July 29, 1930. A. T. YODER 1,771,600

ADJUSTABLE MAKING BOARD AND FLOW DEFLECTOR

Filed June 8, 1928 2 Sheets-Sheet 1

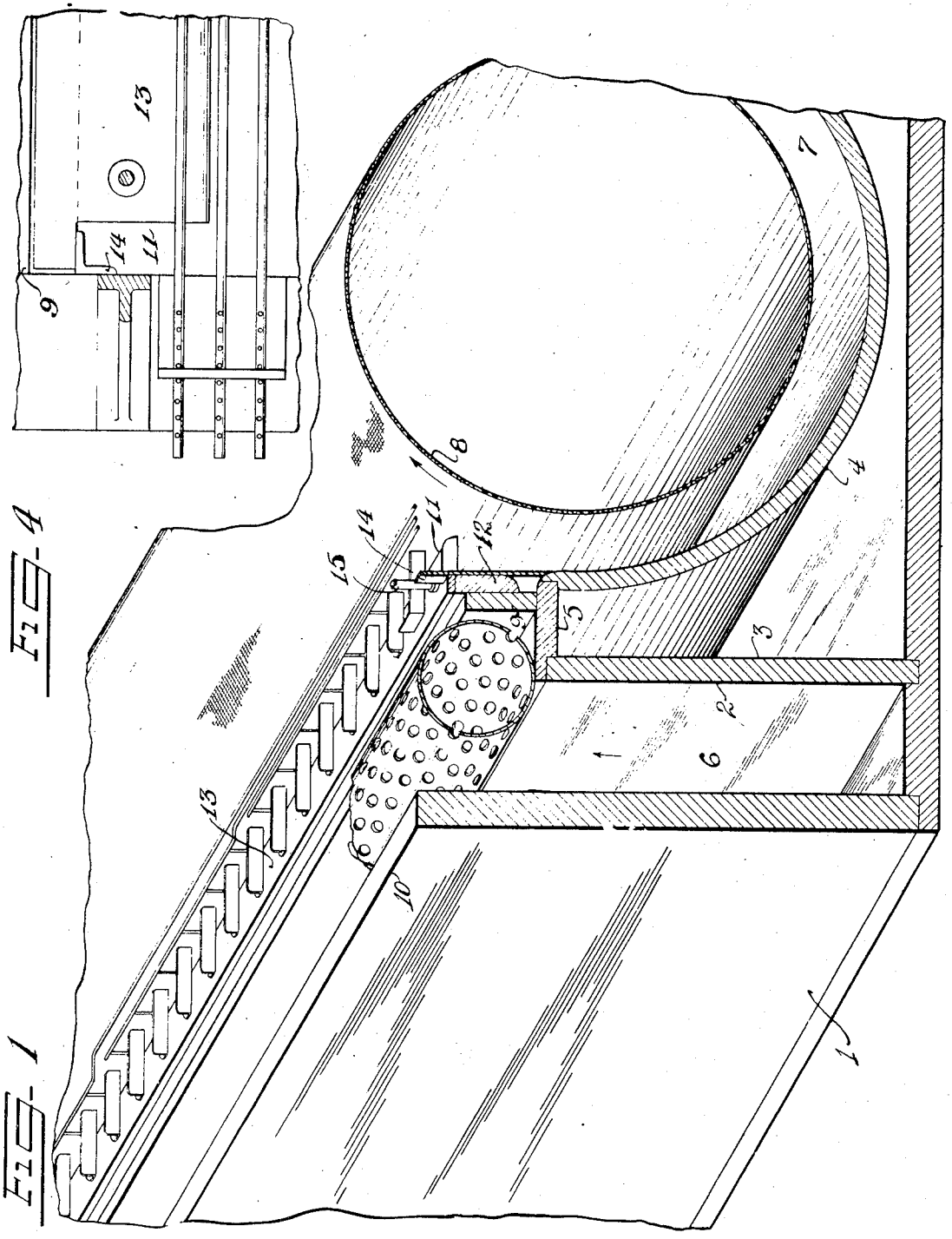



Fig. 4

Fig. 1

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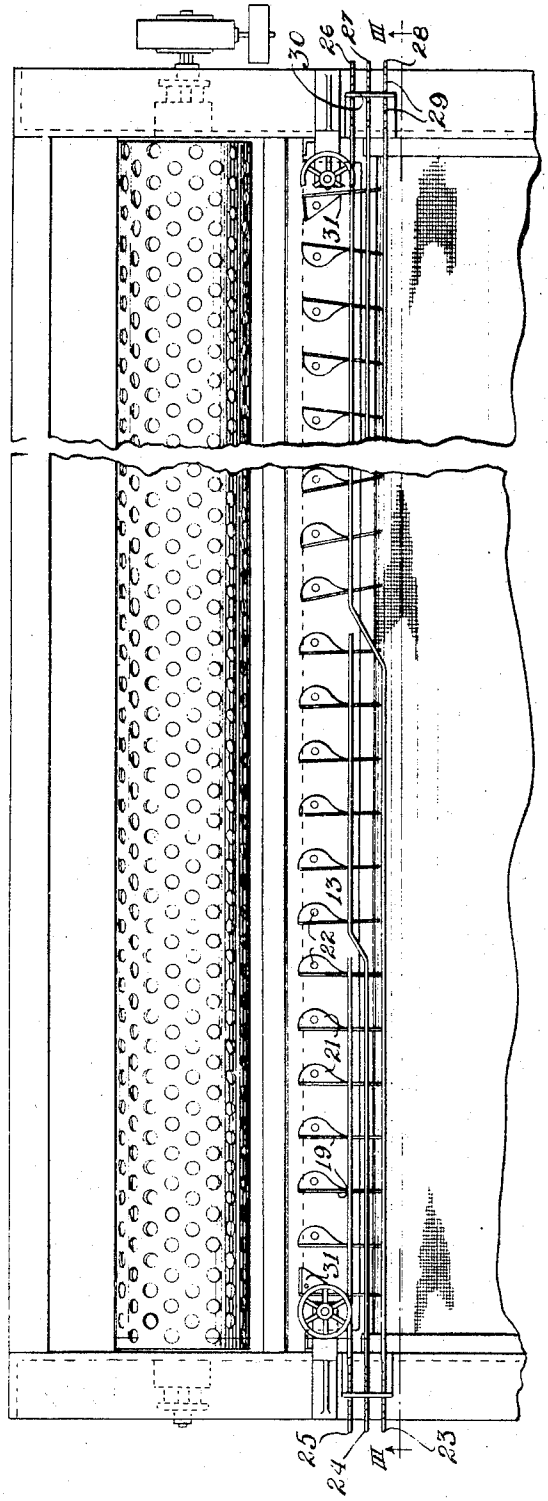



Fig. 2

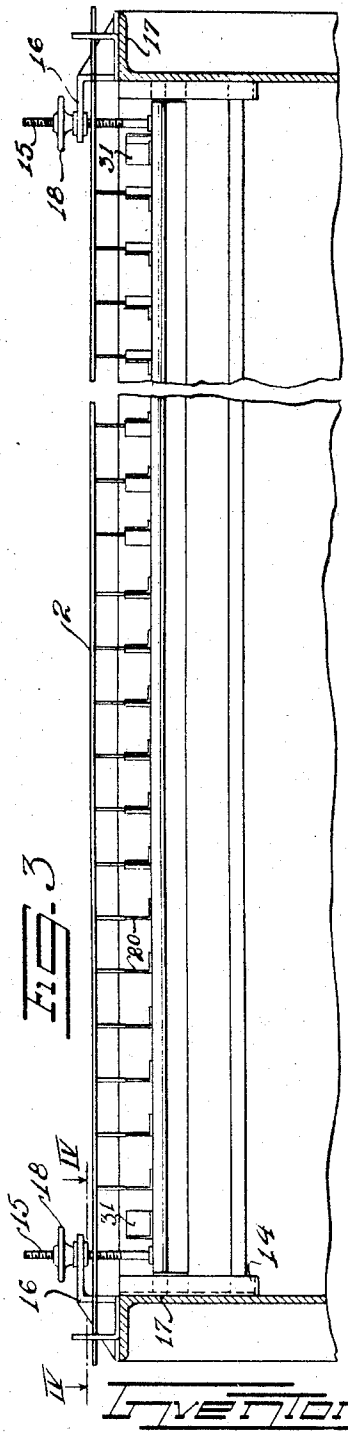



Fig. 3

Inventor

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By Charles W. Hills Attys

Patented July 29, 1930

1,771,600

# UNITED STATES PATENT OFFICE

ARTHUR T. YODER, OF ONTONAGON, MICHIGAN

## ADJUSTABLE MAKING BOARD AND FLOW DEFLECTOR

Application filed June 8, 1928. Serial No. 283,897.

This invention relates to an adjustable making board and flow deflector for use on paper machines. Heretofore devices have been used more particularly in connection with Fourdrinier paper machines for controlling the flow of stock under the web forming mechanism to prevent eddies of stock and consequent irregularities in the formation of the web.

The present invention, while applicable to Fourdrinier paper machines, is peculiarly adapted for use on cylinder machines for the purpose of guiding and equalizing the flow of stock to the cylinder mould so that the web formation may be free of variation in its way across the machine direction.

It is therefore an object of this invention to provide a making board and flow deflectors for use on paper machines in preventing the formation of eddy currents in the flow of stock to the web forming mechanism.

It is a further object of this invention to provide a vertically adjustable making board and angularly adjustable flow deflectors for association with the making board to improve the web formation on paper machines and more particularly on cylinder machines.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is an isometric end sectional view of a cylinder vat provided with a making board and flow deflectors of my invention;

Figure 2 is a broken fragmentary top plan view of the same;

Figure 3 is a sectional view taken on line III—III of Figure 2; and

Figure 4 is a fragmentary sectional view taken on line IV—IV of Figure 3.

The reference numeral 1 indicates as a whole a cylinder vat of a type similar to that in general use with cylinder machines. Said vat 1 is divided by means of a partition 2, comprising a vertical wall 3, a cylindrical wall 4 and a connecting horizontal wall 5, into a stock flow chamber 6 and a vat 7 in which the cylinder mould 8 is adapted to be rotatably mounted. Said cylinder mould 8 is of the usual standard construction and operates in a well-known manner to pick up a web of stock during its revolution.

A vertical baffle 9 is mounted upon the horizontal wall 5 of the partition 2 to extend completely across the vat. As described in my Patent No. 1,664,722, a silencer roll 10 is rotatably mounted behind the baffle 9 and directly above the horizontal wall 5 in such a position that all of the stock in its path from the flow box 6 to the cylinder mould is caused to flow through said silencer roll, which serves the well-known purpose of quieting the turbulence of the flow.

In accordance with the principles of this invention, a making board, designated as a whole by the reference numeral 11, comprising a vertical leg 12 and a horizontal portion 13, is adjustably mounted in front of the baffle 9 with the ends of said vertical leg 12 slidably fitted between angle iron guides 14 in the baffle 9 (Fig. 4). Means are provided for vertically adjusting the making board 11, comprising a pair of threaded bolts 15 secured at their lower extremities in the top portion 13 of said making board 11 adjacent the ends thereof and extending through brackets 16 mounted upon reinforcing beams 17 and provided with manually operable wheels 18. By proper rotation of wheels 18, the making board as a whole may be raised or lowered in the guideways formed between the angle irons 14 and the baffle 9. In this connection it should be noted that the vertical leg 12 of the making board 11 forms a continuation of the baffle 9 to raise or lower the height of the stock in the flow chamber 6.

A plurality of deflector plates 19 are mounted in closely spaced relation throughout the length of the making board 11 upon the horizontal portion 13 thereof. Each of said deflector plates 19 comprises a vertical portion 20 and an integral horizontal portion 21 formed at the rear end thereof. A pin or bolt 22 pivotally secures each of said deflector plates 19 to said making board top portion 13 through the horizontal portions 21 of said

deflector plates. The deflector plates 19 are arranged to be controlled as to angular adjustment in groups or series by means of control rods 23, 24 and 25 extending inwardly from one end of the vat 1 and control rods 26, 27 and 28 extending inwardly from the other end wall of the vat 1. The ends of each of said control rods are provided with adjusting pins 29 adapted to cooperate with a horizontal rod 30 to hold the control rods in adjusted position.

At each end of the horizontal portion 13 of the making board 11 are independently mounted for angular adjustment corner deflectors 31.

In the operation of the cylinder vat 1, the stock is admitted near the bottom of the flow chamber 6 and flows upwardly through the openings in the silencer roll 10 and over the making board 11 into the vat 7 in which the cylinder mould 8 revolves, the direction of rotation of said cylinder mould 8 being indicated by arrows on Figure 1. Each group of the deflector plates 19 can be moved or adjusted within a 90° angle to direct or deflect the passage of the stock to the cylinder mould.

Angular adjustment of the deflector plates is varied by the machine tender until an even formation of web across the cylinder mould is obtained and the deflector plates are then set in this position.

The deflectors tend to guide and equalize the suction currents within the cylinder mould vat 7 so that the web at the last stage of its formation is free from harmful eddy currents, which so frequently cause heavy and unevenly formed streaks resulting in excessive variation in the weight of the web across the machine.

The flow deflectors and controls are all mounted on the top side of the making board with the hand adjusting wheels in readily accessible position. The adjusting screws provided at each end of the making board permit the making board to be regulated as a unit up or down to the level at which best formation of the web occurs. In a sense, the adjustable making board and sectionally controlled deflectors act as an inverted slice with the various sluices in group control.

It has been found that a cylinder paper machine equipped with a silencer roll, making board and flow deflectors of my invention can be operated with greater efficiency and with increased production of a better formed sheet than in the case of a cylinder machine not so equipped.

It will be understood, however, that my invention is also applicable to Fourdrinier machines, in which case the silencer roll and making board with associated flow deflectors are placed in the head box directly behind slices where slices are used.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a cylinder vat having a stock flow chamber and a chamber for the cylinder mould with a baffle therebetween, a making board associated with said baffle and vertically adjustable relative to said baffle and means mounted on said board and extending into the flow of stock to said cylinder mould for influencing said flow of stock at different points along the board.

2. In a cylinder vat, the combination with a silencer roll of a vertically adjustable making board over which stock from said roll must pass on its way to the cylinder mould and means mounted on said board for influencing said flow of stock.

3. In a head vat of a cylinder paper machine, a silencer roll and a making board positioned in the path of the flow of stock from said roll, means on said making board for influencing the direction of said stock flow, and means for adjusting the height of said making board.

4. In a cylinder vat of a cylinder paper machine, a vertical baffle dividing the stock flow chamber and the chamber in which the cylinder mould is mounted, a making board adjacent said baffle and vertically adjustable relative thereto and deflector plates capable of angular adjustment mounted on said making board.

5. In a cylinder vat of a cylinder paper machine, a vertical baffle dividing the stock flow chamber and the chamber in which the cylinder mould is mounted, a making board adjacent said baffle and vertically adjustable relative thereto, deflector plates capable of angular adjustment mounted on said making board and means for controlling certain horizontally spaced groups of said deflector plates independently of others.

6. In a cylinder vat of a cylinder paper machine, a partition between the stock flow chamber and the chamber in which the cylinder mould is mounted, a making board having a vertical leg forming a continuation of said partition, deflector plates mounted upon the top face of said board and means for independently controlling horizontally spaced groups of said deflector plates.

7. In a cylinder vat of a cylinder paper machine, a partition between the stock flow chamber and the chamber in which the cylinder mould is mounted, a vertically adjustable making board having a vertical leg forming a continuation of said partition, deflector plates capable of angular adjustment mounted upon the top face of said board

and means for independently controlling groups of said deflector plates.

8. In a device of the class described, a making board, a plurality of angularly adjustable deflector plates mounted thereon and means for independently controlling horizontally spaced groups of said deflector plates.

In testimony whereof I have hereunto subscribed my name at Ontonagon, Ontonagon County, Michigan.

ARTHUR T. YODER.