June 28, 1932. C. B. GRIFFIN 1,864,726

AIR DECKLING

Filed July 10, 1930

Fig. 1.

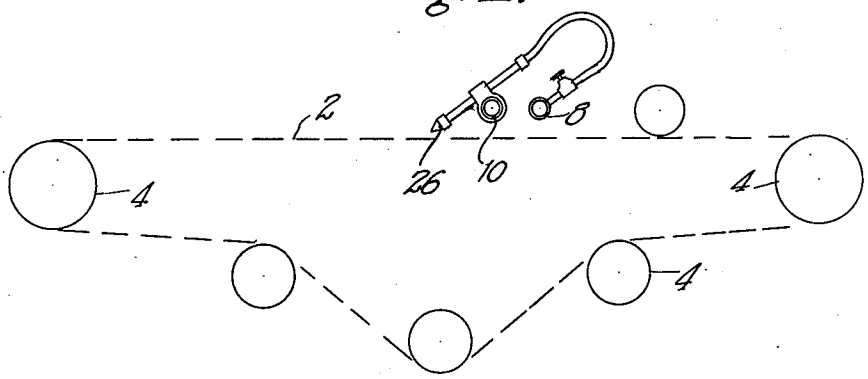
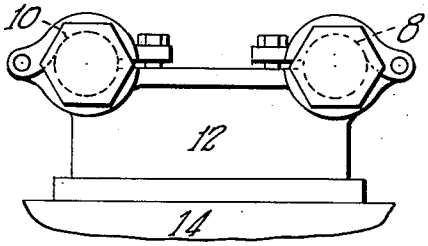


Fig. 2.



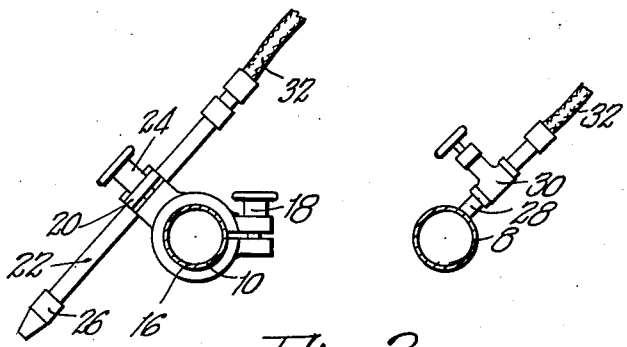


Fig. 3.

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UNITED STATES PATENT OFFICE

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AIR DECKLING

Application filed July 10, 1930. Serial No. 466,936.

This invention relates to the paper manufacturing art and is directed more particularly to the method of and apparatus for making deckle-edge paper.

The principal objects of the invention are the provision of a novel method of and apparatus for operating on a wet web of paper to provide deckle edges for the paper which resembles hand made deckle edges.

It has been attempted to make paper having deckle edges in several ways, but the results have not been entirely satisfactory. For instance, the edges of finished paper have been tapered by tools of various forms, but the tapering edge is of different color than the main body of the paper and does not have the appearance in other respects of the hand made product. In another way jets of water have been directed onto a web of paper as it is being formed on the paper-making element. The jets separate the web along uneven or wavy lines to give a sort of deckle effect, but this method is objectionable because the water has the affect of washing color from the paper stock so that the wavy or so-called deckled edge is of a different color than the main body of the web.

According to the novel method of this invention I am able to separate a wet web of paper and thereby obtain the deckle effect by directing a jet or jets of air against a wet web of paper as it travels therepast. In this way the web is not only separated to provide the deckle edge effect, but the color of the deckled edges is not impaired because the air in no way affects the characteristics of the color.

This is accomplished by the novel apparatus to be more fully hereinafter described in connection with the accompanying drawing.

In the drawing:

Fig. 1 is a diagrammatic side elevational view of an apparatus embodying the novel features of the invention.

Fig. 2 is a side elevational view of a part of the apparatus, and

Fig. 3 is a sectional elevational view through the apparatus showing certain novel features thereof.

Referring to the drawing the invention will now be described in detail.

In Fig. 1 a Fourdrinier belt or wire of a paper-making machine is represented at 2 which is supported and driven by drums or rolls 4. The belt 2 receives paper making material and on this belt a web of paper is formed in the usual way. The web of paper is in wet condition, while on the belt and according to the invention a plurality of jets of air are directed onto the web by air nozzles 26 as it is conveyed by the belt therepast. The jets of air separate the web along longitudinal lines to provide separable web portions. As air from the nozzle impinges the wet web, the fibers thereof are displaced so as to separate the web and provide uneven, or irregular tapering edges having the desired deckle edge appearance.

The apparatus of the invention comprises the following: An air supply pipe 8 and a clamp supporting pipe 10 are disposed transversely of the belt 2. For this purpose their opposite ends may be clamped in brackets 12 which may be supported by convenient frame parts such as 14 of the paper making machine.

A plurality of slide members such as 16 are slidable and rotatable along the supporting pipe 10 and are split as shown so they may be clamped to the support in various positions along and radially of the support by means of clamp screws 18.

Lugs 20 on the clamps 16 slidably receive rigid nozzle tubes 22 and are split as shown so that by means of clamp screws 24 the tubes may be clamped in various positions of adjustment along the support 10. Nozzles 26 having relatively small orifices at the ends of the tubes 22 are provided for directing air onto a web of paper as it travels therepast on the belt 2.

Nipples 28 screwed in the supply pipe 8 are connected to air control valves 30 from which extend flexible pipes 32 that are connected to the nozzle tubes 22. With this arrangement air is supplied to the tubes and nozzles which may be regulated or controlled while by means of the flexible connections the

slides and nozzles may be moved back and forth along the support pipe 10.

In this way it is possible to separate a wet web on the belt into webs of various relative widths and at the same time provide the adjacent edges thereof with the desired deckle edge effect.

The supply pipe 8 is preferably connected to an apparatus for supplying air under pressure.

According to the novel method of the invention the wet web is separated by displacing fibers without in any way unfavorably affecting the quality of the paper or the color thereof. This is to be distinguished from the prior art methods where the results are not satisfactory.

By means of the invention it is possible to regulate the flow of air to obtain different deckle effects. That is by using more or less air, more or less of the fibers may be displaced and air from one nozzle may be applied to the web differently than that from another.

The slide members are independently adjustable while connected by flexible connections to a common supply pipe so that not only may different deckle effects be obtained, but it is possible to provide webs of various widths.

The invention is adapted for broad application and while for purposes of disclosure it has been described in connection with a Fourdrinier belt, it is equally well adapted for use in connection with a so-called cylinder machine.

Having described the invention in the form at present preferred, what I now desire to claim and secure by Letters Patent of the United States is:

1. The combination with the movable web forming member of a paper making machine of apparatus for making deckle edge paper comprising in combination, a main common air supply pipe and a support disposed transversely of said web forming member, a plurality of slide members rotatably and slidably adjustable on said support, nozzle tubes slidably adjustable in said slide members and flexible connections between tubes and said common supply pipe whereby the slide members may be adjusted independently of one another.

2. The combination with the movable web forming member of a paper making machine of apparatus for making deckle edge paper comprising in combination, a main common air supply pipe and a support disposed transversely of said web forming member, a plurality of slide members rotatably and slidably adjustable on said support, nozzle tubes slidably adjustable in said slide members and flexible connections between tubes and said common supply pipe whereby the slide members may be adjusted independently of one another and valves associated with said connections.

3. The method of making deckle edge paper which consists in, forming a wet web of paper on a moving Fourdrinier wire, directing a stream of air onto said web by a stationary nozzle above said wire as the wire and web move past said nozzle, the said air being directed onto said web longitudinally thereof and in a direction opposed to the direction of travel of said web, so as to displace fibers of the web along an uneven wavy longitudinal line and form a groove in the web which inclines upwardly and transversely from said line and has roughened upper surfaces providing uneven tapering edges for adjacent webs at opposite sides of said line.

In testimony whereof I affix my signature.

COURTLANDT B. GRIFFIN.