Aug. 17, 1937. H. K. WILLIAMS 2,090,168

PHOTOGRAPH DRYING MACHINE

Filed Sept. 9, 1935

FIG-1

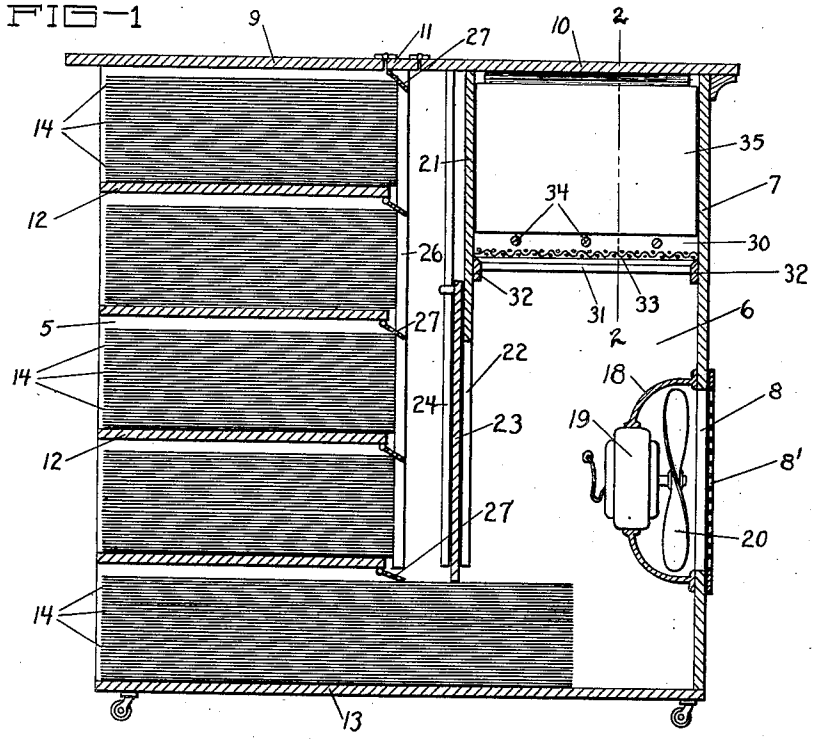
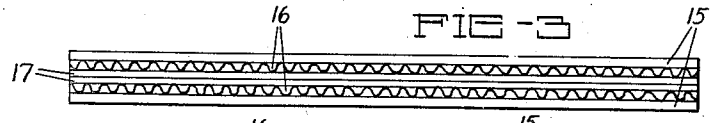


FIG-3



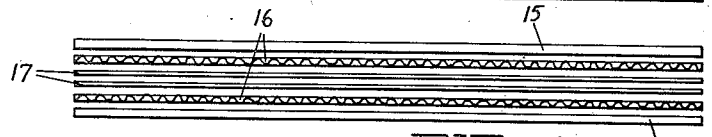
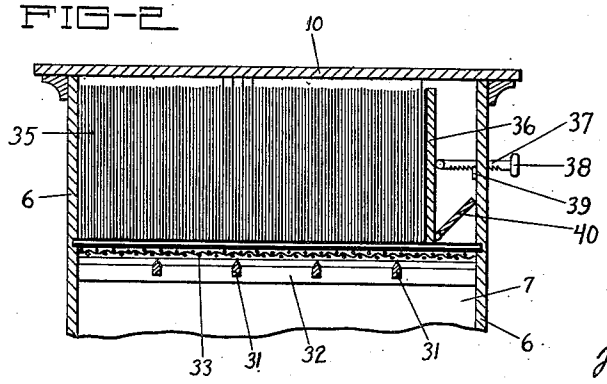


FIG-4

FIG-2



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PHOTOGRAPH DRYING MACHINE

Harold K. Williams, Port Byron, Ill.

Application September 9, 1935, Serial No. 41,101

4 Claims. (Cl. 34—19)

My invention has reference to a device for drying photographic prints, and it is designed for use by photographers and amateurs for the drying of prints in any quantities. One of the objects thereof is to do away with the use of heat in the drying operation, and dry the prints in such a manner that they will not become brittle, and do not change color. This is especially advantageous in the drying of portrait prints, in which it is desired to retain the olive black tone. The tone of the print is determined by the particular developing process to which the print has been subjected.

Another purpose of the invention is to have the drying operation carried on in such a manner as to have the prints lie practically flat upon being removed from the machine.

Other features of the invention consist of a rapid drying operation at a low cost, convenience of operation, an economy of space, also of time and labor, and the elimination of several steps which are required in methods now made use of.

The invention is designed for use with specially arranged drying units, which may be either horizontally or vertically disposed in the machine, according to the requirements for drying portrait photographs, some styles of commercial prints, back to back cloth prints, enlargements, and some other types in which the drying units are horizontally arranged, or for drying ferrotyped (glossy) prints, either plain or cloth-backed, in which the vertical position is preferred.

The invention comprises a casing or cabinet, having compartments containing a desired number of units of a print drying character, with a novel arrangement of the elements of such units, and of a structure permitting of the passage of air therethrough. In connection therewith is a rotary fan or other air circulating device which tends to create a vacuum within the cabinet, with a consequent movement of the air inwardly through the drying units. This results in a rapid drying of the prints contained in said units. Means is also provided for preventing the entrance of air into the compartment, except through said units.

The particular construction, arrangement, and mode of operation of the machine will more fully appear from the following specification, taken in connection with the accompanying drawing, in which,—

Fig. 1 shows the invention in longitudinal section.

Fig. 2 is a cross-section on the line 2—2 of Fig. 1.

Fig. 3 shows one of the drying units, with the parts assembled.

Fig. 4 is a similar view with the parts separated.

The machine comprises a cabinet, the front of which is shown at 5, and provided with sides 6 and a back 7, in which is an opening 8, partially closed by a grille 8'. The top is formed of covers 9 and 10 hinged to a cross-piece 11, fixed to the sides 6. The front of the cabinet is open, and is divided into compartments by means of shelves 12, supported in the sides of the cabinet, and held from movement therein. The cover 9 forms the upper part of the upper compartment, and the bottom 13 of the cabinet forms the floor of the lower compartment.

Each of the compartments is designed to contain a plurality of print holding units, each of a size to receive several prints of average dimensions, or a larger sized print if desired. As set forth herein each of the units consists of two pieces of protecting material shown at 15, between which are two layers of double-faced corrugated boards 16, between which is a pair of blotter sheets 17. The boards 15 are of rigid material, and are of the same length as the boards 16 and blotters 17, but of a little greater width, so as to thoroughly protect the edges of the other parts of the unit when being placed in the cabinet or removed therefrom. The prints are placed between the blotter sheets, and the openings in the corrugated boards are disposed in a direction to permit of the movement of air into the machine.

Adjacent to the opening 8, in the rear part of the machine, is a frame 18, supporting an electric motor 19, to the driveshaft of which is attached a fan 20. Between the rear chamber containing the fan and the compartments at the front of the cabinet is a vertical partition 21, beneath which is an opening 22, which may be closed by a slide-gate 23 movable in guides 24 attached to the inner faces of the walls 6. When said gate is raised and the fan is in operation a current of air is formed in the machine, coming in through the horizontal drying units, and passing out through the opening at 8.

The inward movement of the drying units is limited by strips 26 fixed to the walls 6, and at the inner end of each compartment is hinged a cross-piece 27, forming a shutter for the space in the upper part of the compartment, which is left to allow for the expansion caused by inserting the prints in the several units. As such ex-

pansion proceeds the shutters are automatically raised by the upper protecting layer, preventing the passage of air into the cabinet above said units. The chief purpose of dividing the cabinet into compartments is to relieve some of the units or layers from the weight of the others. Where too many of such layers are placed in a pile the weight on the lower layers is liable to be injurious to the prints contained in the lower part of the pile, which can not occur in the present machine.

The lower compartment is shown filled with units of a greater size, giving a greater capacity thereto, and with the space above the same closed by one of the shutters 27. However, these units can be formed of the same size as the others, if desired. When it is desired to load the units the cover 9 is tipped rearwardly and used as a table for the support of a unit, or other supporting means can be employed. In the operation the upper unit is filled first, the uppermost board 15 being first laid on the support, followed by one of the boards 16, and next by one of the blotter pieces. The prints are then on this piece, 17, and the other blotter placed thereon, then the other board 16, and finally the board 15 which was at the bottom of the unit. The next empty unit is then removed for filling in the same way and the loaded one put in its place. In unloading the prints the operation is reversed.

When all of the prints have been loaded the cover is closed and the fan operated, producing a current of air between all of the prints, and operating to dry them quickly. The drawing of the air inwardly results in an equal amount of drying efficiency in all parts of the cabinet, which cannot be attained by currents of air passing outwardly. This efficiency is uniform at all points, whether near the fan or remote therefrom, and results from the partial vacuum formed in the body of the machine.

In the rear part of the cabinet above the fan space is a compartment 30, designed specially for the support of corrugated boards or other units in a vertical position, and intended chiefly for the drying of ferrotype prints. In the lower part of the compartment a series of bars 31 is supported on cleats 32 attached to the partition 21 and rear wall 7, above which bars is a piece of wire screen 33, supporting rods 34, on which is rested a series of corrugated boards 35, with the spaces running up and down. Two of said boards are used, in connection with a ferrotype plate, for drying a print, which is squeegeed to the plate and inserted between two of the boards. The cloth back is attached to the squeegeed print in a dry condition, and without the amount of fussy work usually attending the drying of prints of that kind. Blotter sheets can be used with the boards if desired, but as a general thing they are not needed. At one side of the compartment 30 a board 36 is supported against the drying boards, by means of a ratchet arm 37, passing through the side of the cabinet, and provided at its outer end with a handle 38. The teeth of said arm are engageable with a catch 39 in the opening through which the arm passes, and by adjustment thereof the position of the board 36 may be shifted. In placing prints in the compartment 30 a pair of the corrugated boards are spaced sufficiently to admit the print and plate by which it is carried. As the prints are added the body of the holding boards or units expands, moving the board 36 outwardly. When all of the prints are in place a pressure is exerted upon the boards containing the prints by the board 36, and the same is locked in position, insuring an effective contact between the prints and ferrotype plates during the drying operation.

The opening between the boards 35 and wall of the cabinet is closed by a shutter 40, hinged to the board 36 at the bottom thereof, and opening and closing automatically as with the shutters first above described. The bars 31 are preferably of wedge formation as shown, so as to present little resistance to the passage of air through the compartment.

When the compartment 30 is in use the cover 10 will be open, to permit the passage of air into the compartment, while the gate 23 would be closed. By opening said gate, however, the horizontal units and vertical units can be used simultaneously.

Changes can be made in the general construction and arrangements of the various parts of the machine, without departing from the spirit of the invention, as set forth herein.

What I claim, and desire to secure by Letters Patent, is;

1. In a photograph drying machine, a compartment adapted to contain a plurality of print drying units, a plurality of print drying units in said compartment, with space for the expansion of said units upon being loaded with prints left above said units, and a shutter for said space at the inner end of said compartment movable automatically by the expansion of said units.

2. In a photograph drying machine, a cabinet provided with a compartment for the support of print drying units in a vertical position, and a fan chamber below the same, a framework between said chamber and compartment, permitting free passage of air therethrough, a screen on said frame work, a series of rods on said screen for the support of print drying units in position for expansion, means for exerting pressure on said units when loaded, and a fan in said fan chamber adapted to produce a current of air in said compartment in the direction of the fan.

3. In a machine of the class described, a compartment adapted to contain a plurality of print drying units in horizontal position, a series of sub-compartments in said compartment, forming spaces for said units and for the expansion thereof when loaded with prints, and hinged shutters at the inner ends of said subcompartments closing the spaces above said units and movable automatically by the expansion of said units.

4. A photograph drying machine, comprising a cabinet, provided with a pair of compartments with an opening between the two, means for closing said opening, a series of subcompartments in one of said compartments adapted to hold a plurality of print drying units in horizontal position, a fan in the lower part of the other compartment, means for supporting a plurality of photographic prints in said last-named compartment above said fan, and in vertical position, and a lid for said cabinet formed of two hinged sections, one above each of said compartments.

HAROLD K. WILLIAMS.