

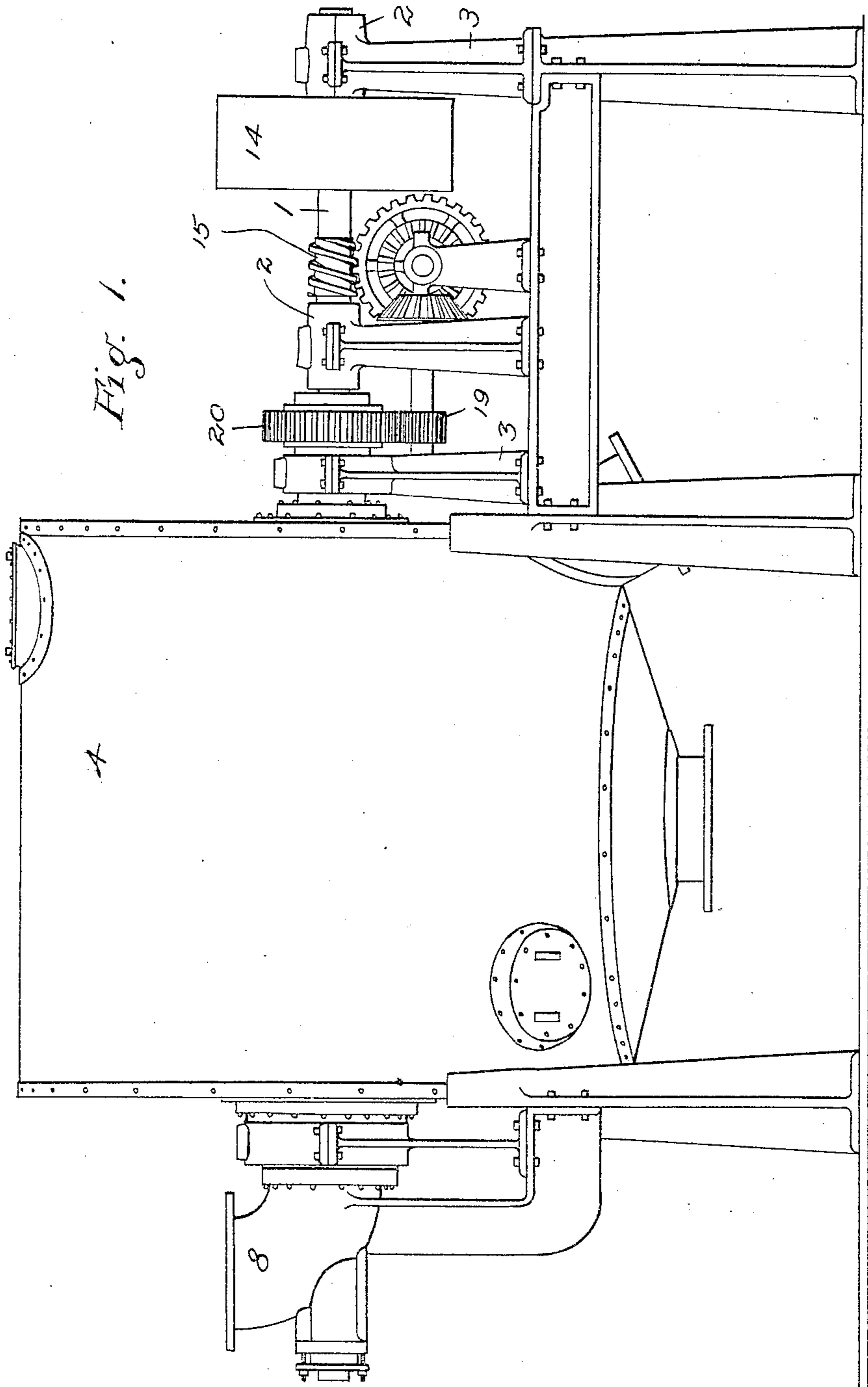
No. 778,692.

PATENTED DEC. 27, 1904.

O. H. MOORE.
PULP SCREEN.

APPLICATION FILED DEC. 17, 1903.

3 SHEETS—SHEET 1.



Witnesses

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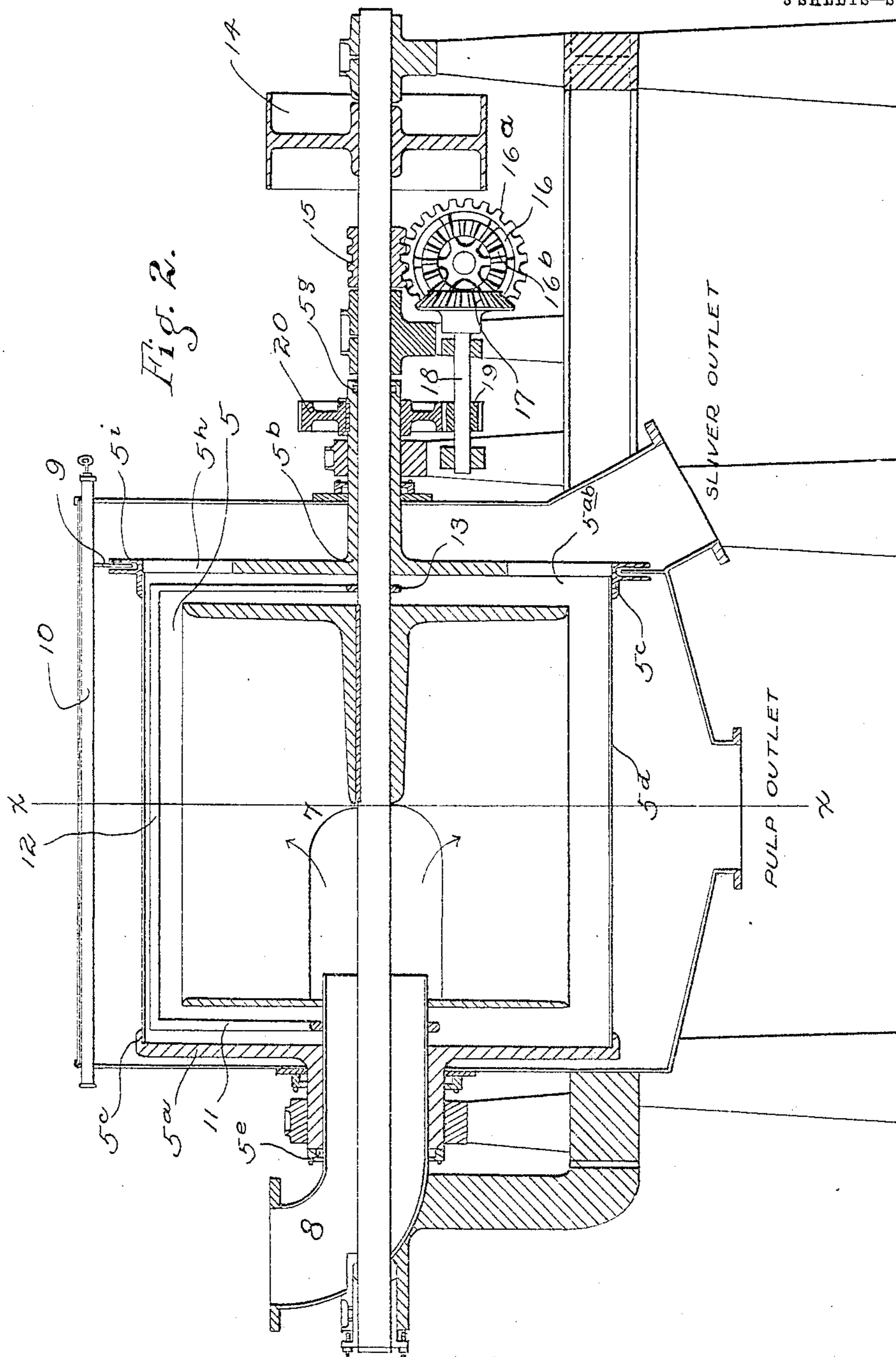
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3 SHEETS—SHEET 3.

Fig. 3.

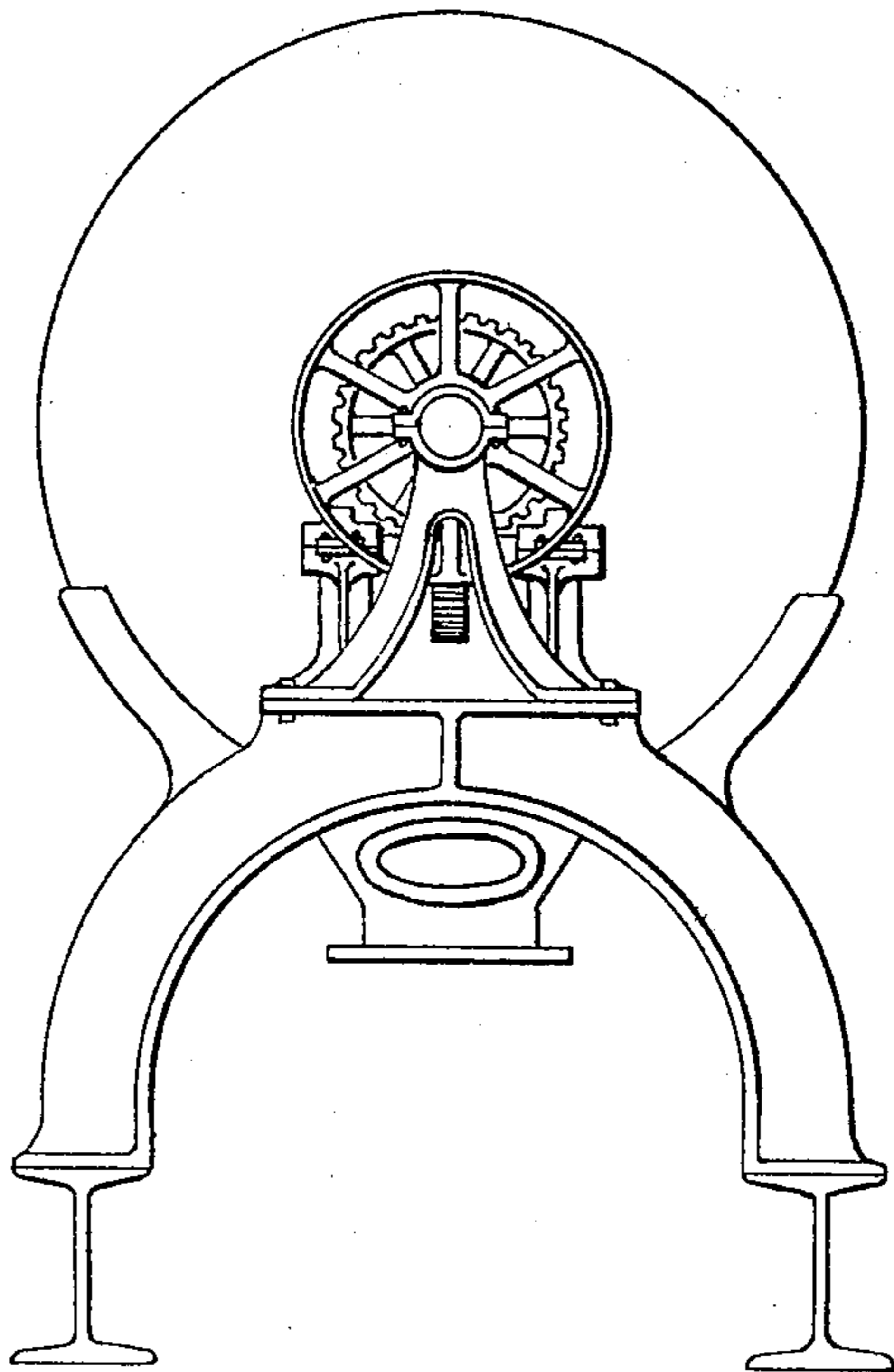
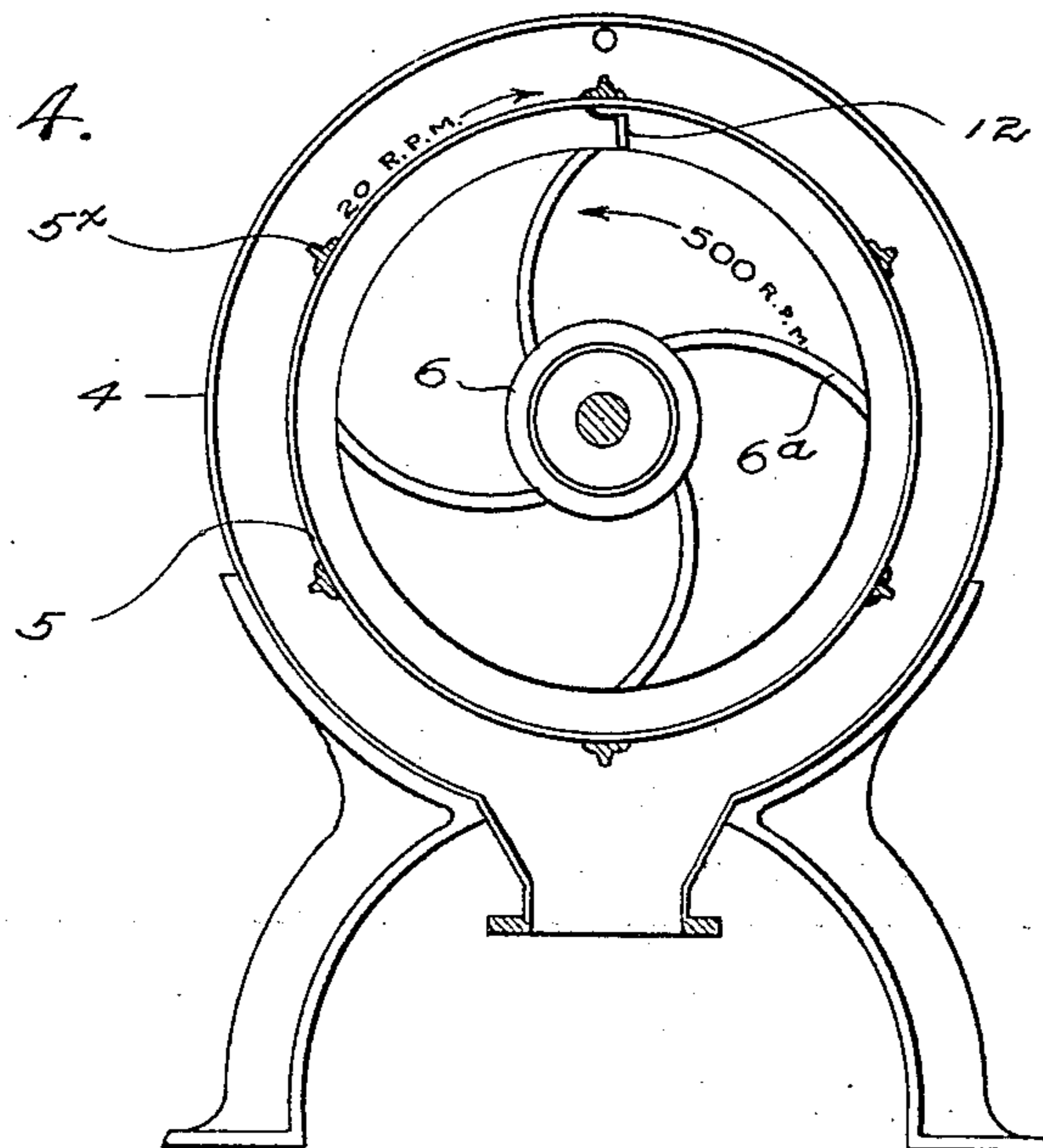


Fig. 4.



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UNITED STATES PATENT OFFICE.

ORVILLE H. MOORE, OF FORT EDWARD, NEW YORK.

PULP-SCREEN.

SPECIFICATION forming part of Letters Patent No. 778,692, dated December 27, 1904.

Application filed December 17, 1903. Serial No. 185,556.

To all whom it may concern:

Be it known that I, ORVILLE H. MOORE, a citizen of the United States, residing at Fort Edward, in the county of Washington and State of New York, have invented certain new and useful Improvements in Pulp-Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in pulp-screens.

It has for its object to promote economy in manufacturing pulp by providing a screen capable of a much larger output of a better quality so constructed that the sliver cannot become mixed with the refined pulp and in which the cleansing power of the shower will not be counteracted by the material being forced against the screen at the point where the shower strikes, while at the same time the screen is being scraped from within. Also the machine is compact, occupying a minimum amount of floor-space, and the joints are packed, so that none of the material can ooze out to make the machine itself and the floors around it look dirty or dingy, as is so often the case.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a side elevation of my screen complete. Fig. 2 is a vertical sectional view taken longitudinally and centrally of Fig. 1. Fig. 3 is an end elevation of the screen, and Fig. 4 is a cross-sectional view taken on the line *xx* of Fig. 2.

Referring more particularly to the drawings, a central and horizontal shaft 1 is mounted in bearings 2 in suitable supports 3, which also support the casing 4, surrounding the preferably cylindric screen 5. Mounted on said shaft and adapted to rotate therewith within the screen, the fan 6 has its blades 6^a centrally cut away at one end, as at 7, to allow the pulp to be fed from the inlet-pipe 8 to the center of the fan. The blades are preferably concavo-convex in shape, and the fan revolves so that the material strikes the convex sides of the blades, thereby greatly facilitating the

work of the machine and increasing its capacity. The other head or end plate 6^a of the fan is preferably reinforced and tapers outwardly. Said head has an inwardly-extending hub 6^b mounted and keyed to the shaft for supporting the fan. By this means the pulp being fed to the center of the fan any that collects around the hub is readily propelled along the hub and out to the circumference of the plate without coming in contact with any obstructing shoulder, &c. The pulp-inlet pipe extends through the casing and one end of the screen and projects a short distance through the adjacent end plate of the fan.

The screen is formed of heads or end plates 5^a 5^b, the outer circumferences of which are provided with flanges 5^c, to which are secured the strainer-plates 5^d, which may be provided with either round holes or slots, according to the stock to be made. The end plate 5^a of the screen-cylinder has a hollow neck-bearing around the inlet-pipe and has a packing-gland 5^e at its end to prevent the stock from escaping. The end plate 5^b has a smaller neck-bearing and is also provided with a packing-gland 5^f at its end. This end plate has a solid center with a slot 5^{ab} around its outer edge, through which the sliver escapes to its outlet. The rim of this plate is secured to the central portion by means of spokes 5^h or portions left in cutting the sliver-escape slots. The extreme outer edge has a double flange 5ⁱ, in which the interior flange 9 of the outer casing extends, whereby the sliver and sawdust are prevented from getting into the space between the screen-cylinder and the casing, where the good stock is confined. The screen is preferably reinforced by external cross-pieces 5^x, extending from one end plate to the other at stated intervals around their circumferences. The outer casing is of a general cylindrical form and has pulp and sliver outlets at its lower portion. Packing-glands are provided at each side around the neck-bearings of the end plates of the screen-cylinder and also at the end bearing of the shaft 1 next to the inlet-pipe. A water-pipe 10 is arranged longitudinally through the upper portion of the casing for feeding a shower upon the screen-plates for clearing the perforations

therein. Said casing is also provided with two hand-hole plates, which may be removed at any time to clean the machine. They are preferably two in number—one at the top and
5 the other at the bottom of the casing.

Fixed to the pulp-inlet pipe between the head 5^a of the screen-cylinder and the adjacent end of the fan is a framework 11, supporting a scraper or doctor 12, extending across
10 just below the screen-plates, the other end of said scraper being supported on a split ring 13, mounted on the shaft 1, which allows the free movement of said shaft while the scraper is held rigid. This scraper or doctor
15 is preferably made in the form of a trough to prevent the fan from forcing the stock against the plates where the shower strikes, thus giving the shower a better chance to clear them, and at the same time said plates are being
20 scraped.

The machine is run by means of a belt-pulley 14, fixed to the shaft 1, which shaft carries a worm-gear 15, meshing with a worm-wheel 16, suitably mounted in position. Said worm-
25 wheel has worm-teeth 16^a on its outer edge, gearing with the worm-gear 15, and beveled gear-teeth 16^b on its side. The latter gear-teeth mesh with the beveled pinion 17, mounted on the short shaft 18, which also carries a
30 gear 19, meshing with the gear 20, keyed to the neck-bearing 5^b of the screen-cylinder. By this means it will be seen that when the shaft 1 revolves, carrying with it the fan, the screen-cylinder will be revolved in the opposite direction through the medium of the
35 worm-gear 15, compound gear 16, shaft 18, and gears 19 and 20 at a much slower rate. The pulp being fed through the inlet-pipe 8 to the center of the fan is forced against the
40 screen-plates of the screen-cylinder, when the finer stock will go through and pass out the pulp-outlet, while the coarser material will find its way out through the openings 5^{ab} in the end plate 5^b of the screen-cylinder and
45 out the sliver-outlet. During the operation the scraper or doctor, being stationary, scrapes the screen-plates as they pass, while the shower washes them from the outside. The scraper is of such form that it always ex-
50 tends beneath the screen-plates, where the shower strikes, so that its cleaning power is not counteracted by having the pulp forced against the plates from the inside, which tends to stop up the holes.

In practice the fan is run about five hundred revolutions per minute, while the screen-cylinder makes about twenty revolutions per minute. It will be readily seen, however, that the gearing may be changed, so that the
60 relative speed of the fan and cylinder may be varied, and other detail changes may be made without departing from the spirit or sacrificing the advantages of my invention and the same remain intact and be protected.

In mounting the machine so that the shaft, 65 fan, and screen revolve on their horizontal axes all irregular motion is prevented.

Having thus described my invention, what I claim as new, and desire to secure my Letters Patent, is—

1. In a machine of the character described, a cylindric screen, a fan, revoluble within said screen, having its blades cut away at one end, said blades forming chambers therebetween extending uninterrupted from the hub
75 to the outer extremities of the blades and means which extend within the plane of said cut-away portion for feeding the material to the fan.

2. In a machine of the character described, 80 a cylindric screen, a fan mounted on a horizontal shaft and revoluble within said screen, said fan having its blades cut away at one end and means, which extend within the plane of said cut-away portion, for feeding the ma- 85 terial to the fan.

3. In a machine of the character described, a cylindric screen, a fan mounted on a horizontal shaft having three bearings, said fan revoluble within said screen and having its
90 blades cut away at one end, and an inlet-pipe, extending within the plane of said cut-away portion, for feeding the material to the fan.

4. In a machine of the character described, a revoluble cylindric screen, and a fixed trough-
95 shaped scraper adapted to clear said screen from within.

5. In a machine of the character described, a revoluble cylindric screen, an oppositely-revoluble fan mounted within said screen, and a
100 fixed scraper adapted to clear said screen from within.

6. In a machine of the character described, a horizontal cylindric screen having an end plate and a fan revoluble within said screen
105 also having an end plate, said end plate of said screen having a slot around its outer circumference for the escape of the sliver, said slot extending upward to a point above the plane of the lower edge of the end plate of
110 said fan.

7. In a machine of the character described, a horizontal cylindric screen having end plates, a fan revoluble within said screen and having
115 its blades cut away at one end and means, which extend within the plane of said cut-away portion, for feeding the material to the fan, the end plate, of the screen at the opposite end of the cylinder from where the material is fed to the fan, having a slot around
120 its outer circumference for the escape of the sliver.

8. In a machine of the character described, a revoluble screen, an oppositely-revoluble fan, a casing inclosing said screen, provided
125 with separate compartments for the refined material and the sliver, said compartments being separated from each other by a double

flange on the screen adapted to move in juxtaposition to the opposite sides of a single flange on the casing.

9. In a machine of the character described, 5
a revoluble screen having an end plate, an oppositely-revoluble fan, a casing inclosing said screen, said end plate having a slot near its outer circumference for the escape of the sliver and a double flange on its edge adapted 10
to move in juxtaposition to the opposite sides of a single flange on the casing whereby said casing is separated into different compartments for the refined material and the sliver.

10. In a machine of the character described, 15
a cylindric screen, a horizontal shaft, a fan, revoluble with said shaft, having an end plate provided with an integral, inwardly-extending, hub, said fan wholly supported by said hub.

20 11. In a machine of the character described, a cylindric screen and a revoluble fan having an end plate, provided with an outwardly-tapering inner surface, said fan wholly supported on a hub extending inwardly from said 25
end plate.

12. In a machine of the character described, a cylindric screen, a horizontal revoluble fan having its blades and one end plate centrally cut away at one end and an integral hub extending inwardly from the opposite end plate, 30
said fan wholly supported on said hub.

13. In a machine of the character described, a cylindric screen, a horizontal revoluble fan, mounted within said screen, having its blades 35
cut away at one end, an inlet-pipe extending within the plane of said cut-away portion, said fan having an end plate carrying an integral inwardly-extending hub.

14. In a machine of the character described,

a cylindric screen, a revoluble fan mounted 40
within said screen, an inlet-pipe extending into the screen, and a doctor having a bearing upon said inlet-pipe.

15. In a machine of the character described, a cylindric screen, a revoluble fan mounted 45
within said screen, an inlet-pipe extending into the screen, and a doctor having a bearing upon said inlet-pipe, and its other bearing upon the shaft carrying the fan.

16. In a machine of the character described, 50
a cylindric screen, a revoluble fan, mounted within said screen, having its blades cut away at one end, an inlet-pipe extending within the plane of said cut-away portion, and a doctor having a bearing upon said inlet-pipe between 55
the screen and the fan.

17. In a machine of the character described, a revoluble cylindric screen, an oppositely-revoluble fan, mounted within the screen, a shaft 60
carrying said fan, an inlet-pipe, said screen having neck-bearings, one around said inlet-pipe and one around said shaft, said latter bearing carrying a gear, a short shaft carrying a gear meshing with the gear on said neck-bearing and a beveled gear, a combination 65
worm and beveled gear-wheel mounted to mesh with said beveled gear mounted on said short shaft, a worm-gear mounted on the fan-shaft and meshing with said combination gear-wheel and a belt-pulley mounted on said fan- 70
shaft whereby the screen and fan may be rotated in opposite directions through one belt.

In testimony whereof I affix my signature in presence of two witnesses.

ORVILLE H. MOORE.

Witnesses:

WALLACE A. FRENCH,
GEORGE TURNER.