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G. H. BENEDICT

MEANS FOR COOLING PHOTOMECHANICAL PRINTING PLATES

Filed Aug. 23, 1920

FIG 1

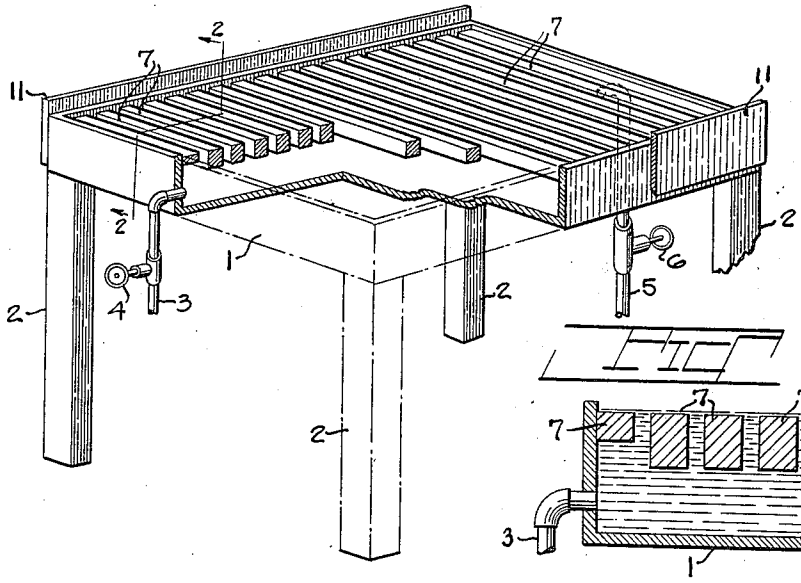


FIG 2

FIG 3

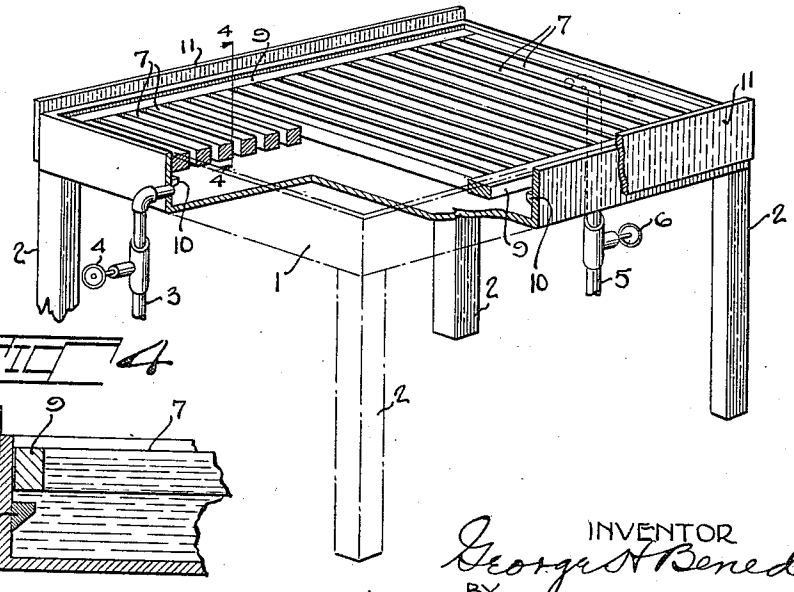


FIG 4

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UNITED STATES PATENT OFFICE.

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MEANS FOR COOLING PHOTOMECHANICAL PRINTING PLATES.

Application filed August 23, 1920. Serial No. 405,502.

To all whom it may concern:

Be it known that I, GEORGE H. BENEDICT, a citizen of the United States, residing at Chicago, in the State of Illinois, have made certain new and useful Improvements in Means for Cooling Photomechanical Printing Plates, of which the following is a specification.

The invention relates to means for cooling photo-mechanical printing plates, and more especially to an apparatus or mechanism for cooling such plates by the application thereto of water or aqueous moisture in a manner and degree readily controlled by an operative, together with means for quickly removing the moisture without injuring the surface of the plate.

Other objects and advantages of the invention will be set forth in part hereinafter, and in part will be obvious herefrom, or may be learned by practice with the invention; the same being realized and attained through and by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:—

Fig. 1 is an isometric perspective of a plate cooling device embodying the invention;

Fig. 2 is an enlarged fragmentary vertical section, taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is an isometric perspective of a somewhat different form or embodiment of the invention than that shown in Fig. 1; and

Fig. 4 is an enlarged fragmentary vertical section taken on the line 4—4 of Fig. 3.

In cooling photo-mechanical printing plates, especially such as have been subjected to the enamel process, or otherwise, it is desirable or necessary that the cooling of the plate be under the accurate and absolute control of the workman, so that he may localize the application of the cooling water or other cooling agent and also determine and control the duration and degree of the application of the cooling agent, and preferably that means be provided for removing the cooling agent from the surface of the plate when desired.

Referring now to the embodiment of the invention illustrated by way of example in the accompanying drawing, and referring first to its features generally, a support is provided for the plate to be cooled in connection with a receptacle or reservoir for the cooling fluid; the support for the plate in one instance or example being in a fixed degree or position of submersion with respect to the level of the water or other cooling fluid, and in the other instance or example, the plate support being regulable as to the degree of its submersion or submersibility, that is, the plate support is submersible in the cooling liquid to a degree determined or determinable by the operative.

In connection with the foregoing, means are provided, mounted upon the cooling apparatus, for quickly removing the moisture from the plate, such means being adapted to engage with the printing surface of the plate and to remove the moisture therefrom without in anywise or in any degree impairing the delicate and easily injured printing surface.

Referring now in detail to the structural features of the form shown in Figs. 1 and 2, a reservoir 1, shown of rectangular form, is supported at convenient height for the workman, preferably upon legs 2, which rest upon the floor. The tank 1 is preferably filled or nearly filled with water, and is usually equipped with a supply pipe 3 having a valve 4, and with a discharge pipe 5 provided with a valve 6. The pipe 5, if desired, may constitute a continuous level-determining spill-way, and the pipe 3 may continuously provide fresh and cool water, or the tank may be filled from time to time and the valves 4 and 6 may be closed in the meantime.

In this embodiment, a plurality of plate supporting members are provided, spaced apart to permit the cooling fluid to pass therebetween, and positioned vertically in the reservoir 1, so that in connection with the means for determining the height of the cooling fluid in the reservoir 1, they will determine the degree of submergence of the plate, or the degree of the application of

moisture thereto. This is usually both of slight degree and of brief duration and is repeated by the workman as desired or required. As embodied a series of bars 7 is provided, arranged preferably parallel side by side horizontally, and separated one from another, and are supported within and from the walls of the reservoir 1. The bars 7 are preferably of wood, or other material which may become saturated with the cooling fluid, and their ends may be attached to the walls of the reservoir 1 by nailing. Wooden bars or other liquid permeated bars will themselves act to a certain degree as a cooling means for the plates, when this is desired or advantageous.

In Figs. 3 and 4 of the drawings, the reservoir 1 with the supporting legs 2 and the supply and discharge pipes 3 and 5 are shown the same as in the preceding figures. In this construction, however, the series of bars 7 are afloat in the water or other cooling liquid in the reservoir 1, the plate support 7 being submersible to a greater or less degree by pressure thereon. That is, the workman may place the plate upon the support and press downwardly thereon to a greater or less degree, the support sinking in the liquid to a degree corresponding to the pressure exerted. The support being afloat in the liquid, and requiring submersing pressure, gives a very nice and accurate control of the degree and location of the application of the cooling fluid to the printing plate. As already stated, the cooling operation is often both slight in degree and duration, and may be repeated, with more or less change in its location.

As embodied, the bars 7 are surrounded by a rectangular frame 9, the ends of the bars being fastened to two of the opposite reaches of the frame 9 in any suitable manner, as by nailing. The bars 7 may be of rectangular or other convenient form, and may be parallel with each other and separated apart as already described. As stated, the bars 7 and frame 9 are afloat in the water in the reservoir 1, and if desired, stops 10 may be provided for limiting the degree of submergence of the plate support, as shown in Fig. 4, the stop 10 being fastened on the inside of the reservoir 1.

The embodied form of means for removing the cooling fluid from the plate comprises strips 11 of soft and flexible or resilient material such as rubber, arranged along and projecting upwardly from one or more of the side walls of the reservoir 1. After the plate has been cooled by applying it printing face downwardly, or otherwise, to the cooling fluid, the plate may be drawn across the top edge of the strip 11, and the remaining moisture removed. There will usually be sufficient residual heat in the plate to immediately evaporate the exceedingly small amount of moisture which might remain after the plate has been drawn across the drying strip 11.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. A device for cooling photo-mechanical printing plates including in combination a liquid containing reservoir, a plate support therewithin having fluid passing spaces formed therein, the reservoir and plate support being relatively movable vertically to control the action of the cooling fluid on a plate on the support.

2. A device for cooling photo-mechanical printing plates including in combination a liquid containing reservoir, a plate support therewithin consisting of liquid permeable material, the reservoir and plate support being relatively movable vertically to control the action of the cooling fluid on a plate on the support.

3. A device for cooling photo-mechanical printing plates including in combination a liquid containing reservoir, a plate support therewithin and means mounted on the top edge of the reservoir close to the plate support for removing the moisture from the plate.

4. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container and a floating plate support therewithin for supporting the plate being cooled in a horizontal position on top thereof.

5. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container, a floating plate support therewithin for supporting the plate being cooled in a horizontal position on top thereof free to be depressed into the cooling fluid in the container, and stops carried by the container for limiting the depth of submersion of the plate support.

6. A device for cooling photo-mechanical printing plates including in combination a liquid containing reservoir, a plate support therewithin and a member mounted on and projecting upwardly from the top edge of the side of the reservoir for removing moisture from the plate.

7. A device for cooling photo-mechanical printing plates including in combination a liquid containing reservoir, a plate support therewithin and a member mounted on and projecting upwardly from the top edge of the side of the reservoir for removing moisture from the plate consisting of a flexible plate projecting above the edge of the reservoir.

8. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container and a floating plate support therewithin for supporting the plate being cooled in a horizontal position on top thereof, adapted to permit the fluid to pass therethrough.

9. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container, a floating plate support therewithin for supporting the plate being cooled in a horizontal position on top thereof free to be depressed into the cooling fluid in the container, and adapted to permit the fluid to pass therethrough, and stops carried by the container for limiting the depth of submersion of the plate support.

10. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container, inlet and outlet pipes for leading fluid into and out of the container, and a floating plate support therewithin for supporting the plate being cooled in a horizontal position on top thereof consisting of a plurality of separated fluid supporting members with spaces therebetween through which the fluid may pass upwardly.

11. A device for cooling photo-mechanical printing plates including in combination a cooling fluid container and a plate support vertically movable therewithin and means for regulating the height of the liquid relatively to the top of the plate support.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE H. BENEDICT.

Witnesses:
H. REIMER.
CHAS. L. PORTER.