May 13 , 1924. 1,494,315

Z. OSTENBERG

COATING MECHANISM

Filed Jan. 26 , 1921

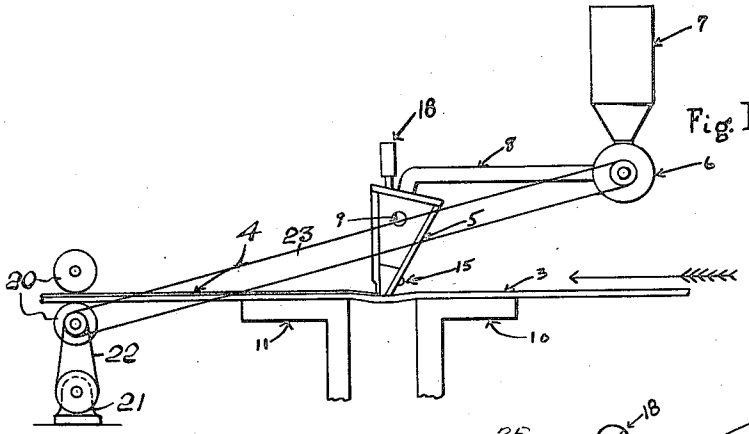


Fig. I.

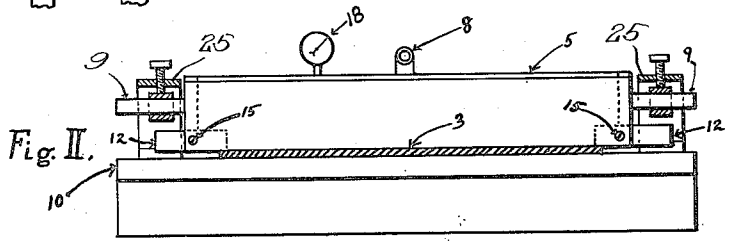


Fig. II.

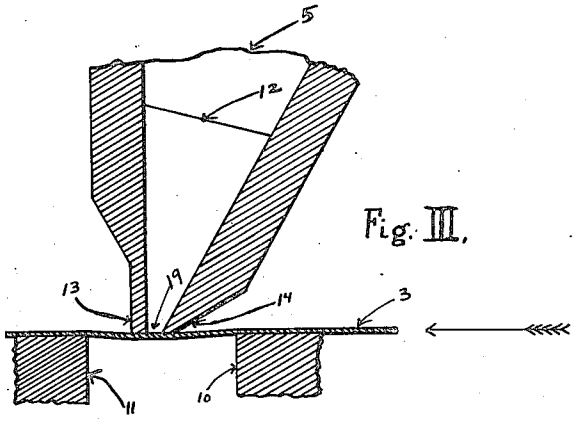


Fig. III.

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UNITED STATES PATENT OFFICE.

ZENO OSTENBERG, OF STAMFORD, CONNECTICUT.

COATING MECHANISM.

Application filed January 26, 1921. Serial No. 440,101.

To all whom it may concern:

Be it known that I, ZENO OSTENBERG, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Coating Mechanism, of which the following is a specification.

My invention relates to improvements in coating machines in which a moving surface such as a band of metal, cloth or composition is coated with a composition, in a fluid or semi-fluid condition, and then dried to form so-called artificial leather, sheeting, films, rubberized cloth, etc., and provides that a very uniform and exactly measured coating may be deposited with the possibility of duplicating the coating without a preliminary trial and measurement.

I attain these objects by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of my improved coating mechanism.

Figure 2 is a front elevation of my improved coating mechanism.

Figure 3 is a partial vertical section through that part of the mechanism that actually comes into contact with the moving surface.

Similar numerals refer to similar parts throughout the several views.

The knife 1, the mass of composition 2 and the moving surface 3 constitute the usual type of machine. On the moving surface is deposited the coating 4. In 5 is shown my hollow knife supplied with composition under pressure by pump 6 from reservoir 7 and through pipe 8. The hollow knife 5 is supported by extensions 9 and the moving surface 3 is held in contact with the knife by supports 10 and 11 arranged below the normal level of the discharge orifice of said knife, one on each side thereof and adjacent thereto. The effective width of the knife is regulated by adjusting blocks 12 which fit snugly against the back-plate 13 and the front-plate 14 and which are securely fastened by screws 15 when the surface 3 remains uniform in width. Gauge 18 indicates the pressure in the hollow knife 5. At 19 is the orifice of hollow knife 5 and at 24—24 is shown means for adjusting the pressure of contact between the knife 5 and the material being coated. The material being coated is shown as drawn forwardly by rollers 20 operated in any suitable manner as by motor 21 and belt 22. The pump 6 and rollers 20 are operated in unison by connecting belt 23.

It is common practice at the present time to set the coating knife against the surface to be coated in an approximately correct position to give the desired thickness or weight of coating, then to have an expert workman feel the wet coat as it issues from under the knife and judge how much the knife must be raised or lowered to secure the correct coating. Actual tests have shown that 25% of the surfaces are coated too lightly and that about 25% are coated too heavily, necessitating the recoating of the light coated goods and a loss of excess composition on the goods coated too heavily. Furthermore with the present type of knife the thickness and weight of the coating will vary with variations in the speed of the moving surface, the viscosity of the coating composition, the pressure of the surface against the knife, the wear on the edge of the knife, and the character of the moving surface. This causes much trouble in the actual operation of coating and also causes considerable of the coated material to be rejected as unsalable.

My improved mechanism overcomes all of these disadvantages besides increasing the adhesion of the composition when the moving surface is of a porous nature like cloth, webbing, split leather, compressed cork, etc.

This results from the very nature of the invention, namely that the pump, being connected to the same mechanism that moves the surface to be coated, the amount of composition pumped varies directly proportionally to the speed of the moving surface and as all of the composition pumped into the hollow knife must emerge through the outlet 19 which is in contact with the moving surface it follows that the coating will remain of a uniform weight and thickness no matter what the speed of the moving surface might be. This will enable the operator to run the moving surface at a much higher rate of speed than is at present possible.

With the present type of knife the coating becomes lighter when the knife and surface are pressed more firmly together and the adhesion or "anchorage" becomes greater. Therefore to secure the best adhesion it is

necessary to apply the first coat under heavy contact and on account of the light coating resulting it is necessary to apply several coats to build up to the proper thickness. In my invention since the weight and thickness of the coating depends upon the amount of composition pumped by the pump 6 and is independent of the contact between the surface and the knife, it follows that by forcing the knife and moving surface more tightly together, greater adhesion will be obtained because the composition will be forced into the pores of the surface.

It is also obvious that wear on the orifice of my improved knife will not affect the rate of deposition of composition as this is controlled entirely by pump 6. Furthermore the viscosity of the composition does not have any effect on the weight and thickness of the coating as long as it is not too viscous to be pumped.

Having thus described my invention I claim:

1. In combination, a pump, a hollow knife communicating therewith, means for moving material to be coated in operative relation to said knife, means for operating said pump and material moving means at proportional speeds, and means for adjusting the knife toward and from the material being coated.

2. In combination, a pump, a hollow knife communicating therewith, means for moving material to be coated in operative relation to said knife, means for operating said pump and material moving means at proportional speeds, means for adjusting the knife toward and from the material being coated, and means to adjust the effective length of the orifice of said knife.

ZENO OSTENBERG.