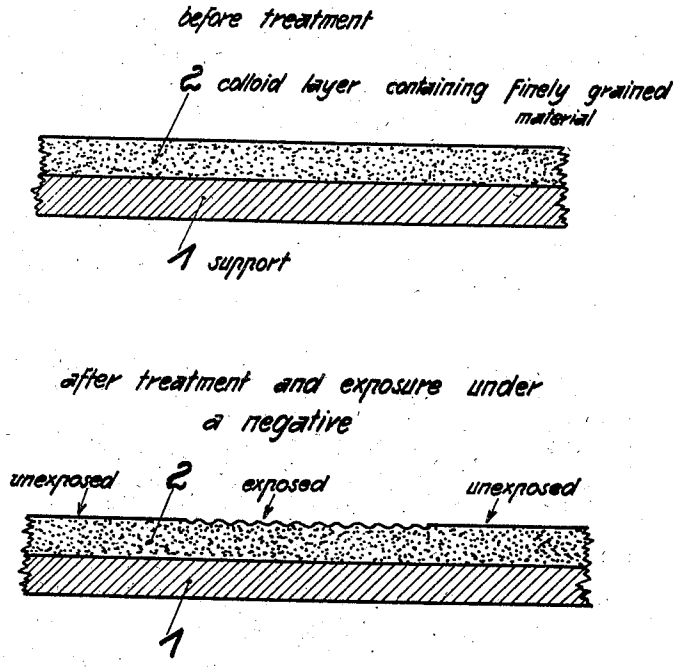
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COLLOTYPE PRINTING FORM AND PROCESS OF PRODUCING THE SAME

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COLLOTYPE PRINTING FORM AND PROCESS OF PRODUCING THE SAME.

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Phototypy has been performed in the following manner:

A glass-plate prepared in a suitable manner receives an aqueous solution of gelatine and alkali-bichromate and is dried in an oven at a high temperature. In this manner there is formed a certain wrinkling of the gelatine over the whole plate; this is the so-called phototypic grain (compare Albert, Lichtdruck, 1906, page 32). The dried plate is then exposed under a negative and afterwards thoroughly washed and dried, whereupon it is moistened as usual with water containing glycerine or the like and the printing operation may begin. This process has the disadvantage that the printer is obliged to prepare the material himself.

The said disadvantage is overcome by other processes already proposed by which firstly on the support (plates or films) a hardened gelatine layer is applied and dried. Such plates can be manufactured in large quantities and delivered to the printers. They are sensitized directly before use in a bichromate solution, dried at ordinary temperature or in a weakly warmed current of air, then exposed to light under a negative, washed in water at ordinary temperature, dried and treated with glycerine containing water. Such a printing form is contrary to the old phototypic plate totally grainless, as well in the lights as in the shadows. Pictures produced from them when compared with the impressions obtained by the old phototypic process have the disadvantage that they show an essentially steeper gradation and the half-tones, particularly on large surfaces have a certain hard and cold appearance which is not to be observed in the old phototypic process.

Therefore, attempts were made, to give a grain to plates manufactured in the just described manner and exposed to light under a negative by acting with chemicals, such as formaldehyde in connection with acids, on the gelatine layer. This process could not be readily introduced into practice as the formation of a good grain depends upon several difficultly controllable circumstances, very often resulting in failures.

The present invention avoids these disadvantages. The process likewise starts from a colloid layer which may be spread upon a suitably prepared support, such as a glass plate, a brass plate, or a film. The colloid layer if desired may contain a fine grained material such as barium sulfate which renders the colloid slightly opaque when wet and thereby affords a better surveying of the inking operation of the finished printing form. It should be understood, however, that this feature does in no wise affect the forming of the grain hereinafter described. The layer is sensitized in the usual bichromate bath. If as colloid unhardened gelatine be taken the layer is dried at a moderately raised temperature of about 30° C., whereby no grain is produced. After the layer has been exposed under a negative it is washed in moderately warm water, for instance at 20–25° C., and dried.

If a more or less hardened colloid, for example a hardened gelatine is employed, the layer which has undergone the treatment with bichromate solution is dried at a raised temperature higher than that employed for unhardened gelatine, that is the temperature must be the higher the greater the degree of hardness of the colloid. The drying temperatures are relatively low, however, and should not exceed approximately 35° C. Similarly the temperature of the washing water preferably is raised in proportion to the degree of hardness of the colloid.

There is thus formed in the exposed places in proportion to the degree of action of the light which produces insolubility of the gelatine a more or less pronounced grain. Thus in contradistinction to the old phototypic plates which have a grain over the whole surface, the plates produced by the new process are grained only in the exposed places, while those parts which have been completely protected from light are without grain. Under a magnifying glass the grain is seen to have extraordinary closeness and uniformity, whereas the ordinary phototypic grain frequently has clefts in it and is irregular. The printing forms prepared according to the present invention are distinguished from those produced by any prior method by the fact that, due to the low drying temperatures applied, the areas which have not been affected by exposure to light, i. e., in the high lights and especially the white margin surrounding the picture area, are entirely without grain. By this lack of grain in the areas, which, in

the final print, shall appear entirely colorless, there is avoided the troublesome inking of those areas; which latter is experienced in using those printing forms which have an over-all grained surface.

The printing forms manufactured by the new process give excellent and just as well graded prints as the old phototypy and are devoid of the aforesaid disadvantages of the other processes. Instead of hard and cold pictures the forms produce soft and warm pictures. The advantages of the processes mentioned above are united in the new process.

For the sake of illustration reference is made to the accompanying drawings in which—

Fig. 1 is a sectional view showing a support 1 carrying a colloid layer 2 before treatment according to the invention;

Fig. 2 is a similar sectional view showing a phototypic printing form prepared by treating the colloid layer 2 in accordance with the invention.

It is understood that the undulating surface of the layer 2 in Fig. 2 is merely a diagrammatic representation on an exaggerated scale of the grained surface which results from the exposure to light and the subsequent washing with warm water.

What I claim is—

1. A process of producing phototypic printing forms, which consists in sensitizing by means of a chromic acid salt a colloid surface, drying the sensitized surface at a temperature of 28° C. to 35° C. depending upon the degree of hardness of the colloid, exposing it under a negative and then washing it in warm water.

2. A process according to claim 1, wherein the colloid is gelatine.

3. A process according to claim 1, wherein the colloid surface has embedded in it a finely grained material.

4. A process according to claim 1, wherein the colloid surface has embedded in it finely divided barium sulphate.

5. In a process of producing phototypic printing forms from a colloid, the steps which consist in sensitizing the colloid surface by means of a chromic acid salt, drying the surface at a temperature of about 28° C. to 35° C. depending upon the degree of hardness of the colloid, exposing the thus prepared surface and then washing the exposed surface with warm water.

6. In a process of producing phototypic printing forms from a colloid, the steps which consist in sensitizing the colloid surface by means of a chromic acid salt, drying the sensitized surface at a temperature of about 28° C. to 35° C., depending upon the degree of hardness of the colloid, exposing the thus prepared surface and then washing the exposed surface with water having a temperature of about 20° C. to 25° C.

7. In a process of producing phototypic printing forms from a colloid, the steps which consist in sensitizing the colloid surface by means of a chromic acid salt, drying the sensitized surface at a temperature not exceeding 35° C., exposing the thus prepared surface and then washing the exposed surface with warm water.

8. Process according to claim 7, wherein the colloid is gelatine.

9. Process according to claim 7, wherein the colloid is hardened gelatine.

10. A collotype phototypic printing form in which all areas defined by exposure to light are grained and all areas unaffected by the light are without grain.

11. A collotype phototypic printing form in which all areas defined by exposure to light have a grain the quality of which is proportional to the light effects defining the printing surface, and all areas unaffected by the light are without grain.

12. A collotype phototypic printing form in which all areas defined by exposure to light have a grain proportional in distinctness to the degree of insolubility caused by the light effects, and all areas unaffected by the light are without grain.

In testimony whereof I affix my signature.

ALFRED MILLER.