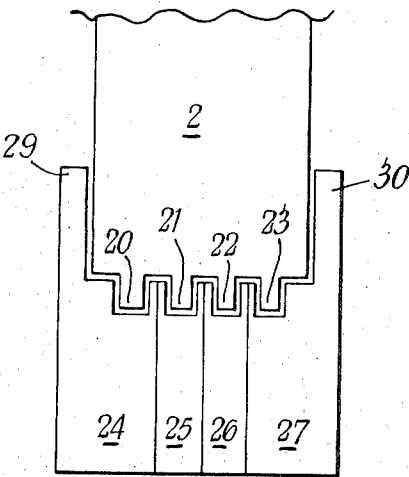


[54]	COATING OF STRIPES ON TO A TRAVELLING WEB	1,654,214	12/1927	Evans.....	118/261 X
		2,071,345	2/1937	Johnson et al.....	118/261 X
		2,695,004	11/1954	Montgomery et al. ....	118/262
[75]	Inventor: George Frederick Albert Marriott Turner, Ilford, England	3,623,451	11/1971	Burgess et al.....	118/221 X
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[22]	Filed: July 13, 1972				
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[51]	Int. Cl.....	B05c 1/12, B05c 1/16			
[58]	Field of Search .....	118/221, 246, 261, 262, 118/249			
[56]	References Cited				
	UNITED STATES PATENTS				
	219,963	9/1879	Mather .....	118/246 X	

[57] ABSTRACT

This invention relates to a to a device for coating stripes on a travelling web from a transfer roller having peripheral rings. The amount of coating liquid to be taken up from the transfer roller is metered by means of an array of rigid adjustable doctor blades.

6 Claims, 3 Drawing Figures



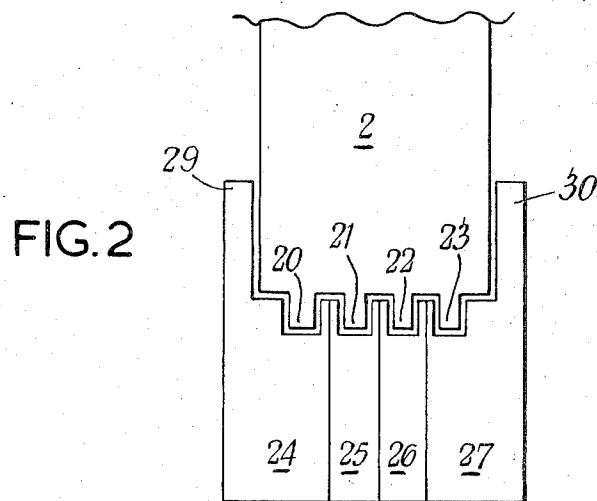
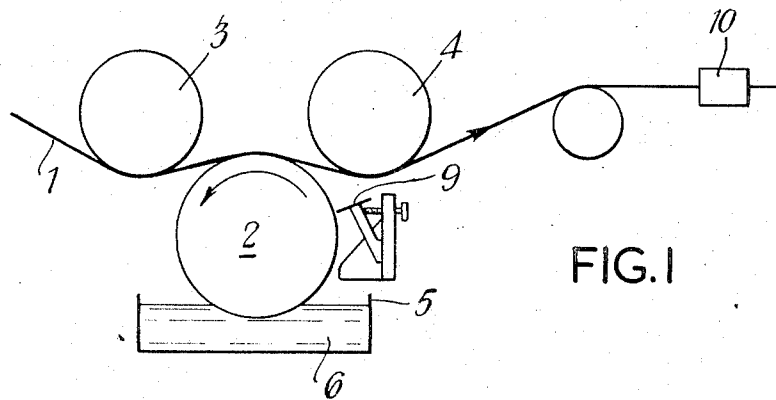
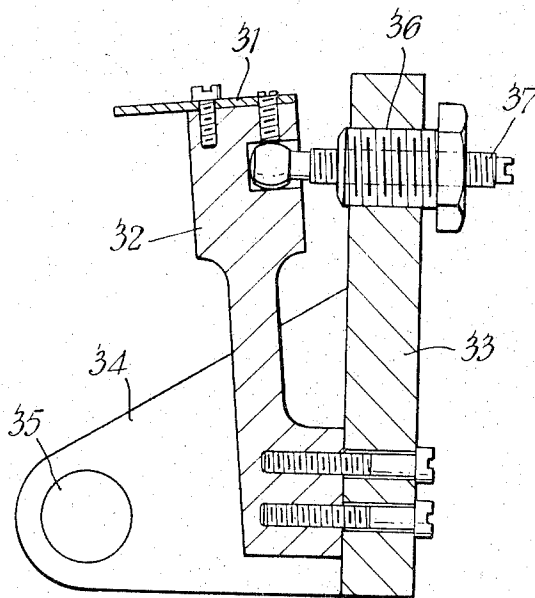


FIG. 3



## COATING OF STRIPES ON TO A TRAVELLING WEB

One way of coating stripes, for example magnetic stripes, on to a travelling web is to apply the coating material as stripes on to a transfer roller, doctoring or metering the amount of material in each stripe on the transfer roller and then transferring the stripes on to a travelling web. In an improvement of this method the transfer roller has on its peripheral surface a number of peripheral rings and the coating composition is applied to these rings.

It is the object of the present invention to provide a coating device wherein the amount of coating material applied to the peripheral rings on a transfer roller may be accurately metered, and wherein the amount of material in each stripe may be metered individually.

According to the present invention in a device for coating a plurality of stripes on a travelling web, which device comprises a transfer roller having a plurality of peripheral rings therein, on to which a metered amount of coating liquid is applied, there is provided a coating liquid metering means which comprises a blade metering system consisting of an array of rigid doctor blades so positioned in relation to the peripheral rings on the transfer roller that a narrow slot in the operative end of each of the blades fits closely over one of the said peripheral rings, the mounting for the array of blades being such that the whole array of blades can be moved towards or away from the transfer roller as an entity but each blade or at least each blade except one is capable of being moved away from or towards that peripheral ring over which it is mounted independently of the other blades.

Preferably each blade in the array is capable of independent movement. However, for example, when there are only two blades in the metering system these may be movable together but one only may be movable independently of the mounting for the array of two blades. Similarly if there are four blades in the system, three may be movable independently of the mounting which holds the array of four blades.

Preferably the two end doctor blades in the array carry an elongated projection which when the doctor blade array is in position over the transfer roller fit closely against the lateral sides of the transfer roller. The elongated projections serve to clean the coating material from the side of the transfer roller and prevent coating composition accumulating on the side and perhaps being carried forward on to the travelling web.

In a preferred embodiment of the invention each independently movable doctor blade is rigidly mounted on the end of a spring steel flexing member. Preferably each spring steel flexing member is independently secured on a mounting block at the end opposite to that to which the doctor blades are fixed and thus each flexing member is capable of independent movement. Adjustment of a doctor blade may be made by flexing the spring steel member by a differential screw action. A threaded member having threads of differing pitch on its inner and outer diameters is threaded in each mounting block. A threaded stud is pivoted in the spring steel flexing member adjacent to the doctor blade and engages the internal thread of the threaded member. Means are provided for turning the threaded member and because of the differential screw action of a very fine adjustment of the doctor blade is possible

without backlash. One such adjustment means is provided for each spring steel flexing member.

Associated with the coating device of the present invention there is usually provided means for monitoring the applied stripes. If the stripe is a magnetic stripe a particularly useful means for monitoring the stripe is a magnetic means derived from the device described in Brit. Pat. No. 1,013,438. Such a monitoring apparatus is able to monitor the actual amount of material being coated in a stripe. Thus it is possible to keep a continuous watch on the amount of magnetic material being coated in each stripe and if the amount coated in one stripe compared with the others varies it is possible to adjust this by altering the position of that doctor blade which is over that peripheral ring which is coating the stripe which has the incorrect amount of coating material therein.

The following drawings will serve to illustrate the invention.

FIG. 1 is a diagrammatic view of an apparatus for coating a plurality of stripes on a travelling web showing the location of the various parts of the apparatus.

FIG. 2 is an enlarged view of the array of rigid doctor blades mounted in relation to the transfer roller.

FIG. 3 shows the mounting means for the array of rigid doctor blades.

In FIG. 1 a travelling web 1 is guided into surface contact with a transfer roller 2 by means of two guiding rollers 3 and 4. The transfer roller 2 is rotating in the direction indicated by the arrow thereon at a slightly higher peripheral speed than the forward speed of the travelling web 1. The transfer roller 2 carries on its peripheral surface a number of peripheral rings which are shown in FIG. 2. The transfer roller 2 rotates in a container 5 which contains a liquid magnetic composition 6. As it rotates in the container 5 it picks up the coating liquid 6 on the peripheral rings. The amount of coating composition coated on each ring is metered by the array of doctor blades 9. The metered amount of magnetic material is then transferred to the travelling web as stripes as the web 1 contacts the surface of the transfer roller 2. The travelling web 1 then passes through the stripe monitoring means 10.

If the amount of coating material coated in any particular stripe is shown by the monitoring means to be incorrect compared with the others then the position of the individual blade in the array can be altered.

In FIG. 2 a top plan view of the transfer roller 2 of FIG. 1 is shown. The peripheral surface of the transfer roller 2 carries four peripheral rings 20, 21, 22 and 23. The rigid doctor blade 9 of FIG. 1 is shown to conform closely to the profile of the transfer roller 2. The rigid doctor blade 9 comprises doctor blades 24, 25, 26 and 27 mounted together so that the whole array can move inwardly or outwardly in relation to the transfer roller 2. Each doctor blade 24-27 carries a slot on its operative end. The shape of the slot conforms closely to the shape of the peripheral ring over which it is mounted. Blades 24 and 27 each carry a projection 29 and 30. These projections project along the lateral side of the transfer roller 2 and serve to prevent any build-up of coating composition on the side of the roller. Each of the blades 24-27 can be moved individually towards or away from the transfer roller 2. The mounting for the blades is shown in FIG. 3.

In FIG. 3 each doctor blade 31, is rigidly mounted on a spring steel flexing member 32, which is in turn rigidly secured to mounting block 33 attached to the coating apparatus by bracket 34 free to pivot at the pivot point 35. Means (not shown) are provided for moving the whole assembly away from or towards the working position i.e. towards or away from the peripheral rings on the transfer roller. A threaded member 36 having threads of differing pitches on both inner and outer diameters is threaded into the mounting block 33 and engages a threaded stud 37 pivoted into the spring steel flexing member 32. Each doctor blade is mounted in a similar manner.

What I claim is:

1. In a device for coating a plurality of stripes on a travelling web and having a transfer roller with a plurality of peripheral rings thereon onto which a metered amount of coating liquid is applied, a coating liquid metering means comprising: an array of rigid doctor blades each having a slot which is provided in the operative end thereof and the shape of which conforms to the shape of a peripheral ring and positioned in relation to the peripheral rings on the transfer roller so that a blade is mounted over and has a slot fitting closely over each peripheral ring; blade array mounting means for the array of blades movably mounted on said device such that the whole array of blades can be moved towards or away from the transfer roller as an entity; and individual blade mounting means on which at least all but one of the blades and at most all of the blades being mounted for movement away from or towards the respective peripheral rings over which they are mounted independently of each other and comprising individually flexible, relatively thick spring steel members for each independently movable doctor blade and a common mounting block for said flexible members, each independently movable doctor blade being rigidly mounted on the end of a corresponding flexible member and said flexible member being independently secured in said mounting block at the other end thereof, and means engagable with said spring steel members for independently flexing the spring steel members, thereby adjusting the respective doctor blades mounted thereon in relation to the transfer roller.

2. A device according to claim 1 wherein each blade in the array is capable of independent movement.

3. A device according to claim 1 wherein the two end doctor blades in the array carry an elongated projec-

tion which when the doctor blade array is in position over the transfer roller fit closely against the lateral sides of the transfer roller.

4. A device according to claim 1 wherein the mounting block is mounted for pivotal movement about an axis substantially parallel to that of the transfer roller.

5. A device according to claim 1 wherein the flexing means for each spring steel member consists of a threaded member which has an inner and an outer thread of differing pitch and which has the outer thread threaded into the mounting block.

6. In a device for coating a plurality of stripes on a travelling web and having a transfer roller with a plurality of peripheral rings thereon onto which a metered amount of coating liquid is applied, a coating liquid metering means comprising: an array of rigid doctor blades each having a slot which is provided in the operative end thereof and the shape of which conforms to the shape of a peripheral ring and positioned in relation to the peripheral rings on the transfer roller so that a blade is mounted over and fits closely over each peripheral ring, the two end doctor blades in the array having an elongated projection thereon which fits closely against the lateral sides of the transfer roller; individually flexible, relatively thick spring steel members for each doctor blade and a common mounting block for said flexible members, each blade being rigidly mounted on the end of a corresponding flexible member and said flexible member being independently secured in said mounting block at the other end thereof, the mounting block being pivotally mounted about an axis substantially parallel to that of the transfer roller so that the whole array of blades can be moved towards or away from the transfer roller as an entity; and individual threaded adjusting means for each of the flexible members comprised of an inner and an outer threaded member with the outer member being threaded into the mounting block and the inner member being engaged with the corresponding flexible member and being threaded into the outer member and having threads with a different pitch than the threads on the exterior of the outer member, movement of said threaded adjusting means independently flexing or relaxing the respective flexible members, thereby causing the blades mounted thereon to move towards or away from the peripheral rings over which they are mounted.

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