

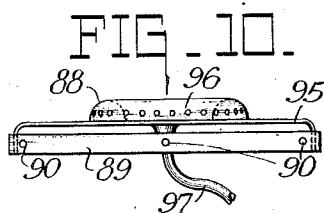
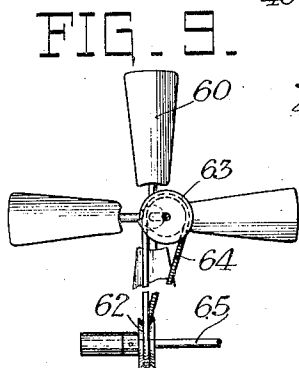
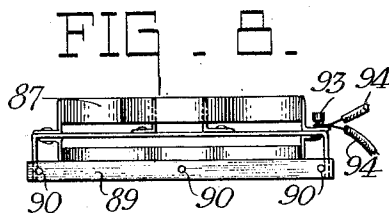
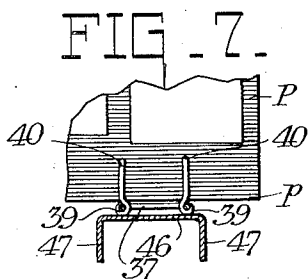
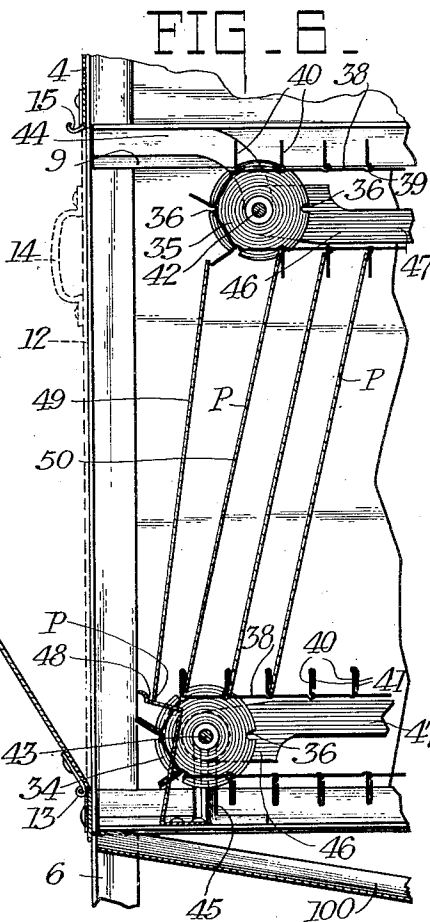
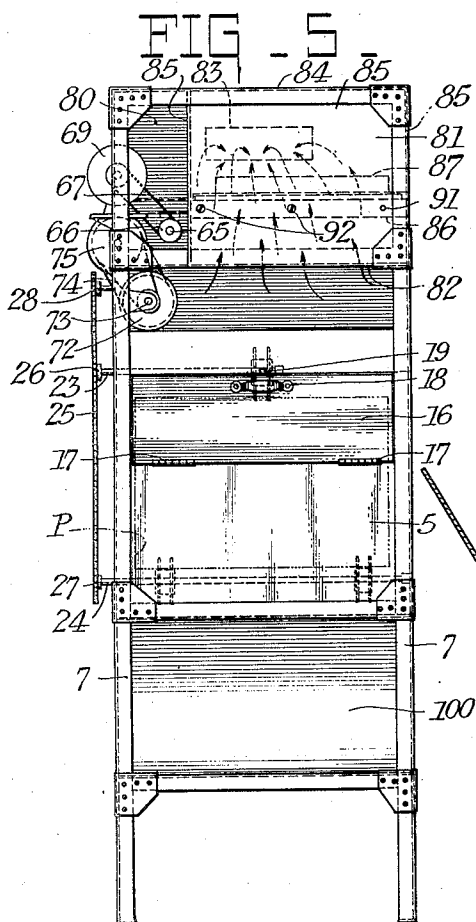
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PHOTOGRAPHIC PRINT DRIER

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2 Sheets-Sheet 2



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PHOTOGRAPHIC-PRINT DRIER.

Application filed April 17, 1924. Serial No. 707,310.

This invention relates to driers and more particularly to driers for photographic prints.

A common method of producing prints with a high gloss is to make the prints on paper with a naturally glossy surface, squeegee such prints with the glossy surface in contact with a ferrotype plate and then permit them to dry. Most types of driers are not adapted to take these plates, which, as is well known in this art, are thin sheets of iron with a smooth black lacquer or japan finish. Prints dried in the usual way do not have such a high gloss, and if dried on the ferrotype plates they cannot be put through the driers customarily used but must be dried in the open air, taking considerable time and space.

The object of this invention is to provide a drier through which these ferrotype plates with photographic prints squeegeed upon them may be passed and the prints dried in a relatively very short time, and which will be economical of space and convenient in operation. Other objects will appear hereinafter.

Reference will now be made to the appended drawings in which the same reference characters refer to the same parts throughout, and in which

Fig. 1 is a side elevation of a print drier constructed in accordance with and illustrating one embodiment of my invention;

Fig. 2 is a fragmentary end elevation of the same machine;

Figs. 3 and 4 are detailed perspective views of sections of chains which may be used in the print drier.

Fig. 5 is an end elevation of the drier shown in Fig. 2;

Fig. 6 is an enlarged fragmentary section showing the loading end of my machine;

Fig. 7 is a fragmentary detailed section showing a conveyer chain with the chain support;

Fig. 8 is a side elevation of an electric heating unit;

Fig. 9 is a plan view partially in section showing one of the fan drives; and

Fig. 10 is a side elevation of a gas heating unit.

This machine is designed to dry prints which have been squeegeed upon a ferrotype plate. These plates are loaded in one end

of the machine being placed upon endless belt carriers consisting of chains having links engaging the top and bottom of the plates. This carrier moves the plates slowly through a chamber through which warm air is blown to cross the surface of the plates. The plates drop from the conveyer against a partition plate from which they may be removed.

The machine consists of a body portion which is in the form of a box having sides 2, a top 3, a rear end wall 4 and a front end wall 5 supported by a pair of rear legs 6 and a pair of front legs 7 which may be made of angle iron. These pairs of legs are connected by pairs of cross bars 8, 9, 10 and 11. There is no bottom to the box above described but there is a tray 100 extending from the cross arms 10 at the rear of the machine to the cross arms 11 at the front of the machine. This tray catches any prints which may drop from the ferrotype prints P as they are carried through the drying chamber.

A door 12 is hinged at 13 to the rear of the machine and has a handle 14 by which it may be drawn to and from its closed position wherein it is latched by a spring catch 15. A door 16 hinged at 17 to the front wall of the machine is provided with a handle 18 by which it may be moved and is normally held closed by means of a latch 19. There is a side door 20 having handles 21 and turn buckles 22 for holding it in position. The last mentioned door is used only when it is necessary to adjust the air circulating mechanism. The plates P are loaded into the machine through door 12 and removed from the machine through door 16.

The plates P are conveyed through the drying chamber by means of the following mechanism: Shafts 23 and 24 are driven at a constant speed through a chain 25 passing over sprockets 26 and 27 attached to these shafts and passing over a power driven sprocket 28 and an idle sprocket 29. Conveyer sprockets 30 and 31 are fastened to shafts 23 and 24 so as to drive the upper chain 32 and the lower chains 33. The upper chain passes over conveyer sprocket 35 at the top and the lower chains pass over sprockets 34 at the bottom of the loading end of the machine. As best shown in Fig. 6 the conveyer sprockets consist of disks hav-

ing notches 36 into which the cross bars 37 of the conveyer chains pass. As shown in Figs. 3 and 4 the chains preferably consist of U-shaped members 38 having portions 39 looped around the ends of the cross bars 37 and having extended ends 40. In Fig. 3 the lower chains are shown as having the ends 41 bent upon themselves in order to strengthen them. In Fig. 4 the ends 40 are merely cut off, as this additional strength is not necessary.

Conveyer sprockets 35 and 34 are carried by shafts 42 and 43, the former being supported by a pair of brackets 44 and the latter by a pair of brackets 45. Similar brackets are used to support the conveyer sprockets 30 and 31 at the front of the machine. In order to support the chains channel members 46 having side flanges 47 extend between shafts 23 and 42 and shafts 24 and 43. As shown in Fig. 7 the lower channel member 46 is positioned so that portions 39 of the chain will be supported as the chain is moved between its sprockets. The upper channel member 46 prevents the plates P from moving the chain upwardly out of its normal position. The conveyer chains are moved together at the same speed. As conveyer sprocket 34 is closer to the door 12 than conveyer sprocket 35 the plates P lie at a slight angle from a vertical position as they are carried through the drying chamber. This assists materially in the convenient positioning of the plates.

The plate supporting bracket 48 is mounted inside of the door 12 and is arranged so that when the bottom *p* of the plate P is placed on the bracket the upstanding portions 40 of the conveyer chains will move the plate from the position shown in Fig. 6 at 49 to the position shown at 50 in the same figure. After being moved through the drying chamber by the endless belt carriers the plates drop from the conveyer chains upon the partition plate 51 which has a slanting rear wall 52. A series of the plates P are shown in Fig. 1 in this position. They can be removed through door 16.

Any prints which may dry before the plate has gone completely through the machine will drop into the pan 100 from which they will tend to move to the front end of the machine because of the slant of this pan and because of the air current which is blown through the open bottom of the drying chamber.

The air is circulated by means of fans 60 mounted on brackets 61 and driven through pulleys 62 and 63 which are connected by belts 64 (see Fig. 9). Pulleys 62 are affixed to shaft 65 rotated through pulley 66, belt 67 and pulley 68 which is power driven by motor 69.

Motor 69 drives sprocket 28 through pulley 70, belt 71, pulley 72, shaft 73, belt 74, pulley 75 and shaft 76, this shaft operating

through a worm and gear enclosed in the housing 77. The gear drives shaft 78 upon which sprocket 28 is mounted.

The driving mechanism above described is mounted in an opening 80 in the front wall of the machine, this opening being best shown in Figs. 1 and 5. There is a heating chamber 81 beside this opening having an open bottom 82 and a window 83 opening into the fan chamber. The top wall 84 and the side and end walls 85 are preferably lined with asbestos. There is an inside frame 86 adapted to hold any suitable heater such as the electric units 87 shown in Fig. 8 or the gas unit 88 shown in Fig. 10. The electric units 87 are mounted upon a frame 89 fitting into frame 86 and having a series of threaded holes 90 in alignment with apertures 91 in frame 86. This unit may be fastened into place by screws 92 passing through these apertures. This frame supports a series of electric heating units 87 which may be of any well known type such as the Cutler-Hammer space heaters. Terminals 93 (only one being shown) may be connected to a suitable source of power through wires 94.

The gas heating unit 88 is mounted on a frame 89 similar to the frame described for the electric unit in all respects except that it carries a bridge 95 which supports a gas plate 96. Gas tubing 97 may be used to connect this plate to a gas supply pipe.

As there is no bottom to the heating chamber the wires of the unit shown in Fig. 8 or the gas tube used with the device shown in Fig. 10 may pass from the machine through the open bottom.

Since the drying efficiency of the machine depends largely upon the direction of the air currents, arrows have been used to indicate the direction in which these move. As shown in Fig. 5 the air enters through the bottom of the heating chamber passing the heating unit mounted therein being warmed and drawn through the window 83 by means of the fans 60 in the fan chamber. It should be noted that the axes of these fans are parallel to the plane of the plates P when they are positioned on the conveyer chains. This causes the warm air to pass evenly between these plates thus evenly heating the entire area of all of the plates. This is necessary to produce the best results because uneven drying will distort the print and mar the high gloss which is obtained by drying the prints unevenly. After passing across the surface of the ferrotype plates the warmed air passes out of the open bottom of the machine. The tray 100 mounted beneath this open bottom is at an angle so that the air passing through the plates at the rear 4 of the machine will tend to cause a certain amount of air to move downwardly over the tray 100 tending to

move prints which may be dropped from the plates towards the front of the machine.

While I have shown in the drawings a preferred embodiment of my invention I do not wish to be limited to the exact structure shown therein but contemplate as within the scope of my invention all such modifications as come within the scope of the appended claims.

10 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A photographic print drier comprising a housing with a longitudinal compartment, 15 endless belt carriers in said compartment, certain of said carriers having an operative path along the top of said compartment, and certain of said carriers having an operative path spaced from and parallel to the first 20 named path along the bottom of said compartment, said carriers having projections for simultaneously engaging and supporting the top and bottom edges of the same plates, means for moving said carriers at the 25 same speed, and means for locating and supporting a plate in position to be engaged and removed by said projections of the lower carriers.

2. A photographic print drier comprising 30 an upper air supply chamber tapering from back to front, a central longitudinal drying compartment and a lower air exit chamber tapering from back to front, the air supply

and air exit chambers being immediately 35 above and below the central compartment and open into it, endless skeleton carriers at the top and bottom of the compartment and having means to engage the tops and bottoms of plates and move them from front 40 to rear of said compartment, whereby air introduced under pressure at the rear of the supply chamber will be distributed among such plates and directed by the plates down through the compartment to the exit chamber. 45

3. A photographic print drier comprising an upper air supply chamber tapering from back to front, a central longitudinal drying 50 compartment and a lower air exit chamber tapering from back to front, the air supply and air exit chambers being immediately above and below the central compartment 55 and open into it, endless skeleton carriers at the top and bottom of the compartment and having means to engage the tops and bottoms of plates and move them from front to rear of said compartment, and heating 60 means in said supply chamber whereby air introduced under pressure at the rear of the supply chamber will be heated and distributed among such plates and directed by the plates through the compartment to the exit chamber.

Signed at Buffalo, N. Y., this 12th day of April, 1924.

HARRY E. WOOLEVER.