

No. 781,097.

PATENTED JAN. 31, 1905.

W. RUTH.

APPARATUS FOR SEPARATING AND SIEVING WOOD PULP.

APPLICATION FILED JULY 12, 1904.

3 SHEETS—SHEET 1.

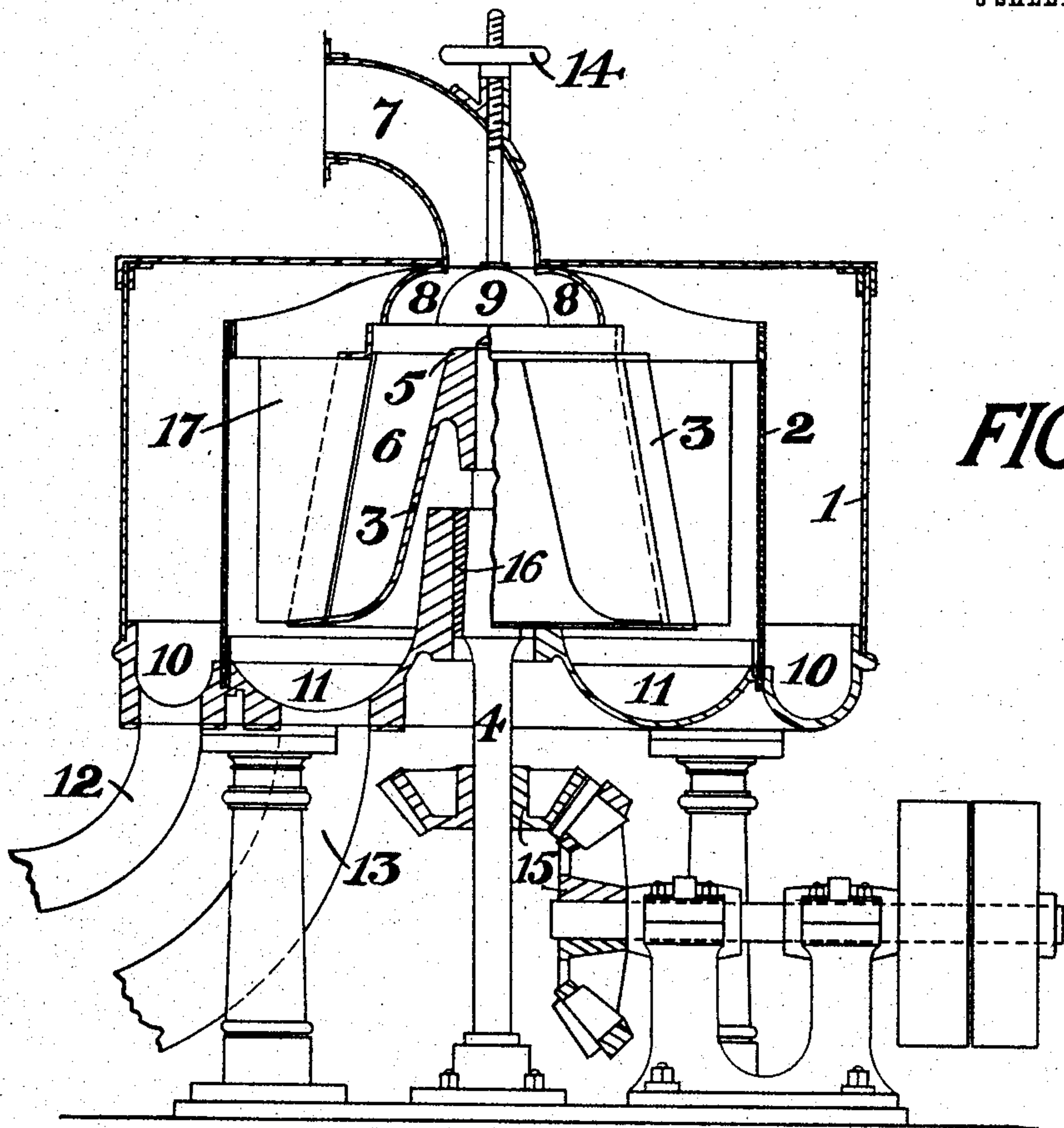


FIG. 1.

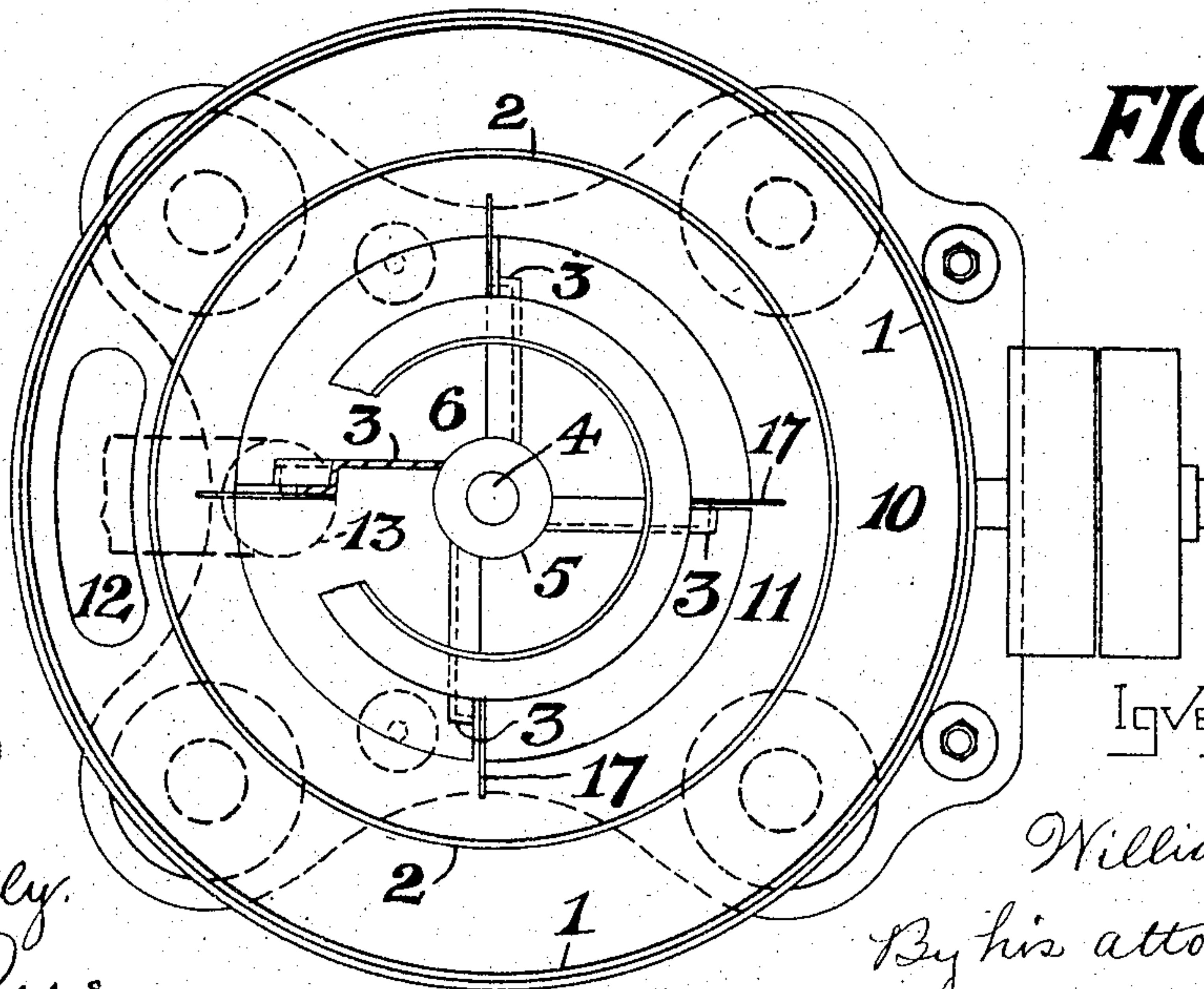


FIG. 2.

Witnesses

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Inventor

William Ruth.  
By his attorney,  
Edward P. Thompson

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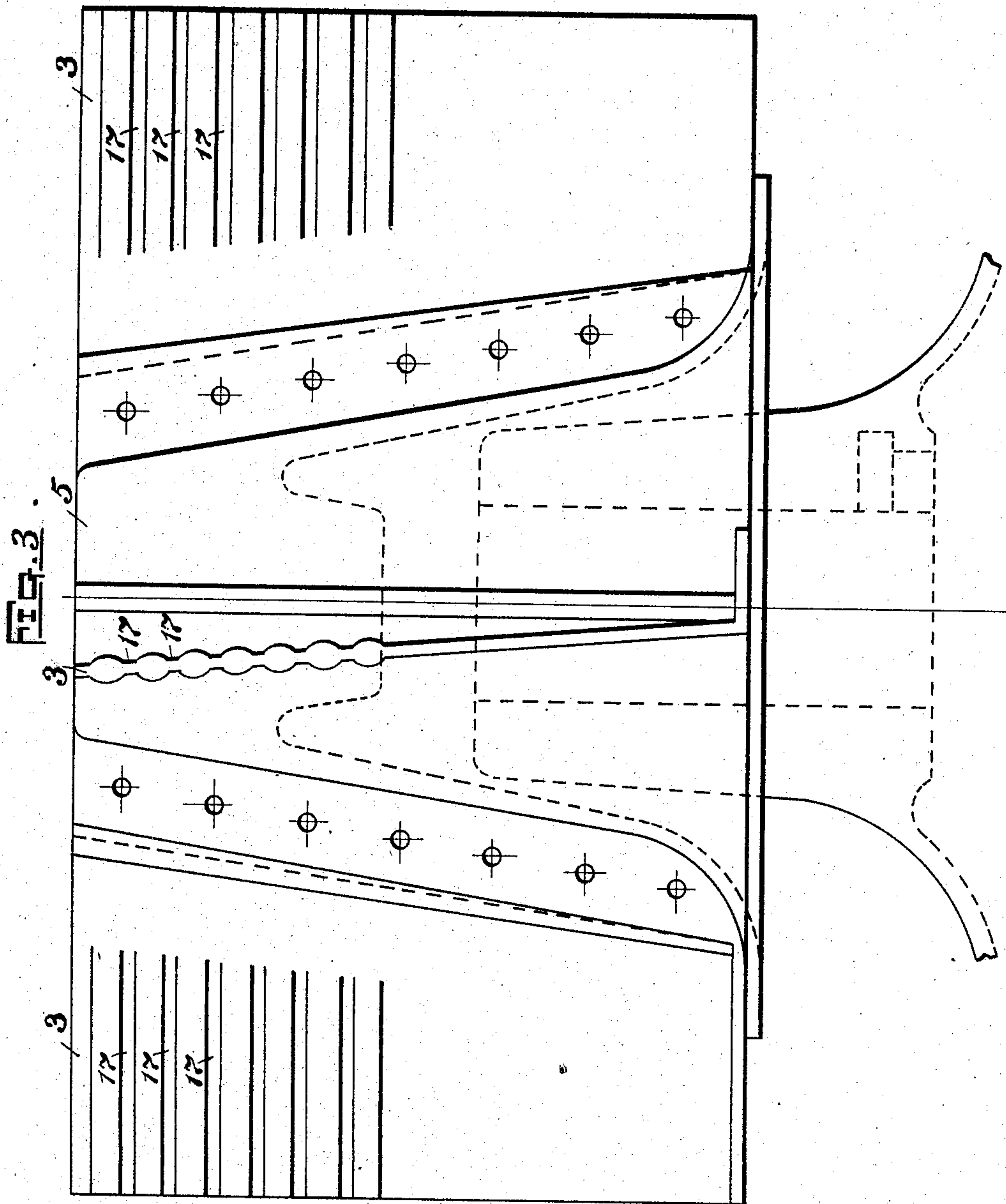
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Witnesses  
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J. C. Courser

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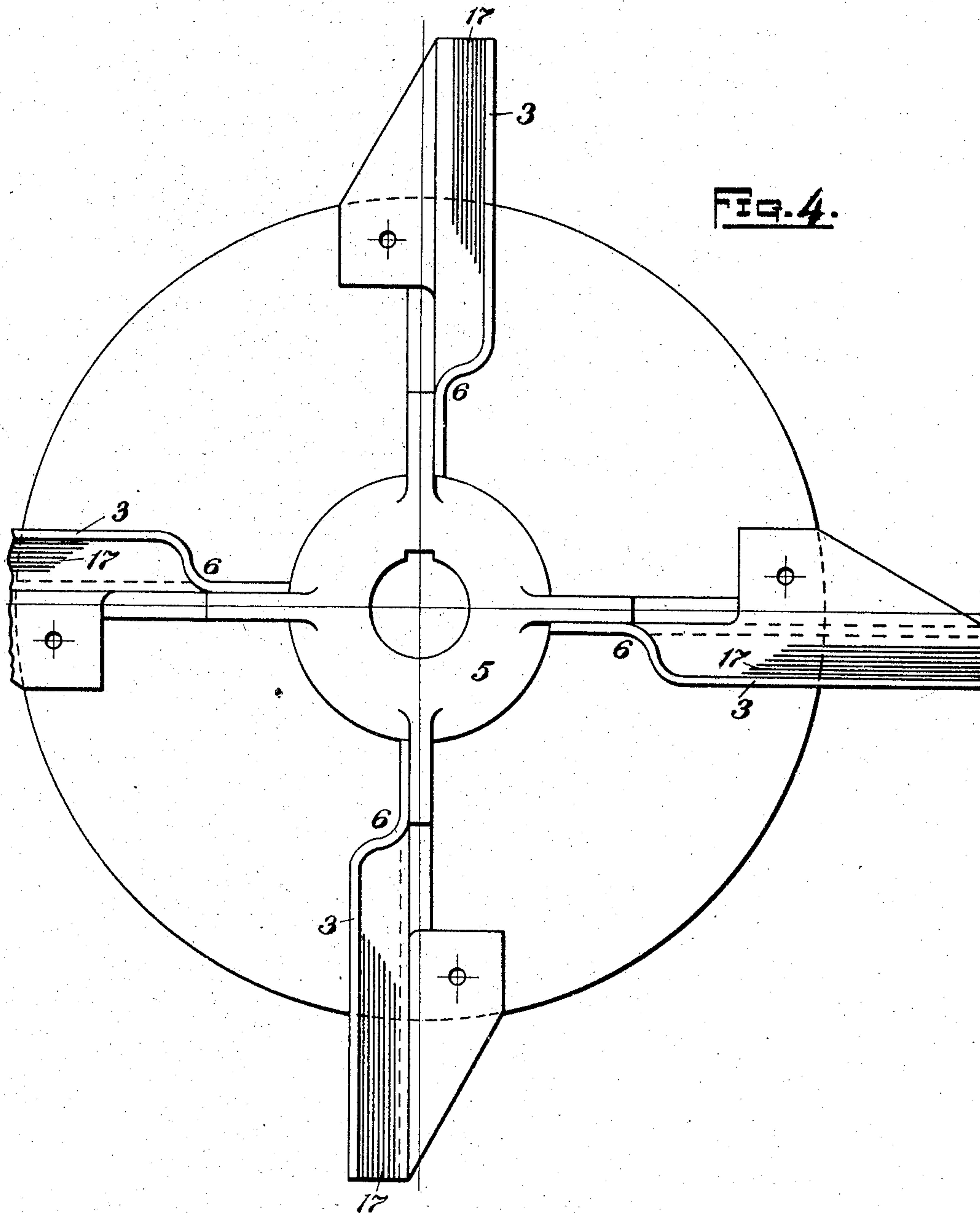
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3 SHEETS—SHEET 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR SEPARATING AND SIEVING WOOD-PULP.

SPECIFICATION forming part of Letters Patent No. 781,097, dated January 31, 1905.

Application filed July 12, 1904. Serial No. 216,292.

*To all whom it may concern:*

Be it known that I, WILLIAM RUTH, captain, a subject of the Emperor of Russia, and a resident of Karhula, in the Grand Duchy of Finland, Russia, (whose post-office address is Karhula, Finland aforesaid,) have invented certain new and useful Improvements in Apparatus for Separating and Sieving Wood-Pulp and Similar Substances Soaked in Liquids, (for which application has been made in Finland, dated November 14, 1903; Sweden, November 23, 1903; Norway, November 1, 1903; Germany, December 1, 1903, and Russia, December 20, 1903,) of which the following is a specification.

This invention relates to that kind of separating or sieving device for wood-pulp, cellulose, and other substances which have been soaked in fluids which comprises a stationary receptacle in which is placed a cylindrical sieve-drum wherein a number of wings or beaters rotate and throw the substance which has been led into the receptacle against the sieve, which lets the fluid and finer particles through, but retains the coarser particles, thereby separating or screening the material. In separating or drying devices hitherto used of this character the disadvantage has existed that only the upper part of the beater-surface has acted, the falling speed of the fluid having been less than the speed of the wing or beaters, which is influenced by other means; so the particles of the fluid have not been able to fall down to the bottom of the apparatus before they have been touched by the beaters, the mass in this way being spread only over the upper part of the beater-surface and the cylindrical sieve or screen.

The invention in question refers to an arrangement by which the whole sieve-cylinder can be used, this being accomplished by leading the fluid or mass in such a way against the wings or beaters that it is spread over the whole of their surface. The best results are thereby obtained with the least output of power.

The annexed drawings show the device, Figure 1 being a vertical section; and Fig. 2, a

plan partly in section. Figs. 3 and 4 are different views of the beaters, on an enlarged scale, to indicate the grooves 17, not easily represented in Figs. 1 and 2. 17 represents the location of the grooves in Figs. 1 and 2, however.

The device consists of a receptacle 1, the cylindrical sieve 2, and wings or beaters 3, the latter radiating from a cone-shaped body fixed on the spindle 4 and widening considerably toward the bottom, as is shown in Fig. 1. The spindle 4, journaled in bearings 16, is rotated by suitable gearing 15. Each wing has nearest the cone or sleeve 5 a channel 6, which stretches along the whole length of the wing with the same or almost the same inclination in regard to the spindle as the walls of the cone 5, so that it is inclined from top to bottom away from the spindle 4. At the top there is an inlet consisting of the inlet-pipe 7, the outer hood 8, and the inner hood 9. The opening between the two latter lies exactly opposite to the channels 6, and its radial width is the same or almost the same as the width of the latter. The fluid upon entering follows and fills the channels along their whole length and spreads itself from there, owing to centrifugal force, over the whole surface of the beaters or wings. Through the rotation of the wings the fluid is thrown against the sieve-cylinder, whereby the finer particles go through it and fall down into the channel 10, whereas the coarser ones fall down into the channel 11 and are conducted from there through special channels to any desired place by separate pipes or the like, such as 12 and 13.

The channels 6 being at their lower ends farther away from the spindle 4 than at their upper ends, the fluid is led downward partly through the pressure of the fluid which enters from above and partly from the influence of the centrifugal force. A channel made by riveting a ledge or such like on the wing side can also be employed. To enable the fluid to be conducted in the right direction over the surface of the beaters or wings, these can be furnished with grooves 17 of suitable shape. The inner hood 9 can be raised and lowered,



so as to regulate the inflow, by means such as the screwed spindle and hand-wheel designated as a whole by Fig. 14.

I declare that what I claim is—

- 5 1. In centrifugal separating and sieving apparatus for wood-pulp, cellulose and other substances, soaked in liquids, a cylindrical sieve; drum-wings adapted to be rotated in  
10 outwardly from the top to the bottom of said wings whereby the material to be treated is caused to spread itself along the whole surface of the wing and so utilize the whole surface of the sieve, substantially as described.
- 15 2. In centrifugal separating and sieving apparatus for wood-pulp, cellulose and other substances soaked in liquids, a cylindrical sieve-drum; a cone-shaped body adapted to  
20 be rotated in said sieve-drum; wings on said sieve-drum; channels in said wings inclined approximately parallel to the surface of said cone-shaped body, substantially as and for the purpose set forth.
- 25 3. In centrifugal separating and sieving apparatus for wood-pulp cellulose and other substances soaked in liquids a cylindrical sieve-drum, wings adapted to be rotated in said sieve-drum channels in said wings in-  
clined outwardly from the top to the bottom

of said wings, grooves in said wings, substan- 30  
tially as and for the purpose set forth.

4. In centrifugal separating and sieving apparatus for wood-pulp cellulose and other substances soaked in liquids a cylindrical sieve-drum, wings adapted to be rotated in 35  
said sieve-drum channels in said wings inclined outwardly from the top to the bottom of said wings, means for leading the material to be treated to the channels in the wings, substantially as and for the purpose described. 40

5. In centrifugal separating and sieving apparatus for wood-pulp cellulose and other substances soaked in liquids a cylindrical sieve-drum, wings adapted to be rotated in 45  
said sieve-drum channels in said wings inclined outwardly from the top to the bottom of said wings, an inlet on the top of the apparatus; an outer hood; and an inner hood adjustable relative to said outer hood; means for so adjusting said inner hood, substantially 50  
as and for the purpose set forth.

In witness whereof I have hereunto signed my name, this 20th day of June, 1904, in the presence of two subscribing witnesses.

WILLIAM RUTH.

Witnesses:

AKT. ARA. ANAUSHA,  
A. R. STÄHLO.