Dec. 8, 1942. W. M. LEESON 2,304,735

PAPER MAKING APPARATUS

Filed Aug. 4, 1939

Fig. 3.

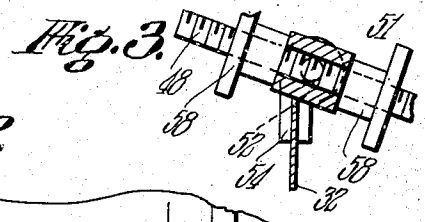


Fig. 2.

Fig. 1.

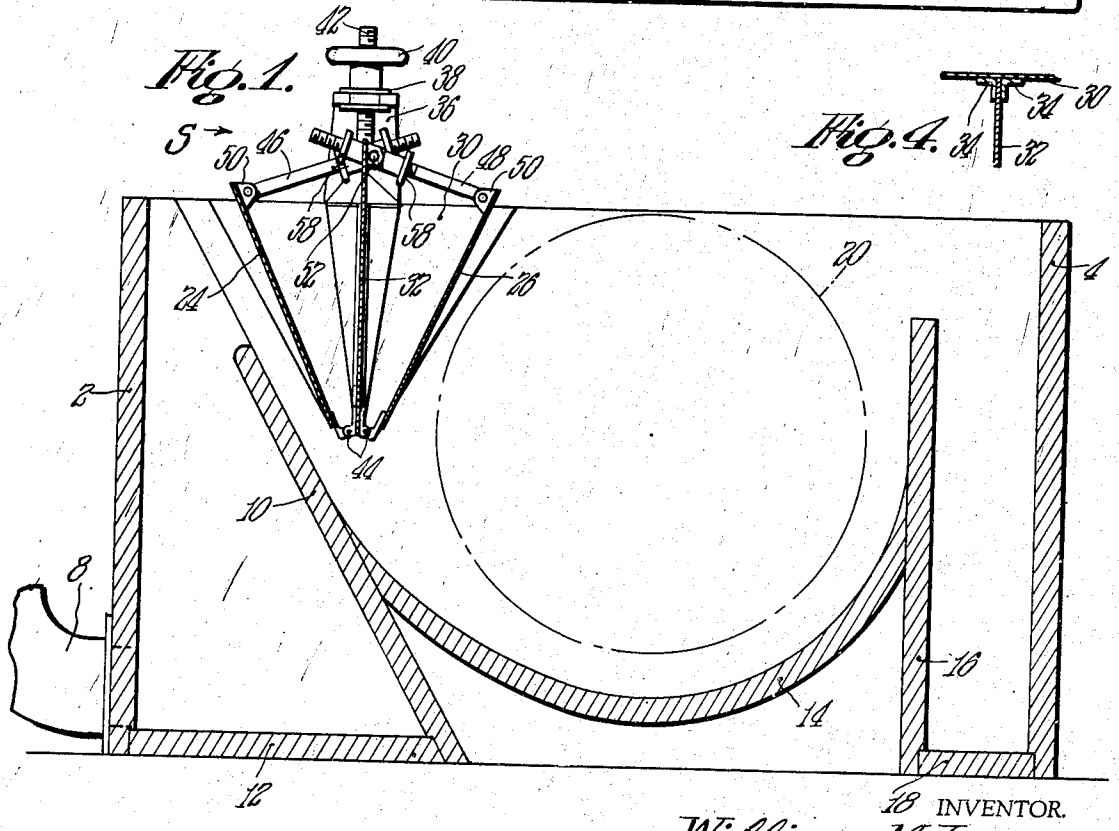


Fig. 4.

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PAPER MAKING APPARATUS

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2 Claims. (Cl. 92—43)

This invention relates to improvements in paper-making apparatus and is directed more particularly to improvements in novel slice apparatus for paper making machines of the cylinder type.

The principal objects of the invention are directed to a slice of novel form in combination with the vat and cylinder mold of a paper-making machine. The slice of the invention may be moved up and down relative to the cylinder mold and varied in width or made to assume various angular positions so as to obtain different various desired effects.

That is, the slice of the invention is so constructed and arranged that as a unit it may be moved up and down relative to an adjacent wall of the vat and cylinder mold so as to vary its position while at the same time its side walls or members are independently movable relative to one another and to the wall and cylinder mold to bring about various conditions.

By means of the novel apparatus, it is possible to vary the space between the walls of the slice and the vat wall and the cylinder mold so as to obtain various desired effects in the operation of the paper machine. It is possible to control the action or flow of the paper making material onto the cylinder mold so as to obtain the desired depositing of paper making fibers on the said mold and thereby to obtain the desired intermingling of the fibers.

The novel features of the invention are adapted for broad application, but are hereinafter disclosed in connection with the present preferred form of the invention. It will be understood that various changes and modifications may be made to adapt the slice mechanism of the invention to various paper making machines without departing from the spirit and scope of the invention.

In the drawing:

Fig. 1 is a transverse sectional elevational view through the vat of a paper making machine of the cylinder type and having the slice mechanism of the invention associated therewith;

Fig. 2 is a partial plan view of the vat shown in Fig. 1 and showing a portion of the slice mechanism associated therewith;

Fig. 3 is a partial sectional elevational view through the upper portion of the central member of the slice mechanism and showing the actuating means for the side members of the slice; and

Fig. 4 is a partial sectional plan view through the central member of the slice and guide means associated therewith.

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

Side walls of the vat of a cylinder type paper making machine are represented by 2 and 4 and one end wall thereof is represented by 6. The opposite end wall is similar to the wall shown but as it forms no part of the present invention it is not shown herein.

An inlet for the paper making material is represented by 8. A wall 10 disposed on an incline and extending between end walls 6 is connected to the wall 2 by a lower wall 12. A curving wall 14 extends between wall 10 and a vertically disposed wall 16 which extends between the end walls 6. A bottom wall 18 extends between the walls 4 and 16 and the outline of a rotatable cylinder mold is represented by dot-dash lines 20.

In the operation of the apparatus paper making material flows through inlet 8 into a chamber formed by walls 2, 10 and 12 and the end walls 6. In said chamber there may be baffles or other means to provide the desired turbulence and action of the paper making material which flows upwardly over the upper side of wall 10, and into the space formed by the walls 10, 14 and 16 and in which the cylinder mold 20 is rotating. Fibers of the paper making material are deposited on the foraminous surface carried by the mold 20 in the usual way to form a sheet or web of paper.

The slice mechanism of the invention is represented generally by S and it extends across the vat. The slice mechanism is generally V-shaped and it has outer and inner walls 24 and 26. The slice mechanism is movable up and down and its walls 24 and 26 are independently movable. The slice as a whole may be positioned as desired relative to the wall 10 and cylinder mold 20 while its walls 24 and 26 may be disposed relative thereto independently of one another. In this way the action or flow of the paper making material is controlled so that more or less thereof is caused to flow either upwardly or downwardly onto the mold.

That is, according to the general location of the slice and the angular position of the walls 24 and 26 relative to the wall 10 and the cylinder 20 more or less of the paper making material will be caused to take an upward or downward course as may be desired according to the particular type of paper being formed, charac-

teristics of the paper making material, speed of the mold and other conditions.

End members 30 are provided, one adjacent each end wall 6, and a center supporting wall 32 extends between the end members. Said wall is guided in some suitable manner for up and down movements. In the form of the invention shown such guides as 34 are provided for guiding the plate 32 but it may be guided in various ways.

Brackets 36 extend upwardly from each of the end wall members 6. In their upper ends nuts such as 38 are rotatable which are associated with hand wheels 40. Rods 42 in threaded engagement with the nuts 38 have their lower ends suitably secured to the center wall member 32.

As the hand wheels 40 are rotated in one direction or the other, the center wall 32 and thereby the slice mechanism is raised and lowered to position the slice as may be desired relative to the wall 10 and cylinder mold 20.

The lower ends of the outer and inner wall members 24 and 26 of the slice are preferably hingedly connected in some suitable way to the lower end of the center wall 32 as by hinges indicated by 44 so that said walls 24 and 26 may swing independently of one another towards and away from the center plate 32.

Rods 46 and 48 have their outer ends pivoted to brackets 50 which are fixed to the upper sides of the wall members 24 and 26, as shown. Bearings or guides 51 slidably receive the rods 46 and 48 and these guides carry pivots 52 that are journalled in brackets 54 associated with the upper side of the center plate 32. The parts described or some other suitable means permit the rods to assume various angular positions relative to center wall 32 so that the walls 24 and 26 may swing.

The upper ends of the rods 46 and 48 are threaded, as shown. Internally threaded members 56 and 58 at each side of each bearing or guide 51 threadedly engage the rods 46 and 48. By rotating the members 56 and 58 in one direction or the other, the rods 46 and 48 are moved through guides 51 to swing wall members 24 and 26 in and out so as to position said walls as may be desired relative to wall 2 and the cylinder mold 20. The members 56 and 58 not only facilitate movement of the rods 46 and 48 but serve as locking means to hold the said rods against movement.

If desired the lower ends of walls 24 and 26 may be more or less immovably fixed to the center plate 32 and be formed of such material that they may bend or flex so as to be movable into various relative positions in order to obtain the desired adjustment.

From the foregoing it will be observed that the slice mechanism is movable up and down so that its general position may be varied relative to the wall 10 and cylinder mold 20. Also as will be noted the side plate members are independently movable so that they may be positioned as may be desired relative to their respective wall 10 and mold 20.

While I have described the invention in great detail and with respect to the present preferred form thereof, it is not desired to be limited thereto since changes and modifications may be made therein without departing from the spirit and scope of the invention. The invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. In a cylinder mold paper making machine including a vat and slice mechanism, the improvement comprising, end brackets attached to the opposite end walls of the vat, vertically adjustable rods attached to said brackets, means for adjusting said rods, a centrally located support member vertically adjustable between said brackets and attached to the lower ends of said rods, side wall members on opposite sides of said support member, hinge means connecting the lower edge of said side walls to the lower edge of said support member, and independent adjusting means connecting the upper edge of said side wall members to the upper edge of said support member.

2. A slice mechanism for use between the cylinder mold and the vat walls of a cylinder mold paper making machine comprising in combination, end members for attaching to the end walls of the vat, a support member vertically adjustable between said end members, means for vertically adjusting said support member, plate-like side wall members on opposite sides of said support member, hinge means connecting the lower portions of said side wall members to the lower portions of said support member in the form of a V, and independent adjusting means connecting the upper portions of said side wall members to the upper portion of said support member.

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