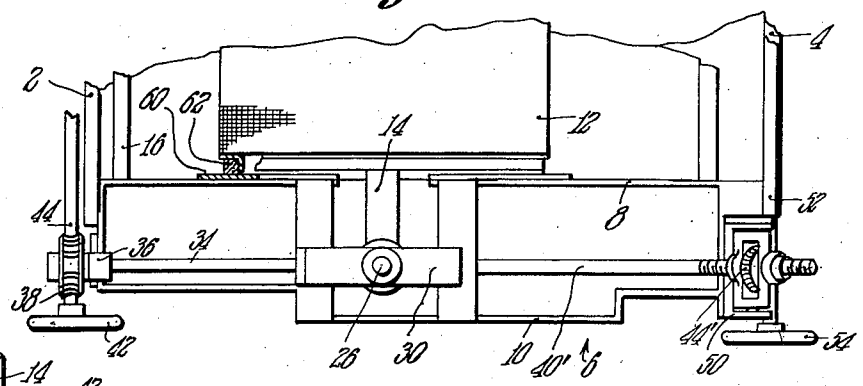
June 15, 1943. W. M. LEESON 2,321,830

PAPER MAKING APPARATUS

Filed Jan. 23, 1940

Fig. 1.



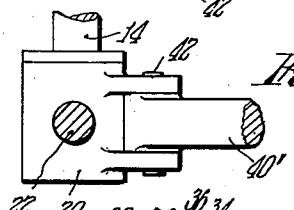
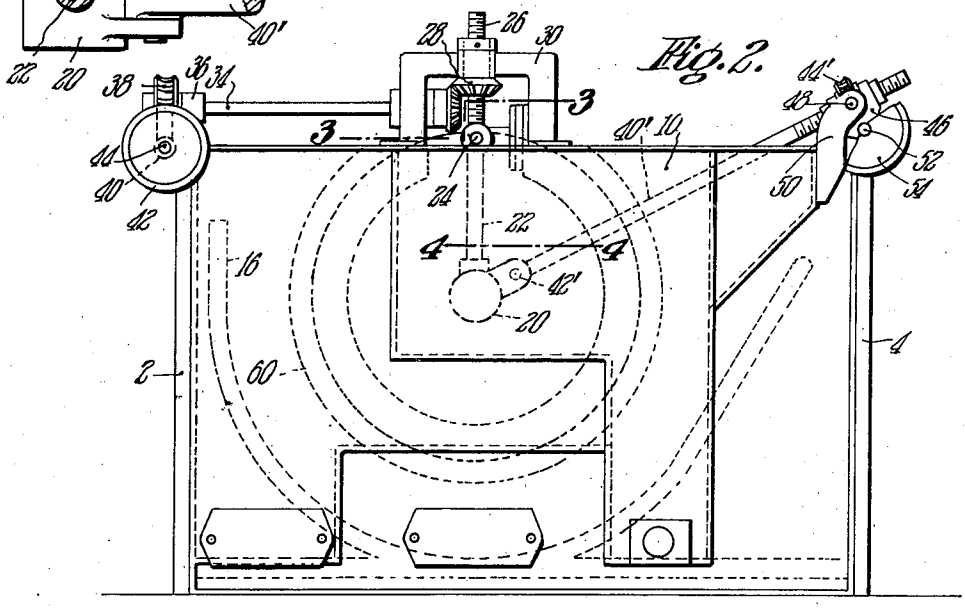


Fig. 4.

Fig. 2.



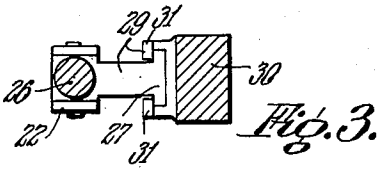


Fig. 3.

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Patented June 15, 1943 2,321,830

UNITED STATES PATENT OFFICE

2,321,830

PAPERMAKING APPARATUS

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Application January 23, 1940, Serial No. 315,267

2 Claims. (Cl. 92—43)

This invention relates to improvements in paper-making apparatus and is directed more particularly to an improved paper-making machine of the cylinder type.

The principal objects of the invention are directed to providing a paper-making apparatus which includes a cylinder mould disposed in a vat containing paper-making material and as a special feature the cylinder is adjustable relative to the walls of the vat so as to facilitate the meeting of the varying conditions and requirements in the manufacturing of paper.

In paper-making apparatuses of the type to which this invention relates, a cylinder or cylinder-mould rotates in a vat having walls and the cylinder is adapted to take on its foraminous surface the fibers of paper-making material which is introduced into the vat. The cylinder is so formed that the water which has been relieved of fibers may be discharged.

It has been found desirable in order to produce certain results in the manufacture of paper to have the walls of the vat in a certain relation relative to the cylinder mould. That is to say, it has been customary in order to produce a certain kind of paper to so rotate the cylinder relative to the vat and so arrange the apparatus that the wall or walls of the vat are so spaced from the cylinder mould as to provide or produce paper-making material of a certain desired consistency.

According to this invention, in order to attain certain predetermined results, the wall or walls of the vat may be of a certain shape and size and be located a certain desired distance from the periphery of the cylinder. To obtain other characteristics and results, the spaces between the cylinder and walls will be different, as well as the speed with which the cylinder is rotated.

As will appear, as contrasted with paper-making apparatus heretofore known where the spaces between the cylinder and the walls of the vat have been constant so that the characteristics of the paper-making material have consequently been limited to an objectionable extent, my apparatus is adjustable.

Various other novel features and advantages of the invention will be hereinafter more fully referred to in connection with the accompanying description of the invention, in the present preferred form thereof, reference being had to the accompanying drawing, wherein:

Fig. 1 is a partial plan view of one side of the apparatus of the invention;

Fig. 2 is a side elevational view of what is shown in Fig. 1 with parts in section for clearness;

Fig. 3 is a sectional plan view on the line 3—3 of Fig. 2; and

Fig. 4 is a sectional plan view on the line 4—4 of Fig. 2.

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

A vat has spaced forward and rear end walls 2 and 4 respectively. Side walls connect these end walls in vat-forming relation.

Only one side of the apparatus is shown in the drawing but it will be understood that the opposite side is substantially similar and therefore need not be described in detail.

The sides of the vat are formed to have spaced members which form chambers for the paper-making material and for the water which is discharged when the cylinder has taken on the fibers. In the form shown, this is accomplished by providing an inner side wall 8 and an outer side wall 10.

A rotatable cylinder is shown at 12 and this has a shaft 14 having its opposite ends extending out through the inner side walls 8. Within the vat there is a curved baffle-like wall, indicated by 16, which is spaced from the cylinder's periphery.

In practice the paper-making material flows into the chamber at one side of the vat and over the upper end of wall 16 into the space between it and the rotating cylinder. The latter takes on the fibers from the paper-making material, which consists largely of water and fibers, and the water is discharged from the end of the mould.

The ends of rotatable shaft 14 are journalled in bearing members such as 20 at opposite sides of the vat. It will be understood that there is similar mechanism at opposite sides of the vat but since only one side has been shown the following description will be with reference to but one side.

From bearing 20 there extends upwardly a vertical rod 22. The upper end of rod 22 has spaced ears between which is pivoted at 24 the lower end of a screw or threaded shaft 26.

The screw 26 is in threaded engagement with the hub of a gear 28 which is rotatable in a bracket 30 associated with the vat as shown in Fig. 2. A horizontal part 29 of member 22 has an end portion 27 guided for vertical movements in a guideway provided in bracket 30, such as formed by gibs 31 on said bracket and as shown more clearly in Fig. 3.

The gear **28** is in mesh with a gear **29** provided on a rotatable shaft **34** and said gear **29** is rotatable in bracket **30**. The forward end of said shaft **34** is journalled in a bearing **36** and has on its forward end a worm gear **38**.

In mesh with the worm gear is a worm **40** provided on the end of a shaft or rod **44** which extends transversely of the forward end of the apparatus. A hand-wheel **42** is preferably provided for rotating said rod.

It will be seen that as rod **40** is turned in one direction or the other it causes rod **22** to move up or down, by means of action through worm gear **38**, shaft **34** and its gear, gear **28**, and screw **26**. Movement upwardly or downwardly of rod **22**, of course, brings about similar movement of the cylinder relative to the vat's walls since rod **22** is directly connected to the cylinder's shaft **20**.

A rod **40'** has its lower end pivoted at **42'** to member **20** and its upper end is in threaded engagement with a worm gear **44'**. A bracket **50** is carried by the vat and it has spaced ears, as shown, between which are pivoted at **48** a bracket member **46**.

The latter member confines the worm gear **44'** and extending through its lower side is a transverse shaft **52**. Said shaft **52** is rotatable and has worms in operative engagement with worm gear **44'**.

Preferably, a manually-engageable hand-wheel **54** is provided on shaft **52** for rotating the same. Thus, it will be seen, as rod **52** is turned in one direction or the other, rod **40'** is moved to the right or left, through the worm gear mechanism, so that bearing **20** and the cylinder shaft **14** journalled therein is moved to the right or left.

In this way, the cylinder may be moved vertically as well as horizontally. Since the hub **46** is swingable, the rod **40'** may move in longitudinal planes as the member **20** is moved up and down.

To prevent paper-making material from passing out between the ends of the cylinder and the side walls and into the outlet chamber without first having contacted the cylinder's foraminous surface so that the latter may take on the fibers, I preferably provide a plate member **60** of greater diameter than the cylinder adjacent the wall **8** as shown. Also an annular packing such as is indicated by **62** may be provided.

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. The combination in paper-making apparatus of, a vat having front, rear and side walls and a curving wall between the lower portions of the side walls, brackets on the upper sides of the side walls, members movable up and down on said brackets and means for moving the same, rods with upper ends pivotally connected to said members having lower free ends, journal means at the free ends of said rods, a cylinder journalled at opposite ends in said journal means, and means connected to said journal means for swinging said rods and cylinder back and forth relative to said curving wall.

2. The combination in a paper making apparatus of, a vat having front, rear and side walls and a curving wall between the lower portions of the side walls, brackets on the upper sides of the side walls, members movable up and down on said brackets and means for moving the same, rods with upper ends pivotally connected to said members having lower free ends, journal means at the free ends of said rods, a cylinder journalled at opposite ends in said journal means, oscillatable brackets on said side walls, rods pivotally connected to said journal means having upper threaded ends slidable in the oscillatable brackets, and operating means engageable with said threaded ends of said rods to move the same in said brackets and thereby act on said journal means.

WILLIAM M. LEESON.