

No. 888,482.

PATENTED MAY 26, 1908.

H. GAARA.
MANUFACTURE OF PAPER.
APPLICATION FILED JULY 13, 1906.

Fig. 1

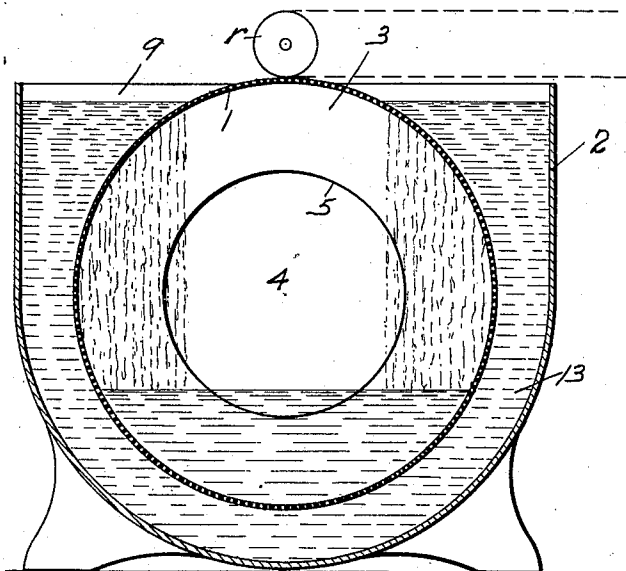


Fig. 2

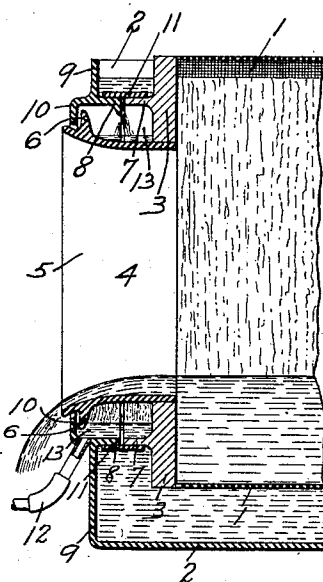


Fig. 3

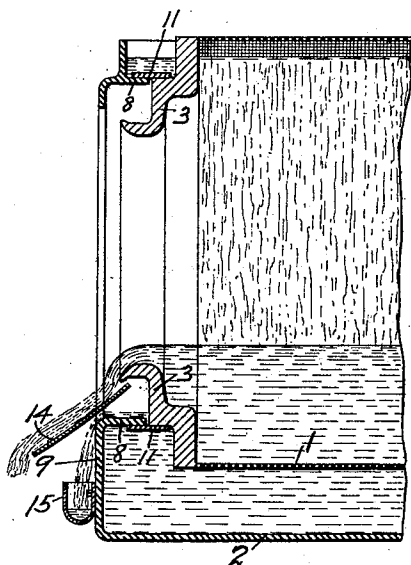
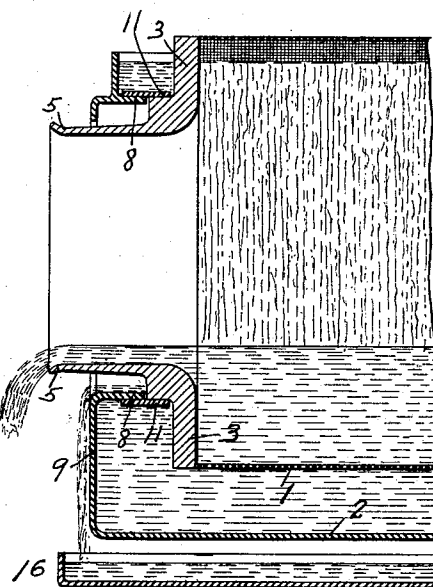


Fig. 4



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF PAPER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HALVOR GAARA, a subject of the King of Norway, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in the Manufacture of Paper, of which the following is a specification.

My invention relates to the manufacture of pulp and paper and more particularly to cylinder pulp machines, and the object of my invention is to provide means, whereby the water passing between the hub of the rotating cylinder and the packing surrounding the said hub, is collected and discharged into a tank or receptacle, from which it is pumped again into the vat containing the pulp and mixes therewith, or the water may be conducted to some other apparatus, where it mixes with other pulp. The water, which escapes between the hub and its packing, contains a certain amount of fibers, which otherwise are lost, but which, according to my invention, are saved and utilized again together with the pulp that flows into the vat, in which the cylinder revolves.

In order to better explain the invention, I have illustrated the same in the accompanying drawing on which

Figure 1 is a transverse vertical section through the revolving cylinder and the vat containing the same. Fig. 2 a longitudinal section therethrough, only part of the cylinder and vat being shown, Figs. 3 and 4 are sections similar to that of Fig. 2, showing modifications.

As well known in cylinder pulp machines, the pulp flows into a vat. This vat is shown at 2 and in said vat is revolvably arranged a hollow cylinder 1, covered with a wire or felt-cloth, against which the pulp is pressed by the pressure of the fluid within the vat 2. The water, in which the pulp is suspended passes through to the interior of the cylinder and flows out from the same through openings 4 in the end walls 3 of the hollow cylinder 1.

The pulp attached to the wire or felt-cloth of the cylinder is carried upward, while the latter revolves, and is removed in the well-known way by a roll *r*, which presses the cylinder at its highest part, or other suitable means.

Referring first now to Fig. 2, to each end wall of the cylinder 1 is attached a cylindrical hub-like extension 5 concentric with the

circular opening 4 and provided with an integral annular flange 6 near its outer end, as seen from Fig. 2. The extensions 5 project through openings in the end walls 9 of the vat 2, in which the cylinder 1 is journaled, and the said end walls 9 are each provided with an annular flange 10, which is bent inwardly so as to overlap the annular flange 6 on the said extensions 5.

On the inside the walls 9 are provided each with a flange 8, whereas the end walls 3 of the cylinder 1 are each provided with a flange 7, the said flanges 7 and 8 being arranged exactly opposite each other and leaving only a narrow space between them, which space is covered by a packing 11, of leather or any other suitable packing material.

From the inclosed space 13 formed around the extension 5 by the said flanges 7 and 8, a pipe 12 leads to the outside of the vat 2, the said pipe being secured in an opening in the flange 10 at the lowest point thereof.

The operation is as follows:—The water containing the pulp flows through the wire or felt-cloth of the cylinder 1 into the interior thereof, and is discharged through the cylindrical extensions 5 at both ends of said cylinder. The cylinder 1 being held almost entirely submerged in the water, some of the water containing fibers will escape through the packing 11 between said packing and the flanges 7 and 8 above referred to. The water entering the annular passage 13 surrounding the extension 5 of the cylinder will collect in the lower part thereof, as seen from Fig. 2, from where it will flow out through pipe 12, through which the water will be delivered into a tank, or receptacle where it will be mixed again with pulp carrying water, which is conducted into the vat 2 containing the cylinder 1, or, the water discharged from pipe 12 may be mixed with other pulp.

In the modification shown in Fig. 3, the extensions 5 of the cylinder 1 are omitted, the latter being merely provided with the openings 4 through which the water flowing to the interior of the cylinder through the wire or felt-cloth is discharged. In this case a shield 14 is mounted at each end of the vat 2, over which shield the water is guided when flowing out of the interior of the cylinder, which water is free from any fibrous material. The water, however, still contains fibers, which water at the lower end of the vat 2 escapes through the packing 11 covering the narrow spaces between the end

walls 3 of the cylinder and the inwardly extended flanges 8 of the end walls 9 of the vat 2, flows into a trough-like channel 15 secured to each end wall 9 of the vat, the shields 14 preventing this water from becoming mixed with the water discharged from the interior of the cylinder 1. From the channels 15, the water may be returned to the vat 2, as in Fig. 2, or to some other machine.

10 Another modification is shown in Fig. 4, in which the cylinder 1 is provided, as in Fig. 2, with an extension 5 at each end adapted to discharge the water from the interior of said cylinder.

15 Under the vat 2 there is provided a duct 16, into which flows the water, that finds its way around the packing 8 covering the space between the end walls 3 of the cylinder 1 and the inwardly turned annular flanges 8 of the end walls 9 of the vat 2. From the said duct the water passes into a tank or receptacle to be pumped back into the vat 2, or to some other pulp-treating apparatus. In the construction shown in Fig. 4 the extensions at 20 the ends of the cylinder 1 serve the same purpose as the shields 14, shown in Fig. 3.

What I claim as my invention and desire to secure by Letters Patent is:—

30 1. A cylinder pulp machine comprising a vat, a hollow screen - cylinder rotatably mounted therein, a bell-mouthed extension on said cylinder for discharging water from

its interior, an axial flange and a radial flange on the end wall of the vat, a cooperating axial flange on the cylinder, said vat flanges 35 being provided with a discharge opening at the bottom; said vat and cylinder flanges forming a substantially closed annular chamber surrounding the cylinder extension, and a packing sleeve embracing the axially extending flanges of the cylinder and vat. 40

2. A cylinder pulp machine comprising a vat, a hollow screen - cylinder rotatably mounted therein, a bell-mouthed extension on said cylinder for discharging the water from 45 its interior, said extension having an intermediate flange, an under-cut flange on the end of the wall of said cylinder, a cooperating flange projecting axially inward from the end wall of said vat, a radially extending 50 flange on said end wall arranged to embrace the intermediate flange of said extension, said flanges forming a substantially closed annular chamber surrounding said extension, a packing sleeve embracing the cooperating 55 axially extending flanges of the cylinder and vat wall, and means for draining said annular chamber.

In testimony whereof I affix my signature in presence of two witnesses.

HALVOR GAARA.

Witnesses:

ALFRED MILLER,
L. H. STAADEN.