No. 649,152. Patented May 8, 1900.

J. H. ANNANDALE.

APPARATUS FOR WASHING FIBROUS MATERIALS USED IN PAPER MAKING.

(Application filed Sept. 29, 1899.)

(No Model.)

FIG. 1.

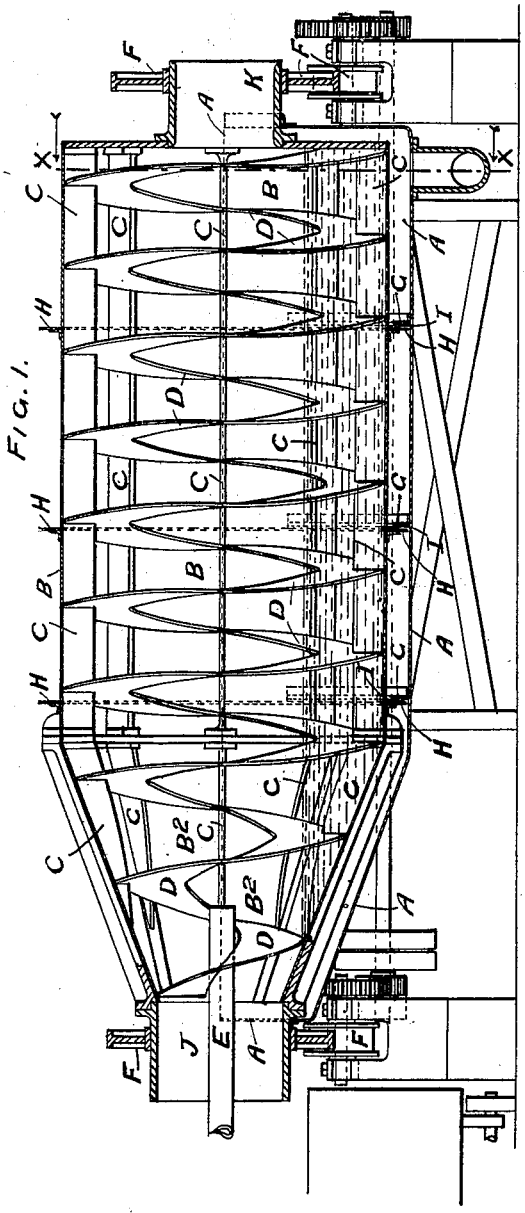


FIG. 2.

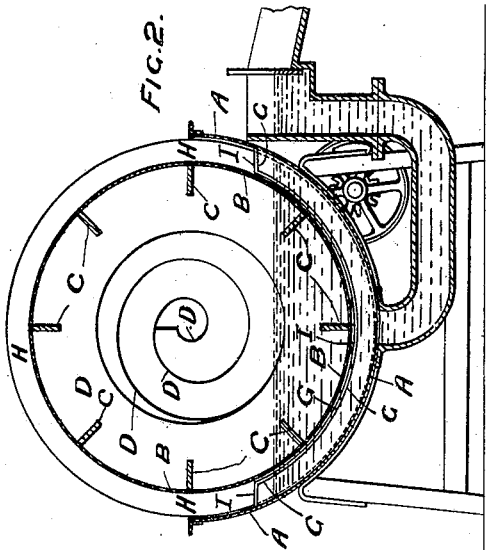
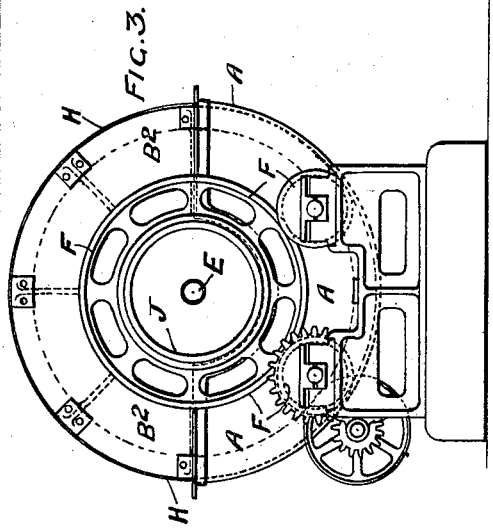


FIG. 3.



WITNESSES:
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JAMES HUNTER ANNANDALE, OF POLTON, SCOTLAND.

APPARATUS FOR WASHING FIBROUS MATERIALS USED IN PAPER-MAKING.

SPECIFICATION forming part of Letters Patent No. 649,152, dated May 8, 1900.

Application filed September 29, 1899. Serial No. 732,084. (No model.)

To all whom it may concern:

Be it known that I, JAMES HUNTER ANNANDALE, a subject of the Queen of the United Kingdom of Great Britain and Ireland, residing at Polton Paper Works, Polton, Mid-Lothian, Scotland, have invented certain new and useful Improvements in Apparatus for Washing Fibrous Materials Used in Paper-Making and for other Purposes, (which was patented in Great Britain on the 4th day of March, 1899, No. 4,756,) of which the following is a specification.

This invention relates to apparatus for washing fibrous materials used in paper-making and for other purposes; and it has for its object to provide improved apparatus in which the fibrous materials may be effectually freed from coloring-matters and other impurities by feeding them slowly forward while turning them and exposing fresh surfaces against a stream of water and so that after washing they are delivered from the apparatus upon their passage through the cleaner in flowing water.

The invention is illustrated by the accompanying drawings.

Figure 1 is a longitudinal sectional view of the apparatus. Fig. 2 is a cross-sectional view of the same, and Fig. 3 is an end elevation.

The vat or trough A is mounted upon a suitable support and receives the drum B, arranged horizontally, having end trunnions J K, journaled in suitable bearings. The drum B, which is formed of a perforated shell, has a series of ribs *c*, projecting radially from its inner periphery and spaced a distance apart. A blade D is wound helically around the inner periphery of the shell B and extends from end to end thereof. One end B^2 of the drum B is conical or made of gradually-diminishing diameter, and at that end the washing-water is admitted by a pipe E and the cleansed material delivered through a central opening in the trunnion J, while at the opposite end a central opening is formed in the trunnion K, leading into the drum, for the admission of the unwashed material. The drum B may be rotated on the trunnions J K at the inlet and outlet, or it may be carried on rollers F, as shown, or otherwise supported as to permit of its rotation. The helical blade or worm D within the drum B is by preference perforated to permit of the free passage through it of the washing-water, and in the bottom of the vat or trough A is formed a transverse vertical web or webs G to prevent the direct passage of the clean water toward the outlet, and in conjunction with these webs G like-shaped leather strips I are preferably provided, which by the action of the water in the drum B are caused to bear against the side of rings H, surrounding the drum B, and thus act as valves to prevent the direct passage of the water.

In the operation of the apparatus the fibrous materials are fed into the trunnion K of the drum B, while the washing-water enters through the other trunnion J through the central pipe E, which delivers it into the conical end B^2. The materials are by the rotation of the drum B and helix D gradually traversed along the length of the drum B and through the washing-water in the vat A, the level of which water is maintained at about the depth of the helical blade D or so as to insure the immersion of the materials carried along by it. During the rotation of the drum B the fibrous materials are also repeatedly lifted and turned over by means of the longitudinal spars C of the drum B. In this way the materials are traversed against the stream of inflowing water which flows through the perforations of the drum and helix D, and at the farther end they are raised up by the conical end of portion B^2 of the drum B clear of the water and delivered through the narrow outlet J.

The drum of the apparatus may obviously be made with a solid shell and the vat or trough dispensed with.

The apparatus described is particularly applicable to the washing of the fibers of textile materials, more especially after disintegration, esparto-grass and wood reduced to "half-stuff," and other fibrous materials used in paper-making. It may also be used for removing coloring-matter and chemical re-

agents employed in treating fibrous materials and for washing wood or like fibers.

Having now described the invention, what I claim, and desire to secure by Letters Patent, is—

In combination, a trough, a drum mounted therein, means for rotating the drum, ribs projecting from said trough and leather rings carried by the drum to press firmly against said ribs and prevent the passage of water, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JAMES HUNTER ANNANDALE.

Witnesses:
ROBERT MACLACHLAN,
JOHN MACLACHLAN.