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[33] **Japan**

[31] **43/15276**

[56] **References Cited**

UNITED STATES PATENTS

1,972,457	9/1934	O'Brien et al.....	118/413
2,092,974	9/1937	Hiers.....	118/413 X
2,860,597	11/1958	Works et al.....	118/413

FOREIGN PATENTS

370,953	9/1963	Switzerland.....	118/414
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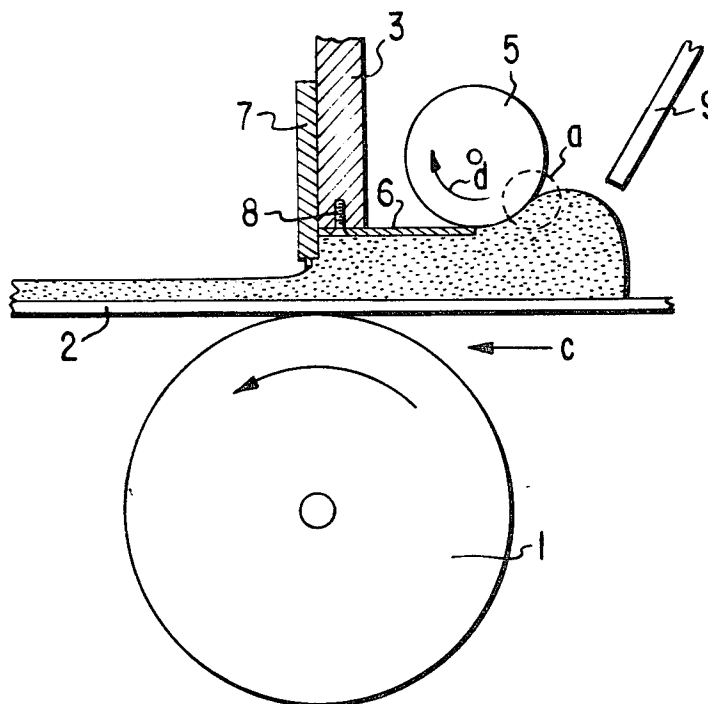
[54] **COATING APPARATUS**
4 Claims, 2 Drawing Figs.

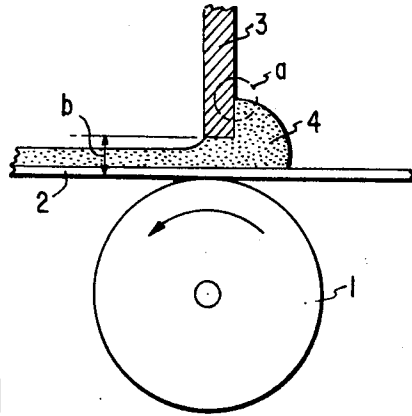
[52] U.S. Cl..... **118/415**

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[50] Field of Search..... **118/407,**
410, 411, 413, 414, 415, 412

ABSTRACT: In a web-coating apparatus, a scraper extends rearwardly, parallel to the web being coated, from the doctor blade to, and in peripheral contact with, a roller disposed in the coating material accumulated behind the doctor blade.





PRIOR ART FIG. 1

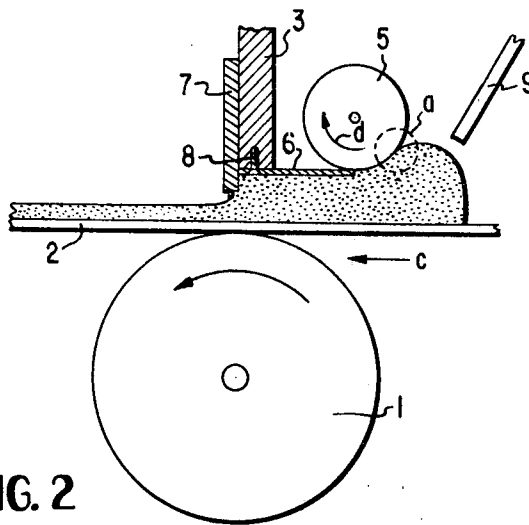


FIG. 2

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COATING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a coating apparatus, and in particular to a coating apparatus for coating a surface of paper, cloth, plastic film and like materials. The present invention further relates to a coating apparatus for manufacturing a plastic film and the like by coating a raw material in layer form, such as a solution of an organic solvent for plastic on a base of metal, glass or the like.

2. Description of the Prior Art

In the above-described coating apparatus, a doctor-blade is in general use. The doctor-blade apparatus employs a backing roller 1 for feeding a base or sheet to be coated 2 in contact relation thereto in the direction of the arrow as shown in FIG. 1. Also, as shown in FIG. 1, the coating material or raw material for forming layer 4 applied on the base or the like 2 is partly cleared away to a definite thickness by a doctor-blade 7. Since the thickness of the coated material is determined or controlled by the spacing b between the edge of the doctor-blade 7 and the surface of the base 2 or the like it partly depends on the viscosity of the coating material 4 or the like, the width of the doctor-blade 7, and the coating speed. Such a doctor-blade apparatus is simple and convenient and has been used for a long time.

But with the prior art doctor-blade, there is a severe disadvantage as follows: since the coating material 4 tends to dry or cohere at the portion a where the material is in contact with the doctor-blade and the air, there occurs a lump in the coated layer and the like. In order to prevent the above-described disadvantage, a cover has been provided at the portion a and a solvent vapor is blown into the cover for preventing the material 4 from drying. Nevertheless, a lump still occurs in the coated layer, since the portion a of the coating material or the like stands still in the cover.

SUMMARY OF THE INVENTION

These disadvantages described hereinabove in accordance with the prior art are completely eliminated in this invention. In accordance with the present invention, a rotating roller is provided behind the doctor-blade so as to dip partly into the coating material. And a scraper is mounted on the lower end of the doctor-blade holder so that the back end portion of the scraper is in contact with the lower end of the rotating roller. The present invention provides a coating apparatus for effectively coating a surface with a rotating roller adjacent the doctor-blade holder, improving the coating condition.

The invention also provides a scraper in contact with the lower portion of the rotating roller which is disposed behind the doctor-blade holder.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an explanatory view illustrating an example of the coating apparatus in accordance with the prior art; and

FIG. 2 is an explanatory view of one embodiment of the coating apparatus in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 2 of the drawings illustrates an embodiment of the coating apparatus in accordance with the present invention. Reference character 2 denotes a web of paper, cloth plastic film and the like to be coated, or a base such as metal or glass plate and the like. The web 2 is supported with and fed by a backing roller 1 disposed in contact relation to the back surface thereof. Above the upper surface of the web, a doctor-blade 7 is disposed in perpendicular relation thereto and fixed to a doctor-blade holder 3 with a spacing therebetween. The spacing is set to a desired value. Behind the doctor-blade holder 3, there is provided a rotating roller 5. And behind the rotating roller 5, there is provided a rubber hose 9 which supplies a coating material or raw material to form layer 4. On the lower end portion of the doctor-blade holder 3, the front end portion of a scraper 6 is mounted by a screw 8 so that the back end portion of the scraper 6 is in contact with the lower end of the rotating roller 5.

The operation and effect of the present invention as constructed is explained hereinbelow: When the coating material 4 is supplied from behind the rotating roller 5, onto the web 2 as it is supported by a backing roller 1 through the rubber hose 9, the coating material 4 is carried between the web 2 and the scraper 6 by the rotating roller 5 and coated on the web 2 with a desired thickness determined by the doctor-blade 7. The rotation of the rotating roller 5 in the direction indicated causes web 2 to move in the direction of arrow c, FIG. 2, and has an effect of supplying the coating material 4 constantly and without making a lump of the material therein. The purpose of the scraper is in effect to clean the surface of the rotating roller 5 in order to prevent the material from being dried into lumps. And moreover, the scraper 6 has the effect of completely preventing the coating material from being mixed with bubbles, which results in an excellent formation of a beautiful coating layer.

What is claimed is:

1. In an apparatus for coating a material on a moving web including means for depositing material in fluent form on one surface of the web, and doctor blade means having a blade edge spaced slightly from said moving web and in the path of deposited fluent coating material to define the thickness of said coating, the improvement comprising:

a scraper blade behind said doctor-blade means and extending generally parallel to the path of said moving web, and a rotating roller having its periphery partially dipped in the material to be coated and in contact with the upstream edge of said scraper blade to prevent drying of accumulated fluent material behind said doctor-blade means during coating.

2. The apparatus as claimed in claim 1, wherein said roller rotates in a direction tending to feed material towards said doctor-blade.

3. The apparatus as claimed in claim 2, wherein said scraper blade extends from said doctor-blade means, spaced slightly from the blade edge which determines the thickness of the applied coating.

4. The apparatus as claimed in claim 1, wherein said scraper blade extends from said doctor-blade means, spaced slightly from the blade edge which determines the thickness of the applied coating.

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