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AUTOMATIC WORKING UP OF PHOTOGRAPHIC PAPERS AND FILMS

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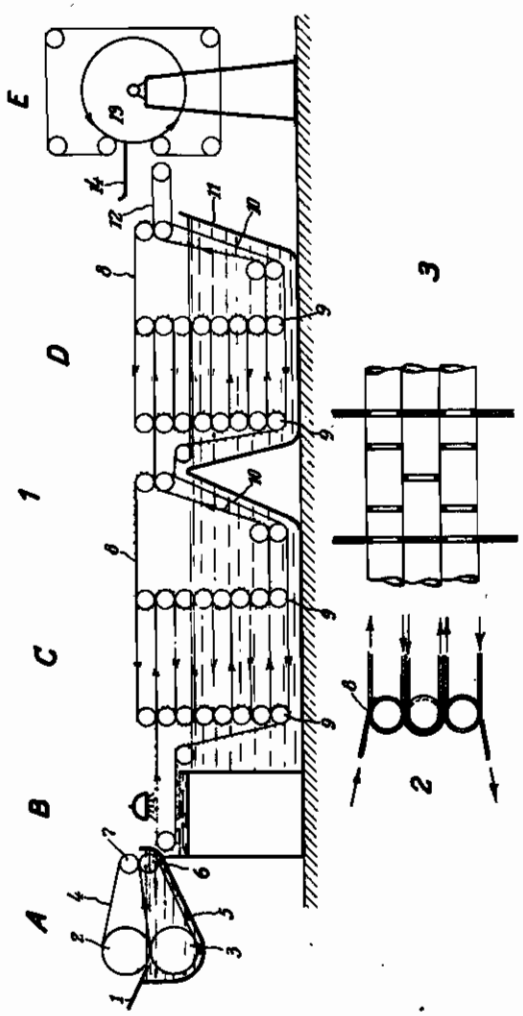

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ALIEN PROPERTY CUSTODIAN

AUTOMATIC WORKING UP OF PHOTOGRAPHIC PAPERS AND FILMS

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vested in the Alien Property Custodian

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The present invention relates to the automatic working up of photographic papers and films.

It is already known to employ an apparatus for more or less continuously working up single photographic developing papers or papers in the form of rolls. The use of apparatus for photographic papers in the form of rolls is inconvenient in most cases, since in the laboratories of the photographers the papers to be treated as, for instance, for obtaining contact copies or enlarged images are quite different in size and amount. Furthermore, a number of these known apparatus only works semi-automatically, either the developing or the fixing and washing being carried out mechanically. Owing to a known method an exposed material is, for instance, transferred through a developing bath between two broad linen bands and then conveyed into the fixing bath, after it has been sprinkled with water. From the fixing bath the material must, however, be carried by hand to the final watering bath and the drying chamber. The mechanical treatment is therefore already finished with the fixing step. Moreover, this method has the great disadvantage that the linen bands which, of course, absorb a relatively large amount of developing liquid are dilated during the developing procedure and convected on dying. A repeated adjustment is therefore necessary. It is also disadvantageous that the course of the development cannot be sufficiently observed since the images are covered on both sides with the broad bands. Furthermore, it is often difficult to remove the absorbed liquid from the linen bands which precaution is, for instance, necessary if it is intended to use a developer having another composition. Finally these broad bands render the apparatus rather inaccessible. This is especially unfavorable when disturbances are to be removed.

It is an object of my invention to overcome the disadvantages mentioned above.

Another object is the provision of an apparatus which is simple in construction and easy to operate. Further objects will be seen from the reading of the following description. Reference is made to the accompanying drawing which illustrates an embodiment of the invention and in which

Figure 1 is a view showing the whole apparatus according to the invention and

Figures 2 and 3 are views showing a detail of the apparatus.

These objects of the invention are accomplished by conveying the photographic papers in and between the baths with the aid of elastic threads which are secured by grooved rolls. The forcing in of the papers can be avoided by arranging the grooves in reverse order. In this way one succeeds in obtaining a fully automatic working up of single photographic papers and films of any size and succession from exposure to drying. In using such elastic threads the course of the whole treatment can be sufficiently observed. Moreover, owing to the easy accessibility the apparatus can be cleaned with little trouble and disturbances can immediately be removed.

Referring to the drawing, exposed photographic papers of different sizes are directly successively transferred at 1 into the developing bath A in which an upper pair 2 and a lower pair 3 of rolls are provided in which is filled to a certain height with the developer (see Figure 1). Both pairs of rolls carry several endless elastic rubber threads 4, 5 which pass the paper through the developing bath. The drive is effected by hand or motor and the duration of development may, for example, be regulated by a cone transmission.

The rolls 6 and 7 by which the excess of the liquid is removed from the papers convey them onto a feeding mechanism consisting of rubber threads. At B the developed papers are sprinkled with water. The papers are then transferred into the fixing bath C in which several pairs of rolls 9 provided with rubber threads alternately disposed in lateral direction. The papers while conveyed round the rolls are secured by holding threads 9 and are further transferred by them to the next feeding mechanism. The papers, therefore, pass through the fixing bath several times in opposite directions. At 10 the papers are again carried up by threads and introduced into the watering bath D where they are conveyed between the rolls and the threads in alternating direction in the same way as in the fixing bath.

It is evident that two or more developing, fixing, and watering baths may also be arranged in succession. It is also possible to insert other baths into the course of the treatment as, for instance, an interrupting bath after the sprinkling device B.

From the last watering bath the papers are automatically transferred at 11 by threads 12 onto the drying or high-polishing rolls 13 of the drying apparatus E which they finally leave at 14.

Instead of rubber threads there may also be used other elastic threads which are incapable of swelling and absorbing liquids and preferably have a round cross section.

RUDOLF ALFRED KREMP.