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APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGES

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Fig. 1

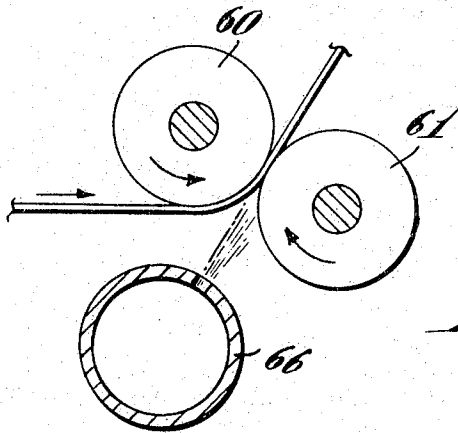
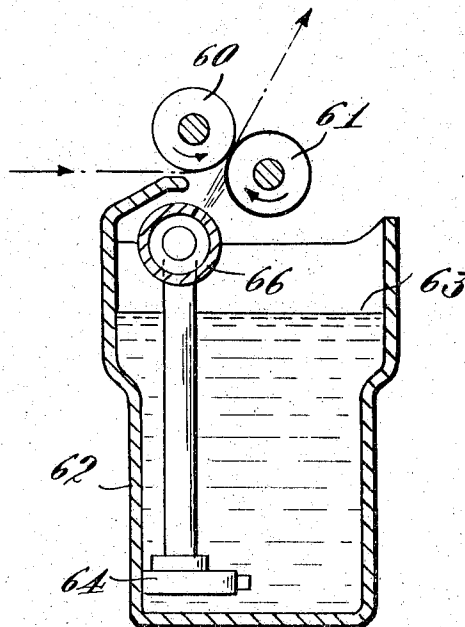


Fig. 2

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APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGES

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3 Claims. (Cl. 118—637)

ABSTRACT OF THE DISCLOSURE

Apparatus for developing electrostatic images comprising means for feeding exposed material over a roller with the image side of the material bearing on the roller and means for directing a stream of developer against the roller in the crotch between the roller and material.

As disclosed in the patents to Young 3,192,897, Young 3,195,430 and Ulary 3,242,902 it has been proposed to project the developer against one of the rollers of a pair of squeegee rollers. However the stream impinges on the roller at a location remote from the nip so that the impingement of the stream does not produce turbulence at the image face of the sheet material.

Objects of the present invention are to produce apparatus which is simple and economical to produce, which develops rapidly without cloudiness, and which is durable and reliable in use.

According to this invention the apparatus comprises means for feeding exposed sheet material along a predetermined path, opposed squeegee members on opposite sides of the path for squeegeeing the material as it passes through the nip therebetween, the member on the image side of the material being a roller, and a nozzle for directing a stream of developer against the roller as close to the nip as possible without substantial impingement directly on the strip material. In this way vigorous turbulence of the developer is produced at the image face of the sheet material. Preferably the nip is directed downwardly so that the developer falls away from the nip by gravity, the apparatus having a developer reservoir below the nip to catch the falling developer and means for pumping the developer from the reservoir to the nozzle. In the preferred embodiment the aforesaid roller is metal and the other member is yielding.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawings in which FIG. 1 is a diagrammatic representation of the developing station of the electrostatic copier described and claimed in copending application Ser. No. 586,131, and FIG. 2 is an enlarged view of the nozzle and rolls.

As disclosed in the aforesaid application sheets S of

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electrostatically charged and exposed paper are fed by a pair of rollers 55-56 to another pair of feed rollers 60-61 which are disposed over a tank 62 of liquid 63 for developing the electrostatic images on the underside of the sheets. A stream of developer is directed against the roller 61 at the nip between the rollers 60-61 by a pump 64 which projects developer through a row of apertures or a slot in a nozzle 66 so as to produce vigorous agitation of the developer as it contacts the sheet. The feed rollers 60-61 also serve as squeegee rolls. By thus producing vigorous turbulence of the developer as it contacts the sheets the images may be developed rapidly without producing background cloudiness. The stream of developer projected by the nozzle should not impact the sheets directly because that would tend to produce streaks in the developed images. However the stream should strike the roller obliquely so that it is deflected against the sheets in order to produce the aforesaid vigorous turbulence at the image side of the sheets.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. For developing electrostatic images on sheet material, apparatus comprising means for feeding the material along a predetermined path, opposed squeegee members on opposite sides of the path for squeegeeing the material as it passes through the nip therebetween, the member on the image side of the material being a roller, and a nozzle for directing a stream of developer against said roller in said nip, so that the stream strikes the roller obliquely and is deflected against the material, thereby to produce vigorous turbulence at the image side of the material.

2. Apparatus according to claim 1 wherein said nip is directed downwardly so that the developer falls away from the nip by gravity.

3. Apparatus according to claim 2 further characterized by a developer reservoir below said nip to catch the falling developer and means for pumping the developer from the reservoir to said nozzle.

References Cited

UNITED STATES PATENTS

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3,195,430	7/1965	Young	118—259 X
3,242,902	3/1966	Ulary	118—637
3,249,088	5/1966	Ostensen	117—37 X

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