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MACHINE FOR MANUFACTURING SHEETS, BOARDS, TUBES, AND OTHER ARTICLES FROM PULP.

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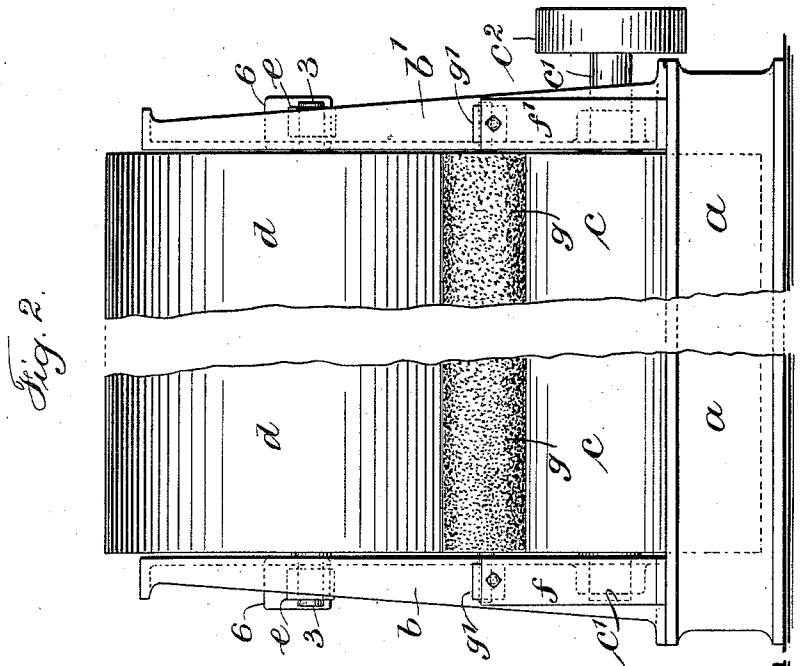

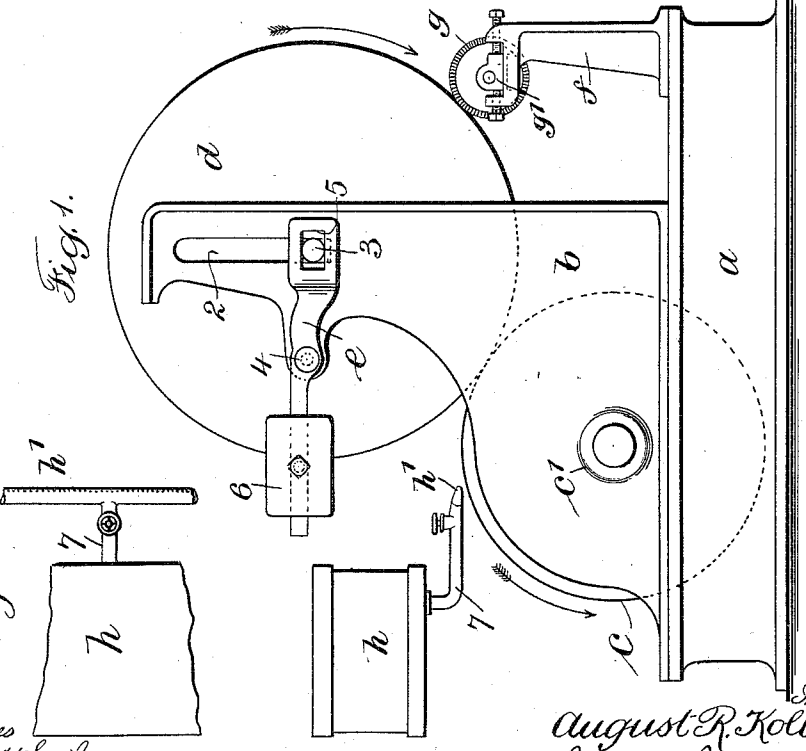

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UNITED STATES PATENT OFFICE.

AUGUST R. KOLB, OF PELHAM, NEW YORK.

MACHINE FOR MANUFACTURING SHEETS, BOARDS, TUBES, AND OTHER ARTICLES FROM PULP.

1,019,486. Specification of Letters Patent. Patented Mar. 5, 1912.

Application filed September 1, 1910, Serial No. 580,004. Renewed July 31, 1911. Serial No. 641,660.

To all whom it may concern:

Be it known that I, AUGUST RICHARD KOLB, a citizen of the United States of America, residing at Pelham, in the county of Westchester and State of New York, have invented an Improvement in Machines for Manufacturing Sheets, Boards, Tubes, and other Articles from Pulp, of which the following is a specification.

My invention relates to an improvement in machines for felting pulp by winding successive layers of the soft pulp film upon a suitable winding roll until the accumulation reaches the desired thickness, and in this manner preparing sheets, boards, tubes and other articles from pulp of any desired thickness.

The object of my invention is to dispense with the couch-roller and to raise the surface fibers of the superimposed mass so as to insure the felting operation with the increasing layers and thickness.

In the device of my invention, the pulp of the paper or suitable material, or waste, is taken up in a mold or pulp cylinder of usual or suitable construction and the superfluous moisture is removed from the pulp by maintaining said cylinder in a vacuous condition. The layer of pulp thus deposited upon the mold or pulp cylinder is removed by the winding roll and I apply to the surface of the pulp layer on the winding roll,—with the progressive winding operation and before it comes into contact with the superposed layer of pulp,—a brush of bristles preferably traveling at a greater surface speed, which raises the surface fibers so that they the better felt in with the fibers of the pulp being superimposed. This action is continuous with the progressive felting action and is maintained until the desired thickness of the pulp sheet or board has been obtained.

The pulp sheet or board is removed from the winding roll in any desired manner, usually as a sheet or body controlled only by the size, (that is, the width and circumference of the roll). This however, forms no part of my present invention.

In the drawing, Figure 1 is a side elevation representing the device of my improvement. Fig. 2 is a front elevation broken through and Fig. 3 is a plan of a portion of the device of my improvement adapted for delivering the pulp to the mold or pulp cylinder.

a represents a bed. Upon this bed and rising therefrom are frames *b* b^1.

c represents the mold or pulp cylinder and c^1 suitable bearings therefor provided in the frames *b* b^1. This mold or pulp cylinder *c* is of any well known or desired construction adapted to take upon the surface a film of pulp and to exhaust or remove the moisture therefrom because of the construction of said cylinder which adapts it to be maintained in a vacuous condition. The particular construction of this mold or pulp cylinder forms no part of my present invention. On the shaft of the mold or pulp cylinder *c*, I preferably provide a driving pulley c^2 to which power is applied.

d represents a winding roll having a shaft or trunnions 3 in slots 2 in the upper portions of the frames *b* b^1 providing for a vertical or rising and falling movement of said winding roll. I provide rocker arms *e* having pivots 4 in said frames *b* b^1. Similar ends of these arms are slotted at 5 to receive the shaft or trunnions 3 of the winding roll and the opposite and similar ends of the rocker arms *e* are provided with adjustable weights 6 which are intended to substantially counter-balance the weight of the winding roll so that the periphery of this winding roll bears very lightly upon the periphery of the mold or pulp cylinder *c*. It is therefore quite apparent that should the winding roll *d* be raised for any reason as hereinafter described, it will also be balanced in a slightly elevated position; the upward movement of which is provided for by the slot ends 5 of the rocker arms *e*.

At one end of the bed *a* I have shown and prefer to employ standards *f* f^1 and in connection therewith I employ a brush roll *g* having adjustable bearings g^1 in the upper portion of said standards, the surface of which brush roll is adapted to contact with the surface of the winding roll *d*.

h represents a tank for pulp and 7 a pipe extending therefrom, and h^1 a delivery pipe at right angles to the pipe 7 and in line with the axis or bearings c^1 of the mold or pulp

cylinder and long enough to extend across the same and longitudinally therewith. By these pipes 7 and h^1 the pulp from the tank h flows onto the surface of the mold or pulp cylinder in an evenly divided stream; the arrow representing the direction of travel of the mold or pulp cylinder and another arrow the direction of travel of the winding roll.

I do not limit my invention to the use of the tank h and the pipes 7 and h^1, as the bed a of the machine may be constructed as a pulp tank so that a portion of the mold or pulp cylinder c is continuously immersed therein; the latter however, is the old and usual way of supplying pulp to a mold or pulp cylinder.

In the operation of the device of my improvement and as illustrated in the drawing, the pulp from the tank h flows through the pipe 7 into the pipe h^1 and is delivered from the pipe h^1 onto the surface of the mold or pulp cylinder lengthwise and as an even layer or film. The vacuous condition in which the cylinder c is maintained as is well known in this art, takes the moisture out of the pulp and leaves the pulp as a film upon the surface of the cylinder c. As the cylinder's rotation meets the winding roll d this layer of pulp is taken off upon the surface of the winding roll and passing around the same its surface fibers are raised by the gentle and rapid movement of the brush roll g and with the continuous rotation of the winding roll the pulp film as taken from the roll or pulp cylinder c is superimposed upon the pulp already wound around the roll d. This superimposing action is continued until the desired thickness of material is attained upon the surface of the winding roll d; the brush roll g meanwhile and continuously performing its function of slightly raising the fibers upon the surface of the pulp so that the surfaces of pulp coming into contact may better felt in with one another to form an even homogenous mass.

Any desired means may be employed for the removal of the mass or thickness of pulp from the winding roll d and the same may be subjected to any after treatment desired, both of which form no part of my present invention.

The cylinder c and winding roll d are of any well known construction and character in this art.

I claim as my invention:—

1. In a machine for making pulp board and in combination, a mold or pulp cylinder, means for supplying pulp to the surface thereof, a winding roll running in juxtaposition to said roll or pulp cylinder and means for slightly raising or disturbing the fibers of the layer of pulp on the winding roll so that the same may better felt with the superimposed layer.

2. In a machine for making pulp board and in combination, a mold or pulp cylinder, a device for holding pulp and means for applying said pulp to the surface of the movable pulp cylinder, a winding roll, the surface of which runs in juxtaposition to that of the mold or pulp cylinder, and a brush roll, the surface of which also runs in juxtaposition to the surface of the winding roll.

3. In a machine for making pulp board and in combination, a mold or pulp cylinder, a device for holding pulp and means for applying said pulp to the surface of the movable pulp cylinder, a winding roll, the surface of which runs in juxtaposition to that of the mold or pulp cylinder, means for substantially balancing the winding roll so as to cause the same to maintain the same relation to the mold or pulp cylinder with the successive superimposed layers of pulp, and a brush roll having a surface also running in juxtaposition to the surface of the winding roll for acting upon fibers of the layer of pulp prior to an additional layer being superimposed thereon.

4. In a machine for making pulp board and in combination, a mold or pulp cylinder, means for supplying pulp to the surface thereof, a winding roll running in juxtaposition to said roll or pulp cylinder and means for slightly raising or disturbing the fibers of the layer of pulp so that the same may better felt with the superimposed layer.

Signed by me this 20th day of July 1910.

AUGUST R. KOLB.

Witnesses:
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