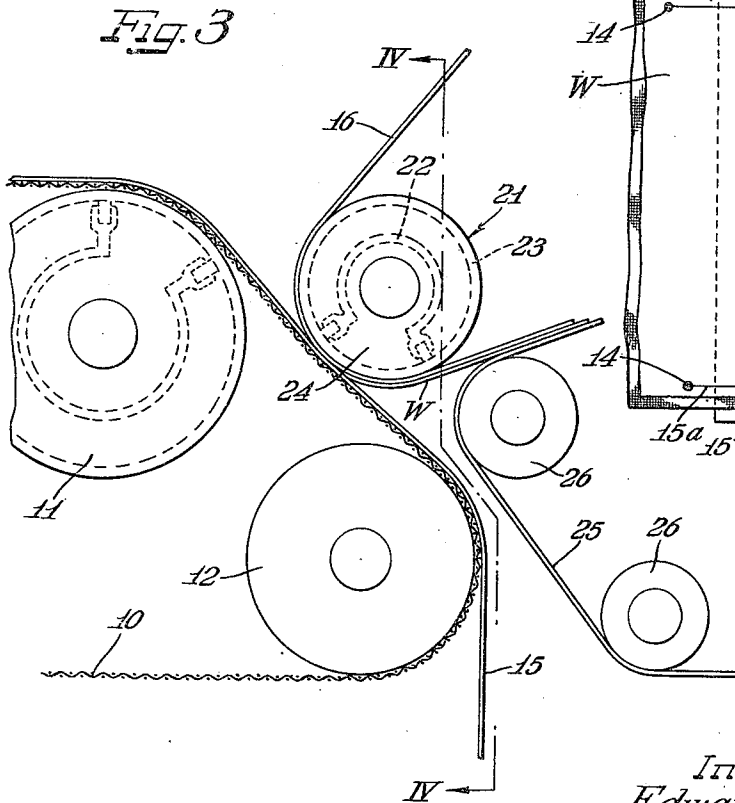
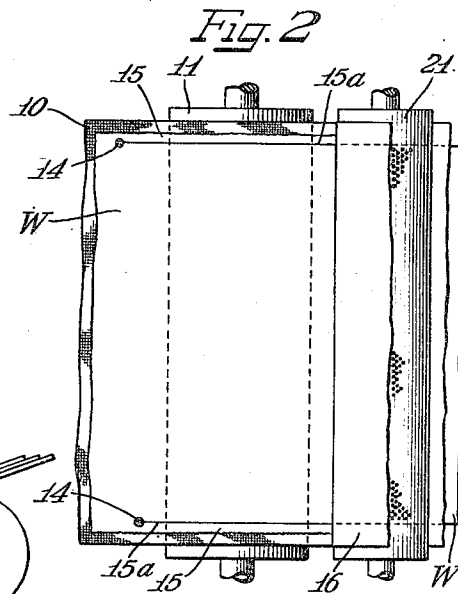
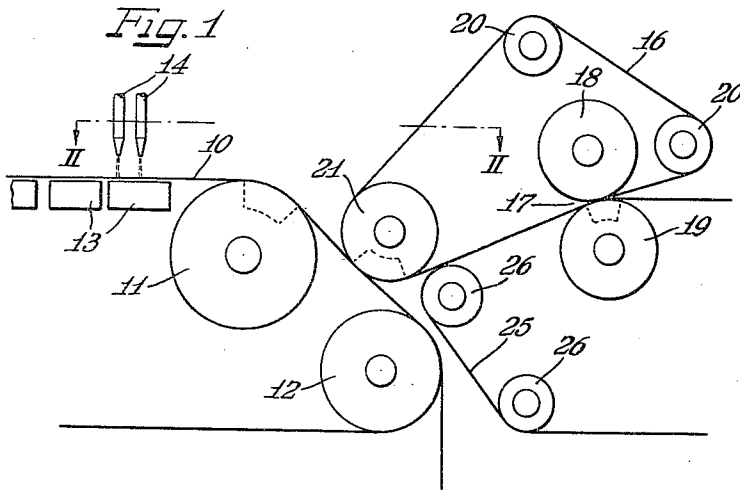


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2 Sheets-Sheet 1



Inventor
Edward D. Beachler

by The Sign of Charles Smith Attys

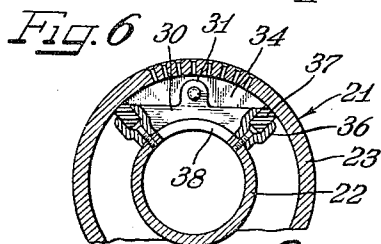
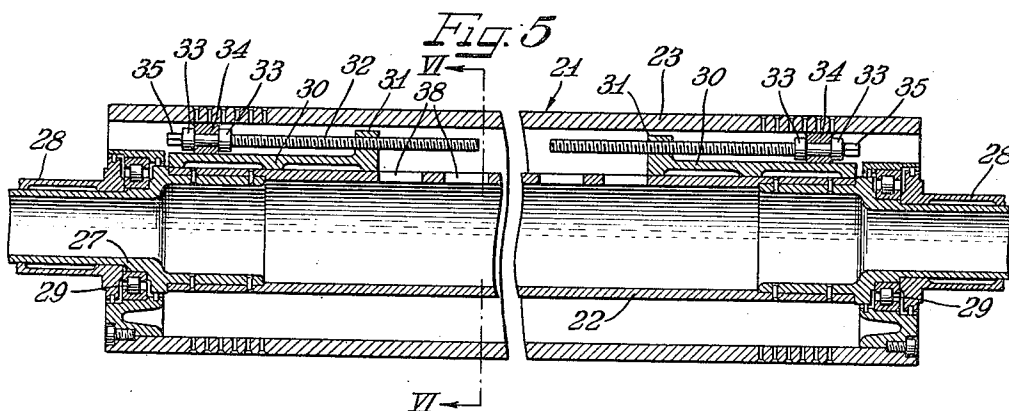
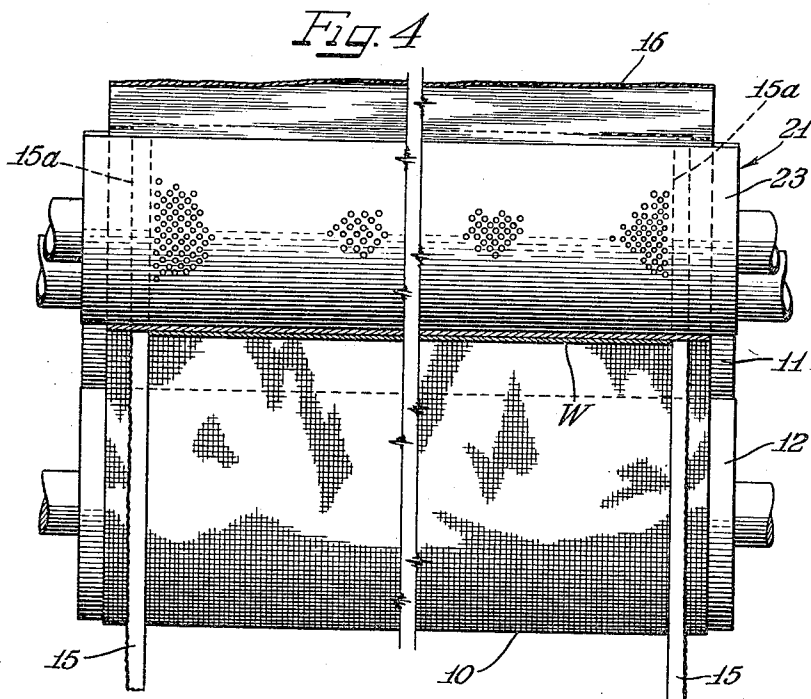
May 31, 1955

E. D. BEACHLER
SUCTION TRANSFER ASSEMBLY WITH
DECKLE EDGE CONTROL

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2 Sheets-Sheet 2



Inventor
Edward D. Beachler

Perkin of Charles H. H. H. Attys

1

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SUCTION TRANSFER ASSEMBLY WITH DECKLE EDGE CONTROL

Edward D. Beachler, Beloit, Wis., assignor to Beloit Iron Works, Beloit, Wis., a corporation of Wisconsin

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4 Claims. (Cl. 92—49)

The present invention relates to a suction transfer assembly with deckle edge control, and more particularly to a paper machine pick-up assembly for transferring a moist paper web from a forming surface to a press section without simultaneously transferring severed deckle edges of the web from the forming surface.

In the manufacture of paper, the practice heretofore conventionally followed with respect to the web deckle edges involved the transfer of the web together with the severed deckle edges from the forming surface through the entire press assembly and through the drying assembly of the machine. Thus, the deckle edges, which were subsequently discarded so as to obtain accurate web lateral edges, were dried at considerable expense and, further, the deckle edges were later reconverted to pulp from their dried condition. The present invention now effects the separation of the deckle edges prior to the introduction of the web into the press section, so that the deckle edges are discarded in their moist condition, thus facilitating the conversion and re-use of the edges to pulp, while at the same time eliminating the necessary drying operations previously performed thereon.

The present invention thus includes means for transferring the desired central web portion only from the forming surface to a press section, while the wet cut deckle edges remain on the forming surface and are discarded therefrom without pressing or drying. More particularly, the deckle edges are severed from the web prior to passage of the web over the terminal suction roll within the loop of the forming wire and the desired web only is subsequently removed from the wire by suitable means, as by a pick-up press felt, with the deckle edges remaining on the wire and being removed therefrom as the direction of wire travel is changed or reversed to the return run of the forming wire.

The present invention preferably employs a suction pick-up roll disposed within the loop of the press pick-up felt, and the axial dimension of the suction gland within the suction roll corresponds to the width of the desired web, so that no suction is effective upon the deckle edges to cause their removal from the forming wire. The deckle edges thus remain on the forming wire and are removed therefrom by suitable means, as by gravity as the wire direction of travel is reversed for the wire return to the flow inlet box or other means for introducing pulp onto the wire.

It is, therefore, an important object of the present invention to provide an improved suction transfer assembly for a paper making machine, the assembly being effective to remove from a forming wire only the desired web.

Another important object of the present invention is to provide an improved suction transfer assembly for effecting the removal of a paper web from a web-forming surface, the assembly including means for exerting a transverse suction solely upon the desired web to thereby prevent transfer of severed deckle edges from the forming surface.

2

It is a further important object of the present invention to provide improved means for the controlled transfer of the desired paper web from the wet end of a paper making machine forming surface, the means exerting a transverse suction only on desired portions of the web while leaving severed web edge portions on the wire for removal therefrom and for later reconversion to pulp.

Still another important object of the present invention is to provide a method of effecting the transfer of a desired central portion of a web from a web-forming surface by the exertion of suction on only the desired central portion of the web and the retaining of the web edge portion on the forming surface for subsequent independent removal therefrom.

Yet a further important object of the present invention is to provide an improved method of separating severed deckle edges from a central web which comprises guiding both the web and the edges in a substantially plane path, exerting a differential fluid pressure on the web to deflect the same from the plane path and utilizing gravity to subsequently remove the edges from the path independently of the web.

Other and further important objects of the invention will become apparent to those skilled in the art from the following detailed description of the accompanying sheets of drawings, which disclose a preferred embodiment of the invention.

On the drawings:

Figure 1 is a schematic side elevational view of a suction transfer assembly of the present invention;

Figure 2 is a fragmentary plan view taken along the plane II—II of Figure 1;

Figure 3 is an enlarged fragmentary side elevational view similar to Figure 2;

Figure 4 is an enlarged sectional view taken along the planes IV—IV of Figure 3, portions of the apparatus being broken and left in elevation;

Figure 5 is a greatly enlarged, broken axial sectional view of a suction transfer roll of the transfer assembly of Figure 1; and

Figure 6 is a sectional view taken along the plane VI—VI of Figure 5.

As shown on the drawings:

In Figure 1, reference numeral 10 refers generally to a paper machine forming surface, such as the foraminous forming wire of a Fourdrinier machine. The wire 10 carries on its upper surface a moist paper web W and the wire is trained about a suction couch roll 11 and a plain turning roll 12. The wire 10, prior to its passage about a portion of the periphery of the suction couch roll, passes over a plurality of longitudinally aligned suction boxes 13 and a deckle edge 15 at each lateral side of the web W carried on the wire 10 is severed, as at 15a, by means of a pair of deckle nozzles 14 disposed above the surface of the web W and directed thereagainst, as best shown in Figure 2. The pressured jet sprays of fluid, such as water, from the nozzles 14 cut through the web W adjacent each lateral edge thereof to form the deckle strips 15 which are severed from the web W, but which are retained on the surface of the wire 10 as it passes about the couch roll 11 and the turning roll 12.

A pick-up felt 16 is trained through a suction press nip 17 defined by the press rolls 18 and 19 and about felt guide rolls 20. The felt 16 is also trained about a suction transfer roll 21 which is so disposed that the felt 16 lapped thereabout comes into contact with the web W carried on the surface of the forming wire 10. The roll 21 is provided with an interior suction gland 22 which cooperates with a radially apertured suction drum 23 to define a suction area 24 acting against the

web W through the felt 16 and serving to transfer the web W from the wire 10 to the felt 16.

A lower press felt 25 also passes through the press nip 17 defined by the rolls 18 and 19, the felt being guided by means of felt guide rolls 26 disposed within the loop of the felt.

The roll 21 is more specifically illustrated in Figures 5 and 6. The roll, as hereinbefore described, includes a rotatable, cylindrical, radially apertured drum 23 journaled for rotation about a fixed suction gland 22. The gland 22 carries at each extreme end an axially extending sleeve 27, each of which is secured to the gland and projects axially outwardly through a journal 28. The sleeves 27 at each end of the gland 22 carry the drum 23 journaled thereon through roller bearings 29.

The fixed gland also carries affixed thereto a slide 30 adjacent each axial end and each having an upwardly projecting boss 31 at the inner end thereof. The bosses 31 are internally threaded to receive an elongated screw 32 which is provided at its free end with spaced shoulders 33 having interposed therebetween an arcuate bearing plate 34 sealingly confined between the upper surface of the slide 30 and the inner periphery of the drum 23. That end 35 of the screw 32 projecting axially outwardly beyond the bearing block 34 is squared for the reception of a suitable tool, such as a socket wrench, for effecting rotational threading of the screws 32 into the threaded bosses 31 to thereby slide the bearing plate 34 axially with respect to the gland 22. In this manner, the distance between the bearing blocks 34 may be varied.

In Figure 6, it will be seen that the gland 22 has affixed thereto packing strip holders 36 which carry packing strips 37 contacting the inner periphery of the drum 23. The packing strips 37 are arcuately spaced, so as to define therebetween an arcuate area which is closed at its axial ends by means of the bearing blocks 34. This area defined by the strips 37 and the blocks 34 is in communication with the interior of the gland 22 through apertures 38, so that the entire area may be evacuated, thereby forming a reduced pressure zone. The reduced pressure in this zone is exerted at the exterior periphery of the drum 23 by virtue of the drum apertures.

The roll 21 is thus provided with a suction area which may be varied in axial length with respect to the drum merely by causing rotation in a desired direction of the screws 32. In use, the bearing blocks 34 are so set by means of the screws 32 that they coincide with the line of severance 15a between the web W and the deckle edges 15. In this manner, suction is exerted at the area of contact between the roll 21 and the web only through that portion of the felt 16 which actually contacts the central portion of the web, exclusive of the deckle edges 15. Inasmuch as there is no transfer suction exerted on the deckle edges, these deckle edges will remain on the wire and will not be transferred to the felt 16 with the web W. As illustrated in Figures 1, 3, and 4, the deckle edges 15 will travel with the wire 10 until the wire direction of travel is drastically changed or substantially reversed, e. g., as the wire passes about the turning roll 12 for its return run, at which time the deckle edges will travel downwardly by gravity away from the turning roll and the wire.

Thus, it will be seen that the present invention provides means for transferring to a press section only the central desired portion of a paper web carried on a forming wire. The transfer of the desired portion of the web is effected by means of a suction roll which bears against a portion of the wire 10 which is unsupported. Thus, the desired portion of the web is not subjected to a pressure nip during transfer, and there is no tendency for the web to become embedded in the wire 10. It is not necessary to perform any work on the deckle edges 15 to cause their remaining behind the wire 10 after transfer of the web therefrom, but this retention of the deckle

edges is due merely to gravitational forces acting thereupon.

Inasmuch as the deckle edges are removed at the wet end of the paper making machine, it is not necessary to transfer these edges to a press section or to a later drier section, and no work is performed on the edges at either the press section or the drying section, and the resultant operating economy will be appreciated. Furthermore, the deckle edges 15 at their time of removal are still moist, and so may be readily reconverted to pulp.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. A paper making machine having a traveling looped forming wire adapted to convey a moist paper web thereon, a suction couch roll disposed in the loop of said wire, a turning roll also disposed in the loop of said wire in spaced relation to said couch roll, transversely spaced cutting jets in advance of said couch roll for severing deckle edges from said web conveyed on said wire, a looped pick-up felt, a suction roll having substantially the width of said wire disposed in the loop of said felt with said felt wrapped about the suction area of said roll and urged by said roll into contact with said web supported on said wire between said couch roll and said turning roll, said suction area of said suction roll having a transverse dimension shorter than the width of said wire and corresponding with the transverse dimension of said space between said deckle edge cutting jets and being aligned with said space longitudinally of said wire, whereby said suction area is effective only against the desired central portion of said web to remove the same from said wire and to permit said deckle edges to remain on said wire.

2. A paper making machine having a travelling looped forming wire adapted to convey a moist paper web thereon, a couch roll disposed in the loop of said wire, transversely spaced cutting jets for severing deckle edges from said web conveyed on said wire, a looped pick-up felt, a suction roll having at least substantially the width of said wire disposed in the loop of said felt with said felt wrapped about the suction area of said roll and urged by said roll into contact with said web supported on said wire, guide means separating the looped pick-up felt and forming wire as the felt passes over the suction area of said suction pick-up roll, said cutting jets being in advance of said suction roll, said suction area of said suction roll having a transverse dimension shorter than the width of said wire and corresponding with the transverse dimension of the space between said deckle edge cutting jets and being aligned with said space longitudinally of said wire, whereby said suction area is effective only against the desired central portion of said web to remove the same from the wire and to permit the deckle edges to remain on the wire.

3. A paper making machine having a travelling looped forming wire adapted to convey a moist paper web thereon, a suction couch roll disposed within the loop of said wire, means cooperating with said suction couch roll to reverse the direction of wire travel adjacent the suction couch roll and to support a reach of the wire in its travel immediately beyond said couch roll, transversely spaced cutting jets in advance of said couch roll for severing deckle edges from said web conveyed on said wire, a looped pick-up felt, a suction pick-up roll having at least substantially the width of said wire disposed within the loop of said felt with said felt wrapped about the suction area of said roll and urged by said roll into contact with said web supported on said reach of wire, said suction area of said suction roll having a transverse dimension shorter than the width of said wire and corresponding to the transverse dimension of the space between said deckle edge cutting jets and being aligned with said space longitudinally of said wire, whereby said suction area is effective only against the desired central portion of said

5

web to remove the same from said wire and permit said deckle edges to remain on said wire.

4. A paper making machine having a travelling looped forming wire adapted to convey a moist paper web thereon, a couch roll disposed in the loop of said wire, transversely spaced cutting jets in advanced of said couch roll for severing deckle edges from said web conveyed on said wire, a looped pick-up felt, a suction roll having at least substantially the width of said wire and positioned beyond said cutting jets in the direction of wire travel, said suction roll being disposed in the loop of said felt with said felt wrapped about the suction area of said roll and urged by said roll into contact with said web supported on said wire, guide means separating the looped pick-up felt and the forming wire as the pick-up felt passes over said suction area of said suction roll, said suction area of said suction roll having a transverse dimension shorter than the width of said wire and corresponding with the trans-

6

verse dimension of the space between said deckle edge cutting jets and being aligned with said space longitudinally of said wire, whereby said suction area is effective only against the desired central portion of said web to remove the same from the wire and to permit said deckle edges to remain on said wire.

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