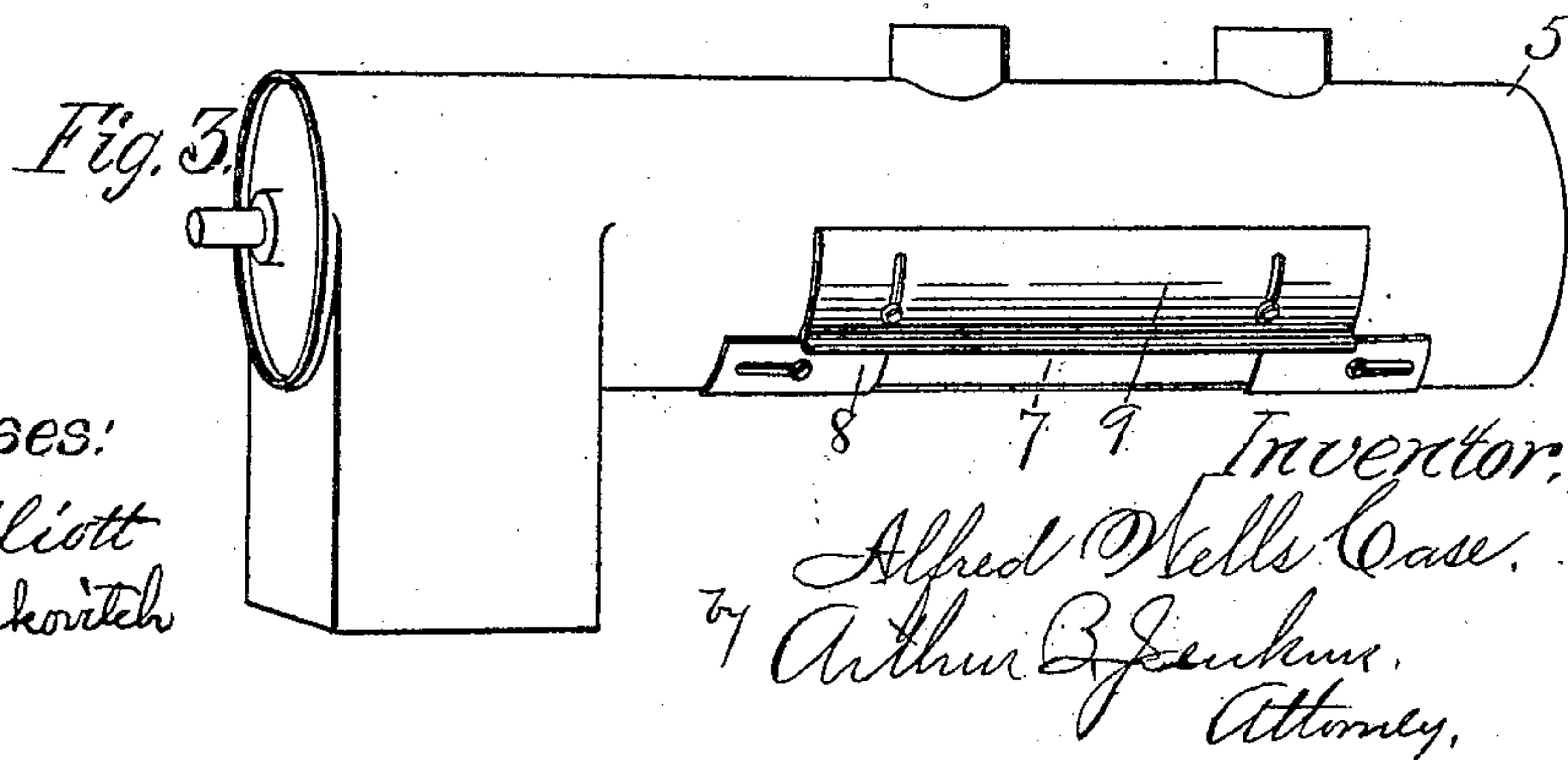
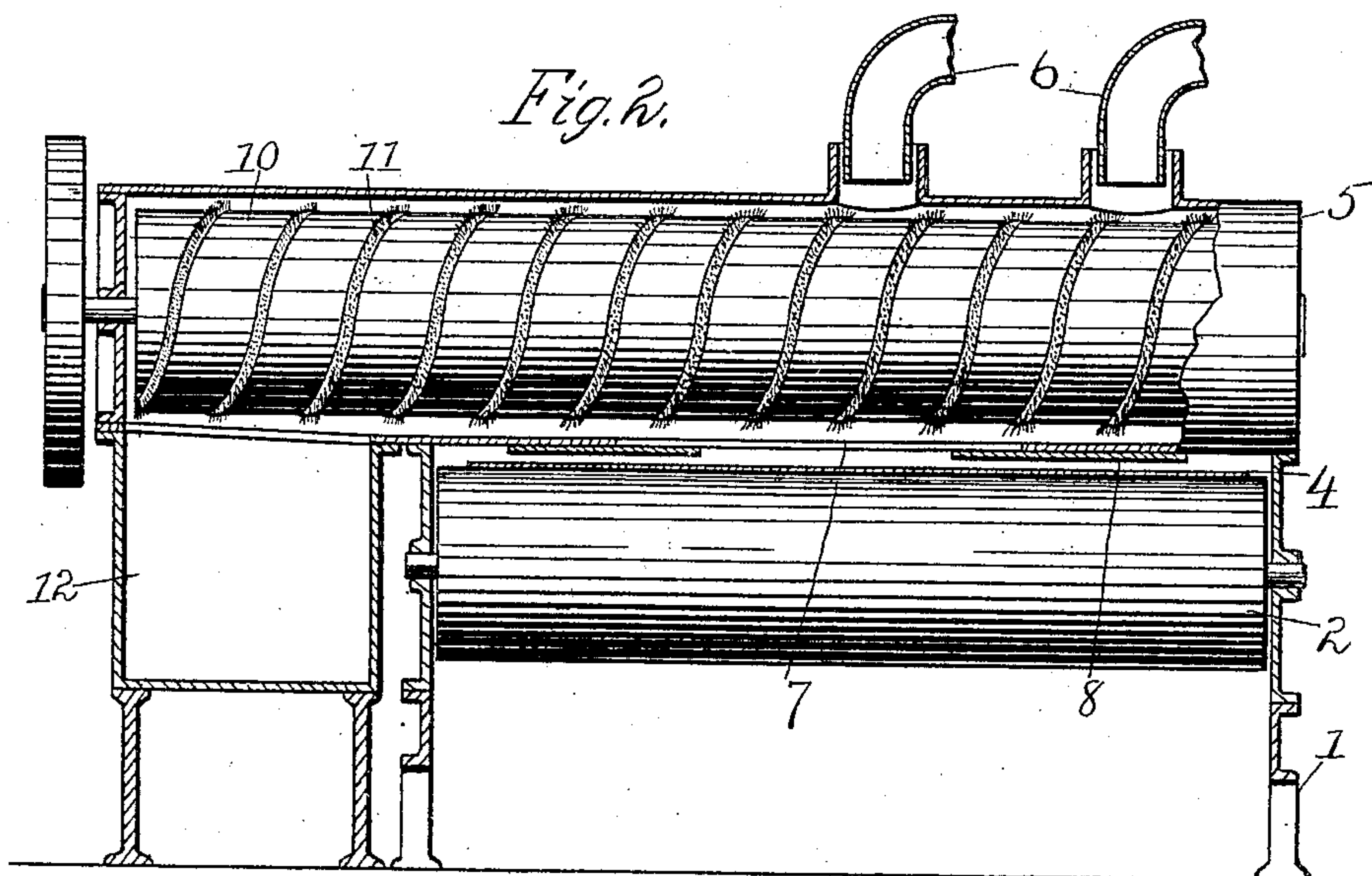
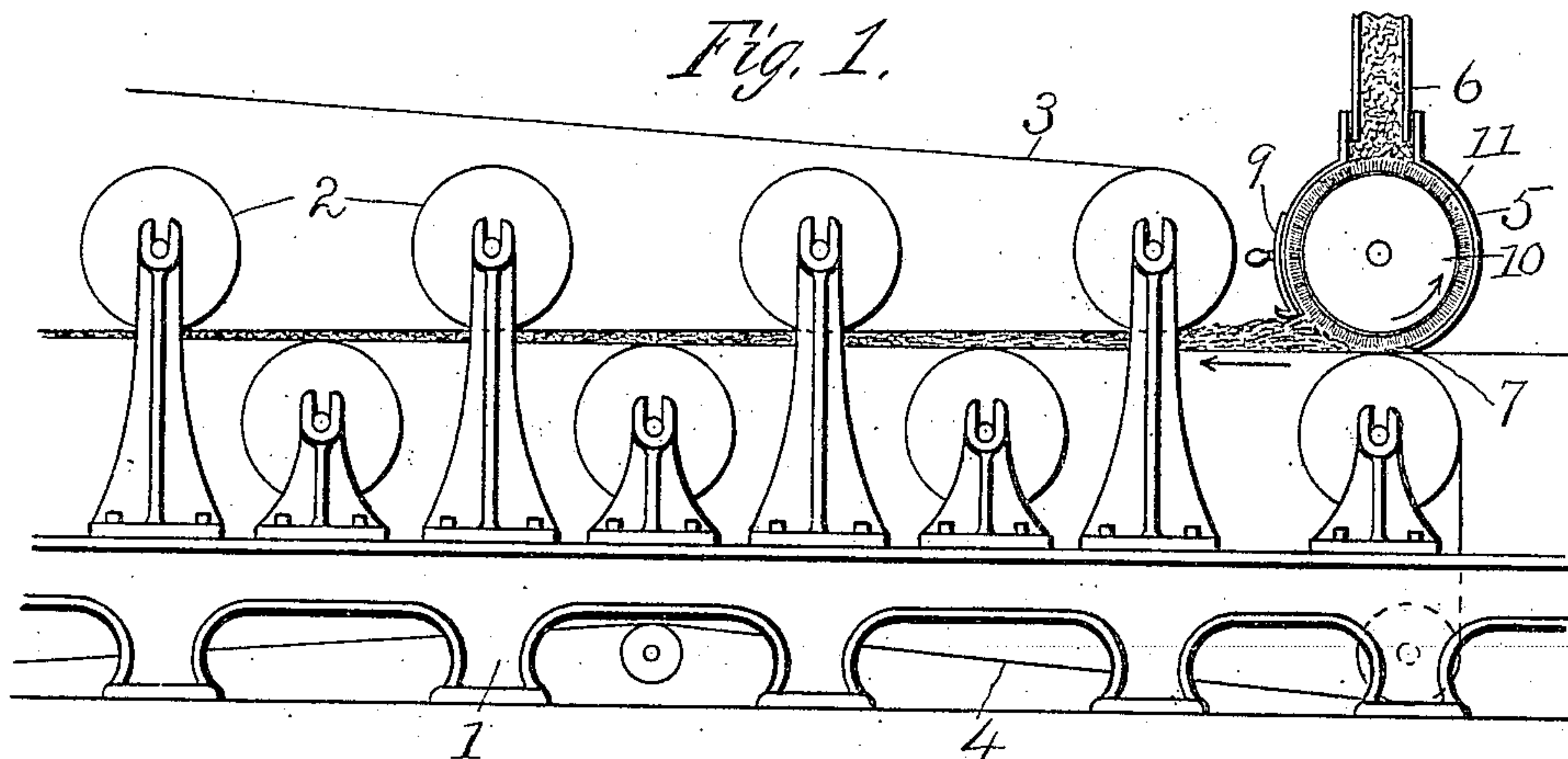


No. 838,686.

PATENTED DEC. 18, 1906.

A. W. CASE.
MACHINE FOR MAKING PULP BOARD.
APPLICATION FILED DEC. 28, 1905.



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UNITED STATES PATENT OFFICE.

ALFRED WELLS CASE, OF HIGHLAND PARK, CONNECTICUT.

MACHINE FOR MAKING PULP-BOARD.

No. 838,686.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed December 28, 1905. Serial No. 293,618.

To all whom it may concern:

Be it known that I, ALFRED WELLS CASE, a citizen of the United States, and a resident of Highland Park, in the county of Hartford and State of Connecticut, have invented a new and Improved Machine for Making Pulp-Board or the Like, of which the following is a specification.

The invention relates to the class of machines more especially designed for forming paper or board from fibrous material in which the pulp containing the material is deposited on a wire cloth or apron and then subjected to the usual operations of squeezing, pressing, drying, &c.

The object of the invention is to provide a machine in which the supply of pulp to the apron can be so regulated and controlled as to produce a web of uniform thickness; and a further object of the invention is to so supply the pulp to the apron and manipulate the same that a web shall be obtained in which the fibers shall be laid in different directions, crosswise and lengthwise, with a result that the finished product shall be extremely tough and shall resist disintegration to the greatest degree. A form of device in the use of which these objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation, partially in section, of a portion of a paper-making machine, showing the application of the invention. Fig. 2 is a detail view, on enlarged scale, in central longitudinal section through the cylinder-case. Fig. 3 is a perspective view of the cylinder-case.

In the accompanying drawings the numeral 1 indicates the frame of a paper-making machine that may be of any convenient form and constructed of any desired material. On this frame, in suitable standards, are arranged squeeze-rolls 2, between which the wire cloths or aprons 3 and 4 travel. These felts or wire cloths are constructed in a manner common to machines of this class—that is, having a sufficiently open mesh to retain the web, but allow moisture to pass through the felt. These felts are in the form of an endless apron, common to machines of this class, and are caused to travel in the machine in any well-known manner, passing around suitable rolls constructed for the purpose.

In carrying out the present invention a cylinder or case 5 is supported on the frame of the machine. An opening or openings, formed preferably in the top of the case, pro-

vide means for the supply of pulp thereto, as through a supply pipe or pipes 6. The means of supply to these pipes is not shown herein, it being well understood by those skilled in the art that such supply may be by means of a pump or other device, causing a flow of the comparatively thick pulp or fibrous material from a vat. The casing 5 is also provided at its under surface with an opening 7, through which the pulp is supplied to the endless apron 4. Slides 8 are secured at opposite ends of the opening 7, these being movable lengthwise of the case to determine the width of the opening 7, and thus regulate the width of the web. It will be understood that any well-known form of device for controlling the width of the web after pulp is deposited on the endless apron may be employed.

On the side of the casing 5 and controlling the opening 7 is a gate 9. This gate is adjustable in a circumferential direction on the case for the purpose of varying the width of the opening 7, and thus controlling the amount of pulp supplied to the apron. Any means of adjustment for this gate may be employed, it being important, however, that this adjusting means shall enable either end of the gate to be separately adjusted.

Within the case 5 a feed-cylinder 10 is mounted, this cylinder being supported on the frame in suitable bearings and the shaft being supplied with proper means for causing the rotation of the cylinder within the casing. The surface of this cylinder contains bristles or teeth by means of which the pulp is supplied to the apron 4. These teeth are arranged in rows extending in a spiral direction about the cylinder. These teeth or bristles may be secured to the cylinder in any desired manner, a satisfactory means having been found in the form of strips 11 of card-clothing wrapped spirally about the cylinder. These spiral rows of teeth may be arranged with any desired width between the rows and the spirals being given a pitch of any satisfactory degree.

The casing 5 and cylinder 10 are so arranged with respect to the apron 4 that the teeth or brush of the cylinder shall come in contact with the pulp as it is deposited on the apron. The direction of rotation of the cylinder and the direction of movement of the apron 4 are indicated by arrows in Fig. 1, from which it will be noted that the two parts travel in opposite directions. The rapidly-revolving cylinder throws the pulp, partially at least, by

centrifugal force upon the upper surface of the apron, and the spiral arrangement of the teeth causes the pulp to be spread from side to side of the apron to form the web. As the mass is deposited upon the apron the contact of the teeth of the cylinder and the arrangement of such teeth to travel in a spiral path will cause the fibers to be laid in different directions. The depositing of the fibers by centrifugal force will cause the fibers to be laid depthwise to a certain extent, and the rotation of the teeth and their spiral arrangement will tend to lay these fibers in a horizontal plane both widthwise and lengthwise, so that there will be no uniform arrangement of the fibers; but they will be laid in all directions horizontally. The pulp is allowed to flow through the supply-pipes in sufficient quantity to keep the opening 7 full at all times and an oversupply being preferably allowed, so that the opening shall certainly be filled at all times. All surplus is moved by the spirally-arranged teeth lengthwise along the surface of the cylinder, where it is deposited in a vat 12, from which it may be removed in any desired manner.

If in the operation of the machine the supply of pulp to that portion of the web located at the greatest distance from the supply-pipes 6 shall not be of the required thickness, the gate 9 may be raised on that edge, and thus allow a greater thickness of pulp to flow through the opening 7, to thus equalize the thickness at all points of the width of the web. After passing the squeeze-rolls 2 the web may be treated to the various pressing, drying, and cutting operations common to machines of this class.

I contemplate, broadly, the formation of a rib spirally arranged upon the surface of the cylinder, this rib to be formed in any desired manner to exert a brushing action upon the pulp deposited upon the apron, and while I have shown herein this rib formed of fine teeth I do not desire or intend to limit my invention to this precise construction, as ribs otherwise formed will be found to produce satisfactory results.

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

1. A case, means for supplying pulp thereto, a rotatable cylinder located within the case, an apron arranged to travel underneath the case, means for delivering pulp from the cylinder to said apron, means on the cylinder for laying the fibers in the pulp in different directions after deposit on the apron, and means for further treatment of said web formed on said apron.

2. A case having a delivery-opening therein, means for supplying pulp to the case, a rotatable cylinder located within the case to deliver pulp through said opening, an apron arranged to travel underneath the case to receive the pulp through said opening, means on

the cylinder for brushing the fibers in the pulp in different directions, and means for further treatment of said web formed on said apron.

3. A case having a delivery-opening therein, means for supplying pulp to said case, a rotatable cylinder located within the case, spirally-arranged rows of teeth formed on the surface of the cylinder, an apron arranged to travel underneath the cylinder to receive the pulp therefrom, and means for further treatment of said web formed on the apron.

4. A case having a delivery-opening therein, means for supplying pulp to said case, a rotatable cylinder located within the case, spirally-arranged rows of teeth formed on the surface of the cylinder, an apron arranged to travel underneath the cylinder in a direction opposite to the direction of movement of that part of the cylinder adjacent thereto, said apron being arranged to receive pulp from said cylinder, and means for further treatment of the web formed on the apron.

5. A case having a delivery-opening therein, means for supplying pulp to said case, a rotatable cylinder located within the case, spirally-arranged rows of teeth formed on the surface of the cylinder, a traveling apron with its surface located in proximity to the surface of the cylinder to receive pulp therefrom, and means for further treatment of the web formed on the apron.

6. A case having a delivery-opening therein, means for supplying pulp to said case, a rotatable cylinder located within the case, spirally-arranged rows of teeth formed on the surface of the cylinder, an apron arranged to travel in proximity to the surface of the cylinder and in an opposite direction from the direction of movement of the surface of the cylinder adjacent to the apron, and means for further treatment of the web formed on the apron.

7. A case having a delivery-opening therein, means for supplying pulp to said case, means for changing the size of said delivery-opening, a rotatable cylinder located within the case, teeth arranged on the surface of said cylinder to travel in close proximity to the surface of an apron, the apron traveling in a direction opposite to the direction of movement of that part of the cylinder next to the apron, and means for further treatment of the web formed on the apron.

8. A case, means for supplying pulp thereto, a rotatable cylinder located within the case, an apron arranged to travel underneath the case, means for delivering pulp from the cylinder to said apron, a spirally-arranged rib located on the surface of the cylinder to pass the apron in proximity thereto, and means for further treatment of said web formed on said apron.

9. A case having a delivery-opening therein, means for supplying pulp to said case, an

apron arranged to travel underneath the case, to receive pulp therefrom, a rotatable cylinder located adjacent to said apron, a spirally-arranged rib located on the surface of said cylinder, and means for further treatment of said web formed on said apron.

10. A case having a delivery-opening therein, means for supplying pulp to said case, an apron arranged to travel underneath the case to receive pulp therefrom, a cylinder located in close proximity to the surface of the apron, said apron traveling in a direction opposite to the direction of movement of that part of the cylinder next to the apron, and means

for further treatment of the web formed on the apron.

11. A case, means for supplying pulp thereto, a rotatable cylinder located within the case, an apron arranged to travel underneath and receive pulp from said case, a spirally-arranged rib located on the surface of the cylinder to pass the apron in proximity thereto, and means for further treatment of said web formed on said apron.

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