

May 14, 1940.

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2,200,451

DEVELOPING DEVICE FOR LIGHT-SENSITIVE PAPER

Filed May 27, 1938

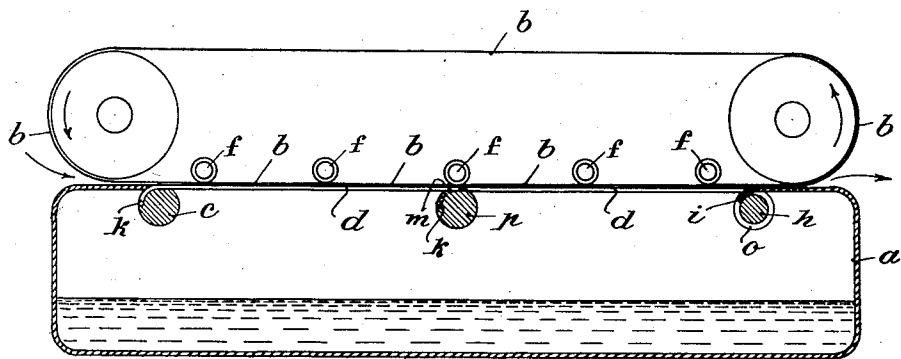


Fig. 1.

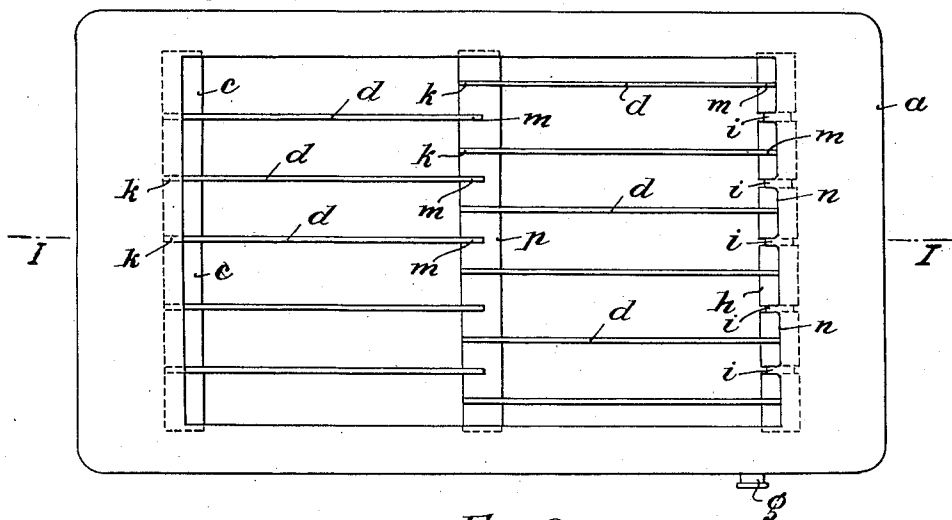


Fig. 2.

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## UNITED STATES PATENT OFFICE

2,200,451

## DEVELOPING DEVICE FOR LIGHT-SENSITIVE PAPER

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Application May 27, 1938, Serial No. 210,324  
In Germany February 28, 1938

3 Claims. (Cl. 95—94)

Developing devices for the dry developing of light-sensitive material (hereinafter referred to for convenience as paper) by means of gas are already known in which a chamber filled with the developing gas is covered by a plate provided with perforations and the sensitive paper carried over the said plate by an endless band. In practice these devices have disadvantages because the perforated plate presents a very large friction surface to which the sensitive paper often adheres thus making the passage of the paper through the device difficult and giving rise to interruptions in operation. The use of a perforated plate is also disadvantageous however because it prolongs the time of development due to the gas only having access to the paper through the perforations while the solid part of the plate which covers about  $\frac{2}{3}$  of its area prevents access. This solid part of the plate also tends to cause condensation of moisture from the warmed gas, which leaves traces on the paper and makes it spotty. All these disadvantages are overcome by the present invention. According to the invention the developing chamber over which the endless conveying band carries the sensitive paper, is open at the top so that the gas directly strikes the paper, and only narrow supporting members, for example rods or narrow bands passing over rollers, are provided spaced apart in the chamber against which to obtain a gas tight closure, the paper is pressed by rollers pressing down on the endless band.

An example of the invention is illustrated in the accompanying drawing.

Figure 1 is a sectional elevation of the developing device taken on line I—I of Figure 2 with the endless band for conveying the paper.

Figure 2 is a plan view of Figure 1 with the conveyor band removed.

In the drawing, *a* is the chamber receiving the developing gas, which is open at the top, and *b* is the endless conveyor band which carries the sensitive paper over the developing chamber. In the upper part of the chamber carrying rollers *c*, *p*, *h* are mounted, upon which rods *d* are arranged at a substantial distance apart. With three or more carrying rollers the rods *d* are arranged between successive rollers are staggered so that the gas has access to the whole surface of the sensitive paper carried over the top of the chamber. The curved ends *k* of the rods *d* on the left hand side are sunk into grooves in the rollers *c* and the ends *m* of these rods are sunk into grooves in the rollers *p*, while the curved ends *k* of the rods *d* on the right hand side are

sunk into grooves in the rollers *p* and their other ends *m* into grooves in the rollers *h*, so that they do not hinder the movement of the sensitive paper. The right rear end margin *n* of the chamber is provided with tongues *i* which are sunk into grooves *o* in the roller *h*, and guide the paper out of the device.

The rods *d* are advantageously of wire but instead of wire, cords or narrow bands can be used in which case they may be carried endlessly round the rollers *c*, *p*, *h* and the latter be rotatably borne.

The run of the endless conveyor band *b* passing over the top of the gas chamber is pressed towards the rods *d* by pressure rollers *f*, which ensures a gas tight closure of the gas chamber by the paper or by the band as the case may be. The rollers *f* are supported in a bearing frame.

In the wall of the chamber *a* is an outlet pipe *g* with stop valve, by which the developing gas can be carried out of the chamber either into a chimney or to an exhauster. This has the advantage that when the developing device is out of use, the gas chamber can be emptied and the rubber band *b* not exposed to the damaging action of the gas.

Very rapid development can be effected with the device in the first place because the rods *d* do not form a surface to which the sensitive paper adheres and the latter can consequently move freely through the device and in the second place the gas has direct access to the sensitive paper. The latter is quite clean as it leaves the device because no water is condensed on the rods and no spots are produced on the paper.

What I claim is:

1. A developing device for the dry development by gas of light-sensitive paper comprising a gas chamber open at the top from which gas can have free access to the paper, carrying rollers mounted in the upper part of said container, supporting rods spaced apart with their ends sunk into grooves in said carrying rollers and located flush with the open top of said chamber, an endless band adapted to carry the paper over said chamber, and means pressing said band downwardly towards said chamber and supporting rods.

2. A developing device for the dry development by gas of light sensitive paper comprising a gas chamber open at the top from which gas can have free access to the paper, carrying rollers mounted on the upper part of said container, supporting rods spaced apart in staggered formation carried by said carrying rollers flush with

the open top of said chamber, an endless band adapted to carry the paper over said chamber, and means pressing said band downwardly towards said chamber and supporting rods.

- 5 3. A developing device for the dry development by gas of light-sensitive paper comprising a gas chamber open at the top from which gas can have free access to the paper, carrying rollers mounted in the upper part of said container, 10 one of them being located adjacent the end at

which the paper leaves, tongues extending from the wall of said chamber at the end at which the paper leaves and extending into grooves in the said adjacent carrying roller, supporting rods spaced apart and carried by said carrying rollers 5 flush with the open top of said chamber, and means pressing said band downwardly towards said chamber and supporting rods.

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