Feb. 3, 1931. H. H. SULLIVAN 1,790,881

PRINTING MACHINE FOR SENSITIZED MATERIAL

Filed Nov. 2, 1927 4 Sheets-Sheet 1

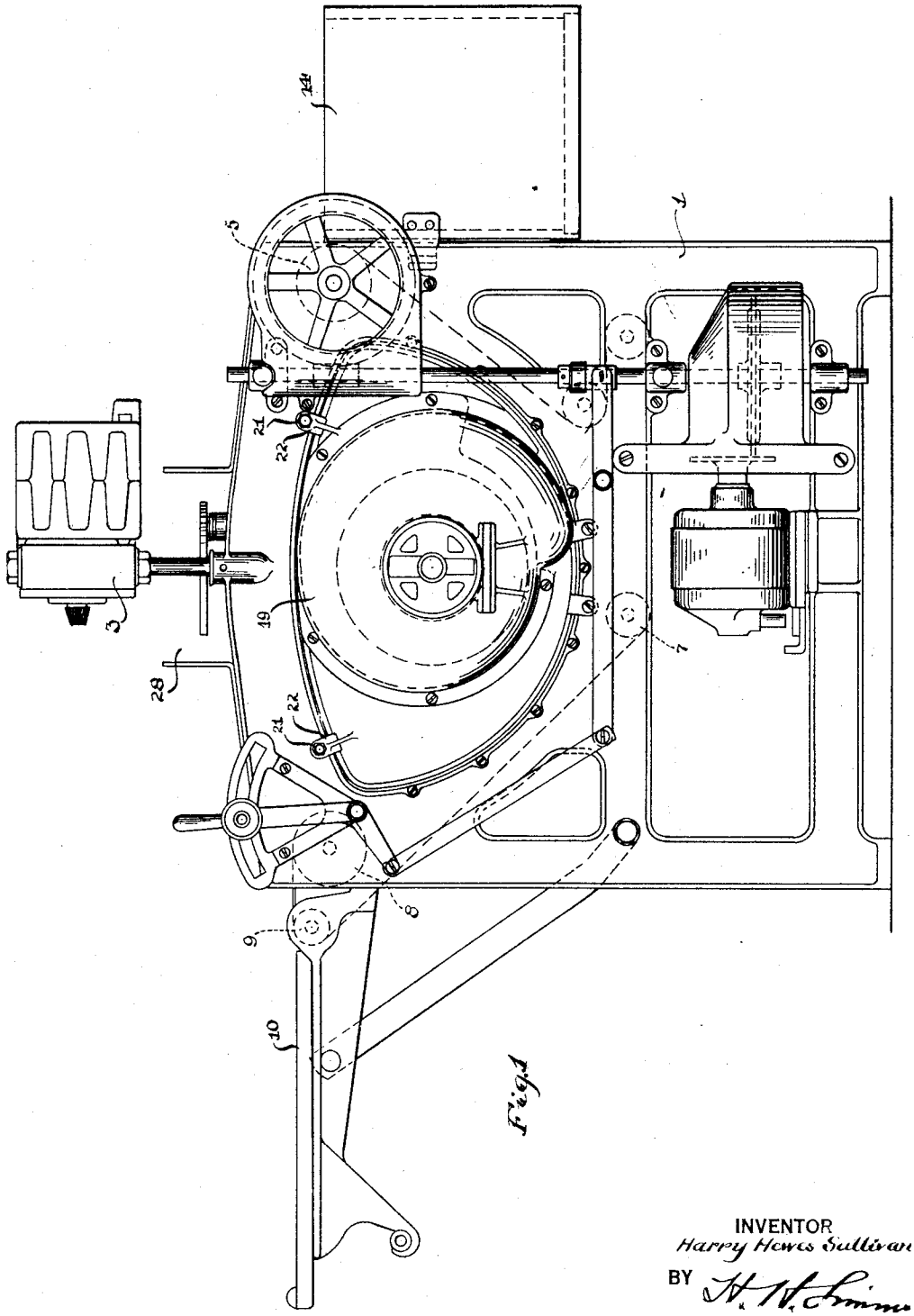


Fig. 1

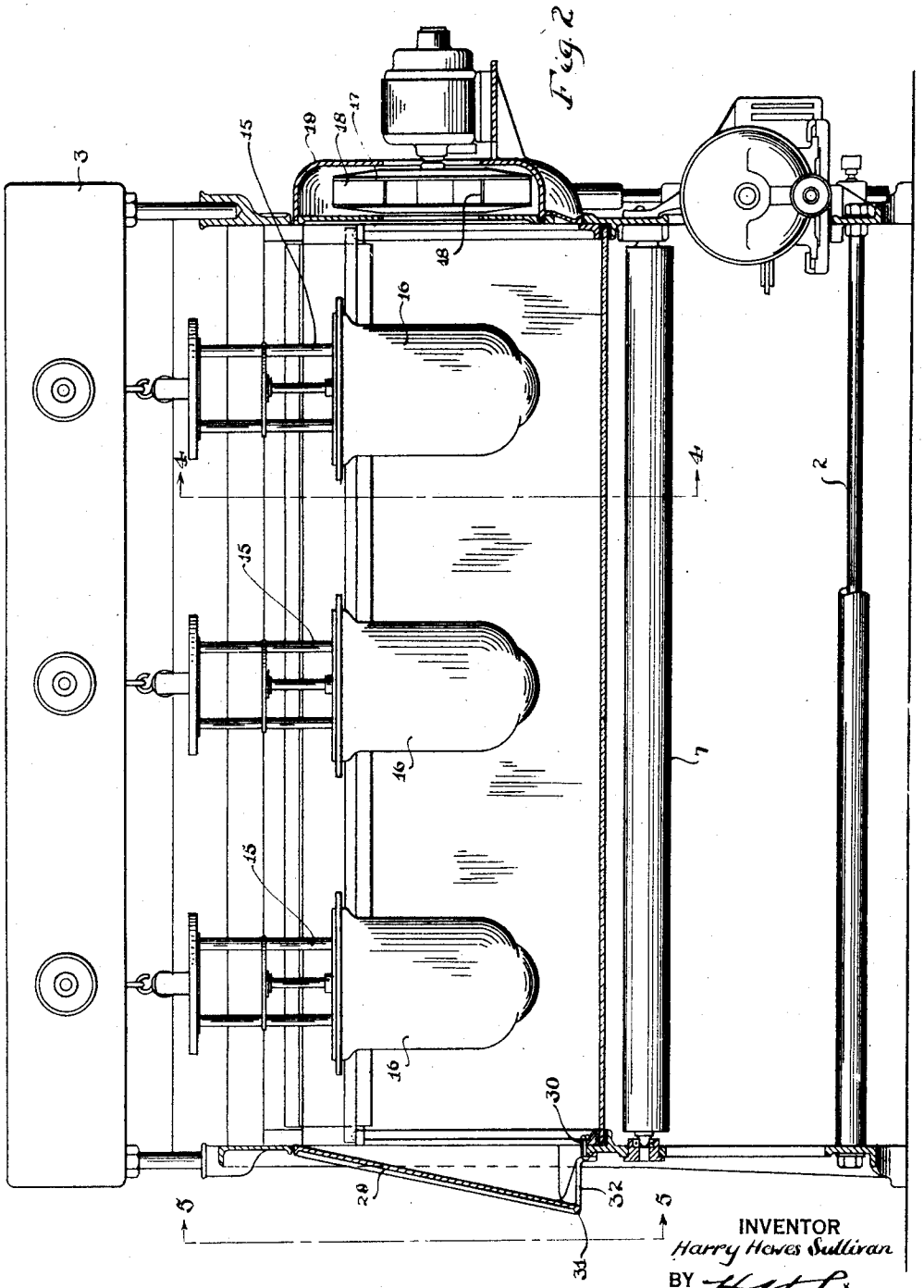
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PRINTING MACHINE FOR SENSITIZED MATERIAL

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Fig. 2



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Fig. 3

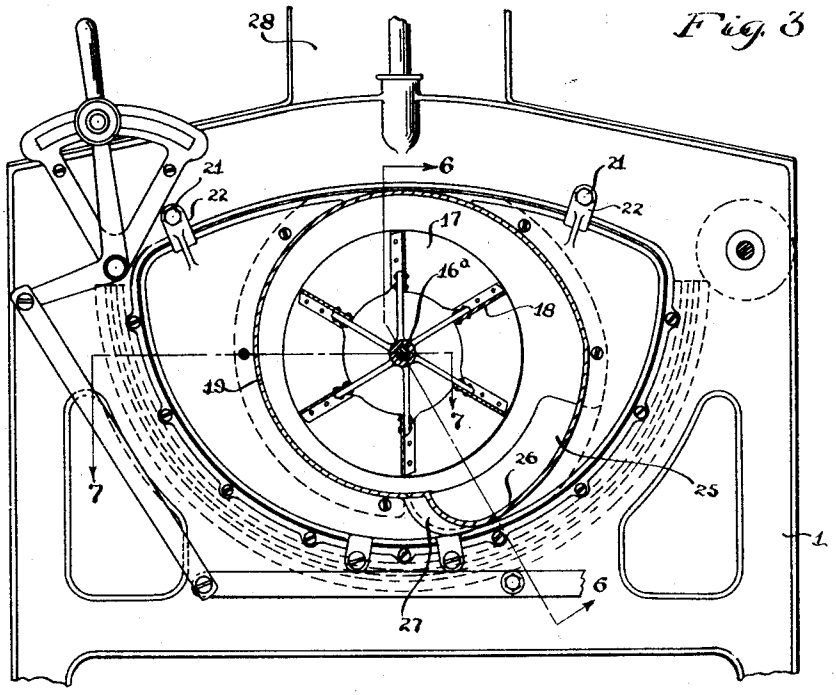
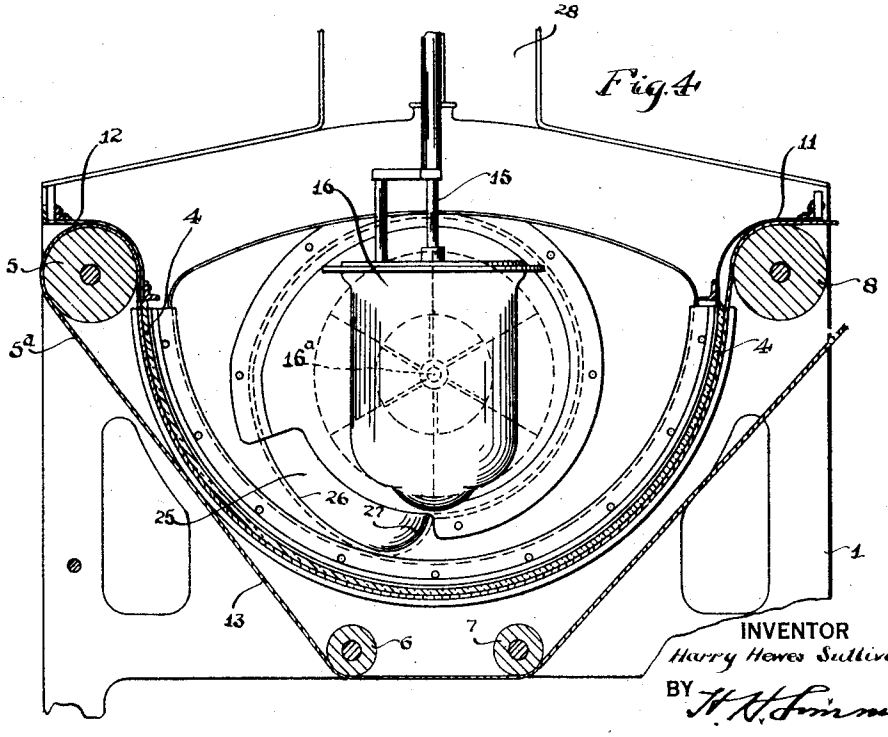


Fig. 4



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PRINTING MACHINE FOR SENSITIZED MATERIAL

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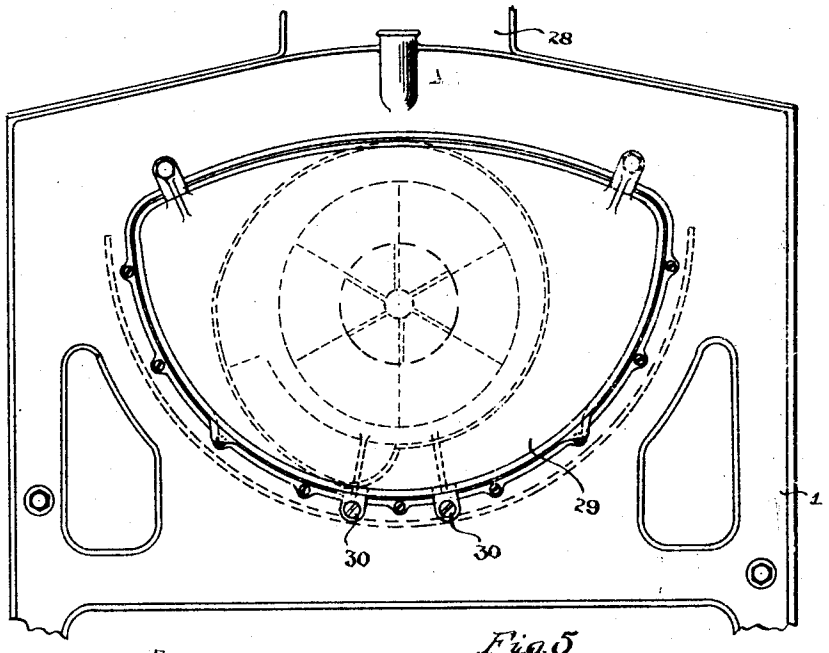


Fig. 5

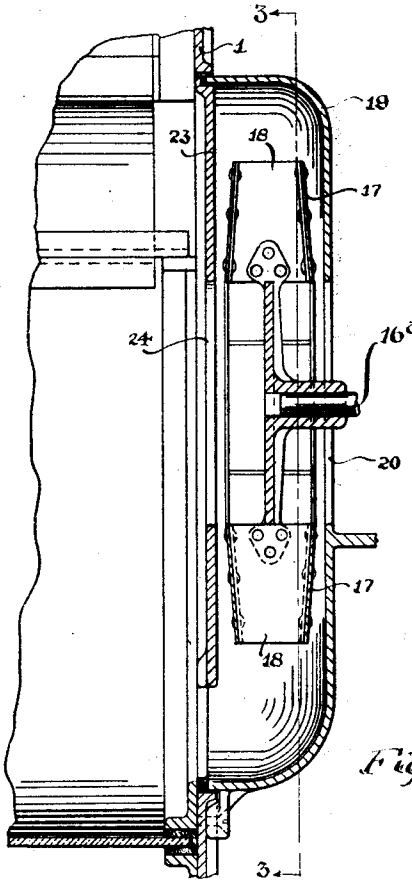


Fig. 6

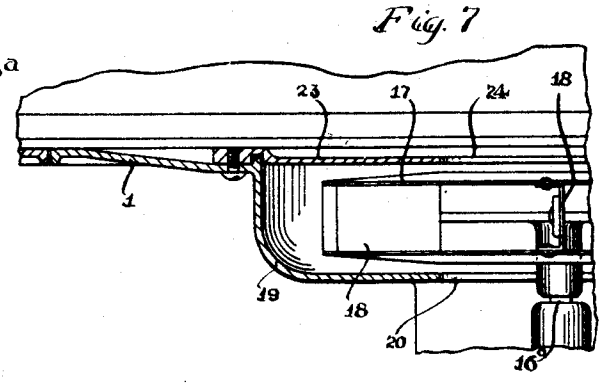


Fig. 7

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Patented Feb. 3, 1931 1,790,881

UNITED STATES PATENT OFFICE

HARRY HEWES SULLIVAN, OF ROCHESTER, NEW YORK

PRINTING MACHINE FOR SENSITIZED MATERIAL

Application filed November 2, 1927. Serial No. 230,640.

The present invention relates to printing machines for sensitized material and more particularly to the type in which the blast producing means is employed for maintaining the bed in a cool condition or state. An object of this invention is to provide a novel construction which permits the concentration of the blast upon those portions of the bed subjected to greatest heat. Another object of the invention is to associate with a peripheral discharging rotary blower, a casing which will distribute the blast of air in the most desirable position over the glass bed of the machine.

To these and other ends, the invention consists of certain parts and combinations of parts all of which will be hereinafter described; the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is an end view of the machine constructed in accordance with this invention;

Fig. 2 is a vertical section through the machine;

Fig. 3 is a section on the line 3—3, Fig. 6;

Fig. 4 is a section on the line 4—4, Fig. 2;

Fig. 5 is a section on the line 5—5, Fig. 2;

Fig. 6 is a section on the line 6—6, Fig. 3; and

Fig. 7 is a section on the line 7—7, Fig. 3;

Referring more particularly to the drawings, 1 indicates the side frames connected together by tie rods 2 and a switch box 3. Between the two frames is also supported a curved or U-shaped glass or transparent bed 4, the concave face of which is disposed upwardly so that the ends of the bed extend upwardly. An endless belt 13 forming the feeding means for the sensitized material passes on the convex or underside of this bed 4 and also about rollers 5, 6, 7, 8 and 9, the rollers 8 and 9 being arranged at the intake end of the machine at the rear of a feed table 10 projected laterally from the machine. Adjacent the intake and the discharge ends of the machine are two plates 11 and 12 cooperating respectively with the rollers 8 and 5. The sheets to be printed are placed on the belt 13 adjacent the roller 8 and are carried by the belt under the plate 11 to the glass or transparent bed 4 and after passing under this bed they are discharged into the receptacle 14 from a point between the roller 5 and the curved plate 12. The operating mechanism for this feeding mechanism may not be described herein as it is a well known construction.

The illuminating means embodies a number of arc lamps 15 suspended from the switch box 3 over the concave face of the bed 4 so that the globes 16 of these lamps project below the ends of the curved bed, whereby the rays from the lamps are projected downwardly and also outwardly covering practically the entire surface of the curved bed on the concave side thereof.

Prior to this invention these beds have been cooled by a fan arranged at one end of the machine and distributing the air over the concave surface of the bed, the air being discharged from the fan in the direction of the axis of rotation of the fan. In Patent No. 1,549,034, granted Aug. 11, 1925, I have disclosed a deflector used in connection with a fan of the type mentioned the air impinging this deflector and being directed over the concave side of the bed. In this invention, a greater supply of air is obtained and a more effective distribution of the air over the glass bed is secured by providing a rotary blower of the type in which the air is discharged from the blades of the blower substantially perpendicular to the axis of the blower or at the periphery of the blower, the blower being enclosed in a casing which has a discharge so positioned that a stream of air issues therefrom, the main stream thereof traveling across the bed transversely of the line of feed of the sheets substantially at the lowermost portion of the bed, the air spreading from the axis of the stream laterally and up the upwardly curved ends of the bed, thus maintaining the bed as a whole in a cool condition. Provision is also made for closing the opposite side of the bed except at a small outlet adjacent the lowermost portion of the bed.

In the illustrated embodiment of the invention 16ª indicates the shaft of the blower supporting two rings 17 spaced apart by

radial blades 18 so that air is thrown from the periphery of the blower as the latter rotates. This blower is enclosed within a casing comprising an outer wall 19 having a central portion of cup formation provided with a central opening 20 concentric with the shaft 16ª of the blower and having an area substantially coextensive with the openings at the center of the rings 17.

The outer wall 19 also forms a closure for an opening in one of the side frames 1 and is secured in said opening by bolts 21 passing through the side frame and the ears 22 projecting outwardly from the outer wall. The inner wall 23 of the casing is in the form of a plate having an opening 24 concentric with the shaft 16ª of the blower and also provided at its lower end with an opening 25 beyond the periphery of the rotary blower. The opening 25 is directly opposite a pocket 26 at the lower portion of the cup shaped portion of the outer wall and the lowermost end wall 27 of this pocket is at an oblique angle to the axis of turning on shaft 16ª of the rotary blower. As the blower turns, it not only draws air from the outside of the machine but also draws air from the space from above the upper surface of the bed 4 and this air is thrown from the periphery of the rotary blower and is collected in the pocket 26, being deflected by the wall 27 of the pocket through the opening 25 of the inner wall. This opening is situated in close proximity to the lowermost portion of the upper surface of the curved bed so that the air issues from the opening with its main axis extending transversely of the line of feed of the sheet material but at an oblique angle to such line of feed. This air then spreads laterally from the main axis of the stream and follows up the curved ends thereby maintaining the bed in a cool condition. At the top there is an opening 28 through which the air escapes.

The opposite side of the machine has an opening in the side frame closed by a plate 29 which is bolted at 30 to the side frame and has the main portion of its wall inclined downwardly and outwardly from its top edge so that an offset portion 31 is provided at the lower portion of the plate. This offset portion has an outlet portion 32 which is in close proximity to the lowermost portion of the concave surface of the bed and which provides an outlet for the stream of air passing across the bed so that an air pocket will not be formed at the side of the bed opposite the blower.

It is apparent that this invention enables the use of a rotary blower as distinguished from a fan for cooling the concave bed of a printing machine. The blower makes less noise than the fan and its casing is so constructed that the main axis of the stream of air is directly between the lowermost portions of the lamp and the bed where the greatest heat exists, the stream passing in a line which is oblique to the line of feed starting slightly to one side of the line of the lamps and passing slightly to one side of the lamp line at the other side of the machine where it issues out of the opening 32. The main stream also spreads laterally up the upturned ends of the bed.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed from one upwardly turned end to the other and illuminating means arranged over the concave face of the bed, said illuminating means embodying a series of lamps arranged transversely of the bed at the middle of the same, of cooling means for the bed comprising a rotary blower of the peripheral discharge type arranged at one side of the bed, and a casing enclosing said blower and having a discharge portion beyond the periphery of the blower, opening above the bed between the two upwardly extending end portions thereof and in close proximity to the upper concave face of the bed adjacent the lowermost part thereof and beneath the illuminating means so as to concentrate the main blast at the hottest part of the bed, the main axis of the blast as it issues from the casing extending transversely of the line of feed of the material.

2. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed from one upwardly turned end to the other and illuminating means arranged over the concave face of the bed, said illuminating means embodying a series of lamps arranged transversely of the bed at the middle of the same, of cooling means for the bed comprising a rotary blower of the peripheral discharge type arranged at one side of the bed, and a casing enclosing said blower and having a discharge portion beyond the periphery of the blower, opening above the bed between the two upwardly extending end portions thereof and in close proximity to the upper concave face of the bed adjacent the lowermost part thereof and beneath the illuminating means so as to concentrate the main blast at the hottest part of the bed, the main axis of the blast as it issues from the casing extending transversely of the line of feed of the material but at an oblique angle to such line of feed.

3. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed from one upwardly turned

end to the other, and illuminating means arranged over the concave face of the bed, said illuminating means embodying a series of lamps arranged transversely of the bed at the middle of the same, of cooling means for the bed comprising a rotary blower of the peripheral discharge type arranged at one end of the bed with its axis extending transversely of the line of feed of the material over the bed and above the concave face between the two upwardly extending end portions, and a casing enclosing said rotary blower and having a discharge in the side wall thereof beyond the periphery of the rotary blower, the wall of said casing adjacent the discharge opening being formed to direct the main axis of the blast transversely of the line of feed of the material and beneath the illuminating means so that the main blast is concentrated at the hottest part of the bed.

4. In a printing machine the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed, illuminating means arranged over the concave face of the bed, the top of the bed being open to permit the heat from the bed to rise, of a rotary blower of the peripheral discharge type arranged at one side of the bed, a casing enclosing said blower and having intake openings on opposite sides thereof in line with the axis of rotation of the blower one of said openings being disposed toward the space between the upwardly extending portions of the bed and the other of said openings being disposed toward the outside of the machine so that air may be drawn from the space above the bed and also from the outside of the machine, and said casing also having a discharge beyond the periphery of the blower opening above the bed between the two upwardly extending end portions thereof and in close proximity to the upper concave face of the bed adjacent the lowermost portion thereof, the main axis of the blast as it issues from the casing extending transversely of the line of feed of the material.

5. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed from one upwardly turned end to the other, and illuminating means arranged over the concave face of the bed, said illuminating means embodying a series of lamps arranged transversely of the bed at the middle of the same, of a closure for the space between the upwardly extending portions at one end of the bed having an opening adjacent the lowermost portion of the concave face of the bed, a casing closing the opposite end of the bed between the upwardly extending portions and having a discharge portion in close proximity to the concave face of the bed adjacent the lowermost portion of the latter and below the lower portions of the lamps, and a blower of the peripheral discharge type arranged in the latter casing and having its periphery operating above the discharge opening of the casing to cool the bed.

6. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed from one upwardly turned end to the other, and illuminating means arranged over the convex face of the bed, said illuminating means embodying a series of lamps arranged transversely of the bed at the middle of the same, of cooling means for the bed, a blower casing arranged at one end of the bed and having a discharge portion in close proximity to the lowermost portion of the upper concave face of the bed and below the lower ends of the lamps, a rotary blower of the peripheral discharge type arranged in said casing.

7. In a printing machine the combination with a substantially U shaped transparent bed, having its end portions extending upwardly, a line of lamps depending over the bed between the upturned ends, a blower, a casing enclosing the blower and having an outlet shaped to direct the main axis of the stream of air from the blower between the lower portions of the lamps and the bed starting slightly to one side of the line of lamps and passing across the line to a point slightly to the other side of the lamp line, and a housing enclosing the lamps, open at its top and having an opening at its side opposite the blower.

8. In a printing machine, the combination with a substantially U shaped transparent bed having its end portions extending upwardly, means for feeding the material over the convex face of the bed, and illuminating lamps depending in a line over the bed between the upturned ends, of bed cooling means directing a stream of air between the lower ends of the lamps and the bed, the main axis of the said stream starting to one side of the line of lamps and passing across the line to the other side of said line.

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