April 19, 1932. J. JERZYKOWSKI 1,854,335

PHOTOGRAPHIC DEVELOPING APPARATUS

Filed May 28, 1931

Fig. 1.

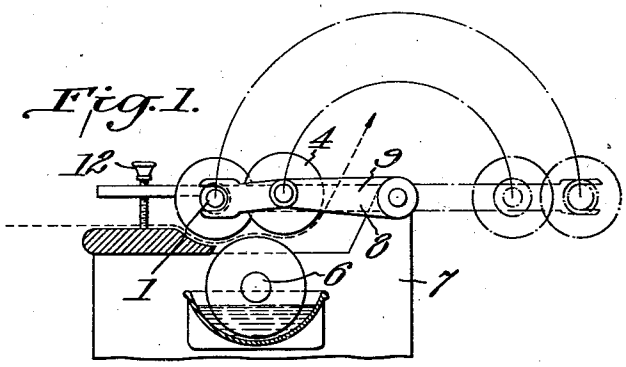
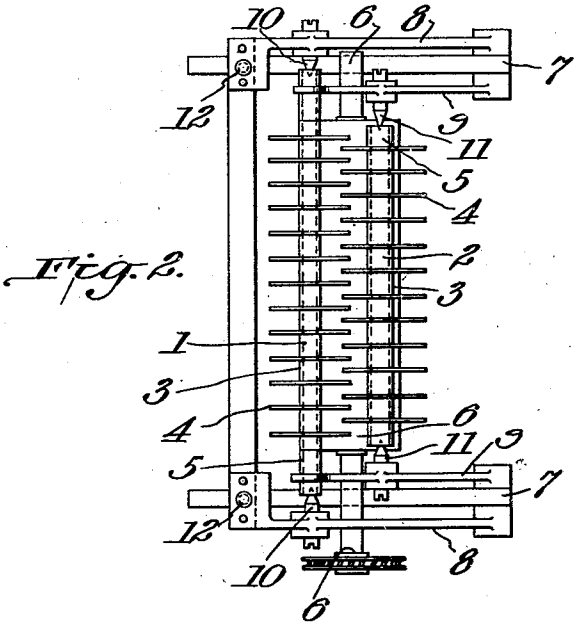


Fig. 2.



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Patented Apr. 19, 1932

1,854,335

UNITED STATES PATENT OFFICE

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PHOTOGRAPHIC DEVELOPING APPARATUS

Application filed May 28, 1931, Serial No. 540,773, and in Germany May 8, 1930.

Applications for patents on this invention have been filed in Germany on May 8, 1930 and on December 6, 1930 and in England on May 8, 1931.

The present invention relates to photographic developing apparatus and more particularly to an apparatus for developing photo-printing papers.

Most of the hitherto known apparatus for half-wet developing have the drawback that the pressing devices do not press uniformly and for a sufficiently long time on the photo-printing paper running between them and the developing roller or cylinder. The short contact with the developing roller obtained with such known apparatus does not suffice to develop the rapidly running paper satisfactorily and causes the result that the moistening action, particularly in the case of thin and hard paper does not take place at certain points so that lines, dashes, etc. are often not developed.

In order to avoid this drawback it has already been proposed to bring the paper-band into a closer contact with a greater part of the peripheral surfaces of the developing rollers by mounting small weight rollers in the spaces between two developing rollers dipping into a liquid.

Now I have found that the same purpose is attained in a particularly effective manner by the employment of an apparatus comprising a frame and a trough mounted between the frame and adapted to contain the developing solution. A developing roller is attached to the frame above the said trough in such a manner that a part of its surface dips into the developing solution. Two levers being movable are mounted on the frame above the developing roller and support two rollers each comprising several disc-like elements and arranged one behind the other, which, by virtue of their own weight, bear upon the wet developing roller so as to give the photo-printing paper running between them a larger and more contact surface with the developing roller. The discs of the first-named roller are arranged between the discs of the second roller, so that the paper is bent over the wet developing roller and the uneveness left by the first roller is compensated. By this arrangement the parts of the surface of the paper which may not have been wetted by the first roller are moistened with certainty by the second roller.

A further novel feature resides in the fact that the rollers comprising the disc-like elements do not run in ordinary bearings, but they run between dead centres or in slotted bearings. By this arrangement easy running of the said rollers is obtained, and, moreover, it is possible to cause the discs to bear accurately on the wet developing roller over its whole breadth.

Furthermore, the two rollers comprising disc-like elements are mounted in lever arms which can be turned over and it is thus possible to lift the said rollers away from the wet developing roller.

A preferred constructional form according to the invention is illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a section through a developing apparatus according to the invention, and

Fig. 2 is a plan view thereof.

Referring to the drawings, rings 3 are mounted on iron shafts 1 and 2 at definite longitudinal distances apart. Between these rings 3 discs 4 are arranged in a row which are held in position by terminal nuts 5 provided at both ends of the iron shaft. The main roller on the shaft 1 thus constituted is arranged in the front, whilst the discs 4 of the roller on the shaft 2 run between the discs of the first roller, equalize the pressure, increase the contact of the surface of the paper on the wet developing roller 6 and allow the photo-printing paper to remain for a prolonged time on the said developing roller.

The levers 8 and 9 mounted in the frame 7 and capable of being turned upwards are provided with dead centres 10 and 11 between which the rollers on the shafts 1 and 2 run.

The levers 8 are forked at their front ends; they project over the bearing tenon of the roller on the shaft 1 so that they can be lifted. The vertical distances between the roller on the shaft 1 and the wet developing roller are

regulated by a set screw 12 mounted in the outer lever 8.

I claim:

1. An apparatus for developing photographic pictures by means of a developing solution which comprises a frame, a trough mounted between the frame and adapted to contain the developing solution, a developing roller attached to the frame above the trough and dipping into the developing solution with a part of its surface and two levers mounted on the frame above the developing roller and supporting two rollers comprising disc-like elements for feeding the material and pressing it against said developing roller by means of the peripheral surfaces of the single disc-like elements.

2. An apparatus for developing photographic pictures by means of a developing solution which comprises a frame, a trough mounted between the frame and adapted to contain the developing solution, a developing roller attached to the frame above the trough and dipping into the developing solution with a part of its surface and two movable levers mounted on the frame above the developing roller and supporting two rollers comprising disc-like elements for feeding the material and pressing it against said developing roller by means of the peripheral surfaces of the single disc-like elements, said rollers comprising disc-like elements being placed in such a way that one is situated before the developing roller and the other after that roller.

3. An apparatus for developing photographic pictures by means of a developing solution which comprises a frame, a trough mounted between the frame and adapted to contain the developing solution, a developing roller attached to the frame above the trough and dipping into the developing solution with a part of its surface and two movable levers mounted on the frame above the developing roller and supporting two rollers comprising disc-like elements for feeding the material and pressing it against said developing roller by means of the peripheral surfaces of the single disc-like elements, said rollers comprising disc-like elements being placed in such a way that one is situated before the developing roller and the other after that roller and that the discs of the one roller are arranged between the discs of the second roller.

4. An apparatus for developing photographic pictures by means of a developing solution which comprises a frame, a trough mounted between the frame and adapted to contain the developing solution, a developing roller attached to the frame above the trough and dipping into the developing solution with a part of its surface and two movable levers mounted on the frame above the developing roller and supporting two rollers comprising disc-like elements bearing in dead centres for feeding the material and pressing it against said developing roller by means of the peripheral surfaces of the single disc-like elements, said rollers comprising disc-like elements being placed in such a way that one is situated before the developing roller and the other after that roller, and that the discs of the one roller are arranged between the discs of the second roller.

5. An apparatus for developing photographic pictures by means of a developing solution which comprises a frame, a trough mounted between the frame and adapted to contain the developing solution, a developing roller attached to the frame above the trough and dipping into the developing solution with a part of its surface and two movable levers mounted on the frame above the developing roller and supporting two rollers comprising disc-like elements bearing in slotted bearings for feeding the material and pressing it against said developing roller by means of the peripheral surfaces of the single disc-like elements, said rollers comprising disc-like elements being placed in such a way that one is situated before the developing roller and the other after that roller and that the discs of the one roller are arranged between the discs of the second roller.

In testimony whereof, I affix my signature.

JOSEF JERZYKOWSKI.