Feb. 23, 1932. C. MÜNCH 1,847,065

PROCESS AND APPARATUS FOR APPLYING SOLUTIONS

Filed May 23, 1928

Fig. 1

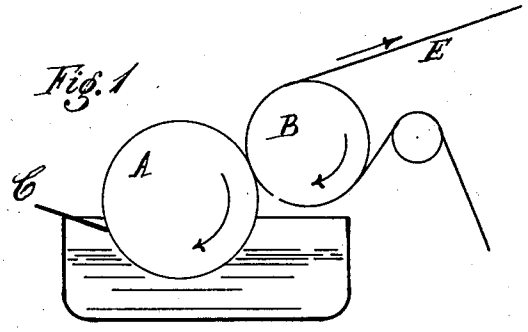
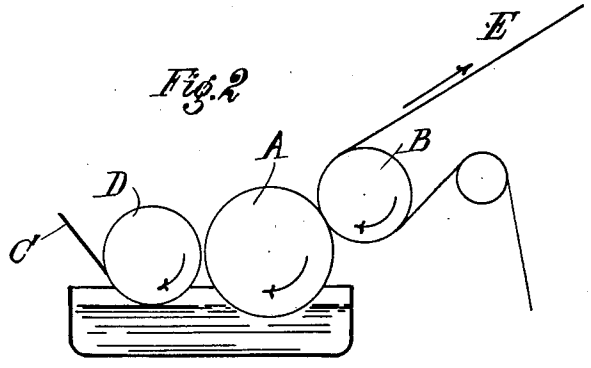


Fig. 2



Carl Münch
By: B. Singer, Atty.

Patented Feb. 23, 1932

1,847,065

UNITED STATES PATENT OFFICE

CARL MÜNCH, OF MITTELBIBERACH, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CHAMPION COATED PAPER COMPANY, OF HAMILTON, OHIO, A CORPORATION OF OHIO

PROCESS AND APPARATUS FOR APPLYING SOLUTIONS

Application filed May 23, 1928, Serial No. 279,967, and in Germany May 24, 1927.

The present invention relates to an improved method and apparatus for applying solutions of any kind to a flexible band of paper, fabric or the like of the type in which a roller taking up liquid from a bath in the form of a film on its surface feeds this to the band moving in an opposite direction thereto.

The invention will be more readily understood from the following description with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a diagram of one form of construction in side elevation.

Figure 2 is a similar diagram of a modified form of construction.

The drawings show schematically two forms of embodiment of the invention.

In Fig. 1 A designates the applying roller, B the press roller for the web E and C the doctor blade.

The roller A is partly submerged in the coating solution in a trough and the liquid substance taken up from the trough by the roller A is reduced, according to the position of the doctor blade C to a more or less thin, uniform layer by wiping off the excess of coating composition. The guiding roller B is made of elastic material, such as soft rubber and is pressed with a slight pressure against the roller A. As both rollers turn in the same direction, the roller A deposits its liquid layer or coating continuously on the web E passing round the roller B. The surface of the applying roller A turns advantageously two or more times as rapidly as the surface of the roller B, and thus the coating as applied is more evenly disturbed.

The velocity of the web and the character of the liquid have thus practically no influence on the thickness of the layer. The apparatus can therefore advantageously be used with both thick or thin solutions or such as those containing volatile solvents.

In Fig. 2 is shown a construction in which the doctor blade is replaced by an adjustable doctor roller D, polished like the roller A, and forming with the latter a gap which is precisely adjustable and serves to determine the thickness of the layer of coating composition. B designates as before the rubber press roller which presses the web E against the applying roller A. C is a scraper which cleans continuously the peripheral surface of the roller D so that the latter always acts as a clean scraper. The rollers A, D, B, are driven in the same angular direction of rotation and roller A again preferable has a greater peripheral velocity than roller B.

I claim:

1. Process of coating paper, cardboard and like webs which comprises applying coating composition to a moving surface, wiping off a portion of said coating composition whereby to produce a layer of coating composition of predetermined thickness on said moving surface and contacting said moving surface with the web material moving in the opposite direction to said moving surface.

2. Process of coating paper, cardboard and like webs which comprises applying coating composition to a rotating cylindrical surface, wiping off a portion of said coating composition whereby to produce a layer of coating composition of predetermined thickness on said cylindrical surface, and contacting said cylindrical surface with the web material moving in the opposite direction to said cylindrical surface.

3. Process of coating paper, cardboard and like web material which comprises applying coating composition to a rotating cylindrical surface, wiping off a portion of the coating composition by a second cylindrical surface rotating in the same angular direction as the first and at a predetermined distance therefrom, and continuously removing substantially all of the coating from the second cylindrical surface so as to produce a layer of coating composition of predetermined thickness on said first cylindrical surface, and contacting said first cylindrical surface with the web material moving in the opposite direction to said first moving surface.

4. Process of coating paper, cardboard and like webs which comprises applying a fluid coating composition to a rotating cylindrical surface, wiping off a portion of the composition by a second cylindrical surface rotating in the same angular direction as the first

and at a predetermined distance therefrom, continuously removing substantially all the coating from the second cylindrical surface so as to produce a layer of coating composition of predetermined thickness on said first cylindrical surface, and transferring said layer to the web carried in direct contact with said first cylindrical surface by a resilient cylindrical surface rotating in the same angular direction as the first and second cylindrical surfaces.

5. Apparatus for coating material in the form of a web which comprises means providing a traveling applying surface, means for supplying coating composition to said surface to form a layer of indeterminate thickness thereon, a device for wiping off a portion of said composition from said surface whereby to produce a layer of predetermined thickness on said surface and means for moving the said web in the opposite direction to the said surface and in contact therewith.

6. Apparatus for coating paper, cardboard and like material in the form of a web which comprises a coating applying roll, means for supplying coating composition to the peripheral surface of said roll, a doctor roll parallel to and at a predetermined distance from said applying roll, means for continuously removing coating from the peripheral surface of said doctor roll, means for rotating said applying roll and said doctor roll in the same angular direction, and means for moving the web to be coated in the opposite direction to said applying roll and in direct contact therewith.

In testimony whereof I have hereunto set my hand this 11th day of May, A. D. 1928.

CARL MÜNCH.