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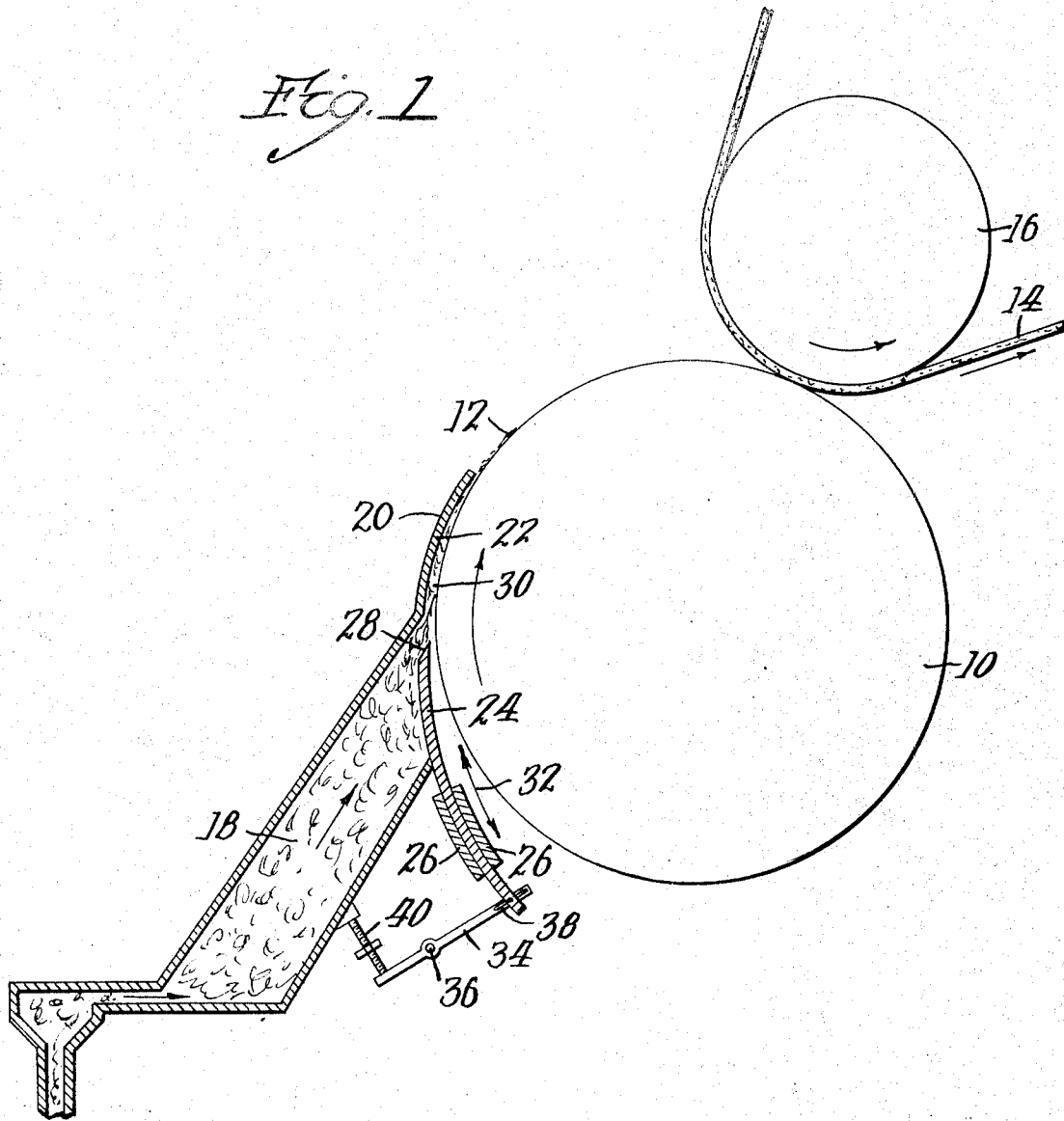
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3,730,831

ADJUSTABLE SLICE FOR CYLINDRICAL ROLL FORMER

Filed Dec. 1, 1970

2 Sheets-Sheet 1



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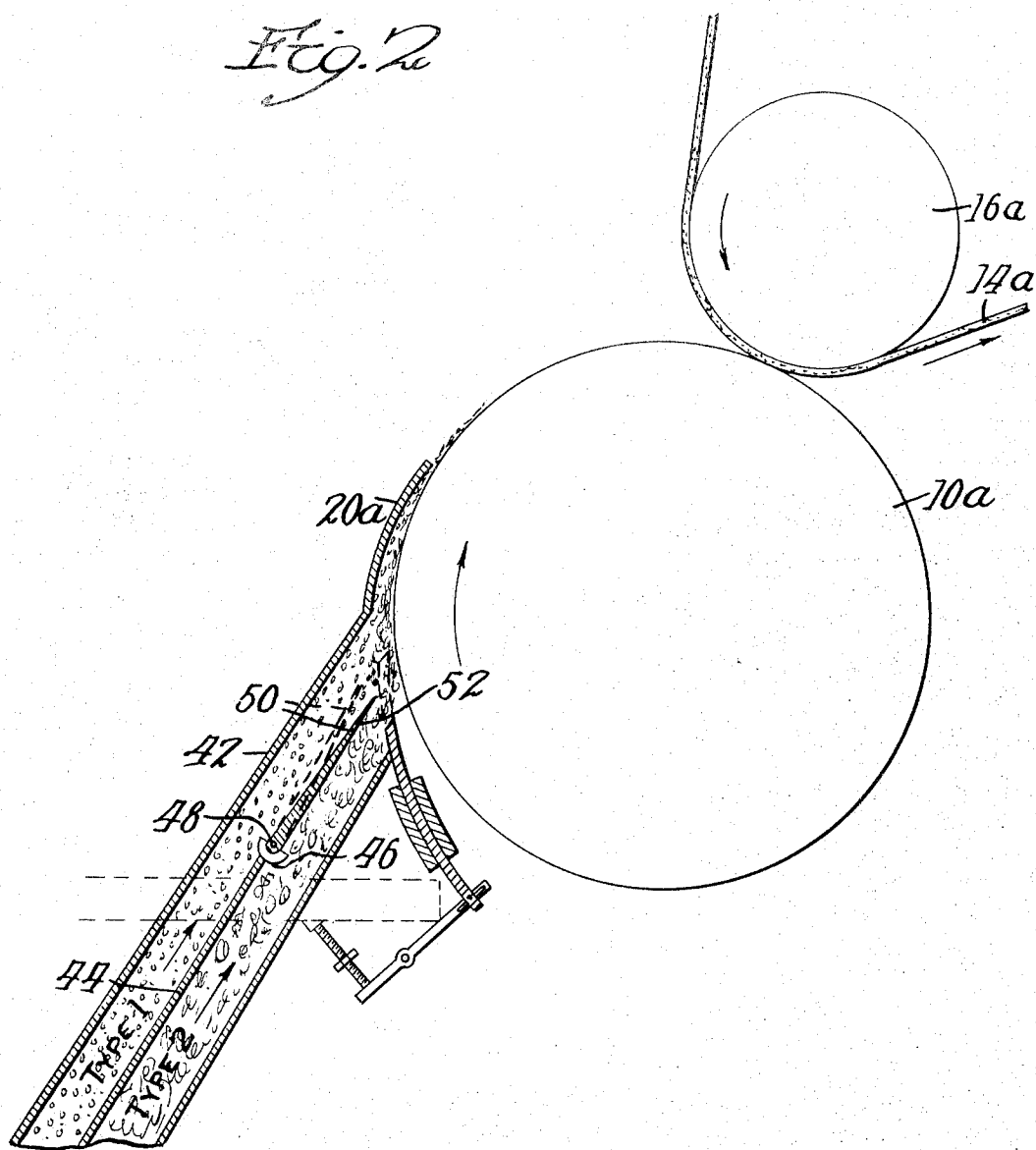
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Fig. 2



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ADJUSTABLE SLICE FOR CYLINDRICAL ROLL FORMER

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5 Claims

ABSTRACT OF THE DISCLOSURE

In a cylindrical roll paper forming machine, a generally fixed upper apron former in gradually approaching association with respect to the surface of the roll, in combination with a lower slice lip member between the apron former and the roll, said slice lip member being longitudinally adjustable toward and from the apron former on an arc, selectively increasing or decreasing the size of the throat.

The same construction including a pair of separate stock feeding conduits for feeding stocks of different types to the roll, and a free moving, free-ended paddle-like member having its free end adjacent the adjustable slice member, and automatically conforming to the slice adjustment to provide for applying a uniform dual layer of different types of stock onto the roll regardless of the adjustment of the slice member.

BACKGROUND OF THE INVENTION

Cylindrical roll paper forming machines are well known in the art but they have certain limitations and one of these is the means for adjusting the slice for predetermining the amount or thickness of the stock to be deposited on the roll. Also so far as is known, there is no provision in the prior art in machines of this nature for adjustably applying in superposed or laminate condition a plurality of types of stock for making paper having side surfaces of different characteristics; and it is the principal object of the present invention to provide for an easily adjusted slice and in addition thereto a means for automatically compensating for this adjustment in the provision of stocks of different types in superposed condition to the forming roll.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagrammatic view which illustrates the construction and operation of the novel adjustable slice, and

FIG. 2 is a similar view showing the adjustable slice including the compensating control for stocks of different types.

PREFERRED EMBODIMENTS OF THE INVENTION

Referring to FIG. 1 the roll former is shown at 10. This roll is generally conventional and is provided with a screen through which the white water passes to a vacuum or suction means. The roll rotates in the direction of the arrow applied thereto and the web is formed thereon as in the area at 12 being taken off on the felt 14 at the couch 16 as will be well understood by those skilled in the art.

There is a passage or throat generally indicated at 18, the stock passing therethrough in the direction of the arrows applied thereto to the upper apron former generally indicated at 20. This apron former may take many different forms but in general it has a curved face 22 which gradually approaches the surface of the roll 10 to form the paper in the adjacent areas.

The reference character 24 indicates a curved lower slice lip member which is adjustably guided by curved runners or guideways generally indicated at 26, 26. The slice lip 24 has a beveled leading edge 28 which by the position of the slice lip controls the amount of stock

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applied to the roll in the area at 30. I.e., the distance between the leading edge at 28 and the apron former forms an adjustable gap extending across the width of the roll providing for the amount of stock which is desired to be applied to the roll. The slice lip 24 is adjustable along a curve in the direction of the double arrow 32, and the leading edge 28 is adjusted in a direction toward both roll 10 and upper apron former as the slice lip 24 is moved upwardly. As shown, the slice lip is formed on the arc of a circle whose axis is offset from the axis of the roll, and this results in a gradual approach of the edge 28 to the roll as the slice lip is moved upwards.

Any means may be provided for adjusting the slice lip 24 and holding the same in its adjusted position as for instance by means of a lever 34 pivoted at 36 and having a loose connection 38 with the lower end of the slice. This lever may be pivoted in either direction to accomplish the adjustment as for instance by means of an adjusting member 40 or some other means under control of the operator; or it may even be motor operated under the control of the operator.

It will be seen that this adjustment can be made even with the machine running if this should be desired to be done but in any event the gap between the apron former and the lip slice is easily controlled so as to in turn control the amount of stock fed along the conduit or stock feed supply at 18 and this in turn adjusts the thickness of the web produced.

Referring now to FIG. 2 in general similar objects are similarly labeled as for instance the roll is indicated at 10a, the felt at 14a, the couch at 16a, and the upper apron former at 20a. In this case the adjustable slice lip is the same as before and the respective numerals are applied thereto with the lower case a applied. However the stock feed supply is different and in this case is provided by an enclosure 42 which has a central partition 44 therein, it being understood that the stock feed supply extends across the width of the machine. The central partition terminates at 46 and mounted on a pivot at 48 is a free-ended paddle 50, the free end being indicated at 52. As shown, stocks of different types flow through the two passages, one at the left of the partition 44 and the other at the right side thereof. These stock types may be of widely different characters depending upon the kind of paper that is being made as will be understood by those skilled in the art.

Assuming that the slice lip is adjusted from its solid line position in FIG. 2 to its dotted line position, and the pressure on the stock is as before, the stock type 2 tends to be compressed and this automatically moves the paddle 50 in a counterclockwise direction, thus automatically swinging it as indicated from the solid line position of the paddle to the dotted line position thereof.

This has the effect of restricting the stock flow of type 2 and the paddle has the effect at the opposite side thereof of restricting the flow of stock type 1. Merely by adjusting the slice lip, the amount of stock fed, both type one and type two, is correspondingly adjusted and the relative proportions of the stocks applied to the roll are the same as before.

It will be seen that in both FIG. 1 and FIG. 2, the member 20 or 20a and the slice 24 and 24a are arcuate and in general arranged tangentially relative to the roll surface.

I claim:

1. In a cylindrical roll forming machine, the combination of a forming roll, an upper apron former operatively associated therewith, and a lower slice lip located between the apron former and the roll, and means to move the slice lip to adjust it generally longitudinally, and means guiding the slice lip in its adjustment in general toward and away from the apron former as well as at

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the same time toward and away from the surface of the roll, and means defining a passage connected to the upper apron and lower slice lip for supplying a stock stream to the forming roll, and a free-ended paddle freely mounted on a pivot, said pivot axis being generally parallel to the axis of the roll, said paddle having its free end adjacent a free end of the slice lip, said paddle being located in the stock supply stream so that stock flows past it at each side thereof past the upper apron and the lower slice lip to the forming roll, whereby adjustment of the slice lip causes the paddle to self-adjust to the stock flow.

2. The cylindrical roll forming machine of claim 1 wherein said slice lip is formed on an arc of a circle whose general center is offset from the center of the roll, said slice lip having a leading end adjustable with the slice lip as the latter is adjusted toward and away from the apron former and also toward and away from the surface of the roll, the slice lip guiding means comprising an arcuate guideway maintaining said slice on an arcuate path during its adjustment.

3. The cylindrical roll forming machine of claim 1 wherein said slice lip moving means includes means for holding it in its adjusted position.

4. The cylindrical roll forming machine of claim 1 including a partition connected to the pivot upstream thereof dividing the stock supply stream into a plurality of passages for accommodating and supplying stocks of different type to said roll.

5. The cylindrical roll forming machine of claim 1

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including a partition connected to the pivot upstream thereof dividing the stock supply stream into a plurality of passages for accommodating and supplying stocks of different types to said roll wherein adjustment of the slice lip toward and away from the stock apron and the roll provides means effecting adjustment of the paddle toward and away from the apron former and the slice lip, adjusting the amount of the stocks of the different types proportionally in their application to the roll.

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