

## UNITED STATES PATENT OFFICE

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## PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC PRINTS AND LIGHT-SENSITIVE MATERIAL

No Drawing. Application filed February 24, 1928, Serial No. 256,809, and in Germany March 10, 1927.

The present invention relates to the production of photographic prints, particularly to the development of copies on layers containing as a light-sensitive substance a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series.

In my preceding application Serial Number 256,810, filed February 24, 1928, I have disclosed a process for the production of photographic prints consisting in the development of exposed layers which contain a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series with the solution of an organic compound containing one or more amino-groups. Now I found that the development of such layers can advantageously be executed with an alkaline solution of an organic compound containing a so-called "acid methylene-group", that is to say, compounds which contain an unsubstituted or substituted methyl-group having an easily reacting hydrogen-atom.

From the great number of bodies having an acid methylene-group I mention as examples: ethyl ester of aceto-acetic acid, cyano-aceto-amide, methylphenylpyrazolone, hydroxybenzenes and resorcinol. The great number of these substances which may be used as developers permits one to realize nearly every tone of the color-scale.

Furthermore I found that these developing substances can be incorporated together with the light-sensitive substance into the sensitive layer and that the picture, in this case, can be developed after exposure by a treatment with gaseous ammonia.

My invention is illustrated by the following examples:

*Example 1.*—A paper coated with a layer containing ammonium 1.2-naphthoquinone-4-sulfonate and resorcinol is developed after exposure under a black and white drawing with gaseous ammonia. There results directly a dark-green positive copy.

*Example 2.*—A paper coated with a layer containing ammonium 1.2-naphthoquinone-4.6-disulfonate and hydroxybenzene is exposed under a black and white drawing and developed with gaseous ammonia. The directly resulting green positive copy becomes

red-violet after having been exposed to the influence of the air during a short time.

*Example 3.*—A paper coated with a layer containing sodium 1.2-naphthoquinone-6-sulfonate and hydroxybenzene is developed after exposure with gaseous ammonia. The directly resulting dark-green positive copy changes its color to blue-violet after a short exposure to the air.

It is not necessary that the sensitive layers according to the preceding examples contain the developing agent (hydroxybenzene, resorcinol). The exposed layers containing the sensitizing compound can also be developed in an alkaline solution of the developing agent.

I claim:

1. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series and developing the exposed light-sensitive surface with an organic compound containing an acid methylene-group and with an alkali.

2. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series and developing the exposed light-sensitive surface with a hydroxy compound of the benzene series and an alkali.

3. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series and developing the exposed light-sensitive surface with phenol and an alkali.

4. Light-sensitive materials comprising a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series and an organic compound containing an acid methylene-group.

5. Light-sensitive materials comprising a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series and a hydroxy benzene.

6. Light-sensitive materials comprising a support coated with a salt of a sulfonic acid

of a 1.2-quinone of the naphthalene series and phenol.

7. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series, and developing the exposed light-sensitive surface with an organic compound containing an acid methylene-group already present in the light-sensitive layer by the action of gaseous ammonia.

8. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series, and developing the exposed light-sensitive surface with a hydroxy compound of the benzene series already present in the light-sensitive layer by the action of gaseous ammonia.

9. The process of making photographic prints which consists in exposing to light behind a positive a support coated with a salt of a sulfonic acid of a 1.2-quinone of the naphthalene series, and developing the exposed light-sensitive surface with phenol already present in the light-sensitive layer by the action of gaseous ammonia.

In testimony whereof, I affix my signature.

MAX RAECK.