(No Model.)

R. M. MASON & G. M. WOOSTER.

MANUFACTURE OF BOARD FROM WOOD PULP.

No. 253,403. Patented Feb. 7, 1882.

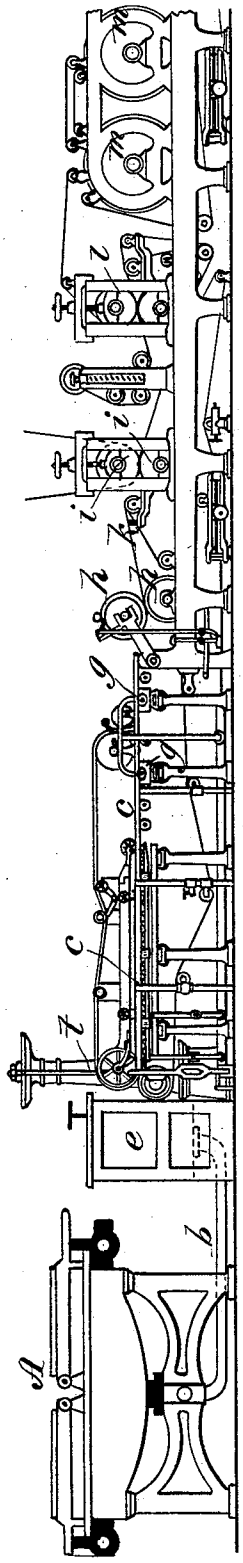


Fig. 1.

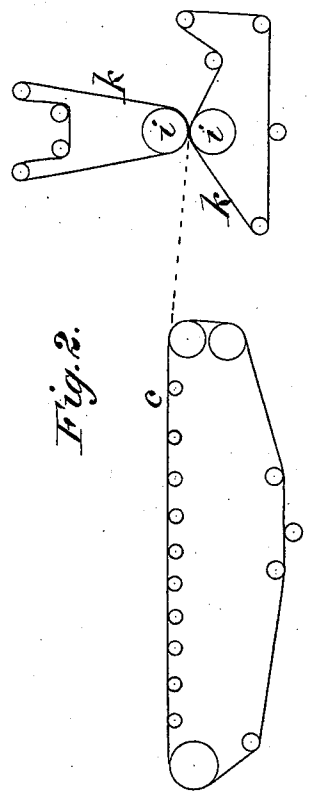


Fig. 2.

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UNITED STATES PATENT OFFICE.

ROBERT M. MASON AND GEORGE M. WOOSTER, OF BRISTOL, NEW HAMPSHIRE, ASSIGNORS OF ONE-HALF TO DAVID MASON AND BENJN. F. PERKINS, OF SAME PLACE.

MANUFACTURE OF BOARD FROM WOOD PULP.

SPECIFICATION forming part of Letters Patent No. 253,423, dated February 7, 1882.

Application filed August 27, 1881. (No model.)

To all whom it may concern:

Be it known that we, ROBERT M. MASON and GEORGE M. WOOSTER, of Bristol, in the county of Grafton and State of New Hampshire, have invented certain new and useful Improvements in the Manufacture of Boards from Wood Pulp, of which the following is a specification.

Wood-pulp boards have been heretofore made on cylinder paper-machines; but the liability of compression by the rollers before the material is dry has limited the thickness of such boards, and, further, the fibers of the pulp being laid mostly in one direction, the board is of unequal strength.

The object of our invention is to manufacture wood-pulp boards of desirable thickness and with the fibers or grain distributed equally in every direction, similar to paper and paper-boards, which we accomplish by the adaptation of the Fourdrinier machine and process to such manufacture, as hereinafter set forth.

For a clear understanding of the improvement, we have shown in Figure 1 of the accompanying drawings a side elevation of a Fourdrinier machine with the addition necessary to carry out the process. Fig. 2 is a detail view of the felts.

A in the drawings is the vat, which has attached to it the mixing and the stock box, through which the return water from the machine is to be pumped back and mixed with the pulp. A perforated box extends the whole width of the screen for discharge of the stock thereon. These arrangements secure thorough mixture of the stock and even distribution of the same on the screen-surface.

b is the sand settling pipe leading to the small vat *e*. *c c* are the wire tables. *t* is the shaker. *g g* are the suction-boxes. *h h* are the couch-rolls. *i i* are the first press-rollers; *k*, the felts; *l l*, the second press-rollers, and *m* are the drying-cylinders.

The wood pulp, after leaving the grinding-machine, is mixed and washed in a rag-engine in the ordinary manner, and it may also be sized to give the board more solidity and render it water-proof. The pulp is then led to the vat A, and, passing through the screens and pipe *b*, goes to vat *e*, and thence to the table-wires *c c*, where the sheet is formed. The shaker *t* assists the formation of the sheet, and the motion of the shaker will be increased in speed and length of stroke according to the thickness of the sheet. The shake motion has the effect to distribute the fibers equally and in all directions, and to insure that result the table or forming wire may be extended to any suitable length. The suction-boxes *g* are connected to suitable pumps, and are to be increased in number as required, to suck all the water possible out of the pulp before the sheet goes between the couch-rolls *h*, so that the sheet shall have sufficient solidity to resist the crushing action of the rolls. From the couch-rolls the sheet goes between the felts *k k* to the first press-rolls, *i*. The lower felt, *k*, is as usual. The upper felt is additional, and is arranged, as shown in Fig. 2, to run beneath the upper press-roll, *i*, and over rollers placed above the press-roll. The sheet passes between the two felts, and is thereby preserved from being crushed. The sheet then goes to the second press-rolls, *l*, and thence to the reels and cutters, as usual in the manufacture of paper. There may be additional driers placed above those shown, so as to hasten the drying operation and allow greater speed.

By this process we produce a much heavier, thicker, stronger, and in every way better sheet of wood board than can be made by any other process or machine. The water being mostly sucked out while the sheet is on the forming-table, the thickness is not reduced by the rollers, as it necessarily is in a cylinder machine. The shake motion acting to distribute the fibers about equally lengthwise and crosswise of the sheet, the board is of equal strength and tenacity in all directions.

We are aware that double wire aprons have heretofore been used to receive and convey and by means of superposed rollers to compress paper-pulp previous to its reaching the couch-rolls of a Fourdrinier paper-machine,

and we do not claim such mode of operation; but

What we claim, and desire to secure by Letters Patent, is—

In a machine for making boards from wood pulp, the combination of the vats A *e*, wire tables *c c*, shaker *t*, and suction-boxes *g g* of a Fourdrinier paper-machine with the endless felt aprons *k k* and press-rollers *i i*, whereby the soft board, being sufficiently dry, may be passed through said press-rollers *i i* without damage or structural change and a thick and uniform board be produced, substantially as shown and described.

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