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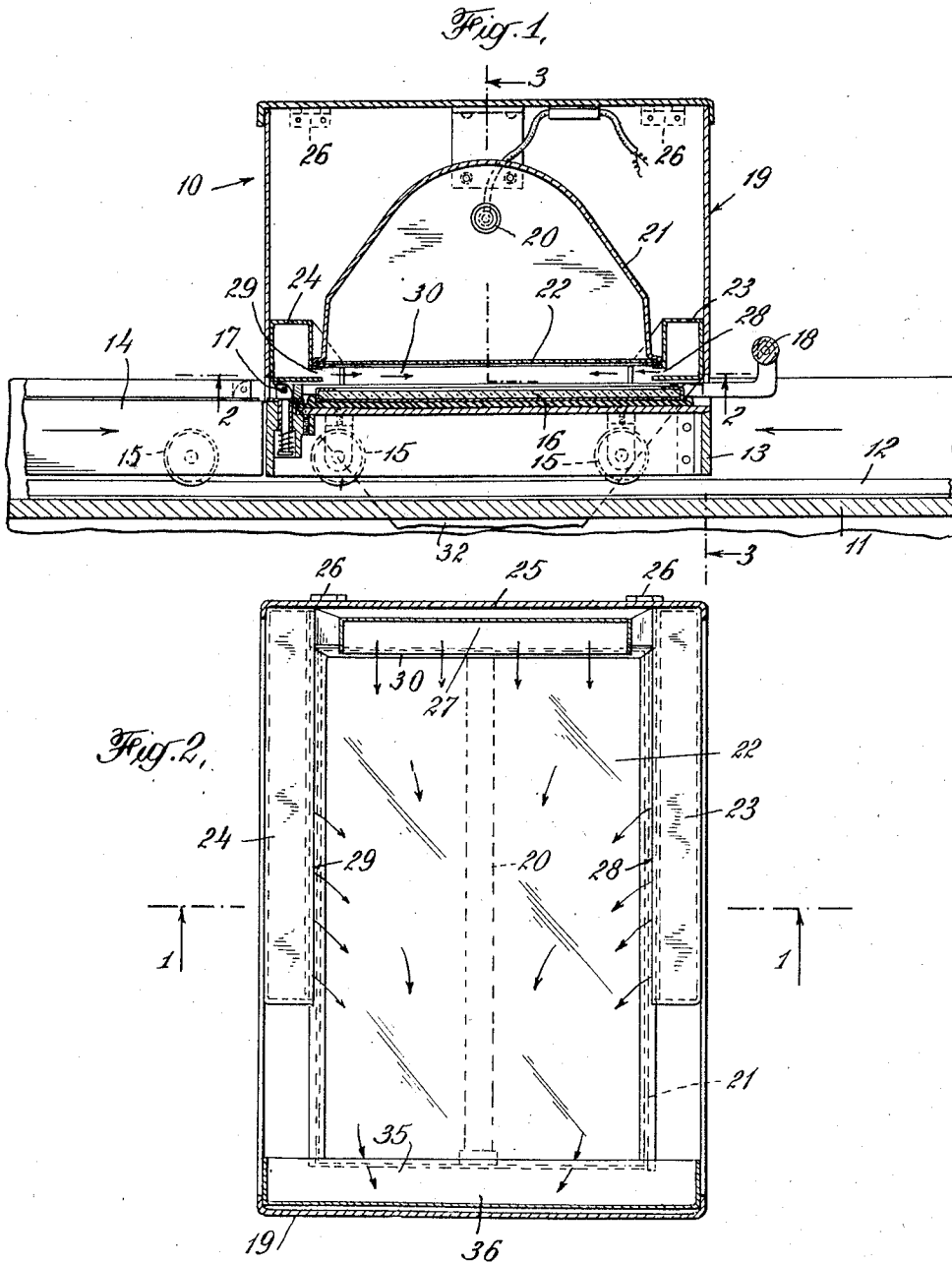
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2,301,675

VENTILATING MECHANISM FOR PHOTO-REPRODUCING MACHINES

Filed April 5, 1940

2 Sheets-Sheet 1



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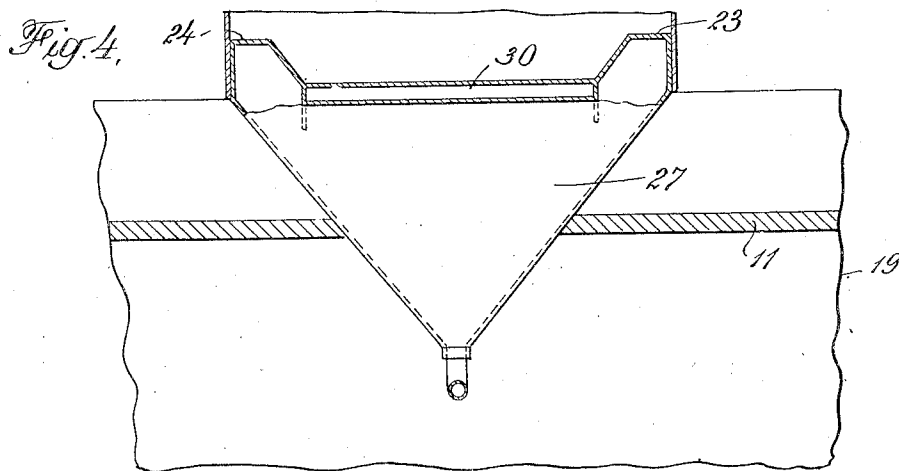
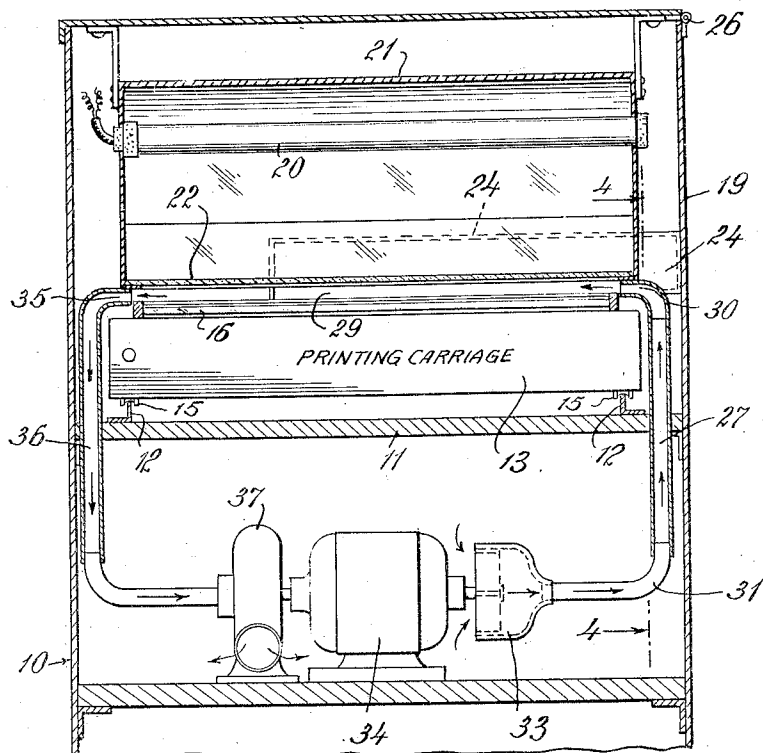
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2 Sheets-Sheet 2

Fig. 3,



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VENTILATING MECHANISM FOR PHOTO-REPRODUCING MACHINES

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9 Claims. (Cl. 95—73)

The present invention relates to photo-reproducing machines and embodies, more particularly, a machine for copying by the reflex method wherein there is embodied certain improvements by means of which the speed of operation may be greatly improved without impairment of the product produced.

The invention comprises, more especially, an improved ventilating apparatus by means of which the temperature of the copying paper is maintained below a predetermined maximum value while permitting a light source to be used that operates at a relatively high temperature.

Reflex copying has long been known, but its use has been restricted considerably because of many difficulties encountered in the carrying out of the process. One of these difficulties has been the length of time required for the exposure and developing of the print. In recent years, the development of gaseous discharge lamps and light sources of other types has advanced greatly and has enabled the time required for the foregoing operations to be greatly shortened, but it has been found that the relatively high temperatures required for efficient operation of these lamps results in injury to the copying paper, and the reflex copying art, therefore, has been unable to take advantage of the advances that would otherwise be available.

In accordance with the present invention, it is proposed to provide an apparatus by means of which reflex copying may be effected and wherein the time required for making the copy is greatly reduced over that required by previous machines.

A further object of the invention is to provide a machine of the above character wherein a ventilating device is embodied by means of which the temperature of the paper may be maintained below a predetermined maximum value.

Still another object of the invention is to provide a device of the above character wherein the temperature of the light source may be maintained at a value required for efficient operation thereof, without deleteriously affecting the copying paper.

Other objects of the invention will be apparent as it is described in greater detail in connection with the accompanying drawings, wherein:

Fig. 1 is a view in vertical longitudinal section, taken on the line 1—1 of Fig. 2 and looking in the direction of the arrows, this view illustrating a machine for reflex copying, constructed in accordance with the present invention.

Fig. 2 is a view in horizontal section, taken

on the line 2—2 of Fig. 1 and looking in the direction of the arrows.

Fig. 3 is a view in vertical transverse section, taken on the line 3—3 of Fig. 1 and looking in the direction of the arrows.

Figure 4 is a view in horizontal section, taken on the line 4—4 of Figure 3 and looking in the direction of the arrows.

Referring to the above drawings, a machine for reflex copying is shown generally at 10 and is provided with a horizontal table 11 on which tracks 12 are provided. Upon these tracks, work supporting members or carriages 13 and 14 are mounted, rollers 15 being provided to facilitate horizontal movement thereof. These carriages are provided with screens 16, hinged at 17 and formed with handles 18.

From the end positions of carriages 13 and 14, each is adapted to be moved into a central position beneath a hood 19. In the drawings, the carriage 14 is shown in its end position and carriage 13 in the central position. In the central position beneath the hood, the paper on the carriage is exposed to light from a light source 20 such as a mercury arc lamp.

The lamp 20 is received within a reflector 21, having a filter 22 to filter out the infra red rays. These rays are the heat rays and represent about 65% of the heat emitted by the lamp. The resulting light emitted by the hood is about eight times as speedy as the old arc lamp and thus permits of a great reduction in the time required for the copying operation.

The filter 22 is spaced about one inch from the screen 16 and in order to prevent overheating of the screen, this space is ventilated in the following manner. Upon opposite sides of the filter and reflector, and lying between the reflector and the sides of the hood 19 are side manifolds 23 and 24. At one end 25 of the hood, hinges 26 are provided in order that the hood may be swung upwardly into a position where it may be inspected and repaired.

At the end 25 of the hood, an end manifold 27 is provided so that cooling air may be supplied to the space between the filter and screen from opposite sides as well as one end of the hood. To this end, discharge slots 28, 29 and 30 are formed in the respective manifolds 23, 24 and 27, and air is supplied to the manifolds by pipe 31, which receives air from a blower 33 driven by a motor 34.

In order that the flow of air in the hood may be controlled, a discharge manifold 35 is provided in the hood at the end opposite the manifold 27. The intake slot of the discharge mani-

fold 35 is of such size that more air can be drawn out of the hood through the manifold 35 than is supplied by the three manifolds 23, 24 and 27. This affords ventilation of the entire hood and thus maintains a desired condition within the hood and around the reflector. The air withdrawn through the discharge manifold is carried through a pipe 36 to a suction fan 37 driven by the motor 34 and having a capacity greater than the blower 33.

It will thus be seen that an effective means has been provided for maintaining the screen at a proper temperature without impairing the efficiency of the lamp. Moreover, the foil and papers being used in the printing operation are prevented from being damaged by too much heat since the moving air between the screen and filter carries off all the radiated heat of the filter.

Although the invention has been described with specific reference to the accompanying drawings, it is not to be limited save as defined by the appended claims.

I claim:

1. In a photo-reproducing apparatus comprising a work supporting member adapted to be positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, and a filter between the light source and the supporting member, the combination therewith of means including a fan to introduce air into the space between the filter and the supporting member, and means including another fan to withdraw air therefrom, said another fan being adapted to withdraw air at a faster rate than it is supplied by the first mentioned fan.
2. In a photo-reproducing apparatus comprising a work supporting member adapted to be positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, and a heat ray filter between the light source and the supporting member, the combination therewith of means to introduce air into the space between the filter and the supporting member, said means including a manifold having communication along opposite sides and one end thereof, and means including another manifold to withdraw air therefrom at the opposite end thereof.
3. In a photo-reproducing apparatus comprising a work supporting member adapted to be positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, and a filter between the light source and the supporting member, the combination therewith of means including a fan to introduce air into the space between the filter and the supporting member and from opposite sides and one end thereof, and means including another fan to withdraw air therefrom at the opposite end thereof, said another fan being adapted to withdraw the air in quantities greater than introduced through the air introducing means.
4. Photo-reproducing apparatus comprising a work supporting member adapted to be positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, a heat ray filter between the light source and the supporting member, supply manifolds upon opposite sides of the filter and having slots formed to supply air to the space between the filter and the supporting member, a supply manifold at one end of the filter to supply air

adjacent the filter and to the aforesaid space, a discharge manifold at the opposite end of the filter having a slot communicating with the aforesaid space, means for introducing air into said supply manifolds, and means for withdrawing air through said discharge manifold.

5. Photo-reproducing apparatus comprising a work supporting member adapted to be positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, a reflector about the light source to reflect light toward the aforesaid member, a heat ray filter carried by the reflector and positioned adjacent the supporting member, supply manifolds upon opposite sides of the filter and having slots formed to supply air to the space between the filter and the supporting member, a supply manifold at one end of the filter to supply air adjacent the filter and to the aforesaid space, a discharge manifold at the opposite end of the filter having a slot communicating with the aforesaid space, means for introducing air into said supply manifolds, and means for withdrawing air through said discharge manifold.

6. Photo-reproducing apparatus comprising a base, a light source including a light directing hood positioned above said base, a work supporting member movable to and from a position beneath the hood, a light transmitting plate associated with the hood and disposed in spaced relation to the work supporting member when the member is in position beneath the hood, manifolds on opposed sides of said hood in communication with the space between the plate and the work supporting member, and means to cause air to flow through the manifolds to ventilate said space.

7. Photo-reproducing apparatus comprising a base, a light source including a light directing hood positioned above said base, a work supporting member movable to and from a position beneath the hood, a light transmitting plate associated with the hood and disposed in spaced relation to the work supporting member when the member is in position beneath the hood, a manifold on at least one side of said hood in communication with the space between the plate and the work supporting member, a second manifold in communication with said space at a side of the hood opposite the first mentioned manifold, means to supply air through the first mentioned manifold, and means operable to withdraw air through the second manifold at a rate greater than the rate air is supplied by said air supply means.

8. Photo-reproducing apparatus comprising a base, a light source including a light directing hood positioned above said base, a work supporting member movable to and from a position beneath the hood, a light transmitting plate associated with the hood and disposed in spaced relation to the work supporting member when the member is in position beneath the hood, a manifold disposed at one side of the hood in communication with the space between the plate and the work supporting member, another manifold in communication with said space at a side of said hood opposite the first mentioned manifold, a blower to supply air to one of the manifolds, an exhaust fan to withdraw air through the other manifold, and means to drive the blower and the fan.

9. In a photo-reproducing apparatus comprising a work supporting member adapted to be

positioned adjacent a light source, a source of light for operating upon material carried by the aforesaid member, and a heat ray filter spaced between the light source and the supporting member, the combination therewith of a pair of manifolds each located along an edge of said work supporting member and having communication

with the space between said member and said filter, power driven means to introduce air into one of said manifolds, and a second power driven means to withdraw air from the other of said manifolds.

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