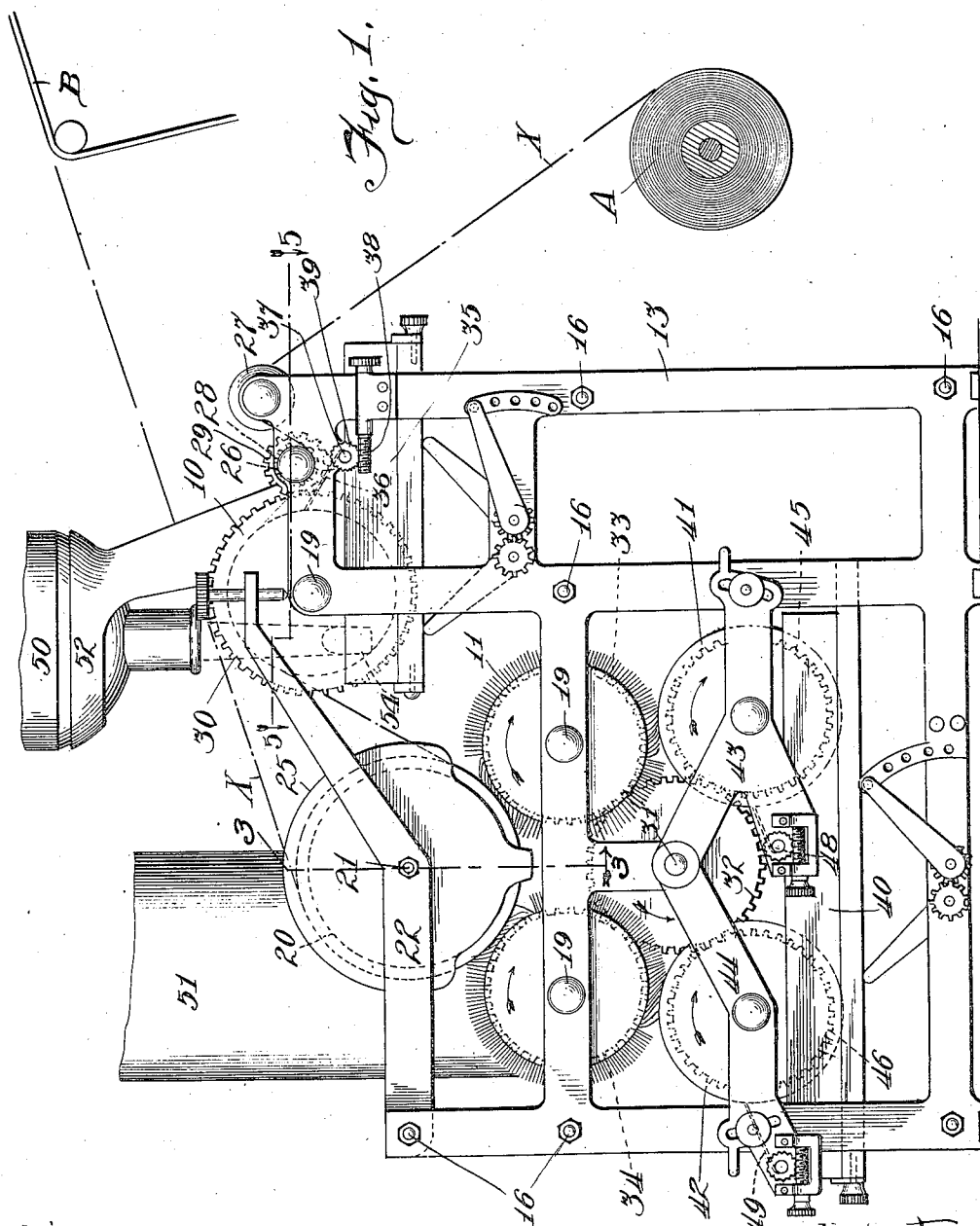


F. B. THOMPSON.
METHOD AND APPARATUS FOR COATING PERFORATED WEBS.
APPLICATION FILED AUG. 30, 1909.

960,437.

Patented June 7, 1910.

3 SHEETS—SHEET 1.



Witnesses:

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Inventor:

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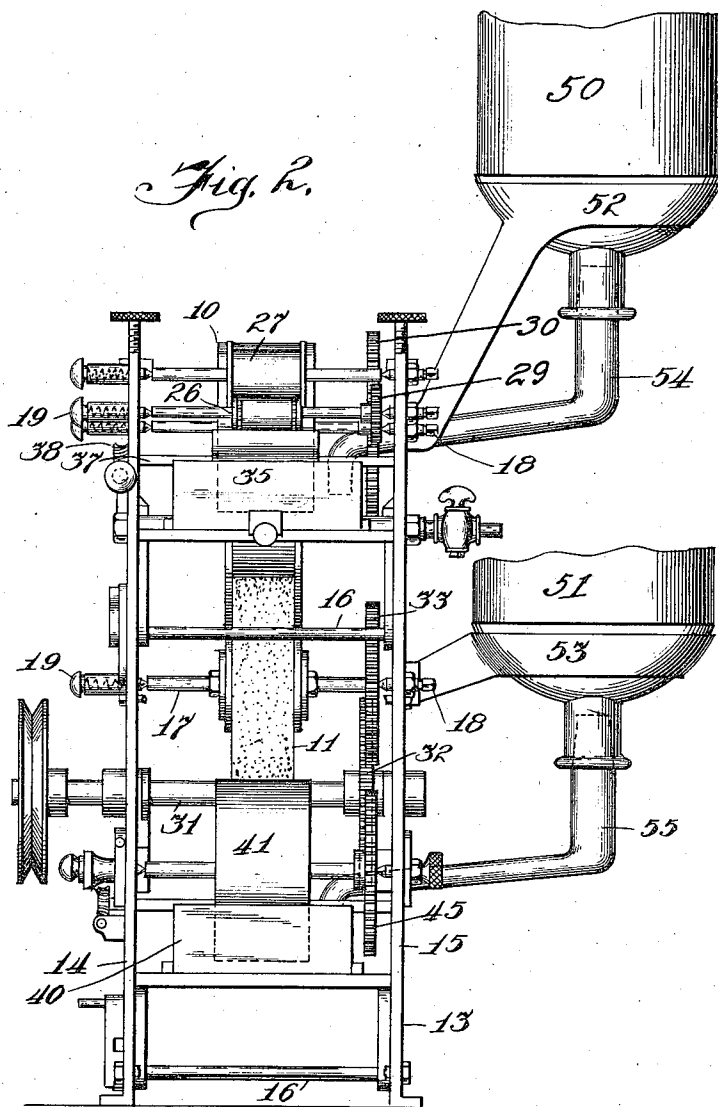
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Witnesses:

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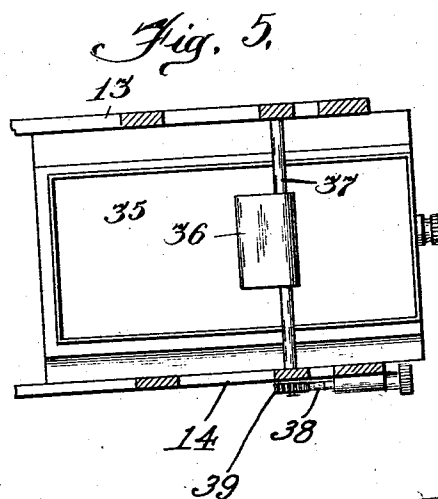
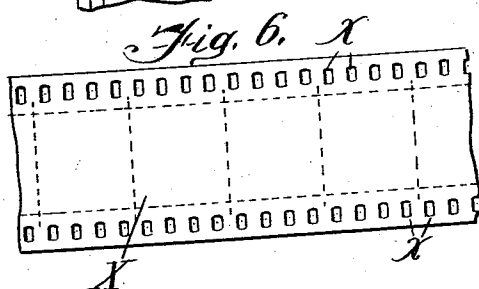
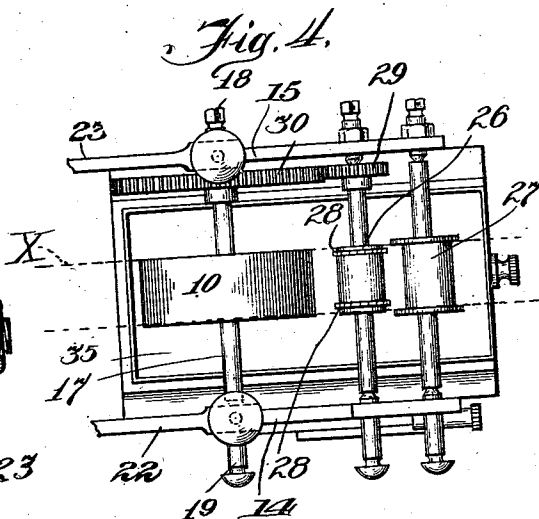
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960,437.

Patented June 7, 1910.
3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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METHOD AND APPARATUS FOR COATING PERFORATED WEBS.

960,437.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed August 30, 1909. Serial No. 515,202.

To all whom it may concern:

Be it known that I, FREDRICK B. THOMPSON, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Methods and Apparatus for Coating Perforated Webs, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to the coating of flexible perforated webs, particularly those carrying photographic images and employed for the projection of pictures representing motion. These picture-carrying webs commonly comprise a flexible transparent support of great length and a pellicle of an emulsion of gelatin in which the photographic images are formed applied to one side of the support. For advancing the web through the machine employed for the projection of the photographic images which it carries, the web has along each of its margins a row of perforations adapted to intermesh with the sprocket teeth of the feeding mechanism of the machine. In use, the faces of these webs become scratched, and these scratches are particularly deleterious when they become filled with dirt, although the character of the photographic pellicle constituting one face of the web will not permit of their being cleansed by washing. To this end it has been proposed to cover the photographic pellicle with a coating material which is unaffected by moisture, and which thereby renders the web waterproof. A material which may conveniently be employed for this coating is a solution of pyroxylin in amyl acetate softened by the addition of small quantities of glycerin or castor oil.

The object of the invention is to provide for the application of such a coating material as that just mentioned to the face of a perforated web without closing or bridging over the perforations of the web.

The invention contemplates the application of a primary or sizing coating of the material to the entire face of the web, this coating being too thin to maintain itself in a film over the perforations of the web, and a second application of the coating material to that part of the web located between the marginal rows of perforations while the material first applied is still fluid, the ma-

terial last applied being sufficient in quantity to flow and unite with that first applied over the entire face of the web.

The invention further contemplates a form of apparatus which may be employed for applying the coating material in the manner just indicated, and which may be conveniently arranged as illustrated in the accompanying drawings, wherein,—

Figure 1 shows the apparatus in side elevation; Fig. 2 is an end elevation of the same; Fig. 3 is a sectional detail taken on the line 3—3 of Fig. 1; Fig. 4 is a partial plan view of the apparatus; Fig. 5 is a detail plan sectional view taken on the line 5—5 of Fig. 1; and Fig. 6 shows in side elevation a detail of webbing such as may be coated in practicing the invention.

The apparatus contemplated by the invention preferably comprises a liquid-applying roller, such as that designated by the numeral 10 in the drawings, and a liquid-applying brush 11, adapted to engage the face of the web X in succession. The marginal rows of sprocket apertures of the web are shown at *x* in Fig. 6 of the drawings, and while the liquid-applying roller 10 is preferably substantially equal in width to the entire width of the web X, as most clearly shown in Fig. 4, the liquid-applying brush 11 is narrower, its width being substantially equal to the width of that part of the web located between the marginal rows of sprocket apertures *x*, as most clearly shown in Fig. 3.

The liquid-applying roller 10 and brush 11 are conveniently supported in a frame generally designated by the numeral 13, and comprising side members 14, 15 connected at intervals by tie rods, as 16, Fig. 1. As shown, the brush 11 is of a form adapted to be rotated and is provided in duplicate, these brushes and the roller 10 each having a spindle 17 which is removably supported for rotation in the frame 13 by having its ends engage, respectively, with the point of a set screw 18 mounted in the side frame member 15 and the point of a spring plunger 19 mounted in the frame member 14.

For supporting the web X in front of the brushes 11, a guide roller 20 is provided. This guide roller turns upon a spindle 21 having its ends supported in arms 22, 23 of the frame 13 and carrying at each side of the roller 20 a disk 24 having a flange 25 which

serves for guiding the web. The web is treated progressively from end to end by being drawn through the apparatus as by being delivered from a reel A and having one of its ends secured to a moving tape B. The face of the web engages with the liquid-applying roller 10 through having the web turned over this roller as a guide, and engages with the brushes 11 as the web turns over the guide roller 20.

The liquid-applying roller 10 is preferably turned by the advance of the web. To this end guide rollers 26, 27 are journaled in the frame 13 in front of the roller 10, and one of these guide rollers, as 26, has sprocket teeth 28 for engaging the marginal perforations x of the web X, and has gear connection 29, 30 with the spindle of the roller 10.

The brushes 11 are preferably turned by power other than the advance of the web. To this end a driving shaft 31 extends transversely through the frame 13 below the brushes 11 and intermediate their spindles 17, with each of which it has gear connection, as by a driving gear 32 mounted on the shaft, and gears 33, 34 mounted upon the spindles and intermeshing with the gear 32.

The liquid-applying roller 10 is supplied with coating material from a pan 35 supported in the frame 13, and into which the roller dips. Means are provided for regulating the quantity of coating material carried out of the pan 35 by the roller 10. For this purpose, a wiper 36 is adjustably mounted in front of the roller. As shown, this wiper takes the form of a vane carried by a shaft 37. This shaft is journaled at its ends in the side members of the frame 13 and is turned for swinging the vane toward and away from the roller 10 by means of a worm shaft 38 journaled in the frame member 14 and engaging a worm wheel 39 mounted on the shaft 37.

The liquid-applying brushes 11 are supplied with the coating material from a pan 40 mounted in the frame 13 through rollers 41, 42 which dip into the pan and engage the brushes. As shown, these rollers are journaled in arms 43, 44 of the frame and are turned from the driving shaft 31 by means of gears 45, 46 mounted, respectively, upon the spindles of the rollers and engaging the gear 32. Wipers 48, 49, similar in construction to the wiper 36, are provided for regulating the quantity of coating material carried to the brushes 11 by the rollers 41, 42.

A uniform quantity of the coating material may be maintained in the pans 35 and 40 by means of siphon feeding bottles 50 and 51 mounted, respectively, in brackets 52 and 53 projecting from the frame 13 and having feed pipes 54, 55 which enter the pans.

In using the apparatus, the web X will be moved continuously by the movement of the tape B. The brushes 11 and rollers 41, 42 will be turned continuously by power applied to the shaft 31. The gear connection 29, 30 between the guide roller 26 and the liquid-applying roller 10 is preferably such that the surface speed of the liquid-applying roller will be identical with that of the web X. By a proper adjustment of the wiper 36, a very thin coating of material may be applied to the entire face of the web X. Such a coating will not permanently bridge over the perforations x of the web, as the surface tension of the film of material placed in front of each perforation during the movement of the liquid-applying roller will be greater than the cohesion of the particles from which it is formed. As the brushes 11 are insufficient in width to cover the perforations x of the web, considerable quantities of the coating material may be applied by means of these brushes without closing the perforations. The entire surface of the film being, however, already moistened with the coating material from the roller 10, that applied by the brushes will unite with that applied by the roller, and a substantially uniform coating will thus be applied to the entire surface of the web.

I claim as my invention—

1. The method of coating the face of a web having marginal rows of perforations without closing the perforations with the coating material, which consists in first spreading upon the entire face of the web a film of coating material in the fluid state, the said film being of such thickness that the surface tension of that part of the film which bridges the perforations of the web will be sufficient to overcome the cohesion of the particles of the material, and in then making an application of the fluid coating material in greater quantity to that part of the face of the web between the rows of perforations while the material first applied is still fluid.

2. In an apparatus for coating the face of a web having marginal rows of perforations, in combination, a liquid-applying tool substantially equal in width to the entire width of the web, and a liquid-applying tool substantially equal in width to that part of the web between the rows of perforations, arranged to operate successively.

3. In an apparatus for coating the face of a web having marginal rows of perforations, in combination, a liquid-applying roller substantially equal in width to the entire width of the web, and a liquid-applying brush substantially equal in width to that part of the web between the rows of perforations, arranged to engage the face of the web in succession.

4. In an apparatus for coating the face

of a web having marginal rows of perforations, in combination, a liquid-applying roller substantially equal in width to the entire width of the web, means for regulating the quantity of liquid delivered by the roller, and a liquid-applying brush substantially equal in width to that part of the web between the rows of perforations, arranged to engage the face of the web in succession.

5. In an apparatus for coating the face of a web having marginal rows of perforations, in combination, a liquid-applying roller substantially equal in width to the entire width of the web, a liquid-applying brush substantially equal in width to that part of the web between the rows of perforations, arranged to engage the face of the web in succession, and means for regulating the quantity of

liquid delivered by the roller and by the brush.

6. In an apparatus for coating the face of a web having marginal rows of perforations, in combination, means for advancing the web, a liquid-applying roller substantially equal in width to the entire width of the web engageable with the face of the web and turned by the advance of the web, a roller brush substantially equal in width to that part of the web between the rows of perforations, and means other than the advance of the web for turning the roller brush.

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Witnesses:

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