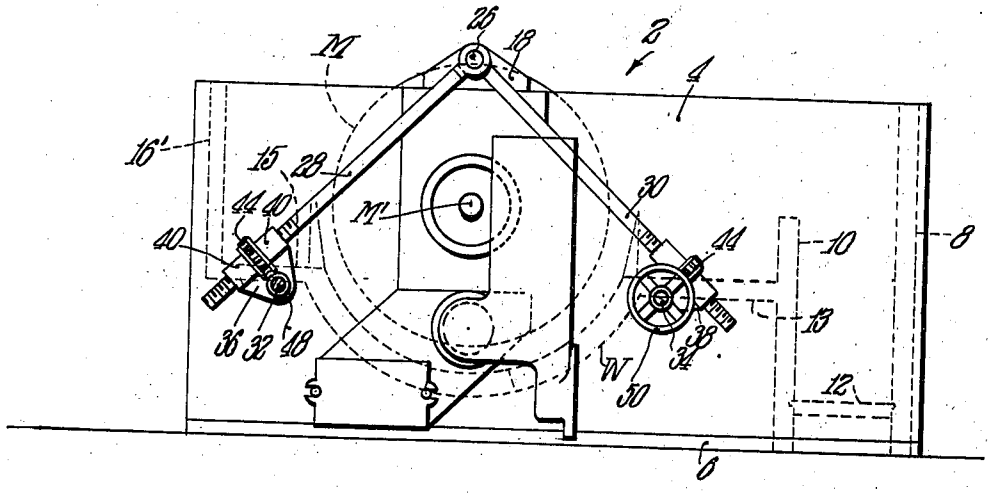
July 8, 1941. W. M. LEESON 2,248,906

PAPER-MAKING APPARATUS

Filed Oct. 3, 1938

Fig. 1.



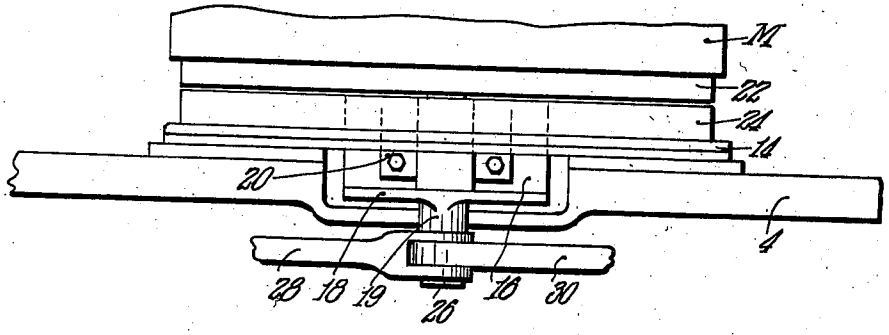


Fig. 2.

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PAPER-MAKING APPARATUS

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4 Claims. (Cl. 92—43)

This invention relates to improvements in paper-making apparatus and is directed more particularly to improvements in cylinder paper-making machines.

The principal objects of the invention are directed to the provision of paper-making apparatus wherein a cylinder mould is adjustable relative to the adjacent wall or walls of the vat in order to meet various conditions and requirements.

In paper-making apparatus of the type to which the invention relates, a cylinder mould rotates in a vat which is provided with a wall or walls adjacent the mould, there being a space between the mould and wall for paper-making material and the fibers of said material being taken on by the foraminous surfaces of the mould.

In order to produce certain results insofar as possible the wall or walls have been of certain contours and spaced certain distances from the cylinder mould. That is to say, when it is desired to produce a certain kind of paper it has been customary to locate the wall or walls adjacent the cylinder mould and so form the vat as to provide a certain space between the mould and wall and to use paper-making material of certain consistency and rotate the mould in a certain way.

In other words, for certain predetermined results the wall is of a certain shape and a certain distance from the cylinder mould, the characteristics of the paper-making material for the particular result are more or less definite, and the speed of the cylinder is within a certain range.

The space between the cylinder and wall is, of course, constant and therefore an important factor and the characteristics of the paper-making material, speed of the cylinder, and other factors must consequently be controlled within relatively narrow limits.

Where it is desired or necessary to produce the same kind of paper continuously it is possible to produce reasonably good results but it is difficult, and some times impossible, to vary all of the factors to produce equally good results where it is desired to produce other kinds of paper because of the definite relationship of the cylinder and wall. To produce a certain result with paper-making material of certain characteristics, the cylinder and wall must have a certain relationship; to produce another result with the same or different paper-making material the cylinder and wall must have a different relationship. But since this relationship is essentially constant it is impossible at times to use the material desired so that it becomes necessary, in order to produce the said other result, to vary the type of paper-making material and/or speed of the cylinder.

According to this invention, instead of varying the numerous factors in order to produce a certain result or a certain kind of paper or instead of attempting to make the various factors accommodate themselves to the definite relationship of the cylinder mould and adjacent wall, there is provided a wall or walls adjacent the cylinder which are of such shape as to suffice for general purposes and the cylinder is adjustable relative to the wall or walls. More specifically the cylinder mould is movable back and forth and up and down relative to the vat and the wall or walls adjacent thereto so as to provide a varying space between the cylinder mould and wall.

It is possible by means of this invention to set the cylinder mould to provide either a relatively small or great space between it and the adjacent wall and the said space may be of greater width at its upper than at its lower side or it may have constant width. Or the cylinder may be moved to provide spaces between it and adjacent walls which are similar to, or are relatively larger or smaller than, one another.

It being possible to vary the space between the cylinder and wall or walls, the varying of results within wide limits is facilitated. That is to say, with a certain result to be obtained by the use of a certain paper-making material, a certain operating speed, etc., the mould may be located with reference to the adjacent wall or walls to provide such a space as will operate to the best advantage with the other factors to give the desired result. For instance, to produce a certain kind of paper with a paper-making material having certain characteristics the space between the cylinder and wall may need to have a certain form while to produce another kind of paper with the same or another type of paper-making material the space may need to be different.

The adjustability of the cylinder relative to the adjacent wall or walls therefore makes it possible to produce the desired results by the use of paper-making material best suited for those results. The paper-making apparatus is variable to accommodate the desired results and conditions rather than conditions being varied to suit the apparatus, all to the end that not only is economy and efficiency in operation made possible but the results are within control and uniform papers are produced.

The invention may be practiced in various ways but for purposes of disclosure the following description refers to the accompanying drawing wherein:

Fig. 1 is a side elevational view of paper-making apparatus embodying the novel features of the invention; and

Fig. 2 is an enlarged partial plan view of one side of the apparatus shown in Fig. 1, to explain the novel features of the invention.

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

So much of a paper-making apparatus is shown and described as is necessary for the purposes of disclosure and it will therefore be appreciated that the other necessary parts may be used in association therewith.

The paper-making apparatus of the invention generally includes a vat 2 in which is rotatable a cylinder mould M.

The vat has front and rear walls such as 4 which may be of metal or the like and there is a bottom wall 6. A transverse wall 8 extends between the members 4 as does a vertical wall 10.

These walls 8 and 10 are arranged to provide a chamber into which paper-making material is admitted and which may pass up and over the vertical wall 10. A curved wall W which is more or less semi-circular as shown is provided between the walls 4 and it is relative to this wall W that the cylinder mould is movable.

A bottom wall 12 extends between walls 8 and 10 and a horizontal wall 13 extends between wall 10 and wall W. A horizontal wall 15 extends between wall W and a wall 16'. A plate 14 adjacent the inner side of each of the walls 4 is slidable thereon in all directions at right angles relative to the axis of the cylinder mould.

Each plate 14 has a horizontally disposed ledge or shelf 16 and an upwardly extending part 18. A bearing on each of the shelf parts 16 of the plates 14 and indicated by 20 rotatably receives a shaft M' of the cylinder mould whereby the mould is rotatably supported by said plates 14.

Annular flanges 22 and 24 of the mould and of the plate 14 respectively are provided on which a sealing ring or strap may be disposed. Hubs 19 of the plates 14 have pivoted thereto at 26 the upper ends of rods 28 and 30 as shown.

A pair of shafts 32 and 34 are rotatable in the vat walls 4 and on these the rods 28 and 30 are oscillatable, adjacent the plates 4 in brackets 36 and 38 respectively. The brackets slidably receive the lower ends of the rods 28 and 30.

The lower ends of the rods 28 and 30 are threaded and threadedly engage nuts such as 44 disposed between bearings 40 of the brackets. The nuts 44 are in the form of worm gears which are in operative engagement with the shafts 32 and 34 by means of worms 48 and wheels such as 50 are secured to the shafts 32 and 34 to facilitate rotation thereof.

As the shafts are rotated the worm gears are rotated thereby so as to move the rods 28 and 30 axially in one direction or the other according to the direction of rotation of the said shaft. The shafts 32 and 34 are adapted for independent rotation so that if one shaft such as 32 is rotated the rod 28 will be moved axially in one direction or the other according to the direction of rotation of the said shaft.

It will be understood that there are plates 14 in opposite ends of the vat pivotally connected to rods such as 28 and 30 with the rods slidable in brackets which are oscillatable on opposite ends of said shafts 36 and 38 so that as said shafts are rotated the rods at opposite sides of the vat are actuated.

By means of the construction described it is possible to move the plates 14 up and down or back and forth at right angles relative to the horizontal axis of the cylinder mould and thereby move the cylinder mould to various positions of adjustment relative to the wall W for the purposes before mentioned.

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 many changes and modifications may be made therein without departing from the spirit and scope of the invention.

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

1. A paper-making apparatus comprising in combination, a vat having spaced front and rear walls and a transverse wall extending therebetween having an upper concave surface, plates slidable in planes substantially perpendicular to the axis of a cylinder mould, said cylinder mould journalled on a horizontal axis at its opposite ends on said plates, spaced shafts extending through the front and rear walls and disposed on opposite sides of said mould, oscillatable pivotally-mounted brackets disposed on said shafts outside of said walls, upwardly extending rods slidable in said brackets with the adjacent rods on adjacent ends of said shafts constituting pairs, pivotal connections between the upper ends of the rods of the pairs and said plates at common points therein, and means associated with said shafts and said rods whereby said rods may be moved up and down to adjusted positions to adjust said cylinder mould relative to the transverse wall.

2. A paper-making apparatus comprising in combination, a vat having spaced front and rear walls and a transverse wall extending therebetween having a concave surface, adjustable plates slidable in planes substantially perpendicular to the axis of a cylinder mould, said cylinder mould journalled on a horizontal axis at its opposite ends in said plates and disposed above the transverse wall, spaced shafts extending through the front and rear walls and disposed on each side of a vertical plane extending through the axis of said mould, oscillatable pivotally-mounted brackets disposed on said shafts outside of said walls, upwardly extending rods slidable in said brackets with the adjacent rods on adjacent ends of said shafts constituting a pair, pivotal connections between the upper ends of the rods of the pairs and said plates at common points therein, and means associated with said shafts and said rods whereby said rods may be moved up and down to adjust said cylinder mould relative to the transverse wall.

3. A paper-making apparatus comprising in combination, a vat having front and rear walls and a transverse wall therebetween, plates adjacent to the front and rear walls and slidable in planes substantially perpendicular to the axis of a cylinder mould, said cylinder mould disposed within the walls and rotatably supported on a horizontal axis by said plates, rotatable shafts extending between the front and rear walls, brackets oscillatable on said shafts at the outer opposite ends thereof, pairs of rods having their upper ends pivotally connected to said plates at common points thereon and having their lower ends slidable in said brackets, and operative con-

nections between said shafts and said pairs of rods to move said pairs of rods up and down relative to said shafts.

4. A paper-making apparatus comprising in combination, a vat having spaced front and rear walls and a transverse wall extending therebetween having an upper concave surface, plates slidable in planes substantially perpendicular to the axis of a cylinder mould, said cylinder mould disposed within said vat and journalled on a horizontal axis at its opposite ends in said plates, spaced shafts extending through the front and rear walls and disposed on either side of said mould, oscillatable pivotally-mounted brackets disposed on said shafts outside the walls, upwardly extending rods slidable in said brackets with the adjacent rods on adjacent ends of said shafts constituting pairs, pivotal connections between the upper ends of said rods of the pairs and said plates at common points thereon, and means associated with said shafts and said rods whereby said rods may be moved up and down to adjust said mould relative to the transverse wall thereunder including internally threaded rotatable gear members engaging said rods and other gear members on said shafts for meshing with the internally threaded gear members.

WILLIAM M. LEESON.