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H. C. JONES

1,920,399

PHOTO-COMPOSING MACHINE

Filed Feb. 26, 1927

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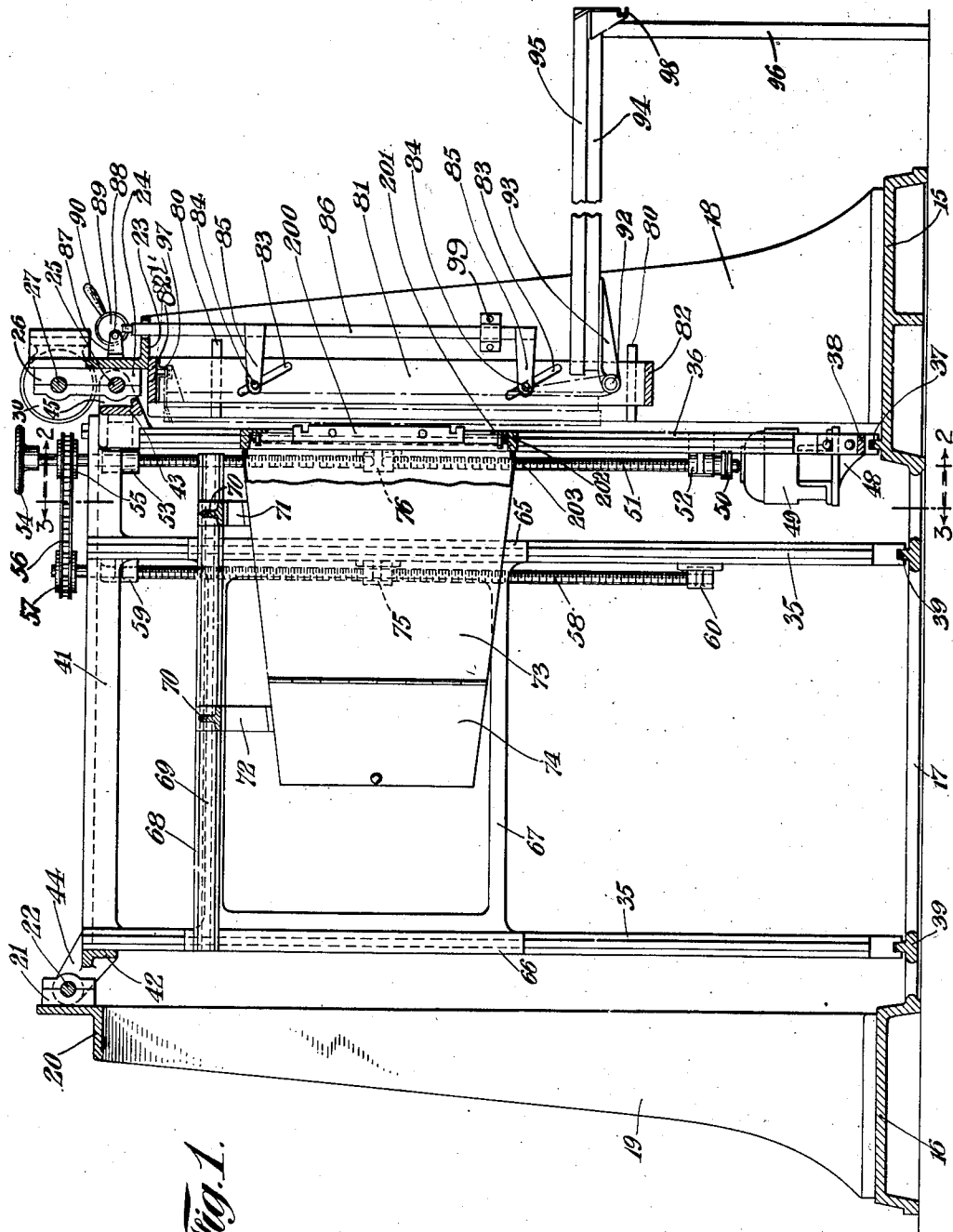


Fig. 1.

Inventor
Harry C. Jones
By his Attorney
Warren E. Willis.

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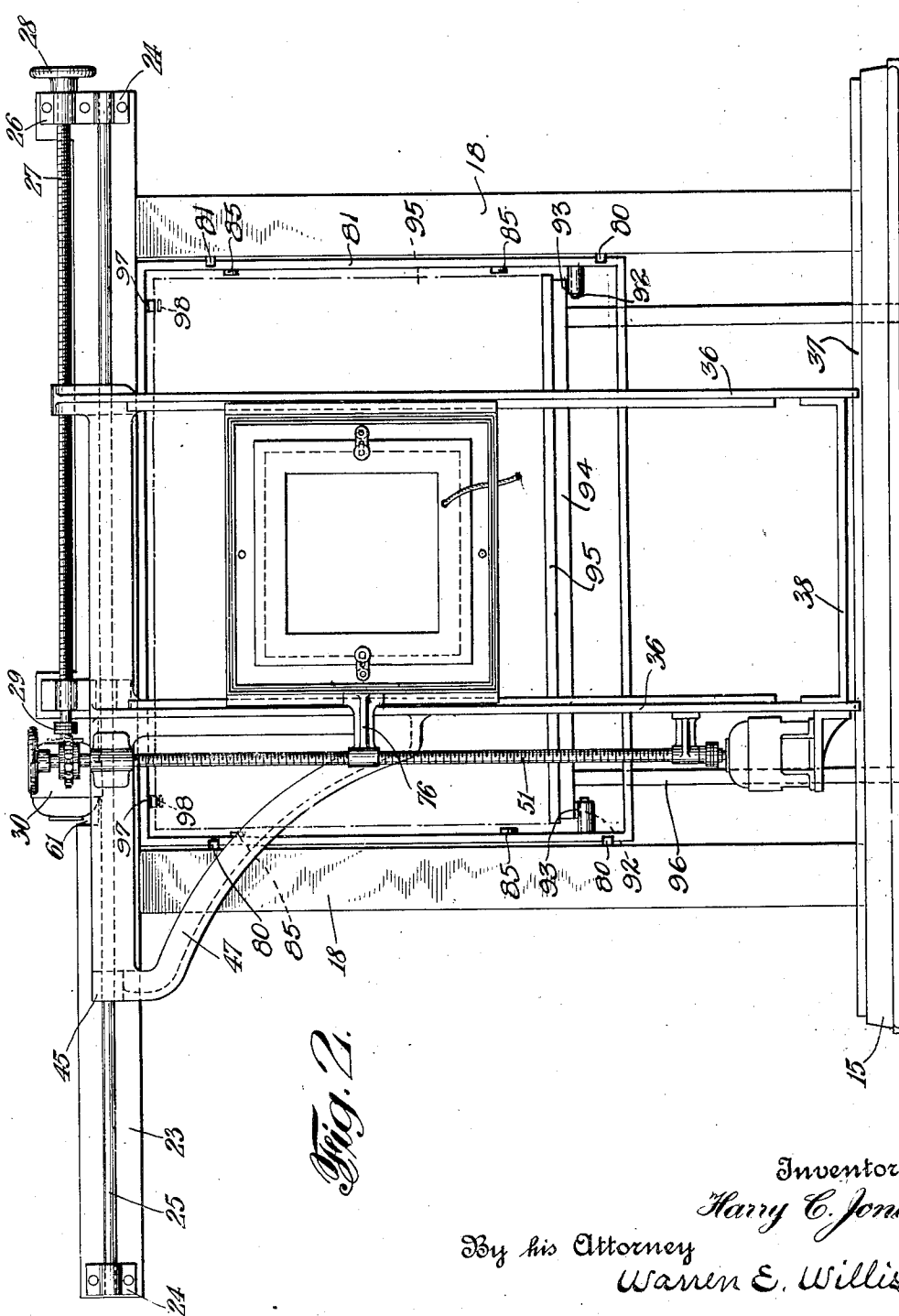
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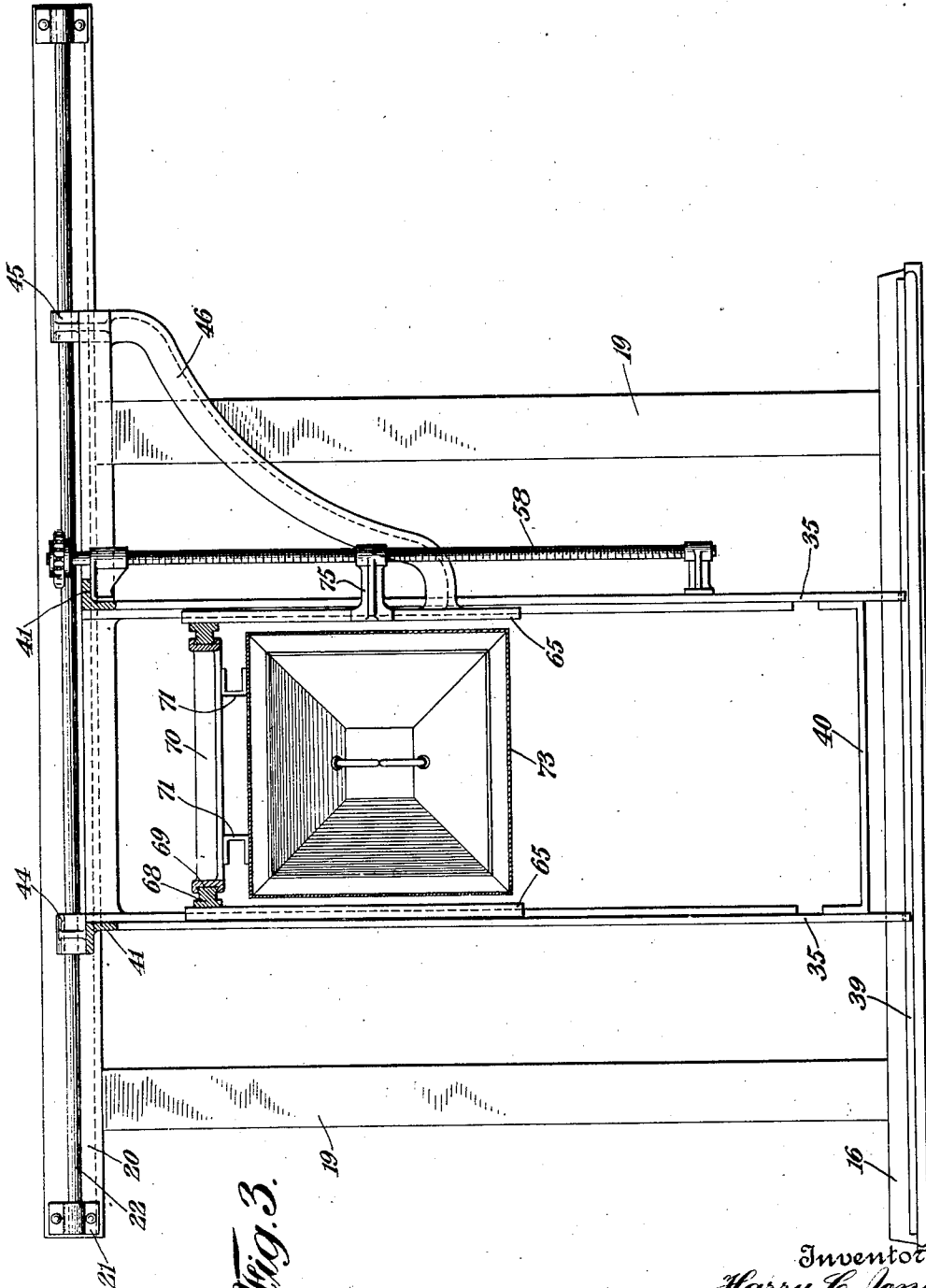


Fig. 3.

Inventor
Harry C. Jones
By his Attorney
Warren E. Willis.

UNITED STATES PATENT OFFICE

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PHOTO-COMPOSING MACHINE

Harry C. Jones, New York, N. Y.

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37 Claims. (Cl. 95—76)

This invention relates to photo-composing machines using a sensitized press plate in connection with a negative carrying frame and a lamp.

Such machines are usually of a ponderous type, occupying considerable space, and contain certain parts, which must function with positive precision, resulting in an assemblage so expensive to produce as to deter extensive use. The term "negative", as used throughout this application, is to be understood as referring to any transparent or translucent substance, as glass, celluloid and analogous compounds, paper and textile fabrics treated to permit the passage of light, etc. etc. bearing images, scribed, written, drawn or deposited photographically, of any objects whatsoever, or having the objects attached in such manner as to be reproduced by photoprinting.

It is therefore one of the objects of the invention to provide a structure of such simplicity that it can be manufactured at a reduced cost without in any way sacrificing accuracy, convenience and speed of operation, but on the other hand materially enhancing the same.

A further feature is to provide a press plate bed with means whereby it may be moved in parallel toward or from the negative, or the negative frame moved relative to the bed.

Another object is in the provision of means whereby the negative carrying frame and press plate may be independently moved with relation one to the other while in vertical planes and closely contiguous so that any point on one may be brought into registration with a predetermined point on the other.

These and other advantageous objects, which will become apparent as the description of my preferred design progresses, are accomplished by the novel and practical design, construction and combination of parts hereinafter described and illustrated in the accompanying drawings, forming a material part of this disclosure, and in which:—

Figure 1 is a vertical sectional view of a machine embodying the invention, certain parts being in side elevation.

Figure 2 is a transverse sectional view taken on line 2—2 of Figure 1.

Figure 3 is a similar sectional view, looking rearward on line 3—3 of Figure 1.

The frame of the machine consists of two hollow transverse base members 15 and 16, respectively at the front and rear, the same being rigidly

connected by side bars 17, either integrally or otherwise as preferred.

Rising from the bases, near their ends, are pairs of columns 18 and 19 presenting inner parallel faces, the rear columns being slightly higher and of lesser lateral width.

The rear columns are connected at their upper ends by a beam 20, here shown as a rolled angle, the same extending past the columns at both ends unequally, that at the right hand side of the machine considerably exceeding in length the extension at the left.

The upright flange of this beam faces towards the front and has secured at its ends a pair of brackets 21 in which is mounted a guide bar 22, as the shaft shown.

A similar beam 23, in a lower plane, connects the front uprights 18 at their outer top surfaces and is provided with brackets 24 at its ends to rigidly support a guide bar 25.

The bracket 24, at the shorter, left hand end of the beam, has a raised portion 26 in which is revolvably mounted a shaft 27 screw threaded, except at its bearings and provided beyond the bearing 26 with a hand-wheel 28 for manual adjustment, the shaft being normally driven by a clutch connection 29 with an electric motor 30 carried on a shiftable carriage by which the lamp housing and negative frame are moved as required.

If desired the motor may be dispensed with and the shaft actuated by the hand wheel alone and further, it is to be understood that any ordinary mechanical equivalents may be substituted by which corresponding results in shifting the carriage transversely of the machine are attained.

The carriage consists of a rigid, preferably integral structure having four light uprights 35 arranged in the form of a rectangle and single pair of similar uprights 36 spaced therefrom at the front.

The lower ends of the uprights 36 are recessed to produce opposel lugs to straddle a transverse guide rail 37 on the upper surface of the front base member 15 and are held in rigid relation by a flanged brace 38 between the uprights adjacent the rail.

The lower ends of the frame uprights 35 are similarly recessed to be guided by tracks 39 extending between the side bars 17 and are held firmly in proper relation by a brace 40.

The uprights 35 and 36 are shown as integral with cross beams 41 at their upper ends, joined

at the rear by a transverse beam 42 and at the front by a similar beam 43.

Extending angularly outward from the ends of the beams 42 and 43 are bracket bearings 44 and 45 bored to receive the bars 22 and 25 respectively and by which the entire carriage frame and elements attached to it are suspended, the lower portions being merely guided, not supported.

In order to more effectively guide the carriage on its runways a pair of outwardly and upwardly extending arms 46—47 are attached to uprights 35 and 36, these uprights carrying bearings 45 at their upper extremities to increase the distance between the points of support on bars 22 and 25 respectively and to add strength and firmness to the frame when any strain is imposed thereon.

At the foot of one of the uprights 36 is a bracket 48 on which is an electric motor 49 arranged in an upright position and driving, through a clutch 50, a threaded vertical shaft 51 rotatable in bearings 52 and 53 fastened on the upright 36.

The screw shaft 51 extends above the beam 41 and is provided with a hand wheel 54; a sprocket wheel 55 fixed on the shaft 51 below the wheel, drives a chain 56 trained over another sprocket wheel 57 fixed on the upper end of a threaded shaft 58 mounted in bearings 59 and 60 attached to one of the uprights 35.

The motor 30 is arranged horizontally to rest on a bracket 61 fixed on the upper portion of one of the uprights 36 and it is to be understood that the motors, if used, are so controlled as to be run separately or conjunctively as desired.

Both pair of uprights 35 have, on their inside facing surfaces, raised longitudinal ribs extending their full length to act as guides for a vertically slidable lamp housing support, the same consisting of two pairs of slides 65 and 66, respectively at the front and rear uprights, the same being connected at their lower ends on each side by cross pieces 67 and at their upper ends by beams 68 having inreaching undercut faces 69, these beams extending towards the front past the uprights 35.

Slidably engaging the elements 69, to extend across from one to the other, are a pair of hanger rails 70 having down-reaching brackets 71 and 72, to supportingly engage a lamp housing 73, the same being preferably a sheet metal casing in the shape of a truncated cone of rectangular cross section disposed on a horizontal axis with its base towards the negative.

This housing contains a lamp, as indicated in Figure 3, of any preferred type, the same being accessible through a hinged door 74 in its side; however the lamp may be used without a housing if the sensitized plate be adequately protected by curtains or otherwise.

From the foregoing it is to be understood that the lamp housing, as a unit with the hanger rails 70, may be moved by hand forward and back without interference with any other part of the structure and irrespective of the height at which it may be positioned.

Vertical adjustment of the lamp housing support is provided for by a bracket 75 rigidly fixed on one of the front slides 65, the outer end of the bracket being bored and threaded to agree with the screw 58, which, as has been explained, may be actuated by power or hand, due to the chain and sprocket connection with the screw shaft 51.

The shaft 51 is directly engaged in the screw threaded portion of a similar bracket 76 fixed

on one of the lateral edges of a negative frame carrier 200, (see Figure 1), the same being slidably engaged between guides on the inner faces of the forward uprights 36 and which obviously will be moved up and down in substantial synchronism with the lamp housing, the negative frame carrier being described in detail further on.

Extending from the inner faces of the forward columns 18, 18, are two pairs of bars and slidably mounted on the bars is a rectangular frame consisting of sides 81 connected at the bottom 82 and top 82'.

The negative frame carrier 200, which may be of any appropriate size, is placed on a carrier frame and having at its edges a raised, rearwardly extending marginal rim 202 provided at its outer edge with light obscuring, marginal cushions 203 against which the corresponding base edge of the lamp housing seats, making tight contact and preventing rays from the lamps from passing outward other than through the negative to strike a sensitized plate carried on the bed.

Formed in the sides 81, near their tops and bottoms, are oblique slots 83 in which are received pins 84 fixed in the inner ends of arms 85 rigidly carried by vertical bars 86, guided by brackets 99 extending from the inner sides of the columns 18, the upper ends of the bars passing through the beam 23 and provided with caps as shown.

Reaching out from the front side of the raised flange on the beam 23 are brackets 87 carrying pivots 88 on which are eccentrically mounted cam discs 89, provided with operating handles 90 by which they may be rotated, the peripheries of the discs being in operative engagement with the caps on the ends of the bars 86 in such manner as to communicate motion to them, both up and down, and thence, by reason of the arms 85, cause the pins 84 to move in the slots 83, thus moving the frame 81—82 forward or back upon its supports 80.

Obviously the disc cams 89 may be replaced by other equivalent mechanical devices, as for instance screws, and it is equally apparent that the frame 81—82 may be shifted bodily by any other preferred device than that indicated.

Journalled at 92 to the frame sides 81, near their lower ends, are strap brackets 93 connecting the frame 94 of a bed plate 95, the same being supported, when in a horizontal position, by foldable legs 96 as shown in Figure 1.

When the bed is folded upward in a vertical position between the frame sides it is held by spring clips 97 carried at the upper ends of the frame, the same engaging in corresponding elements 98 on the outer edge of the bed.

From the foregoing it will be seen that the bed plate is movable with the frame 81—82 towards or away from the negative frame, in any position in which it may be.

If motors be used separate controls for each are provided, all being conveniently accessible to an operator, who can make final or complete adjustments by the hand-wheels.

The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including many modifications without departing from the general scope herein indicated and denoted in the appended claims.

Having thus described my invention, what I

claim as new and desire to secure by Letters Patent, is:—

1. In a photo-composing machine, a pair of stationary uprights rigidly held in spaced relation, an open frame movable between said uprights in a plane parallel with their faces, a press plate carried by said frame, and cam actuated means for moving said frame and plate towards and from the body of the machine. 80
2. In a photo-composing machine, a pair of fixed uprights, an open frame movable horizontally therebetween, a plate bed hinged at a point beyond its extreme lower edge in said frame to swing into horizontal and vertical positions, and cam means for manually actuating said frame whereby the plate bed may be adjusted towards and from the body of the machine when in a vertical position. 85
3. In a photo composing machine, a negative carrier frame, a lamp, rails on which said frame and lamp are simultaneously slidable in horizontal planes, means for raising and lowering said rails whereby the frame and lamp are moved as a unit into different vertical planes, said frame and lamp being normally in juxtaposition, and means for retracting said lamp from the frame without change in their axial position. 90
4. In a photo composing machine, a negative frame, a lamp, height adjustable horizontal support rails on which said frame and lamp are maintained in axial registration irrespective of movement imparted to them, means for moving said frame and lamp co-incidentally, and means for moving said lamp away from said frame. 95
5. In a photo-composing machine having corner supports carrying transverse beams, said beams extending past the supports, rails on the inner sides of said beams, a carriage suspended from said rails, said carriage having outrigger arms on one side engaging the rails, a frame movable vertically on said carriage, a negative carrying frame movable in synchronism with said frame, and a lamp supported in said frame to move towards and away from said negative carrying frame. 100
6. In a photo-composing machine having a column at each of its four corners, rails carried by said columns transversely of the machine, a carriage movable on said rails, said carriage having uprights presenting vertical guides, a frame movable on said guides, a lamp carried by said frame, a negative frame co-related with the slidable frame, means for moving said carriage, and means for moving the negative frame and slidable frame synchronously. 105
7. In a photo-composing machine, the combination of an upright body frame, a negative holder, means for independently shifting said holder horizontally and vertically with respect to the body frame, a sensitized plate supporting bed, means for securing said bed in a position parallel with said negative holder, and means to move said bed towards and away from said holder. 110
8. In a photo composing machine, a plurality of upright supports, a negative frame centrally located in said support, a lamp movable away from and toward said frame, a vertically movable slide on said support, a carriage carried by said slide, and means to move said carriage in a longitudinal plane relative to said frame. 115
9. In a photo-composing machine, the combination with a rigid upright frame having two independent tracks disposed transversely one to the other, a support for a printing member mounted to reciprocate on one of said tracks, a holder mounted to reciprocate on the other of said tracks, and two distinct driving mechanisms independently mounted on said frame associated respectively with said support and said holder. 120
10. In a photo-composing machine having a rigid upright frame, a negative holder movable vertically and horizontally in said frame, a plate bed hinged at its lower edge to swing into horizontal and vertical positions, and cam actuated means to move said bed in planes parallel with said holder when in a vertical position. 125
11. In a photo-composing machine having a rigid upright frame, a negative holder movable vertically and horizontally in said frame, a bed frame, a plate bed hinged to its bottom edge to swing into horizontal and vertical positions in said bed frame, cam actuated means for moving said bed frame forward and back in planes parallel to said holder when in a vertical position, and means to support and guide said bed frame. 130
12. In a photo-composing machine having an upright frame, a plate bed, a negative holder and a lamp, said holder and lamp operating conjunctively in planes parallel with the face of the bed, and cam actuated means for adjusting said bed towards and away from said holder. 135
13. In a photo-composing machine having a rigid upright frame, a negative holder movable vertically and horizontally in said frame, a plate bed hinged at its bottom to swing into vertical and horizontal positions, a negative holder and a lamp, said holder and lamp being actuated co-operatively in planes parallel with the face of said bed when in a vertical position, and cam actuated means for adjusting said bed towards and away from said holder when in a vertical position. 140
14. In a photo-composing machine a single pair of uprights, one of said uprights having guides on its inner face, a slide movable vertically on said guides, a negative frame rigidly carried by said slide, means for adjusting said frame towards and from the faces of said uprights, a plate bed hinged at one edge in said negative frame to move therewith, a pair of foldable legs to support said bed when horizontal, and automatic means to retain the bed when vertically positioned. 145
15. In a photo-composing machine having an upright frame, parallel rails extending horizontally rearward from said frame, a bed for sensitized plates, a negative frame, a lamp, said negative frame and lamp being actuated co-operatively in planes parallel with the face of said bed on said rails toward and away from said upright frame, and means for moving said bed in planes parallel with said frame. 150
16. In a photo-composing machine having uprights at its corners, transverse beams connecting said uprights and extending therebeyond, an open rectangular frame slidable on the rear pair of said uprights, a plate bed arranged to swing toward and from said frame, a negative frame and lamp housing, means to actuate said frame and housing simultaneously in planes parallel with the face of said bed, tracks to support said housing, means to move said lamp housing remotely from said frame while retaining its registered relation therewith, and means to move said bed in a plane parallel with the frame.
17. A photo-composing machine comprising in combination, a rigid upright stand, a negative frame movable toward and from said stand, a

sensitized plate carrying bed hinged to the frame, means to space said plate bed in predetermined parallel positions with the negative frame, and means to adjust the negative frame while in a vertical plane to cover positions on the surface

of a sensitized plate carried on said plate bed.

18. A photo-composing machine comprising a body frame having a plurality of upright columns, a negative holder, means to shift said holder horizontally and vertically with relation to the body frame, a supporting bed for sensitized plates, means to secure said bed in parallel relation with the negative holder, and means to actuate said holder toward and from said bed.

19. A photo-composing machine comprising four columns forming a rigid upright support, a hollow rectangular frame slidably mounted in two of said columns, means to actuate said frame toward and from the columns, a negative holder carried by said frame, a sensitized plate bed, means to move sensitized plate bed into contact with said negative holder and means for spacing the negative holder a predetermined distance from a sensitized plate on said bed.

20. A photo-composing machine comprising fixed corner uprights, beams connecting the upper ends of said uprights in paired relation, pairs of studs extending horizontally outward from one pair of the uprights, a bed hinged in said frame at the bottom edge thereof and adapted to carry sensitized plates, a negative holder, means to bring the negative holder and sensitized plate bed into contact, and means to move said negative holder into predetermined positions relative to said sensitized plate bed.

21. In a photo-composing machine of the vertical type having uprights, a rail fixed to said uprights near their tops, a carriage hanging from and movable horizontally on said rail, means near the bottoms of said uprights to guide said carriage, vertical guides in said carriage, and a negative holder slidable in said guides.

22. In a photo-composing machine having two rigid uprights, horizontal rails connecting said uprights near their tops and bottoms, a carriage slidable on said rails, a negative holder slidable vertically in said carriage, a bed in the machine, a press plate on said bed, and means to move a negative in said holder into and out of contact with said press plate.

23. In a photo-composing machine of the vertical type, a horizontal track on the machine near its top, a frame movable on said track and a guide at the bottom of the machine engaged by the lower end of said frame.

24. In a photo-composing machine of the vertical type, horizontal tracks on the machine near its top and bottom, a negative carrier supported from near its top on the upper track and guided by the lower track, and means for moving said carrier horizontally on said track.

25. In a photo-composing machine of the vertical type, two stationary tracks on the machine respectively at its top and bottom, a carriage, and means for moving said carriage horizontally on said tracks.

26. In a photo-composing machine of the vertical type, a stationary rail on the machine, a carriage movable on said rail, a guide bar spaced below said rail to engage the bottom of said carriage and means for moving said carriage horizontally on said rail.

27. In a photo-composing machine of the vertical type having uprights, a stationary rail fixed near the tops of said uprights, a second rail fixed near their bottoms, said rails being horizontal, a negative carrier supported from near its top on the first named rail, and means for moving said carrier on said rails.

28. In a photo-composing machine of the vertical type, a horizontal rail fixed on the upper part of the machine, a carrier supported by and movable under said rail, and a rail in the lower part of the machine to prevent said carrier from swinging out of register with said rail.

29. In a photo-composing machine of the vertical type, a stationary rail in the lower part of the machine, a negative carrier movable horizontally on said support rail, and means for keeping said carrier in an upright position.

30. In a photo-composing machine of the vertical type, a stationary rail in the lower part of the machine, a negative carrier slidably supported on said rail, and a second rail in the upper part of the machine to retain said carrier upright.

31. In a photo-composing machine of the vertical type, horizontal tracks on the machine near its top and bottom respectively, a frame movable on said tracks, and a vertically movable negative holder in said frame.

32. In a photo-composing machine of the vertical type, stationary rails on the machine, a carriage movable on said rails, means for moving said carriage horizontally on said rails, and a vertically movable negative holder in said carriage.

33. In a photo-composing machine of the vertical type, two stationary tracks on the machine disposed respectively at the top and bottom thereof, a carriage, means for moving said carriage horizontally on said tracks, and a vertically movable negative holder in said carriage.

34. In a photo-composing machine of the vertical type having uprights, a stationary rail fixed near the tops of said uprights, a second rail fixed near their bottoms, said rails being horizontal, a negative carrier supported from near its top on the first named rail, means for moving said carrier on said rails, and a vertically movable negative holder in said carriage.

35. In a photo-composing machine of the vertical type, a stationary rail in the lower part of the machine, a negative carrier movable horizontally on said rail, means including a stationary rail at the bottom of the machine for keeping said carrier in an upright position, and a lamp combined with said negative holder.

36. In a photo-composing machine of the vertical type, a horizontal track on the machine near its top, a second horizontal track on the machine at its bottom, a frame movable on the upper track and guided by the lower track, a vertically movable negative holder in said frame, and a lamp combined with said negative holder.

37. In a photo-composing machine of the vertical type, a horizontal track on the machine near its top, a second horizontal track on the machine at its bottom, said tracks being parallel a negative carrier supported from near its top on the upper track and guided by the lower track, means for moving said carrier horizontally on said tracks, and a lamp combined with said negative holder.

HARRY C. JONES.