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⑰ **Apparatus for coating a web and method of operating a pair of coaters.**

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Description

The invention relates to an apparatus and a method for supplying coating liquid to a paper coater, and more particularly, to an apparatus for supplying excess coating from a remote doctor blade or a coater having a doctor blade to another coater located on the same backing roll and to a method of operating a pair of coaters as described hereinafter.

It is already known to locate two paper coaters on a single backing roll of a papermaking machine, or an off-machine coater line. In such an arrangement, each coater has often been provided with separate supply piping connected to a coating supply system (comprising, as is conventional, pumps, pump motors, tanks, filters, controls, piping and valving) to supply coating liquid to the two coaters. Any coating not applied to the web by either of the coaters has usually been collected from its respective coater and then returned, via separate piping to the coating supply system for reprocessing and eventual reuse. In such an arrangement, the two coaters were in parallel with respect to the coating supply system. In such parallel arrangement, the coating supply system had to be of sufficient size to meet the cumulative demands of both coaters.

It is also known to use a single coater located on a backing roll in conjunction with a remote doctor blade, i.e., a doctor blade located a foot (= 0.3048 m) or more behind the coater, on the same backing roll, and to place a one piece, rigid bridging member between the doctor blade and coater to transfer excess coating from the doctor blade directly to resupply the coater. However, such rigid bridge as used in the past could not accommodate movement of the doctor blade to vary the angle at which the blade pressed against the backing roll. This shortcoming either limited the operating angle of the doctor blade, or made it necessary to change bridges if blade angle was to be changed. The former adversely affected the paper coating as it is an important parameter in producing good coated paper, and the latter resulted in lost time.

One object of the apparatus and method of the present invention is to supply coating to a coater from a doctor blade or another coater with such a blade, while being able to easily adjust the angle of the doctor blade to the backing roll.

According to the present invention there is provided an apparatus for coating a web of moving paper, including a coater and an angularly movable, remote doctor blade both located on the same backing roll, the doctor blade being located above the coater, a coating supply system for supplying coating, and bridge means for collecting excess coating and transferring excess coating by gravity to the coater, characterised in that the bridge means comprises two portions hingedly connected together to accommodate change of the relative angular position of doctor blade on the web, one of said two portions of the bridge means being mounted to move with the remote

doctor blade, and the other of said two portions of said bridge means being adapted to extend from said one portion to the first coater, whereby the angular position of the doctor blade can be changed with the bridge means automatically compensating for such a position change.

In a modified construction, a second coater, is located between the first coater and the remote doctor blade. In this modified construction said one of the two portions of the bridge means is mounted to move with said second coater.

According to a further aspect of the present invention there is provided a method of operating a pair of coaters, one of which has a doctor blade thereon, and both of which are located on a single backing roll, for applying a coating to a web of paper being run on the backing roll, comprising the steps of:

- a. supplying an excess of coating to one of the coaters;
- b. applying at least a portion of the coating to the web with the one coater;
- c. collecting the excess coating which was supplied to but not applied to the web by the one coater;
- d. collecting the excess coating which was supplied to and applied to the web by the one coater with the doctor blade;
- e. transferring by gravity the collected coating from the one coater to the other coater to at least partially supply the other coater with coating; and
- f. applying at least a portion of the coating to the web with the other coater.

The method and apparatus of the present invention utilizes apparatus in the form of bridge means which is hinged and adapted to be located between a coater and a remote doctor blade or another coater with such a blade located on the same backing roll. The bridge is positionable between the coater and doctor blade to permit excess coating scraped off by the doctor blade to be collected and transferred or carried over to the coater to be supplied with coating liquid. The use of the hinged bridge permits the relationship of the doctor blade to the backing roll to be varied or adjusted without the need to change or adjust the bridge, the bridge adjusting automatically to the change of the relative positions of the blade and coater.

In the two coater arrangement, with the bridge in use, the two coaters are in series with each other, instead of in parallel so that a substantial reduction in the cost, size and complexity of the coating supply system can be made as it need be large enough only to meet the larger coating demand of the two coaters, instead of the sum of the two demands. For example, if the method and apparatus of the present invention were used with two identical coaters, since the coating supply system normally has sufficient excess capacity to provide the amount of coating actually being applied to the web by the two coaters, the coating supply system generally need not be any larger than if it served but a single coater. Whereas if the coaters were as used in the prior art, two

coating supply systems or a single system with twice the capacity would have to be provided.

If the two coaters are to be used independently, each coater may be provided with separate coating supply and collecting piping. While this increases the cost and complexity somewhat, the advantage of using a smaller coating supply system is retained, and flexibility of operation is gained. In such installation, the bridge may be positionable in a second position, wherein it will not transfer coating between the coaters and not interfere with the operation of either coater.

The invention is described further hereinafter, by way of example only, with reference to the accompanying drawings, in which:—

Figure 1 is a side elevational view of a portion of a papermaking machine backing roll, two different type paper coaters being located on the one roll, and the bridge means of the present invention being shown in full lines in a first position, and in dotted lines in a second position;

Figure 2 is an enlarged cross-sectional view of a portion of Figure 1, but with the bridge means shown in dotted lines in the first position and in full lines in the second position;

Figure 3 is a view similar to Figure 1, but with one of the coaters moved into a position permitting the bridge means to be moved between its first and second positions; and

Figure 4 is a view similar to Figure 2, but of a second alternative construction for the bridge means.

Referring to Figure 1, a backing roll 10 for a papermaking machine is illustrated. It should be understood that the roll 10 could also represent a roll on an off-machine paper coater line. As is illustrated, the roll 10 is wrapped at least partially by a paper web 12 which is being coated, the web in this instance moving in the direction of the arrowhead 14. One paper coater 16 is located adjacent the lower righthand quadrant of the roll 10, and another coater 18 is located to the left and downwardly, at the bottom of the roll 10. Of course it is understood that the coaters 16 and 18 could be located elsewhere, and/or may be of different types.

In this instance, the other coater 18 is of a dip roll type, having a coating pan 20, which contains a rotatably mounted coating application roll 22. The pan has a front wall (not shown) and a rear wall 21. The coating pan 20 has baffling in the form of a pair of vertical walls 24 and 26 and an arcuate section 28 which extends from the top of the wall 26 to below the roll 22, and then closes with the bottom 29 of the coating pan. Just to the right of roll 22 is another internal, vertical wall 30 which forms a rear baffle. The outer walls of the pan extend above the tops of the baffles to contain the coating.

If it is desired that the two coaters 16 and 18 be operable separately, a coating supply pipe 32 may be provided to supply coating to the coater 18 from the coating supply system (previously described but not shown). The pipe 32 extends through the bottom 29 of the pan 20. Excess

coating may be withdrawn from the pan via pipe 34 located between baffles 24 and 26 and pipe 36 located behind the baffle wall 30. The pipe 36 has a valve 35 for regulating the rate coating flows from the pan through that pipe. While the coater 18 could be provided with a doctor blade, in this instance, it is not, but when operated alone or with the one coater 16, utilises a doctor blade 37 (Figures 1 and 3) carried by the second coater 16, the blade 37 being remote to the coater 18.

The coater 16, which is only partially shown, when being utilized, may be supplied with coating from the coating supply system (not shown) by a piping system (not shown) to the upper or head portion 38 of the coater. When in operation, of the total coating supplied to the one coater 16, only a small portion, say 10% or less, is actually applied to the web 12, and the greater portion, say 90% or more, overflows the front wall 42 of the head portion 38. The head portion 38 of the one coater 16 is pivotally mounted by means (not shown) to pivot about a point to the right and below the portion as shown in Figure 1, so that it can be moved toward or away from the roll 10 and angularly, for among other reasons to vary the angle of the blade 37 to the roll.

The one coater 16 is equipped with an overflow pan 44 which has a front wall 46, a rear wall 48 and a bottom wall 50. The pan 44 is of a sweated construction, i.e. the walls 46, 48 and 50 are double walls, so that a fluid, such as cold water, may be circulated between the double walls of the pan to cause condensation of moisture, and prevent coating from accumulating on the same. Likewise, the overflow pan 44 is pivotally mounted by separate means (only, partially shown) to pivot about a point generally to the right of the pan 44 at just below the level of coater portion 38, so it too can pivot toward or away from the roll 10 and also pivot toward or away from the head portion 38 of the one coater 16, as will be more fully described.

As shown in Figures 1 to 3, the one coater 16 has been provided with a first embodiment of bridge means 60. The bridge means is shown in a first operating position designated by the letter A (full lines in Figure 1 and dotted lines in Figure 2) and in a second stored position, designated by the letter B (dotted lines in Figure 1 and full lines in Figure 2). Of course, the bridge means, could instead have been provided or mounted on the other coater 18 or other portions of the paper-making machine.

A more detailed view of the bridge means 60 is shown in Figure 2. The bridge means includes a round bar or pivot rod 62 which is engaged by portions of an elongate member 64 and a bracket 66 to pivotally or hingedly mount the bar 62, and in turn the bridge means 60, to the head 38 of the coater 16. The elongate member 64 is secured to the portion 38 of the coater 16 by conventional means (not shown), has a V-cut for engaging the round bar 62, and functions to transfer the coating flowing over wall 42 onto the pan portion 68 described below. The bracket 66 is retained by

bolts 67 and has a semi-circular cutout 69 for engaging the bar 62. The V-cut 65 and cutout 69 circumscribe greater than 180°, and in this instance approximately 250°, of the bar 62 to retain it in place, but yet not interfere with the desired movement of the bridge. The construction of bridge 60 is such that it can be moved or pivoted on its bar portion 62 between its A and B positions, as will be hereinafter described, but yet prevents leakage of coating material at the joint provided by bar 62, member 64 and bracket 66.

The bar 62 at its lower left quadrant is secured, as by welding, to a flat pan or bottom 68 having at its sides turned up edges 70. Like the overflow pan 44, the flat pan portion 68 is of double wall construction, having a second wall 72 closed by a pair of end walls 74. One of the end walls 74 has an inlet 76, while the other (not shown) has an outlet (not shown), to accommodate the flow of cold water for condensing moisture and preventing an accumulation or build up of coating on the bridge. The inlet and outlet are connected by hoses to permit movement of the bridge 60. The wall 72 abuts a projection 77 on the head portion 38 to support the bridge 60 in its stored B position.

As shown in Figure 1, the bridge 60 is long enough to extend from just below the front wall 42 of head portion 38 of the one coater 16, downwardly, beyond and over the upper edge of the rear wall 21 of the pan 20 of the other coater 18. Of course, the length and width of the bridge can be varied for the particular installation.

Referring to Figure 3, in order to move the bridge 60 between the positions A and B (Fig. 1), the one coater 16 is moved away from the backing roll 10 and the overflow pan 44 of the one coater is also lowered. When moved sufficient distances, it is possible to then pivot the bridge 60 so that it will clear the upper edge of the rear wall 21 of pan 20 and the upper edge of the front wall 46 of the overflow pan 44. After the bridge 60 is placed in the desired position by means (not shown), such as manually, pneumatically, electrically or hydraulically, the head portion 38 and overflow pan 44 of the coater 16 may be returned to their original positions. While not necessary, if desired, the overflow pan 44 can be raised to the position shown in Figure 1, to support the bridge. Also, it is possible to use only the coater 16 with the coater 18 lowered from the backing roll 10. In such configuration, the bridge may be stored inside the overflow pan 44, and the overflow pan 44 raised close to the roll, (e.g. 6 mm from the roll). In such configuration, the distance or gap between the top edge of the overflow pan and backing roll can be varied by moving or pivoting the control pan toward or away from the roll 10 to control coating flow.

Referring to Figure 4, a second bridge embodiment 80 is shown. The portions of bridge 80 which are similar to bridge 60 and portions of the coater 16 and the surrounding environment which are similar, are identified by the same reference numbers as used previously.

Bridge 80 is similar to bridge 60, but instead of a pivot pin type hinge connection provided by rod 62, bridge 80 utilizes a flexible hinge 82. One end 84 of the flexible hinge 82 is secured or bonded to an extension 86 on the one coater, the extension 86 corresponding to the member 64. The other end 88 of the flexible hinge 82 is secured or bonded to the flat pan or bottom 90 of the bridge 80. The material for the flexible hinge should be selected to be compatible with the coatings to be used and for long life. For aqueous-clay coating, neoprene or butyl rubber is a suitable material. In all other respects, and in its operation, the bridge 80 is similar to the bridge 60.

As the operation of bridge 80 is similar to that for bridge 60, only operation of bridge 60 will be described. When the bridge 60 is in position B, it is stored in the overflow pan 44 of the one coater 16 and does not interfere with the flow of excess coating scraped off the web 12 by the doctor blade 37 into that pan. In the B position, either the one coater 16 or the other coater 18 in conjunction with remote blade 37 can be used independently, the provision of the bridge in no manner interfering with the operation of the coaters.

With the bridge in position A so that it is between the one coater 16 and the other coater 18, coating can flow from the coating supply system to coater 16 and then over the bridge to coater 18. While some of the coating would be applied to the web 12 by the one coater 16, most would overflow the front wall 42 of the one coater. From there it is intercepted by the bridge 60 and is carried downwardly by gravity across the bridge to the other coater 18 to supply the same with coating liquid. Again, some of the coating is applied to the web 12, while the excess coating from the second coater 18 is withdrawn from pan 20, returned to the coating supply system, reprocessed and then may be returned to the one coater 16.

Of course, the installation shown in Figures 1 to 3 permits either coater 16 or 18 to be used independently. In such instances, coating need be supplied only to the coater being used. If coater 18 is being used alone, it could be supplied with coating through pipe 32 or the supply for coater 16. In the latter instance, the coating would then flow across the bridge to coater 18. Alternatively, coater 18 could be supplied with coating from both sources. If coater 16 is being used alone, coater 18 can be lowered from the backing roll 10. The bridge 60 would be stored in the overflow pan 44, and only coater 16 is supplied with coating. Of course, when both coaters are being used, the coating can be supplied directly to coater 16 or 18 or both as desired.

Further, as the bridge 60 is pivotably or hingedly connected, it can readily accommodate movement of the head portion 38 to vary the angle the doctor blade 37 makes with the backing roll and web so that this important parameter can be easily varied. Thus, adjustments in blade angle can be readily made without stopping the paper-making machine and/or changing bridges.

As is apparent, the present invention greatly reduces the size and capacity of the required coating supply system. In fact, in an installation where both coaters are to always be run simultaneously, the overflow pan 44 for the one coater 16 and separate supply piping 32 for the other coater 18 can also be completely eliminated.

For purposes of simplicity, the invention has been described only in conjunction with two coaters. However, it should be understood that it is just as applicable to a single coater and a remote doctor blade located on the same backing roll above the coater. In such installation coating would be supplied to the coater from the coating supply system, applied to the web, the excess scraped off by the remote doctor blade, transferred to the bridge, and by gravity returned to the pan of the coater. Also, the pan could be equipped with some means for withdrawing some of the coating from the pan for reprocessing by the coating supply system and then returned to the pan. The hinged bridge means would have one end fixed, preferably to portions carrying the remote doctor blade. Thus, the remote doctor blade's position relative to the backing roll or web could be adjusted, and the hinged bridge means would automatically compensate for the change.

Claims

1. An apparatus for coating a web (12) of moving paper, including a coater (18) and an angularly movable, remote doctor blade (37) both located on the same backing roll (10), the doctor blade (37) being located above the coater (18), a coating supply system for supplying coating, and bridge means for collecting excess coating and transferring excess coating by gravity to the coater (18), characterised in that the bridge means comprises two portions (64, 68; 86, 88) hingedly connected together to accommodate change of the relative angular position of doctor blade (37) on the web (12), one (64; 86) of said two portions of the bridge means being mounted to move with the remote doctor blade (37), and the other (68; 88) of said two portions of said bridge means being adapted to extend from said one portion (64; 86) to the first coater (18), whereby the angular position of the doctor blade (37) can be changed with the bridge means automatically compensating for such a position change.

2. An apparatus as claimed in claim 1, comprising a second coater (16) provided with said doctor blade, the second coater (16) being adapted to apply coating to the web (12) between the first mentioned coater (18) and the doctor blade (37), said coating supply system supplying coating directly to the second coater (16), the doctor blade (37) also being adapted to scrape and collect excess coating applied by the second coater (16) from the web, the bridge means transferring the excess coating of the second coater (16) to the first coater (18).

3. An apparatus as claimed in claim 1 or 2, wherein the bridge means comprises a bottom

pan portion (68) and a pivot rod (62) at the upper end of said bottom, said bottom pan portion (68) being mounted by said pivot rod (62) to pivot relative to the second coater (16) and/or the doctor blade (37), and said bottom pan portion (68) extending from the pivot rod (62) to the first coater (18).

4. An apparatus as claimed in claim 1 or 2, wherein the bridge means comprises a bottom pan portion (90) and a flexible hinge (82), said bottom pan portion being secured to the flexible hinge (82), and the flexible hinge (82), in turn, being mounted to permit said bottom pan portion (90) to pivot relative to the second coater (16) and/or said doctor blade (37), the bottom pan portion extending from the flexible hinge (82) to the first coater (18).

5. An apparatus as claimed in claim 2, further comprising an overflow pan at the front of the second coater (16), the first coater (18) also including a pan, the bridge means being pivotally mounted on one of said two coaters and being positionable in one position wherein it intercepts the coating from the second coater (16) before it can reach said overflow pan of said second coater and transfers the coating to said pan of the first coater (18), and the bridge means being also positionable in a second position wherein it is storable within said overflow pan of the second coater (16) and does not interfere with the flow of excess coating into said overflow pan of said second coater or the operation of either of said two coaters or said doctor blade.

6. An apparatus as claimed in claim 5, wherein the second coater (16) is pivotally mounted relative to the backing roll (10), and said overflow pan is pivotally mounted relative to the second coater (16) and the backing roll (10), and, with the bridge means in its second position, the overflow pan may be pivoted toward the backing roll (10) to establish a gap with said backing roll to control the flow of coating from the second coater (16).

7. An apparatus as claimed in claim 1 or 2, wherein the bridge means further comprises a bottom pan portion (68) of double wall, sweated construction, and inlet (76) and outlet means for circulated fluid between said double walls (68, 72) to prevent coating from accumulating on said bridge means.

8. A method of operating a pair of coaters (16, 18), one (16) of which has a doctor blade (37) thereon, and both of which are located on a single backing roll (10), for applying coating to a web (12) of paper being run on the backing roll, comprising the steps of:

a. supplying an excess of coating to one (16) of the coaters;

b. applying at least a portion of the coating to the web (12) with the one coater (16);

c. collecting the excess coating which was supplied to but not applied to the web by the one coater (16);

d. collecting the excess coating which was supplied to and applied to the web by the one coater (16) with the doctor blade;

e. transferring by gravity the collected coating from the one coater (16) to the other coater (18) to at least partially supply the other coater (18) with coating; and

f. applying at least a portion of the coating to the web with the other coater (18).

9. A method as claimed in claim 8, further comprising the steps of:

g. collecting the excess coating which was applied to the web by the other coater (18) with the doctor blade (37);

h. transferring by gravity the collected excess coating which was applied to the web by the other coater (18) back to said coater (18);

i. reprocessing at least a portion of the coating supplied to the other coater (18); and

j. returning the reprocessed coating to the one coater (16).

10. A method as claimed in claim 8 or 9, wherein the coating supply system is dimensioned so as to meet the larger coating demand of the two coaters but not the sum of the two demands.

Patentansprüche

1. Vorrichtung zur Beschichtung einer Bahn (12) eines bewegten Papiers, mit einem Beschichter (18) und einer der Winkellage nach bewegbaren entfernt angeordneten Rakel (37), welche beide an derselben Stützrolle (10) angeordnet sind, wobei die Rakel (37) oberhalb des Beschichters (18) liegt, mit einem Beschichtungsmittel-Zuführsystem zur Zuführung des Beschichtungsmittels und mit einer Brückeneinrichtung zum Sammeln überschüssigen Beschichtungsmittels und Übertragen des überschüssigen Beschichtungsmittels zum Beschichter (18) mittels Schwerkraft, dadurch gekennzeichnet, daß die Brückeneinrichtung zwei miteinander gelenkig verbundene Teile (64, 68; 86, 88) aufweist, zwecks Anpassung an die relative Winkellage der Rakel (37) an der Bahn (12) wobei einer (64; 86) der genannten beiden Teile der Brückeneinrichtung so angeordnet ist, daß er sich zusammen mit der entfernt angeordneten Rakel (37) bewegt und der andere (68; 88) der genannten beiden Teile der Brückeneinrichtung so ausgebildet ist, daß er sich von dem genannten einen Teil (64; 86) zum ersten Beschichter (18) erstreckt, wodurch die Winkellage der Rakel (37) geändert werden kann, während die Brückeneinrichtung automatisch eine solche Lageänderung ausgleicht.

2. Vorrichtung nach Anspruch 1, gekennzeichnet durch einen zweiten Beschichter (16), welcher mit der genannten Rakel versehen ist, wobei der zweite Beschichter (16) zum Auftragen von Beschichtungsmittel zwischen dem erstgenannten Beschichter (18) und der Rakel (37) ausgebildet ist, das genannte Beschichtungsmittelzuführsystem das Beschichtungsmittel direkt dem zweiten Beschichter (16) zuführt, die Rakel (37) auch zum Abkratzen und Sammeln überschüssigen Beschichtungsmittels von der Bahn, das vom zweiten Beschichter (16) aufgetragen

worden ist, ausgebildet ist, und die Brückeneinrichtung das überschüssige Beschichtungsmittel des zweiten Beschichters (16) auf den ersten Beschichter (18) überträgt.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Brückeneinrichtung einen Pfannenbodenteil (68) und einen Schwenkzapfen (62) am oberen Ende des genannten Bodens aufweist, wobei der genannte Pfannenbodenteil (68) am Schwenkzapfen so gelagert ist, daß er relativ zum zweiten Beschichter (16) und/oder zur Rakel (37) schwenkbar ist, und sich der genannte Pfannenbodenteil (68) vom Schwenkzapfen (62) zum ersten Beschichter (18) erstreckt.

4. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Brückeneinrichtung einen Pfannenbodenteil (90) und ein flexibles Gelenk (82) aufweist, wobei der genannte Pfannenbodenteil am flexiblen Gelenk (82) befestigt ist und das flexible Gelenk selbst so befestigt ist, daß es eine Schwenkung des genannten Pfannenbodenteiles (90) relativ zum zweiten Beschichter (16) und/oder zur Rakel (37) gestattet und sich der genannte Pfannenbodenteil (90) vom flexiblen Gelenk (82) zum ersten Beschichter (18) erstreckt.

5. Vorrichtung nach Anspruch 2, gekennzeichnet durch eine Überströmpfanne an der Vorderseite des zweiten Beschichters (16), wobei der erste Beschichter (18) ebenfalls eine Pfanne aufweist, die Brückeneinrichtung schwenkbar an einem der beiden Beschichter angebracht ist und in eine Lage bringbar ist, in welcher sie das Beschichtungsmittel vom zweiten Beschichter (16) aufhält, bevor es die Überströmpfanne des genannten zweiten Beschichters erreichen kann und das Beschichtungsmittel zur genannten Pfanne des ersten Beschichters (18) überträgt und die Brückeneinrichtung auch in eine zweite Lage bringbar ist, in welcher sie innerhalb der Überströmpfanne des ersten Beschichters (16) unterbringbar ist und den Strom überschüssigen Beschichtungsmittels in die genannte Überströmpfanne des genannten zweiten Beschichters oder das Arbeiten jedes der genannten beiden Beschichter oder der genannten Rakel nicht behindert.

6. Vorrichtung nach Anspruch 5, dadurch gekennzeichnet, daß der zweite Beschichter (16) relativ zur Stützrolle (10) schwenkbar gelagert ist und die genannte Überströmpfanne relativ zum zweiten Beschichter (16) und zur Stützrolle (10) schwenkbar gelagert ist und, bei der Brückeneinrichtung in ihrer zweiten Stellung, die Überströmpfanne gegen die Stützrolle (10) schwenkbar ist, um mit der Stützrolle einen Spalt zur Kontrolle des Stromes des Beschichtungsmittels vom zweiten Beschichter (16) zu bilden.

7. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Brückeneinrichtung einen Pfannenbodenteil (68) aus einer verlöteten Doppelwandkonstruktion und Eingangs- (76) und Ausgangseinrichtungen zur Zirkulation eines Fluidums zwischen den Doppelwänden (68, 72) aufweist um ein Ansammeln des Beschichtungs-

mittels an der genannten Brückeneinrichtung zu verhindern.

8. Verfahren zum Betrieb eines Paares von Beschichtern (16, 18), von denen einer (16) eine Rakel (37) besitzt und welche beide an einer einzigen Stützrolle (10) angeordnet sind, um Beschichtungsmittel auf eine Bahn (12) aus Papier, welche um die Stützrolle läuft, aufzutragen, gekennzeichnet durch folgende Schritte:

a. Zuführen einer überschüssigen Menge von Beschichtungsmittel zu einem (16) der Beschichter;

b. Auftragen mindestens eines Teiles des Beschichtungsmittels auf die Bahn (12) mittels des einen Beschichters (16);

c. Sammeln des überschüssigen Beschichtungsmittels, welches mittels des einen Beschichters (16) zugeführt aber nicht auf die Bahn aufgetragen wurde;

d. Sammeln des überschüssigen Beschichtungsmittels, welches mittels des einen Beschichters (16) mit der Rakel zugeführt und auf die Bahn aufgetragen wurde;

e. Übertragen mittels Schwerkraft des gesammelten Beschichtungsmittels von dem einen Beschichter (16) zum anderen Beschichter (18), um zumindest teilweise den anderen Beschichter (18) mit Beschichtungsmittel zu beschicken und

f. Auftragen mindestens eines Teiles des Beschichtungsmittels auf die Bahn mittels des anderen Beschichters (18).

9. Verfahren nach Anspruch 8 weiters gekennzeichnet, durch folgende Schritte:

g. Sammeln des überschüssigen Beschichtungsmittels, welches auf die Bahn mittels des anderen Beschichters (18) aufgetragen wurde mit der Rakel (37);

h. Übertragen mittels Schwerkraft des gesammelten überschüssigen Beschichtungsmittels, welches auf die Bahn mittels des anderen Beschichters (18) aufgetragen wurde, zurück zu dem anderen Beschichter (18);

i. Wiederaufbereitung mindestens eines Teiles des dem anderen Beschichter (18) zugeführten Beschichtungsmittels; und

j. Rückführung des wiederaufbereiteten Beschichtungsmittels zu dem einen Beschichter (18).

10. Verfahren nach Anspruch 8 oder 9, dadurch gekennzeichnet, daß das Zuführsystem für das Beschichtungsmittel so dimensioniert ist, daß es dem größeren Beschichtungsmittelbedarf der zwei Beschichter, nicht aber der Summe der beiden Bedarfe entspricht.

Revendications

1. Appareil pour le revêtement ou le couchage d'une bande (12) de papier en mouvement, comprenant un applicateur (18) et une lame de raclage distante (37) mobile angulairement, tous deux placés sur le même rouleau d'appui (10), la lame de raclage (37) étant située au-dessus de l'applicateur (18), un système d'alimentation en substance de revêtement pour fournir la sub-

stance de revêtement, et des moyens à pont pour collecter la substance de revêtement en excès et transférer gravitairement la substance de revêtement en excès à l'applicateur (18), caractérisé en ce que les moyens à pont comprennent deux parties (64, 68; 86, 88) reliées l'une à l'autre de façon articulée pour compenser le changement de la position angulaire relative de la lame de raclage (37) sur la bande (12), l'une (64; 86) des dites deux parties des moyens à pont étant montée de manière à se déplacer avec la lame de raclage distante (37), et l'autre (68; 88) des dites deux parties des moyens à pont étant prévue pour s'étendre de la première partie (64; 86) au premier applicateur (18), de sorte qu'on peut modifier la position angulaire de la lame de raclage (37), les moyens à pont compensant automatiquement ce changement de position.

2. Appareil suivant la revendication 1, comprenant un deuxième applicateur (16) qui comporte ladite lame de raclage, le deuxième applicateur (16) étant prévu pour appliquer la substance de revêtement à la bande (12) entre l'applicateur (18) cité en premier et la lame de raclage (37), ledit système d'alimentation en substance de revêtement fournissant directement la substance de revêtement au deuxième applicateur (16), la lame de raclage (37) étant également prévue pour racler et collecter la substance de revêtement en excès appliquée par le deuxième applicateur (16) sur la feuille, les moyens à pont transférant la substance de revêtement en excès du deuxième applicateur (16) au premier applicateur (18).

3. Appareil suivant la revendication 1 ou 2, dans lequel les moyens à pont comprennent une goulotte comportant un fond (68) et un axe de pivot (62) situé à l'extrémité supérieure de ce fond, ladite goulotte (68) étant tenue par l'axe de pivot (62) de manière à pivoter par rapport au deuxième applicateur (16) et/ou à la lame de raclage (37), et ladite goulotte (68) s'étendant de l'axe de pivot (62) au premier applicateur (18).

4. Appareil suivant la revendication 1 ou 2, dans lequel les moyens à pont comprennent une goulotte comportant un fond (90) et une articulation flexible (82), ladite goulotte étant fixée à l'articulation flexible (82), et l'articulation flexible (82) étant elle-même montée de manière à permettre à la goulotte (90) de pivoter par rapport au deuxième applicateur (16) et/ou à la lame de raclage (37), la goulotte s'étendant de l'articulation flexible (82) au premier applicateur (18).

5. Appareil suivant la revendication 2, comprenant en outre une cuve de déversement à l'avant du deuxième applicateur (16), le premier applicateur (18) comportant également une cuve, les moyens à pont étant montés de façon pivotante sur l'un des deux applicateurs et pouvant être placés dans une première position, dans laquelle ils interceptent la substance de revêtement venant du deuxième applicateur (16) avant qu'elle puisse atteindre la cuve de déversement du deuxième applicateur et ils transfèrent la substance de revêtement à la cuve du premier applicateur (18), et les moyens à pont pouvant

également être placés dans une deuxième position dans laquelle ils peuvent être stockés à l'intérieur de la cuve de déversement du deuxième applicateur (16) et n'interfèrent pas avec l'écoulement de la substance de revêtement en excès dans la cuve de déversement du deuxième applicateur ou avec le fonctionnement de l'un ou l'autre des deux applicateurs ou de la lame de raclage.

6. Appareil suivant la revendication 5, dans lequel le deuxième applicateur (16) est monté de façon pivotante par rapport au rouleau d'appui (10) et la cuve de déversement est montée de façon pivotante par rapport au deuxième applicateur (16) et au rouleau d'appui (10), et, avec les moyens à pont dans leur deuxième position, la cuve de déversement peut être pivotée vers le rouleau d'appui (10) de manière à établir un intervalle par rapport au rouleau d'appui afin de régler l'écoulement de substance de revêtement venant du deuxième applicateur (16).

7. Appareil suivant la revendication 1 ou 2, dans lequel les moyens à pont comprennent en outre une partie de goulotte (68) à fond à double paroi, de construction chemisée, et des moyens d'entrée (76) et de sortie pour un fluide circulant entre lesdites doubles parois (68, 72) afin d'empêcher l'accumulation de la substance de revêtement sur les moyens à pont.

8. Procédé d'utilisation d'un couple de dispositifs applicateurs (16, 18), dont l'un (16) comporte une lame de raclage (37) et qui sont tous deux placés sur un même rouleau d'appui (10), pour appliquer un revêtement sur une bande (12) de papier en déplacement sur le rouleau d'appui, comprenant les opérations de:

a. envoi d'un excès de substance de revêtement à l'un (16) des applicateurs;

b. application d'au moins une partie de la sub-

stance de revêtement à la bande (12), au moyen de cet applicateur (16);

c. collecte de la substance de revêtement en excès qui a été fournie mais n'a pas été appliquée à la bande par l'applicateur (16);

d. collecte de la substance de revêtement en excès qui a été fournie et appliquée à la bande par l'applicateur (16), au moyen de la lame de raclage;

e. transfert par gravité de la substance de revêtement collectée de l'applicateur (16) à l'autre applicateur (18), pour alimenter au moins partiellement l'autre applicateur (18) en substance de revêtement; et

f. application d'au moins une partie de la substance de revêtement à la bande, au moyen de l'autre applicateur (18).

9. Procédé suivant la revendication 8, qui comprend en outre les opérations de:

g. collecte de la substance de revêtement en excès qui a été appliquée à la bande par l'autre applicateur (18), au moyen de la lame de raclage (37);

h. transfert par gravité de la substance de revêtement en excès collectée, qui a été appliquée à la bande par l'autre applicateur (18), de manière à revenir audit applicateur (18);

i. retraitement d'au moins une partie de la substance de revêtement envoyée à l'autre applicateur (18); et

j. retour de la substance de revêtement retraitée à l'applicateur (16).

10. Procédé suivant la revendication 8 ou 9, dans lequel le système d'alimentation en substance de revêtement est dimensionné de façon à répondre à la plus grande demande en substance de revêtement des deux applicateurs, mais non à la somme des deux demandes.

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FIGURE 2

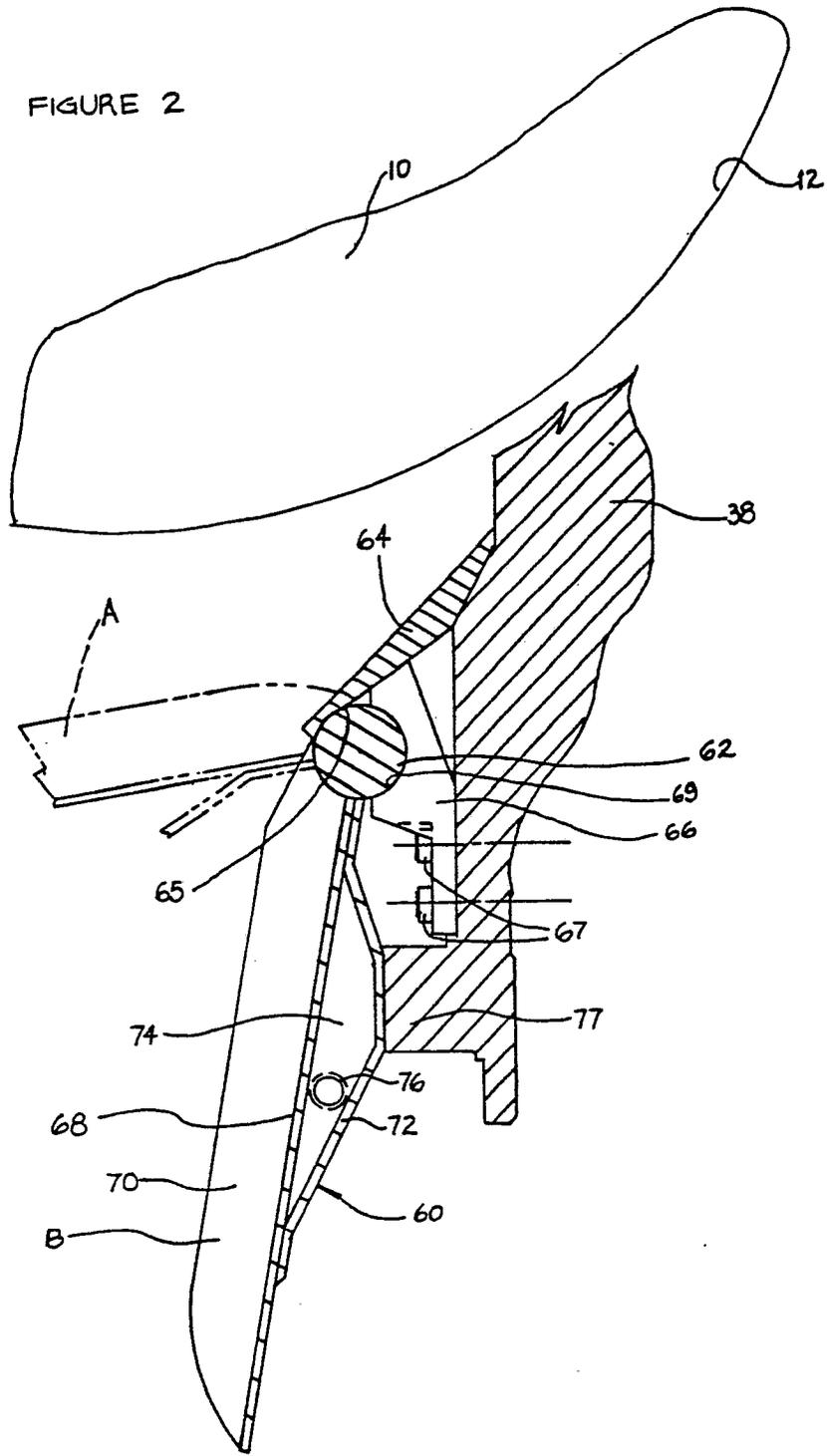


FIGURE 3.

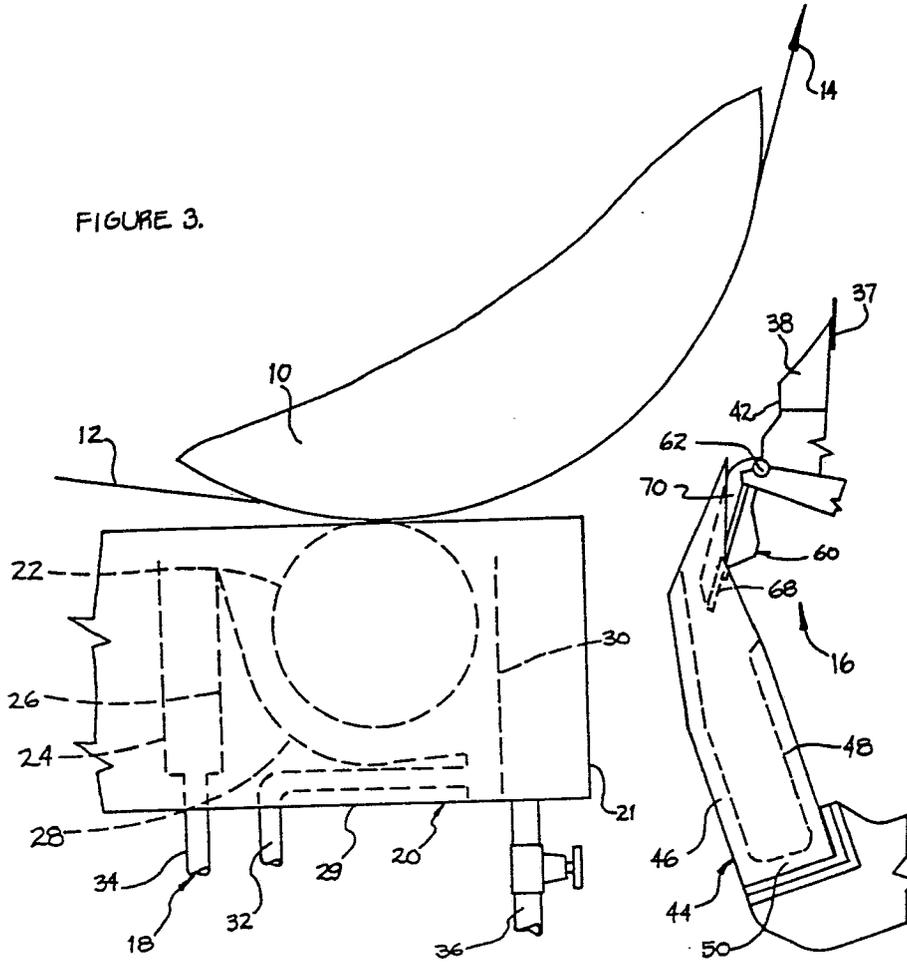


FIGURE 4

