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CONTACT PRINTER ASSEMBLY

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2 Sheets-Sheet 2

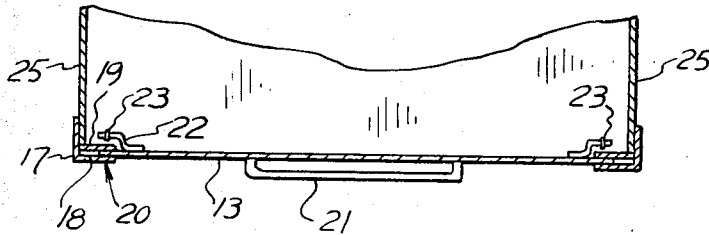


FIG. 5

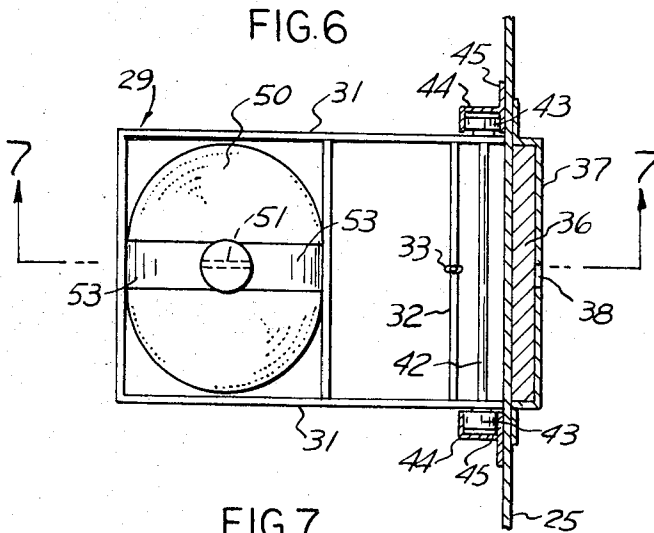


FIG. 6

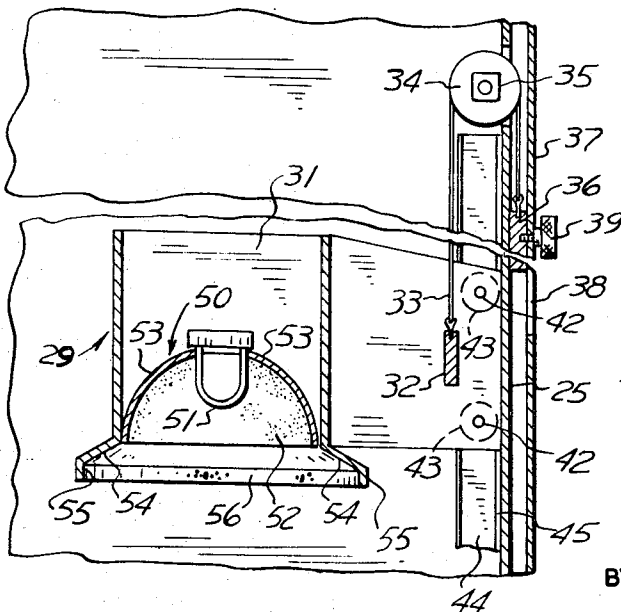


FIG. 7

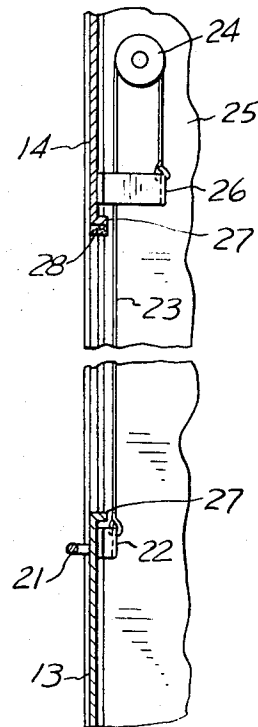


FIG. 8

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## CONTACT PRINTER ASSEMBLY

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7 Claims

### ABSTRACT OF THE DISCLOSURE

A photographic contact printer having a housing defining a printing chamber and a bed, with an improved light assembly mounting which includes channel tracks and rollers on the light assembly to support and guide the light assembly. A counterweighted control is provided on the exterior of the housing for automatically spacing the light source relative to the bed. An improved door construction is provided to seal off the light assembly during exposure. Also included is an improved light reflector.

An object of the present invention is to provide an improved photographic contact printer which is of such construction as to completely enclose protectively the light source during exposure to protect the eyes and other parts of the operator during printing.

It is another object to provide an improved printer wherein the light source is movably mounted upon the interior of the housing and is properly counterbalanced together with a manual means for effecting automatic vertical adjustments in the setting of the light assembly from the exterior of the housing.

It is a further object to provide visual means for controlling the vertical distance of the light source from the bed without visibly watching same and wherein the doors may be closed.

It is a further object to provide an improved door construction in the nature of a pair of oppositely openable coplanar doors which are so interconnected, both may be opened and closed by the operator using one hand and leaving the other hand free for other functions.

It is another object to provide in the present photographic printer an improved light reflector assembly to provide uniform distribution of light for improved printing.

These and other objects will be seen from the following specifications and claims in conjunction with the appended drawings in which:

FIG. 1 is a front elevational view of the present photographic contact printer.

FIG. 2 is a right side elevational view thereof.

FIG. 3 is similar to FIG. 1 with the doors open.

FIG. 4 is a rear elevational view thereof.

FIG. 5 is a fragmentary section on an increased scale taken in the direction of arrows 5—5 of FIG. 1.

FIG. 6 is a fragmentary section on an increased scale taken in the direction of arrows 6—6 of FIG. 3.

FIG. 7 is a fragmentary section taken in the direction of arrows 7—7 of FIG. 6.

FIG. 8 is a fragmentary section on an increased scale taken in the direction of arrows 8—8 of FIG. 3.

Referring to the drawings, the present photographic contact printer includes housing 11 with opposed front and rear walls and the opposed side walls 25, FIG. 5.

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The aforesaid walls define a printing chamber upon the interior of the housing at the bottom of which there is provided a conventional bed which includes a blanket frame A and a glass frame B schematically illustrated in FIG. 3 and showing when the front opposed coplanar bottom and top doors 13 and 14 have been opened as shown.

The lower portion of the housing includes a chamber 12 within which is housed a transformer and vacuum mechanism or other equipment as desired, but which forms no part of the present disclosure and thus its detailed description is omitted.

The lower chamber 12 includes the removable partition door 15 within the front wall of the housing, there being upon the rear wall FIG. 4 a pair of vertically spaced gridded openings 16 which communicate with chamber 12 as well as with the upper printing chamber such as shown in FIG. 3.

A pair of coplanar vertically adjustable doors, namely lower door 13 and upper door 14, are mounted within the front wall portion of the housing with their outer edges guidably received within the channels defined by angle members 17, spacers 18 and plates 19 as best shown in FIG. 5. The lower door having a handle 21. Angle members 17, spacers 18 and plates 19 thus provide a pair of opposed upright channels 20 within the front wall of the housing to guidably receive coplanar doors 13 and 14.

These doors are adapted for opening and closing movements in unison by virtue of a pulley cable arrangement illustrated in detail in FIGS. 5 and 8.

Bottom door 13 adjacent its opposite sides upon its interior includes a pair of spaced brackets 22 whose respective ends are secured to the respective upright cables 23 which extend over pulleys 24 journaled to the respective side walls 25, FIG. 8. The free ends of the said cables extend downwardly and connect corresponding additional brackets 26 which project from edge portions of the corresponding upper door 14.

The doors are thereby counterbalanced against each other and are so arranged that downward opening movement of door 13 causes a corresponding, simultaneous upward opening movement of upper door 14 such as shown in FIG. 3. Likewise, upward closing movement of door 13 permits a corresponding downward movement by gravity of the upper door 14.

As shown in FIG. 8, the meeting edges of the said doors have inwardly directed flanges 27, one of which mounts a sponge rubber sealing strip 28 for effectively closing off the interior or printing chamber of the housing during light exposure.

Within the housing chamber shown in FIG. 3, there is movably mounted a light assembly 29 including a cooling blower 30, said light assembly being centrally disposed within said chamber for the application of an intense light source 51 upon the bed A-B during a contact printing operation.

The light assembly includes a light housing which has a pair of upright spaced side plates 31 which extend at right angles toward one side wall 25 and adjacent thereto FIG. 6. Intermediate said side plates interconnecting the same is cross plate 32, FIGS. 6 and 7 which is centrally connected to the counterweight cable 33.

Said cable movably extends over pulley assembly 34—35 which is secured to and extends transversely through a portion of the side wall 25 with the free end of the

cable connected with the vertically adjustable counterweight 36, FIG. 7.

Said counterweight is guidably and movably mounted loosely within the upright elongated counterweight housing 37 which has an upright slot 38 in its outer wall, FIG. 2.

A manual means in the form of a set screw at its inner end is threaded into the counterweight 36, FIG. 7 and at its outer end includes a knurled handle 39. An intermediate portion of the manual means includes a collar which on rotative adjustment of the manual means is adapted to frictionally engage the outer wall of the counterweight housing, if desired, for securing the counterweight in any desired adjusted position relative to the slot 38, and with a corresponding adjustment of the light assembly 31 upon the interior of the housing.

A suitable scale 41 with indicia measuring inches, as for example, 17 through 30 inches is applied to the exterior surface of the housing 37 adjacent slot 38. The pointer 40 is adapted for movement relative to said scale and at one point is connected to the counterweight at the slot 38.

Accordingly, the inch designations upon the scale 41 are adapted to show automatically the vertical distance of the lower portion of the light assembly with respect to the printer bed A-B of FIG. 3 so that an accurate setting thereof can be secured without the opening of the doors 13 and 14, and for the primary purpose of protecting the operator from the light source during exposure and during the printing operation.

Thus, manual adjustment of the manual means 39 with respect to the slot 38 will cause through the cable and pulley assembly 33-34, vertical adjustments of the counterweight 36 and corresponding opposite vertical adjustments of the light assembly 31 upon the interior of the housing.

The movable mounting of the light housing 31 within said housing chamber, FIG. 3, is best shown with reference to FIGS. 6 and 7.

Adjacent the ends of the side plates 31 are a pair of vertically spaced horizontally disposed rods 42 which extend through said side plates and at their ends journal the opposed vertically spaced pairs of rollers 43. These rollers are movably and guidably mounted within the opposed spaced upright pair of guide channels 44 upon the interior surface of housing wall 25. Within the said channels 44 are provided additional wear plates 45 over and along which the rollers 43 move for the primary purpose of supporting the light assembly 29 in the position shown rigidly and at the same time to facilitate and permit vertical adjustments thereof from the exterior of the housing.

There is provided an improved light assembly as best shown in FIGS. 6 and 7 and wherein the light housing 31 includes the upwardly concave parabolic reflector 50 which centrally mounts an intense light source 51 which may be a mercury or other type of vapor lamp capable of producing high intensity illumination for the contact printing process.

As shown in FIG. 6, the reflector is elliptical in plan with its longitudinal axis at right angles to the general plane of the light source 51.

The interior concave surface of the reflector throughout most of its surface is pebbled but there is provided upon the interior of the reflector a central area 53 which is highly polished and which extends transversely of the long axis of the reflector and within generally the plane of the light source 51.

The light housing also includes a suitable hood which extends outwardly and downwardly as at 54 and terminates in the rectangularly shaped wall portions 55 and 56. The opposed spaced walls 55 are highly polished and very reflective whereas the other pair of end walls 56 are pebbled.

It has been found that such a reflector including the

highly polished elements 53 and 55 in some manner provides for a maximum and even distribution of high intensity light over the entire surface of the bed for the contact printing operation.

Having described my invention, reference should now be had to the following claims.

I claim:

1. In a photographic contact printer having a housing including a front wall and side wall defining a printing chamber, a bed and a light assembly within said chamber; the improvement of means to movably mount the light assembly comprising:
  - a vertically adjustable light housing mounting a light source and including spaced side plates extending at right angles to said side wall;
  - spaced upright opposed guide channel tracks on said side wall;
  - vertically spaced pairs of rollers journaled upon the exterior of the side plates guidably mounted in said tracks and supporting the light housing for vertical movements;
  - a counterweight housing on the exterior of said side wall including an upright slot;
  - a counterweight guidably movable in said latter housing;
  - a cable and pulley assembly extending through said side wall interconnecting said light housing and counterweight;
  - and manual means secured to said counterweight and projecting through said counterweight housing, to movably adjust said counterweight and light housing.
2. In the contact printer of claim 1, the mounting of said rollers including a pair of vertically spaced shafts extending through said side plates adjacent their one ends;
  - said cable pulley assembly including a cross plate interconnecting the free end portions of said side plates and centrally connected to said cable.
3. In the contact printer of claim 1, said manual means including a screw shaft at one end threaded into said counterweight, a handle at its other end, and a friction collar intermediate its ends adapted to frictionally engage said counterweight housing.
4. In the contact printer of claim 1, a scale with indicia upon the counterweight housing adjacent its slot for indicating the distance between said light source and said bed;
  - and a pointer movable along said scale and secured to said counterweight.
5. In the contact printer of claim 1, there being a pair of said side walls, the housing front wall including a pair of opposed upright channels adjacent its opposite sides;
  - coplanar lower and upper doors movably mounted in said channels;
  - a pair of spaced cable and pulley assemblies mounted upon the interior of said side walls with respective ends of said cables connected to said doors, whereby manual movements of the lower door effects simultaneous opposing movements of said upper door.
6. In the contact printer of claim 1, said light housing including an upwardly concave parabolic reflector mounting and enclosing said light source;
  - said reflector being of elliptical shape in plane with the light source lying in a plane at right angles to its longitudinal axis; opposed internal surface portions of said reflector generally within the plane of said light source being highly polished, the remainder of the interior surface of said reflector being pebbled, for uniform light distribution upon said bed.
7. In the contact printer of claim 6, said light housing below said reflector including an outwardly tapered and downwardly extending hood of rectangular shape in plan,

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one pair of its side walls on the interior being highly polished, the other pair being pebbled.

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U.S. Cl. X.R.

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