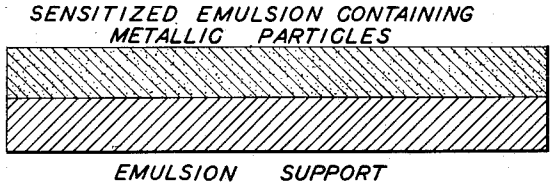
Feb. 3, 1931. A. G. COOLEY 1,791,053

PHOTOGRAPHIC EMULSION FOR ELECTRONIC DISCHARGE

Filed June 7, 1928



Inventor:
Austin G. Cooley,
by Roberts, Cushman & Woodberry.
Attorneys.

Patented Feb. 3, 1931 1,791,053

UNITED STATES PATENT OFFICE

AUSTIN G. COOLEY, OF NEW YORK, N. Y.

PHOTOGRAPHIC EMULSION FOR ELECTRONIC DISCHARGE

Application filed June 7, 1928. Serial No. 283,474.

In my prior Patent No. 1,702,595 granted Feb. 19, 1929, I have disclosed a new method of recording printed matter, pictures, etc., which consists in modulating high-frequency oscillations in accordance with the photographic subject matter, or other subject matter such for example as printed matter, and effecting the photographic exposure upon an ordinary photographic emulsion or other suitable receiving or reproducing medium with an electric discharge produced by the oscillations. Relative movement may be produced between the discharge and the receiving or reproducing medium, in any suitable manner. For example, the reproducing medium may be rotated on a drum or disk and the electrical discharge caused to trace over the medium along parallel lines constituting a spiral. The electrical discharge is preferably in the form of a corona discharge which pulsates at a predetermined frequency, either ceasing entirely between beats or decreasing to an intensity so low as to affect the reproducing medium little if any, thereby forming a succession of dots or short dashes on the medium. The beats, which are modulated in accordance with the subject matter, are impressed upon high-frequency oscillations which are adapted to produce the corona effect without disruptive discharge.

The oscillating circuit is preferably adjusted to generate oscillations of high-frequency and high-potential adapted to produce an electronic discharge from a needle electrode adjacent to but preferably spaced slightly from the photographic paper upon which the record is to be made, the discharge being emitted when the oscillation intensity is higher than that existing between successive impulses of the transmitted subject matter, the intensity of the discharge depending upon the exent of the oscillation intensity above predetermined intensity, whereby an electronic discharge is emitted from the needle during impulse (except perhaps while recording a white or an extremely light representation on the receiving paper). Thus, in transmitting a half-tone, a dot (or short dash) is recorded on the receiving paper at each impulse, the dot varying in intensity in response to variations in the intensity of said impulses, and in transmitting extreme contrasts such as the black and white of printed matter, at each impulse during passage of black or white (depending upon the adjustment of the transmitting apparatus as described in the above patent) past the point of incident of the pencil of light which traces the subject matter to be transmitted at the transmitting station.

The recording paper may be of the type requiring development subsequent to exposure by the corona discharge to convert the latent image into a visible image, or it may be of the type in which a visible image is produced without development, the latter type having the advantage of displaying the image as it is recorded. The corona discharge produces the exposure primarily by electronic bombardment of the photographic emulsion, assisted to some extent by light and/or heat. If the recording medium is of the type adapted to be affected by the corona discharge independently of the light produced thereby, the paper may be enclosed in an opaque envelope or tuned over and the process performed in a lighted room, or a plurality of superposed sheets may be exposed simultaneously; and if the recording medium be of the type which is sensitive to the corona discharge but insensitive to light, the process may be carried out in a lighted room without protecting the medium with an opaque covering.

This invention relates to the recording paper or sensitized emulsion and has for its objects to intensify the exposure, particularly when effected by a corona discharge as above described, so that the desired degree of exposure may be effected with a weaker discharge, and to produce a smoother and more attractive print.

According to this invention finely divided metallic or other conducting particles are incorporated in the emulsion, preferably separated from one another by the gelatin or other material of the emulsion, for the purpose of increasing the potential gradient through the emulsion (between the aforesaid

needle and a drum or other metallic support for the paper connected to the other side of the circuit as described in said patent), thereby making the emulsion more sensitive to a corona discharge of predetermined value. The presence of the finely divided metallic particles will also tend to diffuse the discharge, thereby affording a smoother print. By employing a metal which is a catalyst or chemical reagent (e. g. magnesium) the effect of the exposure may be still further intensified.

I claim:

A photographic coating sensitive to electronic discharge therein characterized by finely divided conducting particles distributed therethrough.

Signed by me at New York, New York, this second day of June, 1928.

AUSTIN G. COOLEY.