

UNITED STATES PATENT OFFICE

2,459,136

DRY DEVELOPING NEGATIVE

Sam Charles Slifkin, Binghamton, N. Y., assignor
to General Aniline & Film Corporation, New
York, N. Y., a corporation of Delaware

No Drawing. Application September 7, 1944,
Serial No. 553,121

1 Claim. (Cl. 95—6)

1

The present invention relates to dry developing light sensitive compositions and in particular to such compositions applied to a suitable base or carrier.

It is an object of the present invention to provide dry development papers which are particularly suitable for use as an intermediate negative for the making of various kinds of prints therefrom.

A further object of the invention is the provision of light sensitive coatings or compositions which can be developed by a gaseous developer.

A further object is the provision of light sensitive dry development papers which produce a negative having good opacity to actinic rays so that it may be used as an intermediate print.

According to the present invention, a suitable base or carrier is coated with a light sensitive composition comprising a mercuric salt which forms a substantially white complex with ammonia and a photo sensitizing material. When exposed to a suitable source of light, especially one which is rich in ultra violet rays, under a transparent drawing or the like, the mercuric salt in the composition exposed to light is reduced while the mercuric salt in the unexposed portion remains unchanged. Upon subjecting such exposed carrier to ammonia fumes the mercuric salt forms a white insoluble complex whereas the exposed portion, which has been reduced, forms a brown to gray colored compound, so that there results a negative providing a white or clear line design on a dark background having good actinic opacity, and where a transparent base or carrier has been employed, such negatives are suitable as an intermediate for preparing further prints therefrom, particularly upon diazotype papers. If desired, there may be added to the composition, organic or inorganic acid salts of iron, chromium or uranium which have the effect of greatly intensifying the depth of color obtained upon treatment with ammonia.

Suitable photo sensitizing materials that may be employed in the composition are, for example, sugars, cellulose, zinc oxide, the polycarboxylic acids such as oxalic acid, the hydroxy-polycarboxylic acids, such as citric acid, tartaric acid and the ammonium salts of such acids. Mixtures of such photo sensitizing materials also may be employed, as for example, a mixture of uranyl sulfate and sugar, zinc oxide and glucose, ferric chloride and ammonium oxalate, uranyl chloride and ammonium oxalate and the like. As such photo sensitizing materials are known in the art additional examples need not be recited.

2

Any mercuric salt may be employed which forms a white insoluble complex with ammonia, such as, for example, mercuric chloride or mercuric nitrate. I prefer to employ in the light sensitive coating or composition a mixture of mercuric chloride, ammonium oxalate and ferric oxalate, which produces after exposure to ammonia fumes a pleasing brown tone of excellent opacity to ultra violet light, which is particularly suitable as an intermediate print. The proportions of ingredients in the composition may be varied through a wide range depending on the results required. Generally, it is preferred, in using mercuric chloride, to have an excess present over the organic acid or other sensitizing material employed. Other suitable metal salts which may be employed for intensifying the color are, for example, uranyl chloride, uranyl nitrate, ferric chloride, potassium ferric oxalate, ferric sulfate, and the like. Such salts, in addition, may have a sensitizing action with or without partaking in the chemical reaction.

The invention will be described in greater detail in connection with the following example which is given to illustrate the invention.

Example

10 grams mercuric chloride and 10 grams ammonium oxalate are dissolved in 100 cc. boiling water, to which is added with thorough agitation 5 grams ferric oxalate. The solution then is filtered hot, applied to a suitable paper base, and dried in the dark. It is exposed, under a negative or original transparent drawing or photograph, to a suitable source of light, and then developed in ammonia fumes. The resulting photographic copy is a negative in which areas exposed to light are brown to gray with good actinic opacity and areas not exposed are white. Because of the photographic latitude, fine half tone prints may be made from an ordinary photographic negative, which may be employed as final prints, proof prints, or as intermediate prints for making prints by diazotype reproduction or blueprinting.

I claim:

A process of reproduction which comprises subjecting a base having a coating comprising mercuric chloride, ammonium oxalate and ferric oxalate to light from an image to be reproduced, then exposing said composition to ammonia.

SAM CHARLES SLIFKIN.

(References on following page)

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
213,484	Willis -----	Mar. 18, 1879
423,849	Willis -----	Mar. 18, 1890
1,225,146	Leighton et al. -----	May 8, 1917
1,602,589	Sheppard et al. -----	Oct. 12, 1926
1,738,530	Frankenburger -----	Dec. 10, 1929
1,880,449	Hickman et al. -----	Oct. 4, 1932
1,939,232	Sheppard et al. -----	Dec. 12, 1933
1,944,293	Martinez -----	Jan. 23, 1934
1,976,302	Sheppard et al. -----	Oct. 9, 1934

Number	Name	Date
2,019,737	Sheppard et al. -----	Nov. 5, 1935
2,095,839	Sheppard et al. -----	Oct. 12, 1937

FOREIGN PATENTS

Number	Country	Date
232,307	Great Britain -----	Apr. 9, 1925
439,812	Great Britain -----	Dec. 16, 1935

OTHER REFERENCES

10 Eder: "Handbuch der Photographie—Copier—verfahren ohne Silbersalze," Zweite Auflage, Halle, 1899 (pp. 300 and 301 and 303 cited).

15 Eder: "Handbuch der Photographie," Bd. IV, 2, published 1899 by Wilhelm Knapp, Halle A. S. (pp. 304 and 305 cited).