No. 727,872. PATENTED MAY 12, 1903.

E. D. ALVORD.

MACHINE FOR MAKING LEATHER BOARD.

APPLICATION FILED JUNE 25, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1

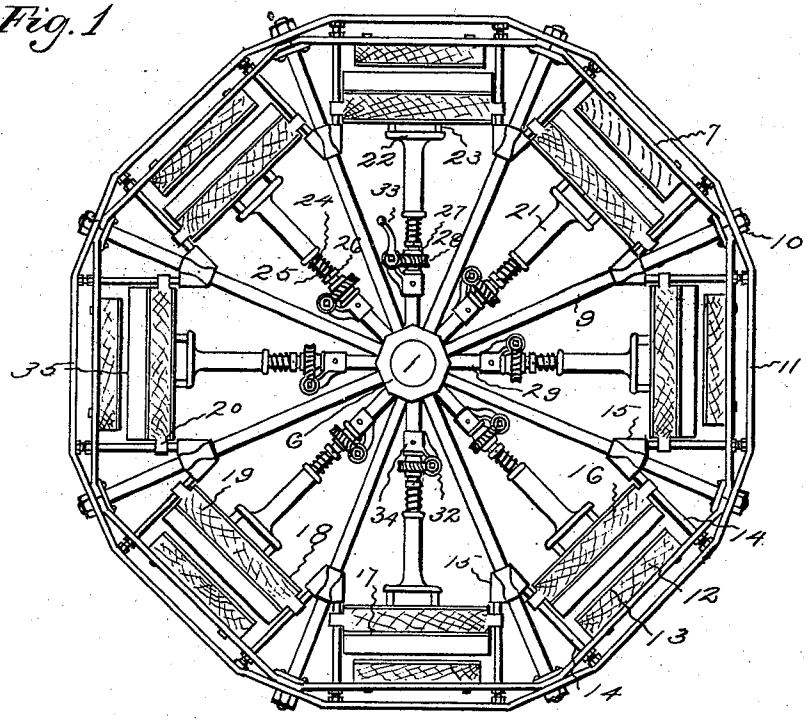
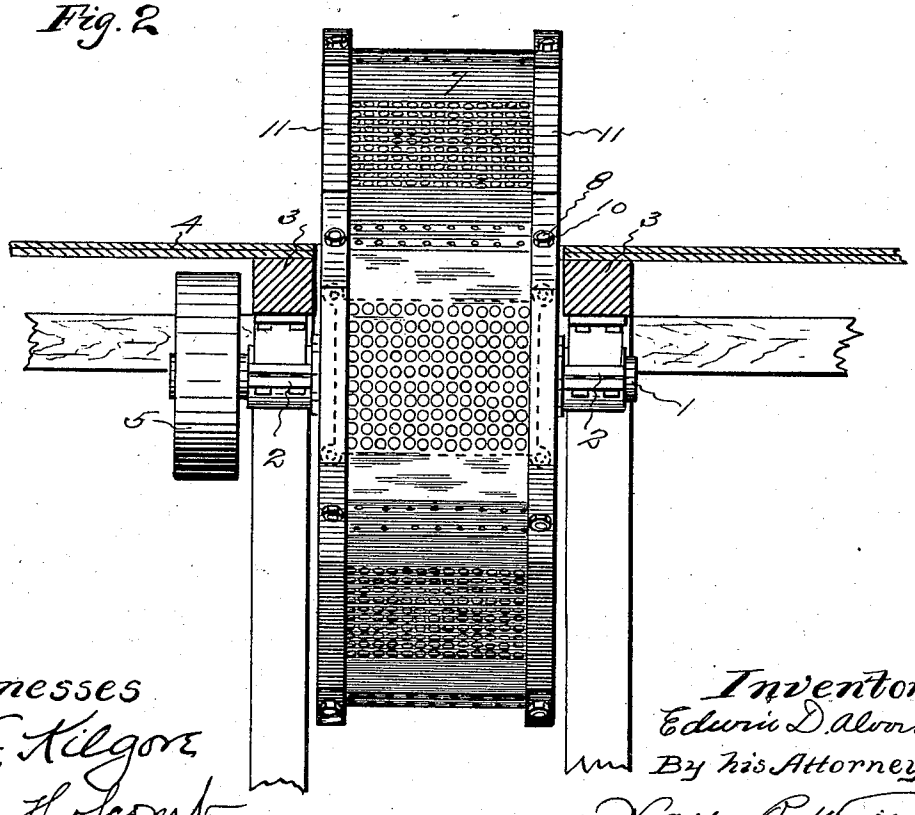


Fig. 2



Witnesses
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V. R. Holcomb

Inventor
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Harry P. Williams

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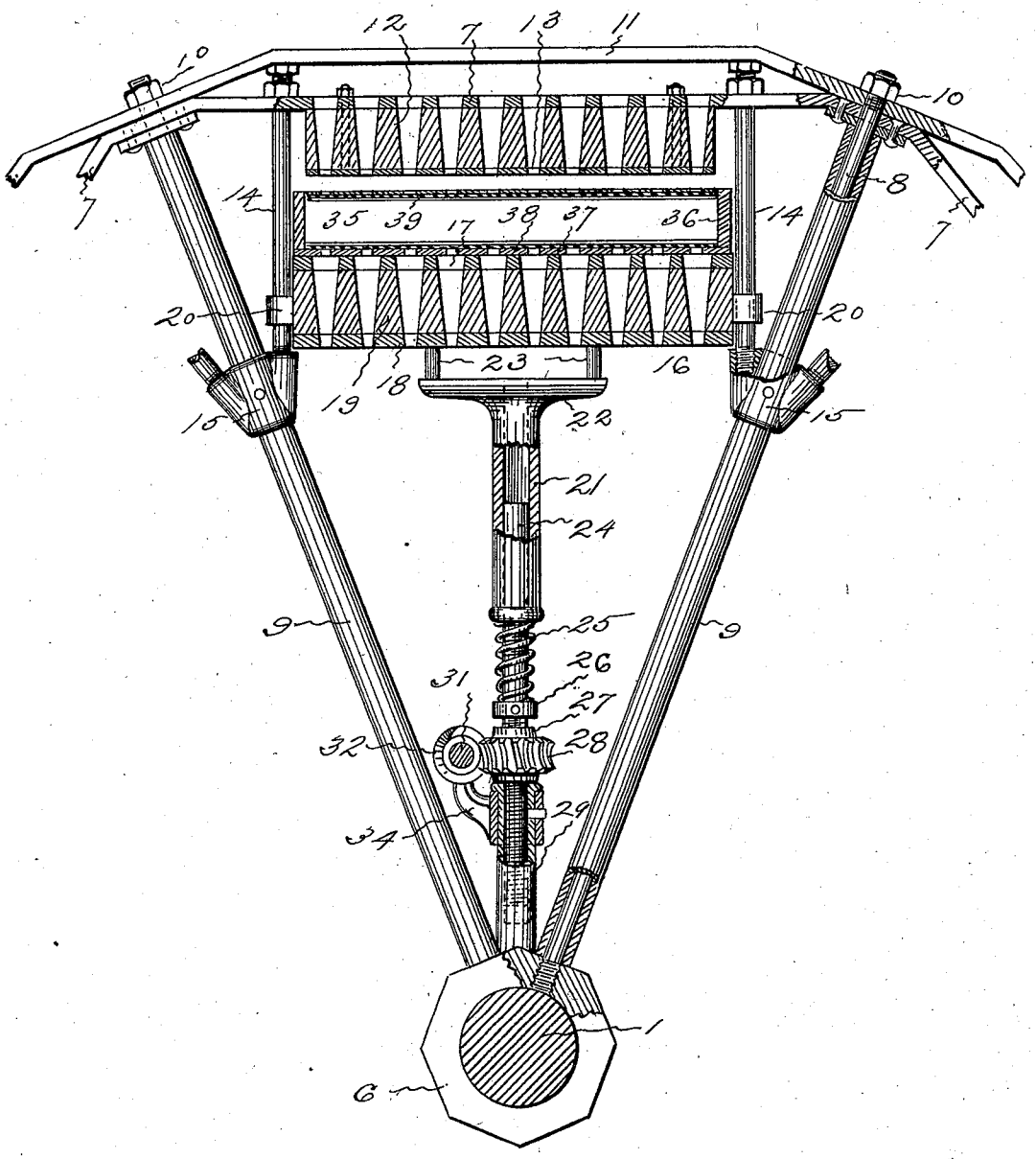
NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3



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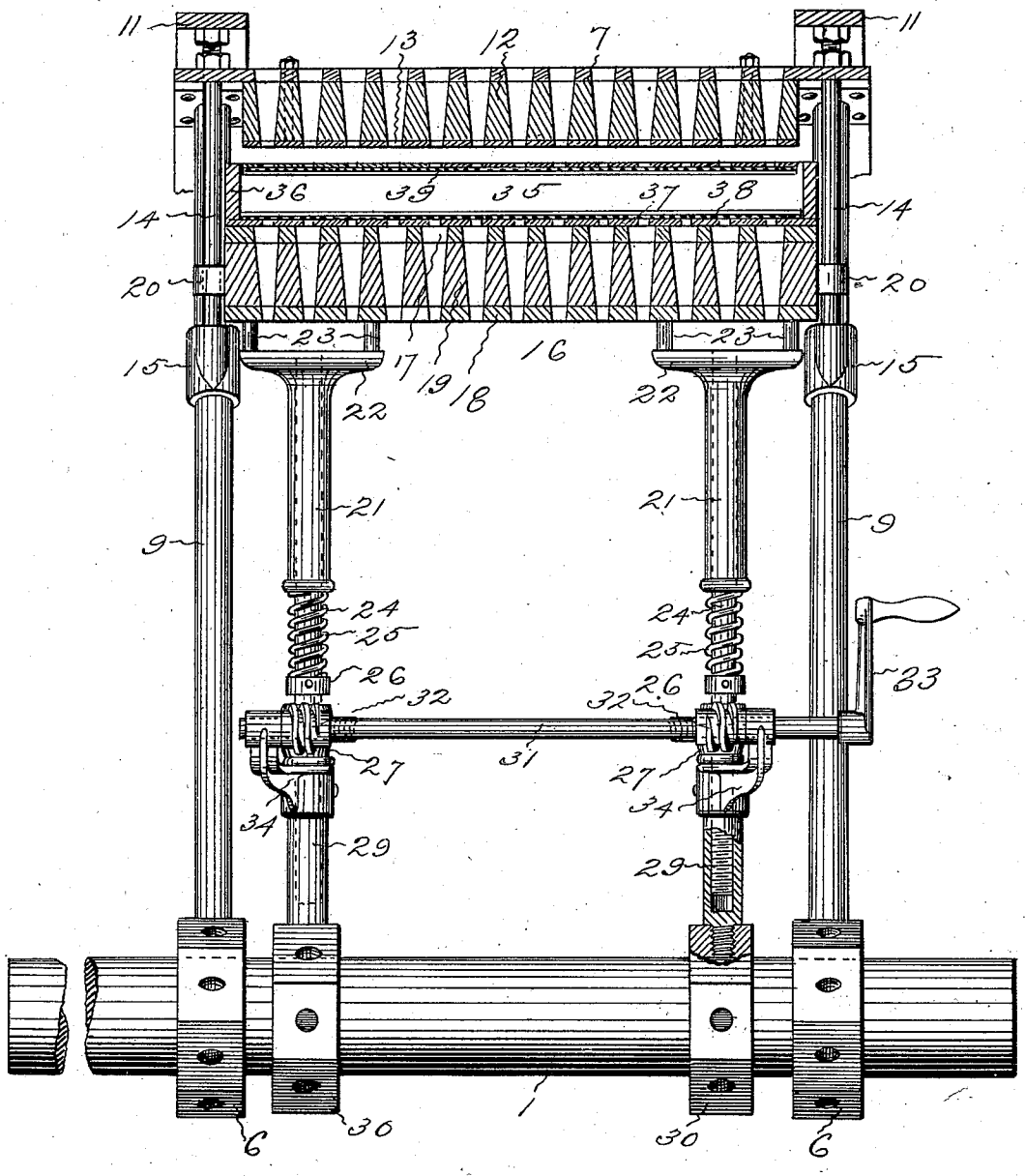
NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4



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UNITED STATES PATENT OFFICE.

EDWIN D. ALVORD, OF TALCOTTVILLE, CONNECTICUT, ASSIGNOR TO THE AMERICAN FIBER LEATHER COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF NEW JERSEY.

MACHINE FOR MAKING LEATHER-BOARD.

SPECIFICATION forming part of Letters Patent No. 727,872, dated May 12, 1903.

Application filed June 25, 1901. Serial No. 65,952. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. ALVORD, a citizen of the United States, residing at Talcottville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Making Leather-Board, of which the following is a specification.

This invention relates to those machines in which pulp containing leather and similar fiber that is more or less coarse and greasy is freed from moisture and condensed and compacted by centrifugal action.

The object of this invention is the production of an efficient centrifugal machine of large capacity for this purpose which can be inexpensively built, easily handled, and cheaply operated.

The machine that is illustrated by the accompanying drawings as embodying the invention has a horizontal shaft with a frame supporting radially-movable perforated beds arranged to carry pulp-molds with foraminated bottoms and covers and by centrifugal action as the shaft is rotated move outwardly and force the molds against perforated heads that form the periphery of the frame, so as to express and throw off all water from the pulp that is contained in the molds.

Figure 1 of the views shows a front elevation of a centrifugal leather-board machine that embodies the invention. Fig. 2 shows a side elevation of the same machine. Fig. 3 shows a vertical transverse sectional view, on larger scale, of one of the sections of the machine; and Fig. 4 shows a vertical radial sectional view of one of the sections of the machine.

The horizontal shaft 1 may be supported by any common form of bearings 2, attached in any suitable manner to the timbers 3 below the floor 4 of the mill. The driving-pulley 5, mounted on the shaft, may be belted to any source of power, Fig. 2. Two collars 6 are fastened on the shaft, and projecting radially with their inner ends threaded and tapped into the collars and their outer ends passing through the ends of the metal plates 7 are rods 8. On the rods between the plates and the collars are tubes 9, and on the outer threaded ends of the rods are nuts 10, which when screwed up clamp the ends of the plates between the ends of the tubes and the bands 11, that encircle the frame, Fig. 3.

The plates 7 are perforated, and fastened to their inner faces between the tubes are a number of perforated heads 12, preferably formed of wood with perforated metal linings 13. The perforations through the plates, the wooden heads, and the linings coincide, but are shaped so as to increase in diameter toward the outside, Figs. 3, 4.

Posts 14, with their inner ends screwed into brackets 15, clamped to the frame-tubes, and their outer ends fastened to the peripheral plates, are provided for guiding the radially-movable perforated beds 16. Each of these beds is composed of an outer perforated metallic plate 17, an inner perforated metallic plate 18, and a perforated wooden body 19, with lugs 20, adapted to fit the four guiding-posts. The perforations through these parts are tapered, the inner ends being the smaller, Figs. 3, 4.

Two sleeves 21 are fastened to the back of each of these beds. The outer end of each sleeve is attached to a flange 22, that is held a little distance away from the back of the bed by studs 23, so as not to obstruct any of the perforations through the bed. A rod 24 projects loosely into each sleeve, and a spring 25 is placed upon each rod, so as to thrust between a collar 26, fastened to the rod and the end of the sleeve. Each rod is threaded and carries a nut 27, which bears a worm-wheel 28. The inner ends of the nuts thrust against the ends of sleeves 29, that are screwed into collars 30, fixed on the shaft, and that receive the ends of the rods. A shaft 31, bearing two worms 32 and having a squared end for the reception of a crank 33, is supported by brackets 34, attached to the outer ends of the sleeves 29 in each section, so that the worms will mesh with the worm-wheels, Fig. 4.

By means of the worm and worm-wheels the nuts are rotated so that they will move the rods 24 and through the medium of the springs force the beds outwardly or allow

them to drop inwardly, according to the direction of rotation of the crank.

A mold 35, containing pulp, is placed upon each of these beds. Each mold consists of a hollow rectangular frame 36, preferably formed of wood, and a bottom formed of a perforated sheet-metal plate 37 with a bottom lining 38, composed of wire-netting covered with open-mesh cloth. A cover 39, composed of a perforated sheet-metal plate and wire-netting covered with open-mesh cloth, is loosely placed in each mold on top of the pulp.

In the machine shown a mold is placed upon a bed as the machine is turned and the bed comes above the floor, and then by means of the crank, worms, worm-wheels, and springs the bed is forced outwardly, so as to compress the mold containing the pulp between the bed and the head. Each bed when placed in position is forced outwardly and held with the springs under considerable tension. After all the molds containing pulp have been placed in position on the beds and forced outwardly against the heads the machine is set in motion. Under centrifugal action due to the rapid revolution of the molds and the heavy movable beds back of the molds these parts tend to move outwardly with great force, and this compresses the pulp and expresses the water and allows it to fly off through the perforations.

With this machine leather fibers which are coarse and greasy can be firmly knit into a compact mass and the water of the pulp thrown off without injuring the texture of the mass or breaking the fibers. This machine is simple to build, it is easily operated, and large masses of pulp may be formed into thick sheets by the expenditure of very little power. It is easy to place the heavy molds containing the pulp in this machine and to remove them after the moisture has been expressed. If desired, a cover may be placed over this machine to prevent the water from flying.

I claim as my invention—

1. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, perforated beds movably supported by the frame inside of the heads, and molds with foraminated bottoms and covers placed between the beds and the heads, substantially as specified.

2. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, perforated beds movably supported by the frame inside of the heads, means for moving the beds outwardly toward the heads, and molds with foraminated bottoms and covers placed between the beds and the heads, substantially as specified.

3. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, perforated beds movably supported by the frame inside of the heads, worms and worm-wheels for moving the beds outwardly, and molds with foraminated bottoms and covers placed between the beds and heads, substantially as specified.

4. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, perforated beds movably supported by the frame inside of the heads, worms, worm-wheels, nuts and springs for moving the beds outwardly, and molds with foraminated bottoms and covers placed between the beds and heads, substantially as specified.

5. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, heads having tapering perforations fixed to the periphery of the frame, beds movably supported by the frame inside of the heads, and molds with foraminated bottoms and covers placed between the beds and the heads, substantially as specified.

6. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, beds having tapering perforations movably supported by the frame inside of the heads, and molds with foraminated bottoms and covers placed between the beds and the heads, substantially as specified.

7. A machine for forming leather-board from pulp, consisting of a horizontal shaft, a frame supported by the shaft, perforated heads fixed to the periphery of the frame, perforated beds movably supported by the frame inside of the heads, sleeves connected with the backs of the beds, springs tending to thrust the sleeves outwardly, means for compressing the springs, and molds with foraminated bottoms and covers placed between the beds and the heads, substantially as specified.

8. In a machine of the class described, a rotary basket having a socket at its periphery and arranged to turn about a horizontal axis whereby said socket may be placed in a horizontal plane, a perforated face-block mounted on the outer face of the socket, a follower arranged in opposition to the face-block, and means for exerting a fixed pressure upon the follower in the direction of the face-block.

9. In a machine of the class described, a rotary basket having sockets at its periphery, a horizontal axis or shaft supporting the basket, a perforated face-block in each socket, a mold or box fitting the face-block, a perforated follower supported in opposition to the face-block in each socket and free to move toward it, and means for exerting a fixed pressure upon the follower in the direction of the face-block.

10. In a machine of the class described, a

rotary frame, a horizontal shaft supporting the frame, supports on the frame forming a socket whereby a mold may be held normal to the radius of the frame, a mold with perforated faces and fitting said socket in the frame, a follower back of the mold-socket, and means for clamping the mold and exerting pressure upon its contents when in place in a socket in the frame.

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