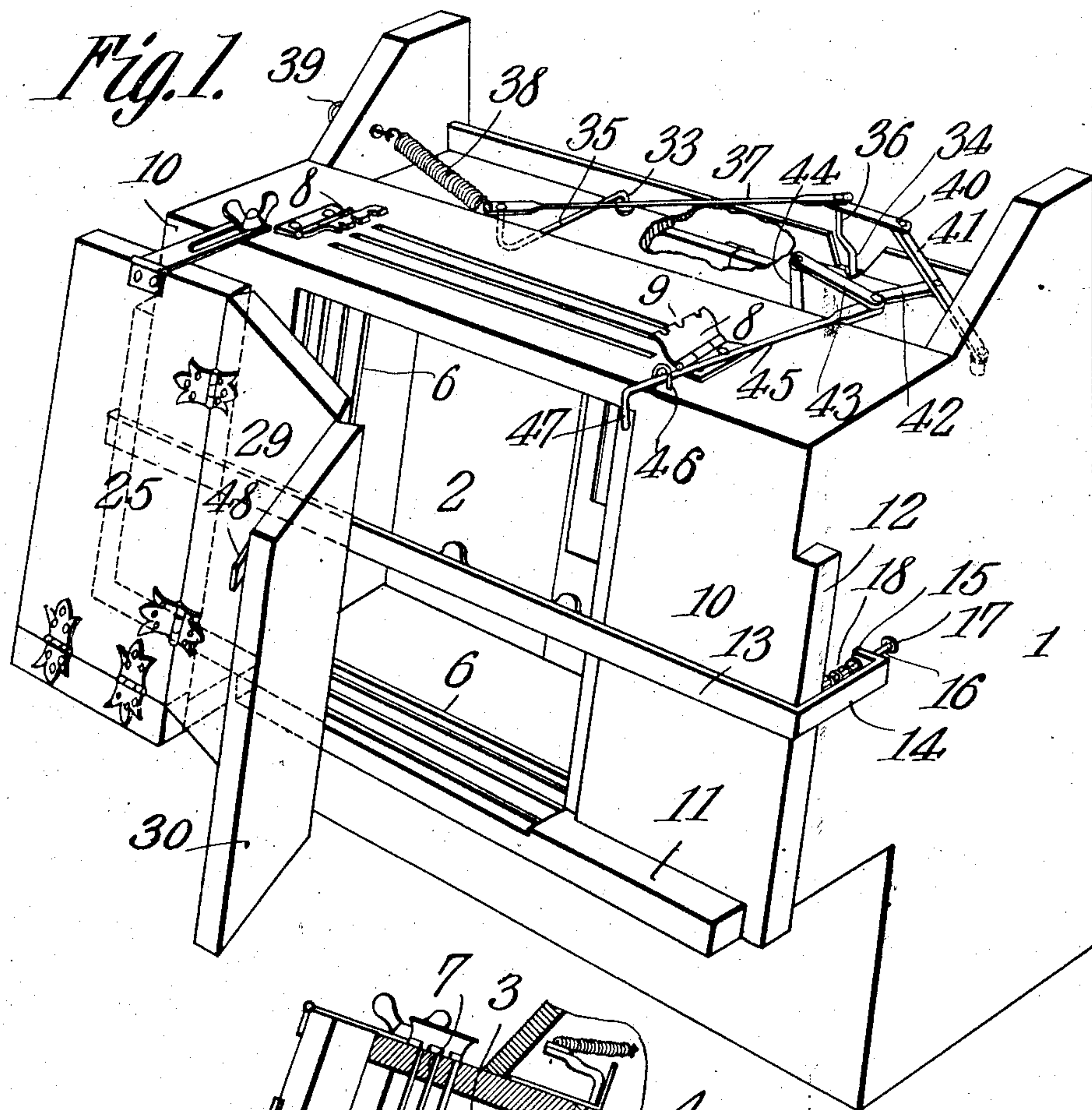


O. C. COURTRIGHT & A. D. MIKA.
 PHOTOGRAPHIC PRINTING CABINET.
 APPLICATION FILED AUG. 13, 1908.

929,195.

Patented July 27, 1909.
 2 SHEETS—SHEET 1.



Witnesses

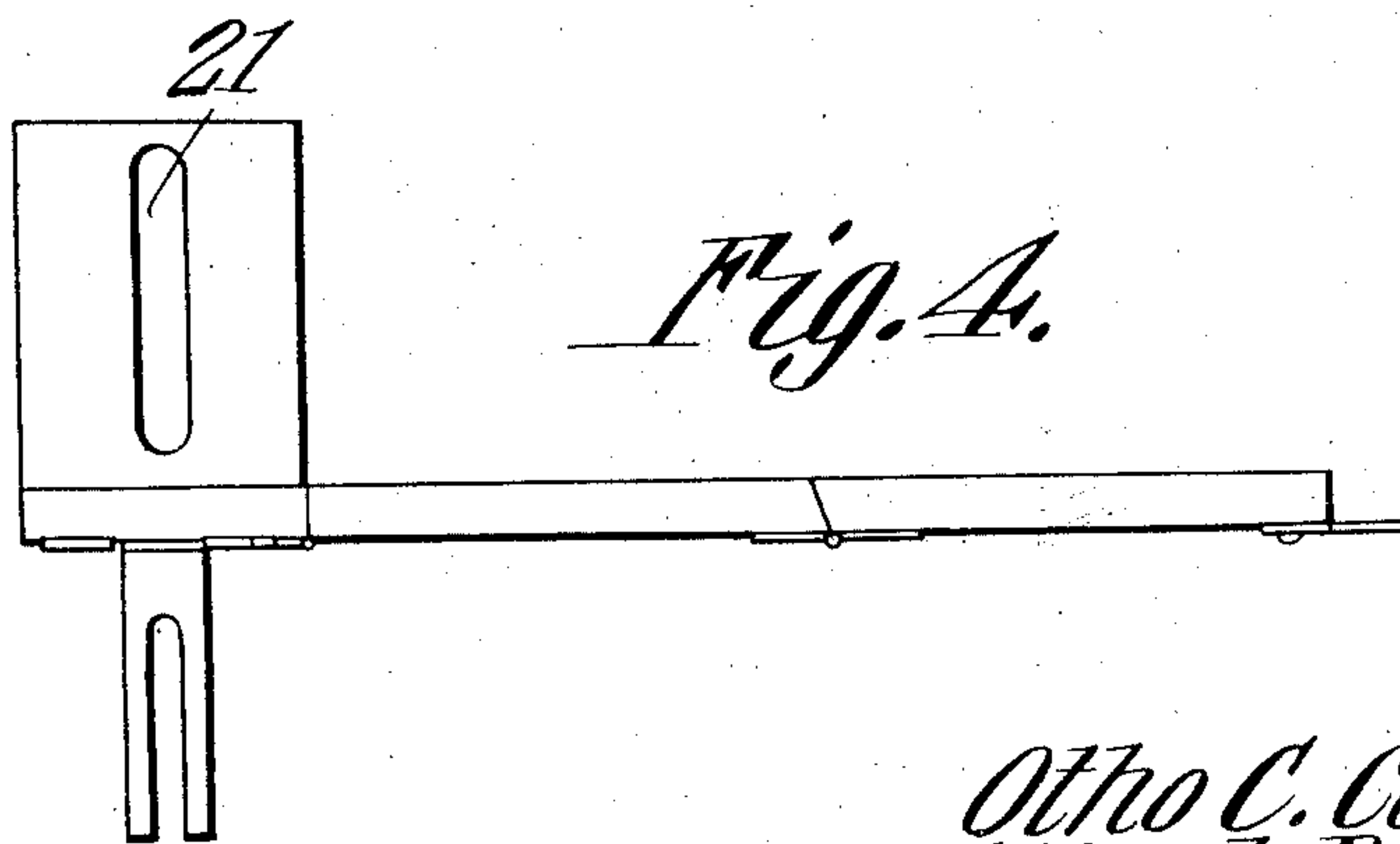
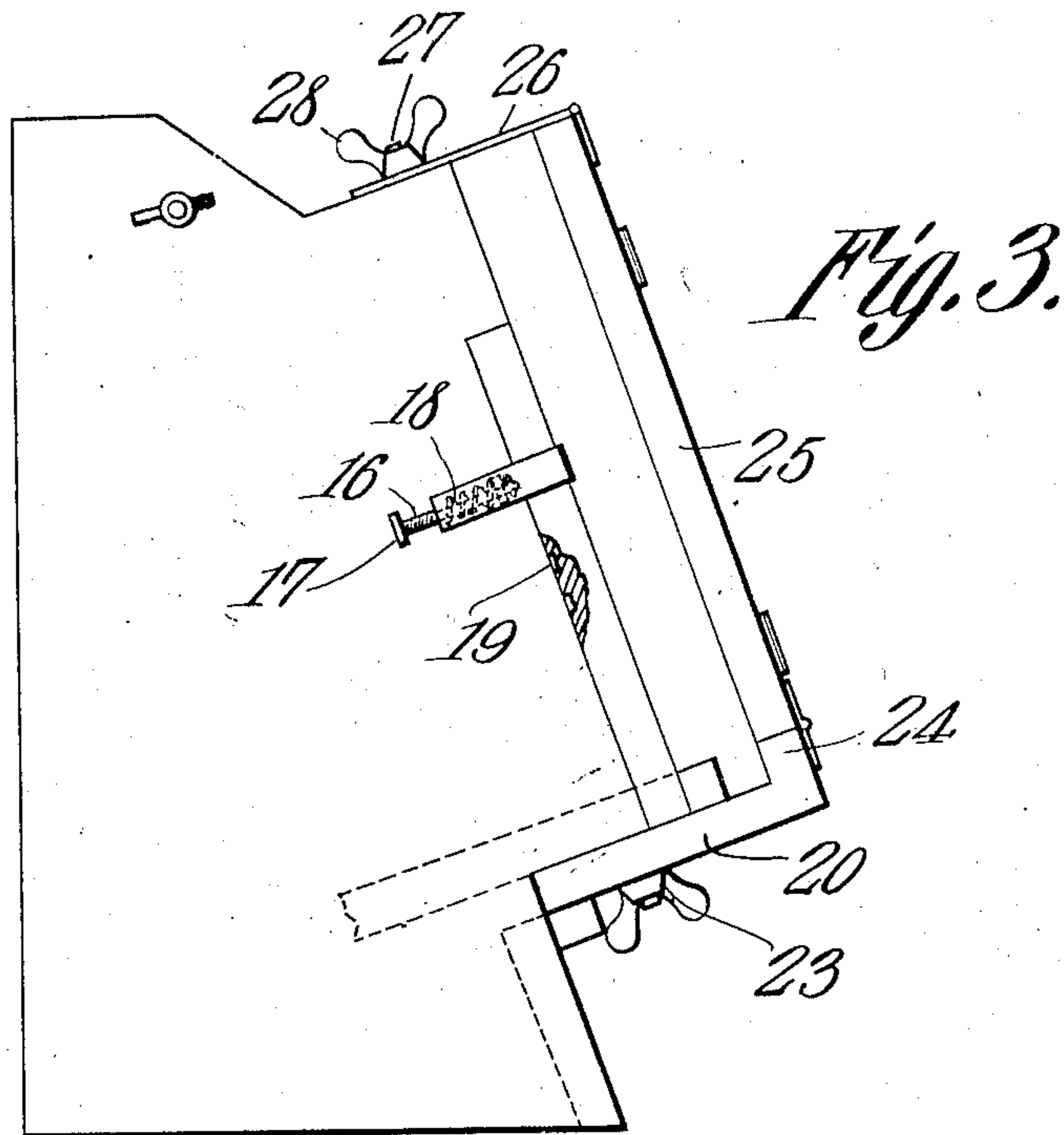
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UNITED STATES PATENT OFFICE.

OTHO C. COURTRIGHT AND ALBERT D. MIKA, OF FORT MADISON, IOWA.

PHOTOGRAPHIC-PRINTING CABINET.

No. 929,195.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed August 13, 1908. Serial No. 448,423.

To all whom it may concern:

Be it known that we, OTHO C. COURTRIGHT and ALBERT D. MIKA, citizens of the United States, residing at Fort Madison, in the county of Lee, State of Iowa, have invented a new and useful Photographic-Printing Cabinet, of which the following is a specification.

This invention has reference to photographic printing frames or cabinets and is designed particularly to facilitate the handling of sensitive papers, and to provide means for the ready centering of the negative with relation to the sensitive paper without the liability of the latter becoming light struck.

Furthermore, the invention provides means for the ready making of a number of prints upon a web of sensitive paper, and also for the use of vignetting means.

Furthermore, the present invention provides means whereby the closing of the back of the printing frame will cause the exposure of the paper to the light for impressing the image thereon.

The present invention is an improvement over that disclosed in our Letters Patent No. 815,267, granted March 13, 1906 for a photographic printing cabinet.

In accordance with the present invention there is provided a cabinet having light excluding doors or shutters on the light receiving side of the cabinet and on the other side means for holding a photographic negative and for adjusting the same to different desired positions.

The invention also provides a number of receptacles for vignetting frames so that the vignetting device may be placed at different distances from the negative and the light thereby be modified in accordance with the desire of the operator.

By the present invention provision is made for off-setting the back of the printing frame so as to adjust the same for differences in the thickness of negatives, and where masks or other devices are used in border printing, a number of glass plates may be employed to support the negative and mask. This also provides for the use of film negatives and any thickness of glass desired to support the films during the printing operation. With the present invention provision is made for supporting the negative at any height, so

as to adjust the negative to the paper to be printed.

The present invention also includes means for operating the light excluding doors or shutters so that the actinic light is admitted to the interior of the printing frame by the closing down of the back of the device thus facilitating the printing of the paper and without distracting the attention of the operator as would be the case were it necessary to open the doors or shutters by an independent operation.

The invention also includes other improvements over and above the structure of the aforesaid Letters Patent, and these improvements will appear from the following detail description taken in connection with the accompanying drawings forming a part of this specification, in which drawings,

Figure 1 is a perspective view of the improved photo printing cabinet from the rear or negative receiving side. Fig. 2 is a vertical cross section of a portion of the structure shown in Fig. 1, the supporting parts of the cabinet being broken away. Fig. 3 is an end view of the printing cabinet with the paper holding doors or back of the printing frame, off-set slightly from normal position. Fig. 4 is an end view of the back of the printing frame removed from the body thereof.

Referring to the drawings there is shown a frame or casing 1 constituting the main body and support of the printing frame. Built into the casing 1 is a chamber 2 having side walls 3, and top and bottom walls 4 and 5 respectively. The side walls 3, and bottom walls 5 of the chamber 2, are formed with a number of parallel grooves 6, while through the top 4 of the chamber are a number of slots 7 matching the grooves 6. The slots 7 permit the introduction into the chamber 2 of suitable vignetting frames which slide in the grooves 6 in the side walls 3 and ultimately become seated in the grooves 6 in the bottom 5. On the outer face of the top 4 of the chamber 2, and at each end of the slots 7 are spring fingers 8 provided with notches 9 matching the slots 7 and equal in number to the number of said slots. These spring fingers or plates 8 provide a means for holding the vignetting frames in different adjusted positions when it is not desired that they should be lowered so as to enter the grooves 6 in the bottom 5.

The back of the chamber 2 is open and is flanked on each side by side extensions 10 of the main casing 1, while the bottom 5 of the chamber 2 may be continued in the same direction to form a ledge 11. The ledge 11 provides a support for negatives designed to cover the back of the chamber 2, either wholly or in part. At the outer ends of each side extension 10 is another, rib-like extension 12 in the same plane as the face of the corresponding side extension 10.

Extending across the open rear end of the chamber 2 is a bar 13 having each end turned at right angles as indicated at 14, and then again turned at right angles to the parts 14 as indicated at 15, the said extensions 15 lying parallel with the main bar 13. The bar 13 is of such length that the extensions 14 hug the ribs 12 quite closely while the extensions 15 of the bar lie behind the ribs 12. The extensions 15 each carry a pin 16 provided with a manipulating head 17, and extending through the part or ear 15 into engagement with the rear edge of the corresponding rib 12. A spring 18 surrounding the pin 16 serves to urge it constantly against the rear side of the corresponding rib 12. Each rib 12 may be provided with notches 19 or otherwise shaped to hold the pin 16 when urged toward it by the spring 18. By this means the bar 13 may be held in any position of adjustment with relation to the chamber 2.

Beneath one of the side extensions 10 there is secured an adjustable bracket 20, in the nature of a slide. This slide is provided with an elongated slot 21 secured to the casing 1 by means of a thumb nut 23, the stem of which extends through the slot 21. The outer end of the slide 20 is provided with a ledge 24 of a height corresponding to the height of the ledge 20 and to this ledge is hinged a strip 25 extending upward to a point even with the top of the top member 4 of the chamber 2. Fast to the upper end of the strip 25 either fixed thereto against movement or hinged thereto as desired is a slotted plate 26, and through this slot there extends a threaded stem 27 to which is applied a thumb nut 28. By means of the two thumb nuts 23 and 28 the strip 25 may be brought into close relation to the corresponding side extension 10 or may be moved away therefrom to any desired extent and be locked by the said thumb nuts 23 and 28.

The strip 25 has hinged thereto one edge of a double hinge back for the chamber 2. This back consists of a hinge member 29 connected directly to the strip 25, and another hinge member 30 connected to the hinge member 29 thus providing a double hinge back such as is commonly used in connection with photographic printing frames. The double hinge back 29—30 is designed to press suit-

able photographic paper in close contact with a negative covering the rear open end of the chamber 2. If the negative be large enough to cover the entire opening of the chamber 2 then the strip 13 is omitted, but if the negative be smaller then the strip 13 is used and supports one edge of the negative. The ledge 11 is cut away at a point coincident with the slide 20 so that the ledge 24 of the slide 20 may be brought into line with the ledge 11 and constitute substantially a continuation thereof, while the lower edge of the double hinge back 29—30 will override the ledge 11 so that the said double back may be brought into close relation with the paper over-lying the negative.

The front of the chamber 2 is closed by doors or shutters 31 as in the aforesaid Letters Patent, and these doors may be provided with windows 32 of ruby glass so that sufficient non-actinic light may enter the chamber 2 to enable the operator to place the negative and the paper in proper position without exposing the paper to actinic light. The doors are mounted upon rods 33, and 34 respectively, and these rods act as hinge supports for the doors which may be made to come together at a median meeting line and open away from each other on turning on the hinge rods 33 and 34. The hinge rod 33 is provided with a crank extension 35 on the upper end, and the hinge rod 34 is provided with a crank extension 36 at its upper end, and these two crank extensions are connected by a link 37 so that the hinge rods 33 and 34 and the doors carried thereby will move in opposite directions at the same time. A spring 38 is connected to the link 37 at the end connected to the crank 35, and this spring 38 is under the control of an adjusting screw 39 so that its tension may be regulated. The crank 36 is connected by a link 40 to one end of a lever 41 the other end of which may be in hinged connection to one side of the casing 1. At an intermediate point the lever 41 is connected by a link 42 to another link 43 and the remoter end of the link 43 is connected to a fixed point 44 on the casing 1. The two links 42 and 43 at their junction pivot are connected to a rod 45, which rod extends to the rear side of the chamber 2 through a guiding eye 46 and terminates in an end 47 and this end 47 of the rod is in the path of a projecting plate 48 on the end of the section 30 of the back of the printing frame. The construction is such that the spring 38 normally maintains the doors at the front of the chamber 2 in the closed position so that no actinic light can enter the chamber 2 from that side. When however, the rod 45 is moved by engagement with the end 47 thereof the two links 42 and 43 which constitute a toggle connection, are moved to the extended position, and this causes a movement of the

lever 41, which by the link 40 causes the rod 34 to turn on its axis and at the same time turn the rod 33 on its axis in the opposite direction through the connecting link 37, and against the action of the spring 38. The movement is sufficient to quickly open the doors controlling the front end of the chamber 2 to their widest extent. When the rod 45 is released the spring will quickly return the doors to their closed position thus cutting off actinic light from the chamber 2.

The device is designed to be used in a room where there is a window or other means for the entrance of sunlight either direct or reflected, and where the device may be brought to the window and all other actinic light excluded from the room except that which may enter the chamber 2 when the doors at the front thereof are opened. Of course, where daylight is not to be used artificial light having actinic properties may be employed.

The structure of this invention is designed to be used more particularly with the grade of photo printing papers known as gas-light paper and also as developing paper. Such papers are highly sensitive to artificial light and need but short exposures. Such papers are non-sensitive to ruby light and in most instances to the ordinary orange light used in dark rooms, and in fact may be handled safely a few feet from mild artificial light.

In the use of the apparatus if it be desirable to produce vignetted effects upon the finished picture, then a suitable vignetting frame is introduced through a suitable one of the slots 7 so as to traverse the chamber 2 to the desired point. The negative is then placed upon the rear end of the chamber 2 and if large enough will cover the same. If the negative be too small to cover the open end of the chamber 2 then the negative is placed upon the bar 13 and the latter is adjusted to the proper point to bring the negative to the desired relation to the paper upon which the picture is to be produced. The paper if in small sheets is now placed upon the rear face of the negative, which in most instances is the film side of the negative and the hinged back is brought into close relation to the paper on the negative to hold it in proper close contact with the negative. As the hinged back is moved into place the member 48 is brought into engagement with the end 47 of the rod 45, and the doors controlled by the rod 45 are caused to open quickly and permit the light to enter the chamber 2 and act on the paper after having passed through the negative. The doors are made to open widely and quickly so that the light strikes upon the paper substantially throughout its area at once, the same as provided for in the aforesaid Letters Patent. When the operator judges that the paper has been exposed long enough, then a move-

ment of the hinged back 29—30 of the printing frame, away from the chamber 2 will immediately release the rod 45 and under the action of the spring 38 the doors at the front of the chamber 2 will snap together, thus cutting off the actinic light. The paper may now be replaced and the operation repeated as described, or a new negative may be adjusted and prints taken therefrom.

It often happens that negatives are on glass of different thicknesses and to accommodate these different thicknesses of negatives the strip 25 may be adjusted to and from the corresponding face of the extension 10 opposite which the strip 25 is located, so that the hinged back 29—30 will at all times engage smoothly against the paper on the negative. Again, it may be desirable to print with masks and these may be held against the negative by suitable glass plates, in which case the thickness of the negative and plate will be much greater than that of the negative alone, and to accommodate this greater thickness the strip 25 must be adjusted slightly away from the corresponding extension 10. When vignetting masks are used, then the vignetting frames or carriers are introduced through the slots 7 as before described, but the degree of sharpness or diffusion caused by the vignetting means is regulated by placing the vignetting frame in any one of the slots 7 which may be desired, the diffusion being greater the farther the vignetter is placed from the negative. Furthermore, the position of the vignetting opening may be adjusted by the spring fingers 8 which will engage the edge of the vignetting frame with an elastic grip so as to hold it in any position of adjustment without preventing its movement either in or out of the chamber 2.

When it is not desired to use the negative supporting bar 13 then the latter may be lifted until the pins 16 are free of the upper edge of the rib 12 and the bar may then be readily removed.

In order to prevent light coming through the chamber 2 from reaching the operator's eyes the meeting edges of the two members 29 and 30 of the folding back may be beveled as indicated in Fig. 4.

The fingers 8 may be either elastically connected to the top of the casing 1 or may be hinged thereto, and their grip on the vignetting frames will then depend upon the weight of the latter to hold the said frames in place.

When it is desired to print a series of pictures upon a single strip of paper as for instance upon a web of paper of considerable length, then the entire hinged back of the frame is removed and the paper placed in position after which the hinged back may be returned and the printing proceed as before.

What is claimed is:

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1. A printing frame having one face provided with a closure for excluding actinic light and the other face provided with means for supporting a negative and paper, and a back adapted to the said face of the printing frame for movement to and from the same and for clamping the paper to the negative, the said printing frame also including actuating means for the light excluding closure in the path of the paper clamping back and operating to open the said closure on the movement of the said paper clamping back to operative position.

2. A printing frame having a negative support adjustable across the negative receiving side or face of said frame, said support comprising a bar extending across the negative receiving opening and provided with end extensions embracing the end of the printing frame on each side of the negative receiving opening and elastic catches carried by said bar for holding the latter in adjusted positions.

3. A printing frame provided with a folding back, a support therefor adjustable to and from the negative receiving face of said frame and means for maintaining parallelism between the support and the negative receiving face of the frame in different positions of adjustment of said support.

4. A printing frame having a back adjustable to and from the negative receiving face of said frame, and means for locking said back in the adjusted positions in parallel relation with the printing frame.

5. A printing frame having a folding back, a support for said back to which the latter is hinged, a slide to which said support is secured, said slide being movable toward and from the negative holding face of the printing frame, and means for maintaining parallelism of the support to the negative receiving face of the printing frame in different positions of the slide.

6. A printing frame provided with a folding back, a support to which this back is hinged, a slide to which the support is hinged to move at right angles to the folding movement of the back and by which slide the support is upheld, said slide being movable toward and from the negative receiving face of the printing frame, and means for locking the back support in any position of adjustment to and from the negative receiving face of the printing frame in parallelism therewith.

7. A printing frame having grooves for receiving vignetting frames and located at different distances from the negative receiving side of the frame and means independent

of the grooves for holding the vignetting frames in any desired position of adjustment in the grooves.

8. A printing frame provided with a plurality of spaced grooves at different distances from the negative receiving side of said frame, said frame being provided with a corresponding number of slots for the insertion of vignetting frames into the grooves, and clamp plates carried by the printing frame in operative relation to the slots to engage the vignetting frames and hold them in any adjusted position.

9. In a printing frame provided with light excluding closures, means for operating said closures, consisting of connected crank arms, a spring for holding said crank arms in a predetermined position, a lever connected to one of the crank arms, a toggle connected to said lever, and a rod connected to said toggle and adapted to be moved longitudinally to act through the toggle and lever on the crank arms in opposition to the spring.

10. A printing frame provided with a movable back, light excluding closures on the face remote from the back, crank arms connected to the light excluding closures, a spring acting on the crank arms to maintain the light excluding closures in the closed position, a lever connected to the said cranks, a toggle connected to the lever, and a bar connected to the toggle and having its other end in the path of the movable back of the printing frame to actuate the crank arms on the closure of the back of the frame against the action of the spring.

11. A printing frame having on its negative receiving face a slide capable of moving into and out of the frame toward and from the negative receiving face, means for holding said slide in adjusted positions, a supporting strip hinged to said slide at one end, means for holding the other end of said supporting strip to the corresponding face of the printing frame in adjusted positions and capable of being independently disconnected from said printing frame, and a folding back hinged to said support to move in a direction at right angles to the direction of movement of said support on its hinges.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

OTHO C. COURTRIGHT.
ALBERT D. MIKA.

Witnesses:

J. J. DATIN,
F. S. HAMILTON.