April 30, 1929. N. F. ANDERSON 1,710,960

PHOTOPRINTER'S LIGHT BOX

Filed June 7, 1926

Fig. 1

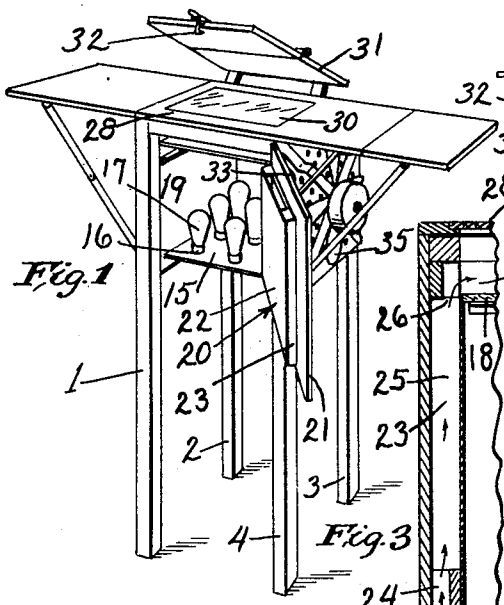


Fig. 2

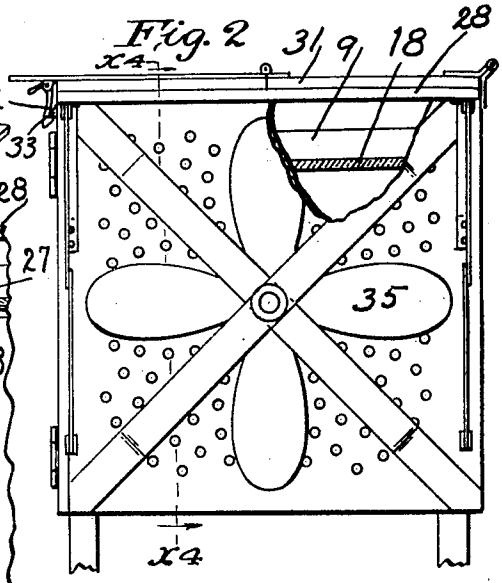


Fig. 3

Fig. 4

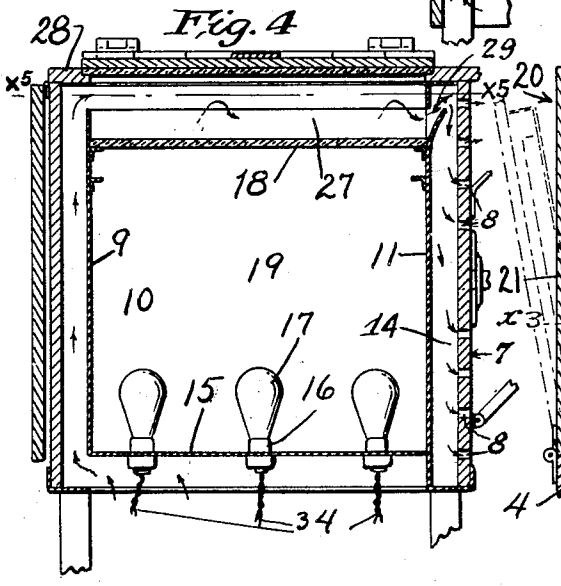
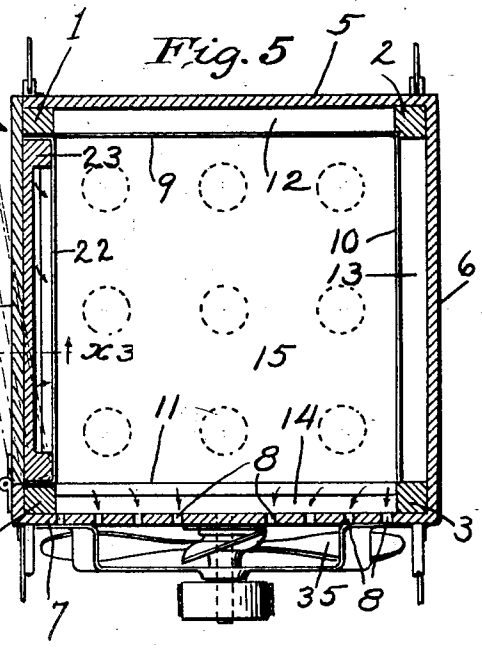


Fig. 5



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UNITED STATES PATENT OFFICE.

NELSON F. ANDERSON, OF LOS ANGELES, CALIFORNIA.

PHOTOPRINTER'S LIGHT BOX.

Application filed June 7, 1926. Serial No. 114,141.

This invention relates to light boxes adapted for use in photographic dark rooms and adapted to project light through negatives to produce prints from such negatives.

It is common in the art to provide a box having electric lamps on the bottom, a light diffusing partition extending across the box above the lamps and substantially of a character such as may be made by ground glass or tissue paper, or both; a translucent glass above the diffusing partition to support the negative for printing the sensitized paper; and a platen adapted to be raised and lowered from the negative and the glass that supports it so as to allow the placing and removal of the sensitized paper upon the negative.

In such contrivances there have heretofore been provided electric conductors with electric switches so connected and arranged that when the platen is pressed down the electric current is turned onto the lamps and the negative is illuminated to make the print.

The period of illumination is short, say one and one-eighth or one and one-fourth seconds and the operator places the sensitized paper on the negative and lowers the platen; and when the platen is lowered electrical connection is made and the light is turned on; and when the platen is raised, the light is turned off, thus allowing the print to be taken and laid aside for the developing bath, while another piece of sensitized paper is placed over the negative and so on.

It is found that the heat of the electric lamps in the lower part of the box becomes so great that the box has to be opened from time to time to allow it to cool off and the object of this invention is to avoid the necessity of opening the box for that purpose.

The invention is broadly new, basic and pioneer in that I provide means for circulating air in such relation to the light chamber as to cool the same without allowing any escape of light from the light box into the dark room where the sensitized pieces of paper are apt to be acted upon by any light that would escape from the light box during the illumination of the negative.

In this invention I provide a forced circulation of air to cool the interior of the light box and this I do by arranging hollow walls surrounding the light box and arranged to receive air at the lower edges conducted to the chamber between the diffusion partition and the negative support.

Various air circulating or draft producing appliances and devices may be used in carrying out the invention; and as an example of such means, I shall illustrate the invention as constructed with a rotary fan, which may be driven by an electric motor or other fan driving means, although it is understood that well known substitutes can be applied by forcibly causing air currents, as by bellows, air compressors or other means.

In some instances pipes carrying refrigerated air may be applied, and a flue connected to carry off the heated air may be provided.

It is sufficient for illustration of the invention that one of the hollow walls be provided with perforations and a fan driven by electric power mounted adjacent to the perforated wall to draw out of the box the air heated by the lamps to be employed.

The accompanying drawing illustrates the invention in one of the forms to which it is adapted.

Figure 1 is a perspective view of the box on legs and provided with side leaves; the door to its light chamber being shown open and the platen raised showing the negative supported in position ready to be printed.

Fig. 2 is an elevation of the exhaust side of the box with a fan for producing a draft through the hollow walls of the box. Parts of the box are broken to expose other parts.

Fig. 3 is a fragmental elevation in section on line x^3—x^3, Fig. 5.

Fig. 4 is a vertical section on line x^4—x^4, Fig. 2, the fan being omitted.

Fig. 5 is a horizontal section on line x^5—x^5, Fig. 4.

The box proper is shown in the plan view Fig. 5 as constructed with four corner posts 1, 2, 3, 4 to the outer faces of which are fastened outside plates 5, 6, 7. The plates 5 and 6 are imperforate and the plate 7 is provided with perforations 8. On the inner faces of said posts 1, 2, 3, 4 are fastened the inner sheet metal plates 9, 10 and 11 respectively, spaced apart from the outer plates 5, 6, 7 to form flues 12, 13 and the outlet passage 14 disposed between the perforated plate 7 and the plate 11. 15 is a floor at the bottom of the box and the same is provided with sockets 16 for the lamps 17.

The outer and inner wall plates and the floor are opaque. 18 is a translucent diffusion plate forming together with the inner plates and the floor, a light chamber 19. 20 is a

hollow door formed of an outside plate 21, an inside plate 22, and an intermediate frame 23, all of which are opaque and the frame 23 is arranged to provide a passage formed by an intake 24, a flue 25 and a top outlet 26 opening into a draft chamber 27 formed between the translucent diffusion plate 18 and the light excluding top 28 of the box. The inner wall sections 9, 10, 11 and the inner facing of the door terminate a short distance above the diffusion plate 18 to continue the flues of the hollow walls and the hollow door 20 through the draft chamber 27 and into the outlet 29 into the outlet chamber 14 as clearly illustrated in Fig. 4.

The top 28 of the light box is provided with an opening therethrough and a transparent plate 30 over said opening to support the negative, and the sensitized paper thereon, not shown, and to allow such paper to be compressed upon the negative when the platen 31 is lowered.

Construction of the platen is well known and no attempt has been made to illustrate the well known electrical connection whereby the electric current is turned onto the electric lamps 17 when the door is closed and the platen lowered.

When the platen is raised the connection is broken and the lamp goes out.

32 indicates an electrical contact point on the platen adapted to engage the contact point 33 on the door, which it is understood connects in the usual way with the conductors 34 of the lamps.

The light baffle 11 prevents escape of light to the dark room through the perforated wall.

35 indicates fan means for causing a draft through the hollow walls and the hollow door when the door and platen are closed; and by this means air is exhausted from the outlet chamber and a current of cooling air is thus caused to flow up through the hollow door in the hollow walls to carry off the heat and expel it through the perforated wall while the fan operates.

The fan may be operated continuously and the cooling effect will continue to some extent during the time that the platen is open. The hollow door will normally be closed and all that needs to be operated is the platen in the usual way, holding the negative as is common and placing the sensitized paper on the negative and removing it in rapid succession.

By the contrivance shown herein ventilation is effected while the door and platen are closed, and at that time there is no opening for the passage of light from the lamps to the dark room in which the printing operation is being performed.

I claim:

1. The photo printer's light box set forth comprising a light chamber constructed with four posts, opaque sheet metal walls fastened to the inside of said posts to enclose three sides of the light chamber, an opaque bottom to the light chamber, an opaque top fastened to the posts and provided with an opening to receive a negative; a negative holder, two imperforate plates fastened to the outside of said posts to form two walls, a hollow wall permeable to air fastened to said posts to form an outlet passage, an opaque hollow door to close the fourth side of said light chamber, said door and the walls of two of said passages being open at the bottom to the atmosphere, and the chamber provided with the opposite perforated wall being closed to the atmosphere at the bottom, the passage of said hollow walls being open at the top to the top of the light chamber so that when the door is closed air may be forced through the space around the light chamber to remove heat therefrom.

2. A photo printer's light box comprising a light chamber having three light excluding walls to form three sides to the light chamber, an opaque floor for said light chamber, a light diffusing plate at the upper part of said light chamber, lamps disposed on the floor of said chamber between said floor and the plate, outer wall members spaced from the inner wall members to form passages open to the atmosphere at the bottom and open to the top of the light chamber; an outer wall permeable to air closing another side of the chamber and forming an outlet passage on another side of the box, a hollow door having an opaque inside wall and open to the external air at the bottom and to the top of the light passage when the door is closed, said outlet chamber being closed to light at the bottom and lighted with a light baffle at the top, an opaque top to the box provided with a negative holder and a platen to close the light chamber against escape of light when the platen and door are closed.

3. A photo printer's light box, comprising a light chamber having ventilating passages below the bottom and extending up around two of the walls; a door for closing the open side of said chamber and having passages opening into a draft chamber above the top of said light chamber; a perforated wall opening at its top to said draft chamber; a fan exteriorly connected to said perforated wall and adapted for exhausting air from around said light chamber; incandescent lights disposed in the light chamber and a light deflector formed on one of the light chamber walls, adapted to prevent escape of light from the light chamber, when the door is closed and the lamps are illuminated.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 29th day of May, 1926.

NELSON F. ANDERSON.