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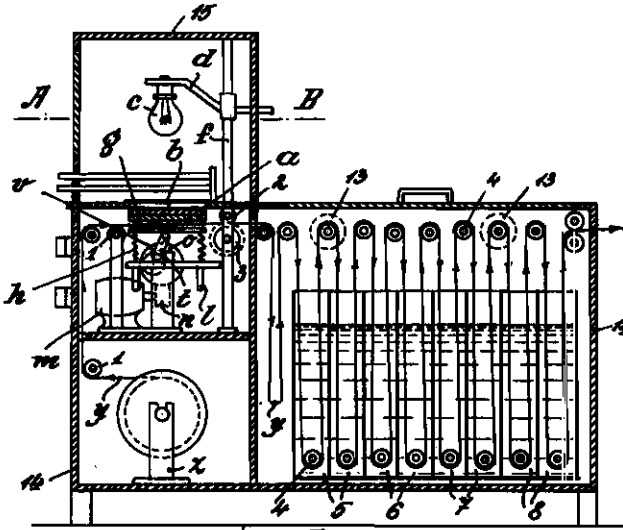


Fig. 1.

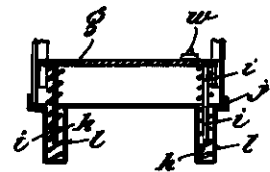


Fig. 4.

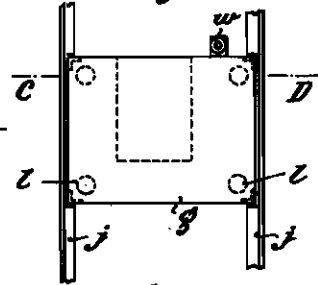


Fig. 3.

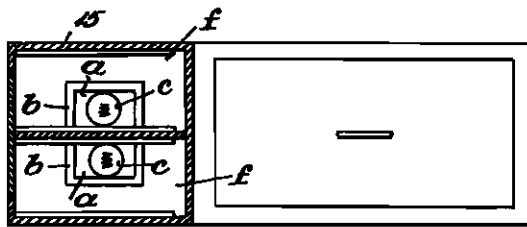


Fig. 2.

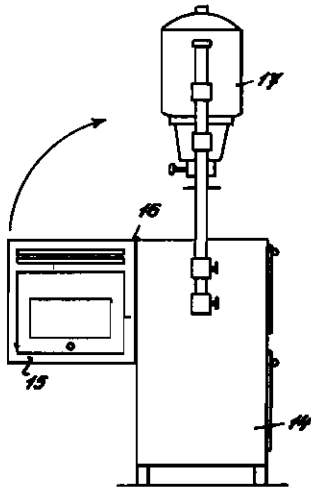


Fig. 6.

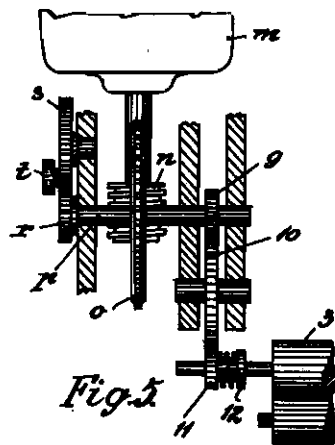


Fig. 5.

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APPARATUS FOR THE PRODUCTION OF PHOTOPRINTS

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The invention relates to apparatus by means of which it is possible to prepare any desired number of photoprints in succession from the same negative without any further attendance excepting a single adjustment of the negative being required. Substantially, the apparatus according to the invention is composed of a frame for accommodating the negative, of a source of light of adjustable position mounted above the said frame and fitted with an automatic current switch, of a printing plate capable of being moved up and down and subject to spring effect arranged below the frame, of a motion device by which the photo-sensitive printing paper coming from the roll is guided between the negative and the printing plate and by which the printing plate and, therewith, the photo-sensitive printing paper moving above the latter are from time to time pressed against the negative, and finally of developing, washing, fixing and washing tanks receiving in succession the photo-sensitive printing paper leaving the negative.

On the accompanying drawing the invention is represented in one of its embodiments assumed by way of example viz.:

Fig. 1 is a vertical section of the apparatus.

Fig. 2 is a horizontal section along the line A—B of Fig. 1.

Figs. 3 to 5 are detail drawings, Fig. 4 being a section taken along the line C—D of Fig. 3, whilst

Fig. 6 is the section of another embodiment of the apparatus.

On the drawing *a* denotes the negative, and *b* the fixed frame of accommodating the latter. Above this is mounted the source of light *c* the supporting arm *d* of which is capable of being slid up and down on the bar *f*, so that the source of light can be fixed in various positions relatively to the negative.

Below the negative *a* the clamping plate *g* capable of being moved up and down is located, the resilient force of the springs *h* endeavouring to keep the said clamping plate at a distance from the negative (Figs. 1 and 4.) Vertical bars *i* are projecting from the clamping plate *g*, the said bars projecting into the sleeve *l* of the frame *j* arranged below the clamping plate and guiding the motion in the vertical direction of the clamping plate. For moving the clamping plate, the motor *m* is employed (Figs. 1 and 5), on the shaft of which the worm *n* is provided with which the wormwheel *o* engages. On the shaft *p* of the latter there is mounted the gear wheel *r* the teeth of which are engaging with the teeth of the gear wheel *s* fitted with the cam *t*. Between the cam

extension *t* of the gear wheel *s* and the clamping plate *g* the connecting rod *v* is arranged in an articulate manner (Fig. 1), the clamping plate being, during the rotation of the gear wheel *t*, pressed alternately by the said connecting rod to the negative *a*.

On the clamping plate *g* the electric switch *w* is provided (Fig. 4) which closes the circuit of the source of light *c* whenever the plate *g* is being pressed against the negative *a*.

The roll of photo-sensitive printing paper *y* is mounted in a rotatable manner on the frame *z*. The paper coming from the roll passes, guided by the rollers *l*, between the negative *a* and the table plate *g*, following which it gets between the pair of motion cylinders 2, 3, following which, guided on the rollers 4, it passes into the developing tanks 5, thence into the washing tanks 6, thence into the fixing tanks 7, thence into the washing tanks 8, and leaving the latter, is led to the drying apparatus.

The cylinder 3 of the pair of motion cylinders 2, 3 is connected with the motor *m* in such a manner that the gear wheel 9 keyed on the shaft *p* is, according to a known arrangement, periodically rotating the gear wheel 11, the front plate of which latter is connected with the front plate of the wheel 12 mounted on the shaft of the cylinder 3 (Fig. 5).

That section of the printing paper *y* which extends up to the pair of cylinders 2, 3 is being moved by the pair of cylinders 2, 3 that section of the paper which gets beyond the said pair of cylinders is being moved by the chain wheels 13 driven by means of chain transmission by the motor. In order to ensure that, during the intervals during which the pair of cylinders 2, 3 is at rest, it should be possible for the printing paper to continue its motion in the tanks 5, 6, 7, 8 unhindered, a loosely hanging-down section of the printing paper is provided between the pair of cylinders 2, 3 and the tank 5, from which section the supply of paper during passage through the tanks is effected.

The method of operation of the apparatus is the following:

The motor *m* is through the intermediate transmission gears *n*, *o*, *p*, 9, 10, 11 and 12 periodically rotating the pair of cylinders 2, 3 through which the printing paper *y* coming from the roll and passing below the negative *a* is passing. It is the motor *m* likewise which through the intermediate gears *n*, *o*, *p*, *r*, *s*, *t*, *v*, is moving the printing plate *g* up and down. As soon as the plate *g* moving in the upward direction presses

the printing paper *y* to the negative *a* the switch *W* connects the current circuit of the source of light *c*, in consequence whereof photo-printing on the photo-sensitive paper *y* takes place. During this time there is no connection between the gear wheels 11 and 12 and accordingly the cylinder 3 does not rotate and leaves the paper *y* in stationary condition. After photo-printing has been effected the springs *h* are removing the plate *g* from the negative *a*, at the same time the current circuit of the source of light *c* is broken, the wheels 10, 11 get into mutual engagement and the pair of cylinders 2, 3 gets into rotation and removes the exposed section of the photo-printing paper from below the negative *a*.

During the upward and downward movement of the plate *g* the operation described above is continually repeated, in consequence whereof photo-printing takes place on new and new sections of the photo-printing paper. The paper *y* already photo-printed, leaving the pair of cylinders 2, 3, will first freely hand down along a section, following which it will, on the rollers 4 driven by means of the chain wheels 13, be passed through the tanks 5, 6, 7, 8 in which the developing, fixing and washing of the photo-printing

paper takes place. Finally, the photo-printing paper leaving the tank 8 gets into the drying apparatus. During the time during which the photo-printing paper remains stationary below the negative *a*, the paper will continue its motion undisturbed in the tanks 5, 6, 7, 8, as this motion is rendered possible by the section of paper hanging down between the pair of cylinders 2, 3 and the tank 5.

Thus all that is necessary is to adjust the negative and to start the motor, whilst the photo-prints will be prepared by the apparatus automatically without any further attendance.

In the embodiment according to Fig. 6, the upper part 15 of the casing 14 of the apparatus, which is arranged above the frame *b*, can be tilted down around the hinge 16. Above the frame *b* an enlarging apparatus 17 of known type is mounted, by means of which it is possible to prepare enlarged photo-prints from the negative.

The photo-printing and the developing device may also be constructed so as to be separate from each other.

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