May 24, 1932. A. B. SAUNDERS 1,859,986

CARDBOARD MACHINE

Filed March 3, 1930

Fig. 1.

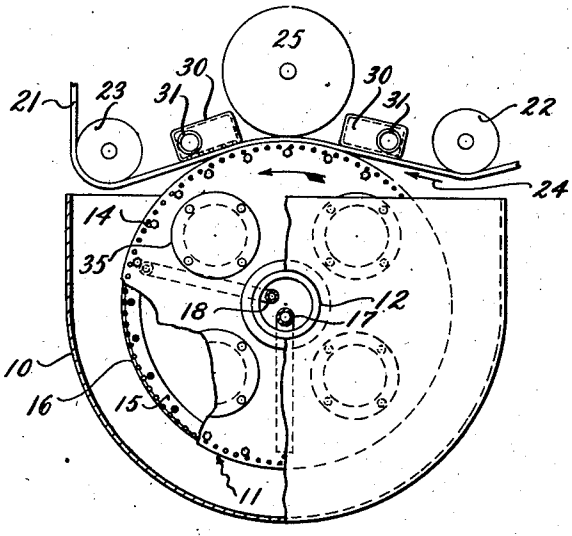
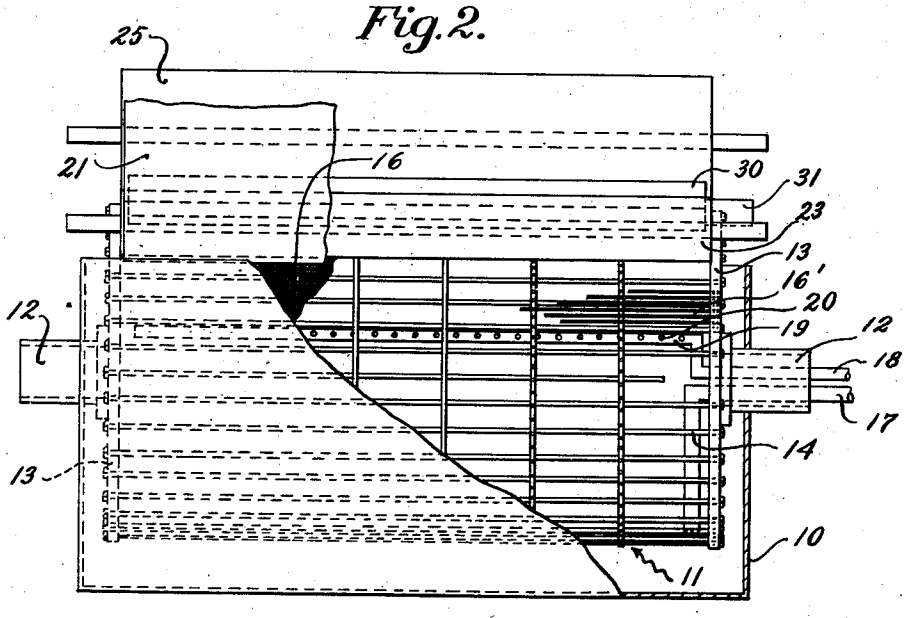


Fig. 2.



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UNITED STATES PATENT OFFICE

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CARDBOARD MACHINE

Application filed March 3, 1930. Serial No. 432,625.

The object of this invention is to provide in a cardboard machine the combination of the screen roll with a vacuum box and further to provide a screen roll of improved construction and means for clearing the surface of the roll from the stock without the necessity of dismantling the machine or even stopping its operation.

In the manufacture of sheets or shingles from asbestos and cement mixed in the form of pulp, it is the general practice to supply this pulp in fluid condition to a cardboard machine from the vat of which the stock is removed in the form of a continuous film or strip by means of a screen roll, such stock then being transferred to an endless foraminous carrier band usually of felt.

A cardboard machine embodying this invention is provided with one or more vacuum boxes so located with reference to the screen roll that suction is exerted both for the purpose of facilitating the transfer of the stock from the roll to the band and also for extracting a portion of the water from the stock as it travels with the band. Moreover the screen roll consists of a plurality of spaced rods forming the surface on which the stock is carried out of the vat and in addition is provided with means for clearing the surface of the roll from the stock without the necessity of dismantling the machine or interfering with its normal operation.

One embodiment of this invention is described in the following specification and set forth in the accompanying drawings, in which;

Fig. 1 is an end elevation with parts broken away of a cardboard machine embodying this invention; and

Fig. 2 is a similar side elevation of such a machine.

Mounted for rotation within a vat 10 of the cardboard machine is a screen roll 11 provided at each end with trunnions 12 by which the roll is suitably supported in bearings, not shown. The end walls 13 of the roll, which carry the trunnions 12, are rigidly united by a plurality of tie rods 14 preferably arranged in a circle, as shown in Fig. 1. In addition to the end walls 13 the screen roll is also provided with a plurality of annular supporting bands 15. The tie rods 14 pass through the bands 15 and secure them in position. The outer surface of the roll is formed by a screen 16 supported upon a plurality of rods 16′ spaced closely together and carried by the end walls 13. The bands 15 are provided with notches or pockets on their periphery in which the rods 16′ rest and are supported.

For the purpose of removing from the vat 10 the water which has passed through the outer surface of the screen roll, a pipe 17 is provided which is connected to a pump or other source of vacuum. This pipe enters through one of the trunnions 12 and terminates at a point as near the bottom of the screen roll as is possible, allowing clearance for the tie rods 14. Extending through the trunnion is a second pipe 18 which terminates in a section 19 extended longitudinally along the roll and provided with a series of apertures 20 at the outer surface. Through the pipe 18 and section 19, may be introduced water or air under pressure by which pieces of stock in the mesh of the screen 16 of the roll may be removed and returned to the mixture in the vat, either continuously or as occasion arises.

Passing over the vat 10 in contact with the roll 11 is a foraminous band 21 usually of felt, suitably held in the proper position by idler rolls 22, 23. This band is caused to travel in the direction designated by the arrow 24 through the application of any suitable power means. A variable pressure roller 25 or the like presses the band 21 into contact with the stock picked up on the outer surface of the roll 11. In order to ensure that the stock is transferred to the surface of the band 21 one or more vacuum boxes 30 are provided, the bottoms of which are perforated, as shown in Fig. 1, so that the suction created in each box 30 through a pipe 31 acts through the felt band upon the stock and draws it from the roll 11 to the band 21. It will be noted that the box 30 shown in Fig. 1 at the left of the roller 25 extends across the band 21 and acts partially through the band 21 and the screen roll 11 and partially

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through the band 21 alone. The suction exerted by the vacuum box upon the stock and the band alone draws the excess water from the stock and band, at the same time ensuring the contact of the stock with the band 21 and further compacting it into a firm strip which can be handled easily during its further treatment in the manufacture of shingles or sheets. The end walls 13 of the screen cylinder are provided with covers 35 bolted or otherwise removably secured thereto and closing openings through which access to the interior of the roll 11 may be had whenever required.

The vacuum box 30 at the right of the roller 25 is located similarly to the one just described. The suction created acts to remove any moisture that may be present in the band 21 as it approaches the screen roll and also to facilitate the transfer of the stock to the band. This box may be omitted if desired but it has been found to be of advantage under certain conditions.

The pipe 18 and its section 19 are here shown as of a definite length and size. It is however obvious that they could be made adjustable in part or of any desired dimensions.

I claim:

1. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band to which the stock is transferred from the roll a roller for pressing the band into contact with the stock on the screen roll and subsequently acting vacuum means for facilitating the transfer of the stock from the roll to the band.

2. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band to which the stock is transferred from the roll a roller for pressing the band into contact with the stock on the screen roll and subsequently acting vacuum means for facilitating the transfer of the stock from the roll to the band and for extracting moisture from the stock and band.

3. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band to which the stock is transferred from the roll, a presser roll and vacuum means at either side thereof for assisting such transfer and means for removing from the surface of the roll stock not transferred to the band.

4. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band to which the stock is transferred from the roll a presser roll and vacuum means at either side thereof for assisting such transfer and fluid pressure means located within the roll and acting upon the surface thereof for removing from that surface stock not transferred to the band.

5. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band to which the stock is transferred from the roll a presser roll and vacuum means at either side thereof for assisting such transfer and a pipe located within said roll adjacent the inner face of the outer surface and provided with perforations through which perforations fluid pressure may be exerted through the outer surface of the roll against stock not transferred to the band to remove it from that surface.

6. In a cardboard machine a screen roll comprising end walls, annular bands between said walls, tie rods positioning said walls and bands, a plurality of spaced parallel rods supported by the walls and bands and a screen resting on these rods which forms the surface of the roll between the walls.

7. In a cardboard machine a screen roll comprising end walls, annular bands between said walls, tie rods positioning said walls and bands, a plurality of spaced parallel rods supported by the walls and bands and a screen resting on these rods which forms an annular surface between the walls.

8. In a cardboard machine a screen roll comprising end walls, hollow trunnions carried thereby and by which the roll is supported, annular bands between said walls, tie rods positioning said walls and bands a plurality of spaced parallel rods supported by the walls, a screen resting on these last named rods which forms the surface of the roll between the walls, and a pipe entering the interior of the roll through a trunnion.

9. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band fed to said roll and to which the stock is transferred therefrom and vacuum means acting upon the band in advance of its arrival at the roll to extract moisture therefrom.

10. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band fed to said roll and to which the stock is transferred therefrom and vacuum means acting upon the band in advance of its arrival at the roll to extract moisture therefrom, and in addition acting through the band upon the stock on the roll for facilitating the transfer of the stock to the band.

11. A cardboard machine comprising in combination a vat adapted to contain pulp, a screen roll rotatable in the vat and adapted to pick up stock therefrom, a band fed to said roll and to which the stock is trans-

ferred therefrom, a presser roller by which the band is held in contact with the roll and vacuum means acting upon the band in advance of its arrival at the roll and upon its departure therefrom.

Signed by me at Nashua, N. H., this seventeenth day of February, 1930.

ARTHUR B. SAUNDERS.

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