Aug. 5, 1924. 1,503,595

C. E. KENNETH MEES

METHOD OF MAKING PHOTOGRAPHIC RECORDS

Filed June 3, 1921

FIG. 1.

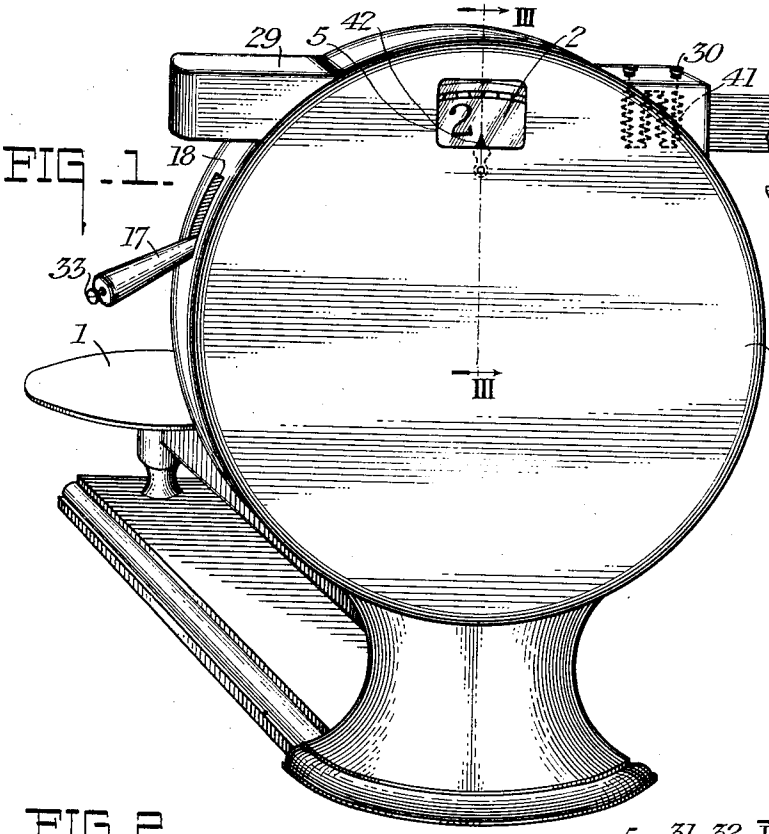


FIG. 4.

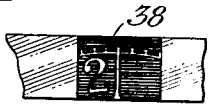


FIG. 2.

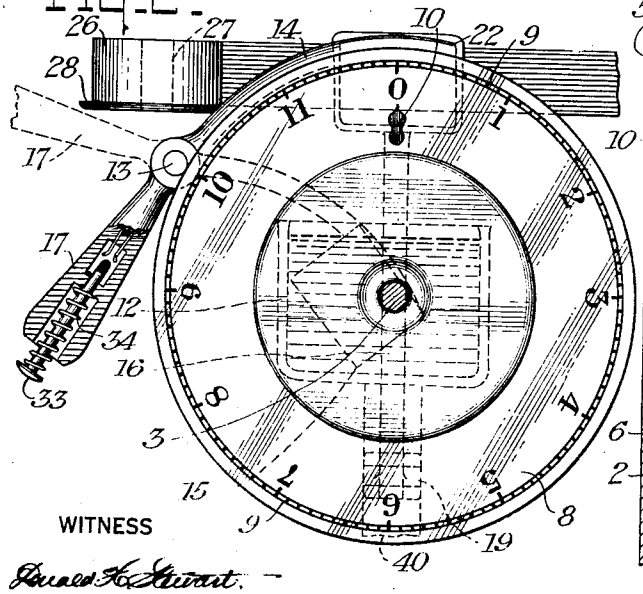
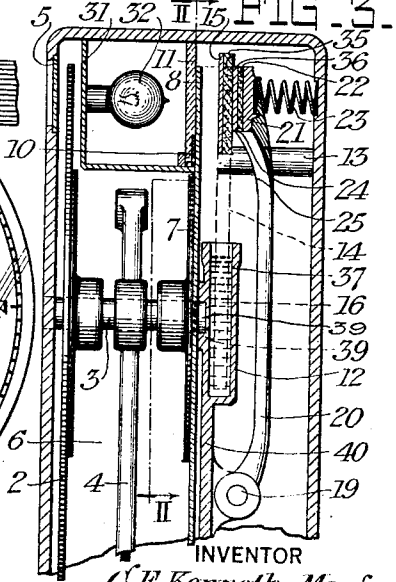


FIG. 3.



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METHOD OF MAKING PHOTOGRAPHIC RECORDS.

Application filed June 3, 1921. Serial No. 474,833.

To all whom it may concern:

Be it known that I, CHARLES E. KENNETH MEES, a subject of the King of Great Britain, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Methods of Making Photographic Records, of which the following is a full, clear, and exact specification.

This invention relates to a new and simple method of making photographic records.

In my Patent No. 1,396,770, granted Nov. 15, 1921, I have disclosed a machine in which a piece of suitably prepared paper may be dampened and then exposed to a printing light, the material becoming more sensitive to light when damp than when dry and a record being thus made upon it when placed in a damp condition at the light printing position. This present application relates to a new photographic method for which the apparatus described is particularly adapted. This method consists in dampening a prepared paper with a solution which both sensitizes the paper and renders it damp at the time of use.

The record, object, image, data, legend or other matter to be reproduced may, of course, be projected by any desired means upon the surface while still damp with the sensitizing solution and I contemplate all such means and methods as being within the scope of my invention, it being necessary only that the material when thus dampened be subjected to the action of actinic rays whatever their source and however they may be controlled, transmitted, reflected, or modified to give any desired action, and when I refer to the projection of a light image it is with this broad intent and meaning. While I have shown hereinafter a particular means for carrying out my method any equivalent means whether in itself novel or not may be used.

In order to illustrate one way in which my process may be applied and performed, I show the weighing machine described in my above mentioned patent which machine is equipped with apparatus for producing photographic records of various readings of the scale; but it is to be distinctly understood that, while this embodiment is chosen by way of illustration, I consider as within the scope of my invention the use of any equivalent means, not only as applied to any desired form of measuring, computing, registering, recording or other machine; but also to other apparatus of any description.

I particularly contemplate the carrying out of my process by photographic apparatus, cameras, reproducing or printing machines.

Reference will now be made to that particular embodiment of my invention which is illustrated in the accompanying drawings, in which like reference characters designate like parts throughout.

Fig. 1 is a perspective view of a weighing machine equipped with one form of my improved photographic recording means;

Fig. 2 is a fragmentary front elevation of that portion of the mechanism which includes my improved recording means, the exterior casing being removed, and taken on line 2—2 of Fig. 3, in the direction indicated;

Fig. 3 is a sectional view taken on line 2—2 of Fig. 1 in the direction indicated;

Fig. 4 is a view of a section of photographic material showing a record as made by my apparatus.

The weighing machine, which is of any usual or desired construction comprises a platform 1 upon which the article to be weighed is placed and a legend bearing dial 2, carried on a shaft 3, which is actuated by suitable lever means 4 connected with the platform 1. The dial 2 moves opposite a window 5 in the casing 6 and a fixed pointer 42 indicates by registry with the data on the dial the weight of the object on the platform. This structure and the details thereof constitute no part of my invention.

The shaft 3 is mounted at one end in a wall of the casing 6 and at the other end in an extension 39 of a wall of the tank 12 which will be later described. On this shaft 3 is mounted another dial 7, the annular outer portion 8 of which, at least, is trans-

parent and bears opaque numerals and graduations 9, corresponding to those on the dial 2, and adapted to register with a pointer 10, fixed in the glass panel 11. In the rear of this dial there is a tank 12 or other liquid retainer, which is rigidly mounted on support 40. Pivoted on a shaft 13, which is supported on the casing 6, is an arm 14 carrying a blade 15 which normally rests in a bath 16 in the tank 12. This arm is operated by the handle 17 which extends through an aperture 18 in the casing 2.

Pivoted at 19 to the support 40 is another arm 20 adapted to rock toward and from the dial, the upper end of this arm having an extended portion 21 with a face of felt or other like material 22. This portion is pressed forward by a spring 23, and it has, just beneath the extended portion, a shoulder 24. The arm has a curved cam surface 25 below this shoulder.

A reel of suitably prepared paper 26 is mounted on a spindle 27 and on a platform 28. The end of the paper is led across the front of the felt surface 22 and is supported by the shoulder 24. The casing 6 has suitable extensions 29 and 30 to provide space for the magazine or supply of paper and to provide a channel through which the paper may be drawn out of the casing.

This paper is coated with an emulsion which when dry is visibly affected only slightly, if at all, by light rays and may be exposed to the light of day without harm. This paper when dampened with solution 16 is capable of darkening quickly and deeply when submitted to light. This paper and the solution will be more fully described hereinafter.

The glass panel 11 forms one side of a lamp box 31, in which is an electric filament lamp 32. There is in the handle 17 a push button 33, normally pressed outwardly by spring 34, but which may be pressed inwardly to close a circuit to the lamp. The simple circuit is not shown as it involves no features of novelty or interest.

When the handle 17 is pushed down, the blade 15 is lifted from the liquid, and the upper edge, engaging the cam surface 25, pushes arm 20 back, permitting the surface of blade 15, which is covered with felt 35 or other absorbent material, to brush across the surface of that portion 36 of the prepared paper which is supported on the shoulder 24, and dampen it with the solution, thus causing it to become sensitive to light rays and capable of being discolored thereby. The handle is at once raised again, permitting the blade 15 to return to the tank and the paper 36 is pressed toward the data bearing disc 8. It does not press against it, however, because arm 20 engages a stop 37. The operator may now cause the illumination of the lamp 32 by pressing button 33. When a sufficient time has elapsed, the lamp is de-energized and the end of the strip of paper is pulled from the machine and torn off, furnishing a record such as 38. Being only slightly dampened, it is printed and practically dry in a few seconds. Preferably, however, the channel part 30 is supplied with a well known form of electric resistance heating unit indicated in dotted lines at 41, so that the paper may be heated and dried as it leaves the machine. Any other desired drying means, whether attached to the apparatus or not, may be used.

Such a machine is of obvious utility in markets and stores, where each customer may be given a photographic record of the scale relating to his purchase. As the paper is insensitive when dry, it will not be further discolored, and the record will remain and be ample to furnish the customer with a sufficient memorandum of the transaction.

When in the specification and claims, I refer to the paper as insensitive when dry, I mean that it is relatively free from visible effects due to actinic light, and that it will not darken beyond such a degree as will not affect its usefulness; and which is slight as compared to the extent that it will darken when damp and exposed to actinic rays.

The sensitive material which I have mentioned and the properties of which I have described is an ordinary emulsion of silver bromide in gelatine. One way in which such an emulsion may be made is the following:

To 1000 c. c. of a 7½% potassium bromide solution is added 175 grams of gelatine. These are melted and the solution is held at a temperature of 90° F., while there is slowly added to the mixture 1000 c. c. of a 10% solution of silver nitrate which has been precipitated and then just redissolved with ammonia, the silver nitrate solution being also held at 90° F. When precipitation is complete the temperature is raised to 120° F., at which point it is held for a half hour. The emulsion is then cooled rather rapidly, as by placing the container in ice, and the emulsion cut up into small shreds and washed in running water for an hour. The emulsion is then remelted and it is immediately coated on the support such as paper. I have found that the addition of sodium sulfite to a wide variety of emulsions, particularly those containing silver bromide, has the effect of rendering them capable of darkening when wet and exposed to light, where without the sulfite they have been incapable of so darkening or have possessed this ability to only a limited extent. This solution may be added to the emulsion after it has been made and coated upon the support and is fully as effective as if it were incorporated therein at the time of

manufacture. I therefore place a solution 16, preferably of sodium sulfite, in the tank 12 and this solution performs the double function of sensitizing the paper so as to give it the properties described and, furthermore, to dampen it at the time of use. It is possible, therefore, for the manufacturer to furnish an ordinary type of Bromide paper to the user of the machine and the latter may use the sensitizer in the machine itself. Other sulfites than sodium sulfite may be used, particularly those of the alkali metals, among which I count ammonium. A solution of sodium nitrite, or of a nitrite of the other alkali metals, including ammonium, may also be used. The strength of solution of any of the materials used may vary within wide limits, but I fiud it satisfactory with an apparatus of the type herein described to use a 10% solution of sodium sulfite.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of making a photographic record which consists in moistening a suitably prepared material with a bath free of substances tending to discolor the material and that will render the material capable of becoming darker in the presence of light when damp than when dry and submitting the material while still damp from such bath to the projection of a light image thereon.

2. The method of making a photographic record which consists in moistening a material bearing a suitable gelatino-haloid emulsion with a bath free of substances capable of developing an image in such emulsion that will render the material capable of becoming darker in the presence of light when damp than when dry and submitting the material while still damp from such bath to the projection of a light image thereon and at once permitting the material to dry.

3. The method of making a photographic record that consists in moistening a material carrying a suitable layer containing silver bromide with a bath free of substances capable of developing a latent image in a silver salt that will render the material capable of becoming darker in the presence of light when damp than when dry and submitting the material while still damp from such bath to the projection of a light image thereon.

4. The method of making a photographic record that consists in moistening a material carrying a suitable gelatino-bromide emulsion with a bath free of substances capable of developing a latent image in a silver salt that will render the material capable of becoming darker in the presence of light when damp than when dry and submitting the material while still damp from such bath to the projection of a light image thereon.

5. The method of making a photographic record which consists in moistening a suitably prepared material with a bath containing a sulfite but free of substances tending to stain said material, thus rendering the material capable of becoming darker in the presence of light when damp than when dry, and submitting the material while still damp from such bath to the projection of a light image thereon.

6. The method of making a photographic record which consists in moistening a suitably prepared material with a bath containing in solution a sulfite of an alkali metal but free of substances tending to stain said material, thus rendering the material capable of becoming darker in the presence of light when damp than when dry, and submitting the material while still damp from such bath to the projection of a light image thereon.

7. The method of making a photographic record which consists in moistening a suitably prepared material with a bath consisting of sodium sulfite in an aqueous solution, thereby rendering the material capable of becoming darker in the presence of light when damp than when dry, and then submitting the material while still damp from such bath to the projection of a light image thereon.

8. The method of making a photographic record which consists of moistening a suitably prepared material with a bath consisting of sodium sulfite in aqueous solution, thereby rendering the material capable of becoming darker in the presence of light when damp than when dry, and then submitting the material while still damp from such bath to the projection of a light image thereon, and at once drying the material.

9. The method of making a photographic record which consists in moistening a material carrying a suitable gelatino-haloid layer with a bath containing in solution a sulfite but free of substances capable of developing an image in said layer, thus rendering it capable of becoming darker in the presence of light when damp than when dry, and then submitting it while still damp from such bath to the projection of a light image thereon.

10. The method of making a photographic record which consists in moistening a material carrying a suitable gelatino-bromide emulsion with a bath consisting of an aqueous solution of a sulfite of an alkali metal, thus rendering the emulsion capable of becoming darker in the presence of light when damp than when dry, and then submitting it while still damp to the projection of a light image thereon.

11. The method of making a photographic record which consists in submitting a suitable photographic gelatino-bromide paper to a bath consisting of an aqueous solution of sodium sulfite, thus rendering it capable of becoming much darker in the presence of light when damp than when dry, and then submitting the paper while still damp from such bath to the projection of a light image thereon and at once drying the paper.

Signed at Rochester, New York, this 1st day of June, 1921.

CHARLES E. KENNETH MEES.