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PROCESS FOR REDUCING PHOTOGRAPHIC SILVER IMAGE LAYERS.

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A number of methods have already been suggested for reducing negatives, films or positives. All these reducers, however, have the common fault, that they affect the fine half tones too strongly or entirely destroy the same. Another reducer has been suggested, which does not attack the fine half tones. It is however rarely used, as its treacherous character greatly endangers the object to be treated and frequently completely destroys the same.

The new reducer consists in a preliminary bath containing in one litre of water:

1,6 gs. potassium ferricyanide.
3,3 gs. potassium bichromate and
1,5 gs. sugar.

The object to be reduced is immersed in this bath for about 3 to 5 minutes, is then quickly rinsed in water and is thereupon immersed in a solution of

1 liter of water,
100 gs. sodium thiosulphate and
20 ccms. 16½% sulphuric acid solution.

The reducing process is effected quickly in this bath, but still slowly enough for the process to be carefully observed and to be interrupted immediately the desired affect is obtained. All that is then necessary is to wash the negative or positive thoroughly. With this method it is possible to reduce even the hardest or densest negative or to lighten a positive which has been too darkly printed or developed, without the fine tones being also reduced. With this method of treatment a very good gradation may be obtained.

It has been found, when potassium bichromate or some other alkali metal chromate or bichromate is present in the reducing solution, gelatine in the vicinity of the silver appears to be tanned and made immune to the action of a reducer. It has also been observed, that the presence of sugar has a favourable effect on the results. The substances are rubbed down with sugar in the required proportions so as to be intimately mixed therewith and the powdered mixture is dissolved in water so as to obtain the required concentration.

Example I.

A negative which has been made too hard by developing is immersed in a preliminary bath containing in one litre of water:

1,6 gs. potassium ferricyanide,
3,3 gs. potassium bichromate,
1,5 gs. sugar.

After 3 to 5 minutes the negative is removed, is rinsed in pure water and is immersed in a 10 to 20% acid sodium thiosulphate bath, until the visible reducing process has reached the desired degree. The negative is thereupon well washed in the usual manner. After this washing the process can be repeated, if desired.

Example II.

A silver bromide negative or positive which has been under or over-developed is immersed in a preliminary bath containing in one litre of water:

1,3 gs. potassium ferricyanide,
3,5 gs. potassium bichromate,
1,3 gs. sugar.

After about 3 minutes the negative or positive is quickly rinsed and immersed in an ordinary 20% acid fixing bath. When the desired effect has been obtained, the visible reducing process is interrupted by rinsing with pure water, and the negative or positive is thoroughly washed in the usual manner.

The inventor has discovered quite generally that the best results may be obtained when potassium ferricyanide and sugar are used as the reducing medium and at the same time the lighter portions are made immune to the action of the reducer by treating the photographic image layers with chromates or bichromates of the alkali metals. He therefore does not limit himself to the substances mentioned, but wishes to include all other means having an equivalent action.

What I claim is:—

1. A process for reducing photographic silver image layers, consisting in treating the said layers in a preliminary bath with chromates of the alkali metals and at the same time with potassium ferri-cyanide and in thereupon treating them with an acid sodium thiosulphate bath as set forth.

2. A process for reducing photographic silver image layers, consisting in treating the said layers in a preliminary bath with bichromates of the alkali metals and at the same time with potassium ferri-cyanide and in thereupon treating them with an acid sodium thiosulphate bath as set forth.

3. A process for reducing photographic silver image layers, consisting in treating the said layers in a preliminary bath with chromates of the alkali metals and at the same time with potassium ferricyanide and sugar, and in thereupon treating them with an acid sodium thiosulphate bath as set forth.

4. A process for reducing photographic silver image layers, consisting in treating the said layers in a preliminary bath with bichromates of the alkali metals and at the same time with potassium ferri-cyanide and sugar, and in thereupon treating them with an acid sodium thiosulphate bath as set forth.

In testimony whereof I have signed my name to this specification.

PAUL PLAGWITZ.