(No Model.)

M. J. ROACH.

WASHING MACHINE FOR PAPER STOCK.

No. 569,673. Patented Oct. 20, 1896.

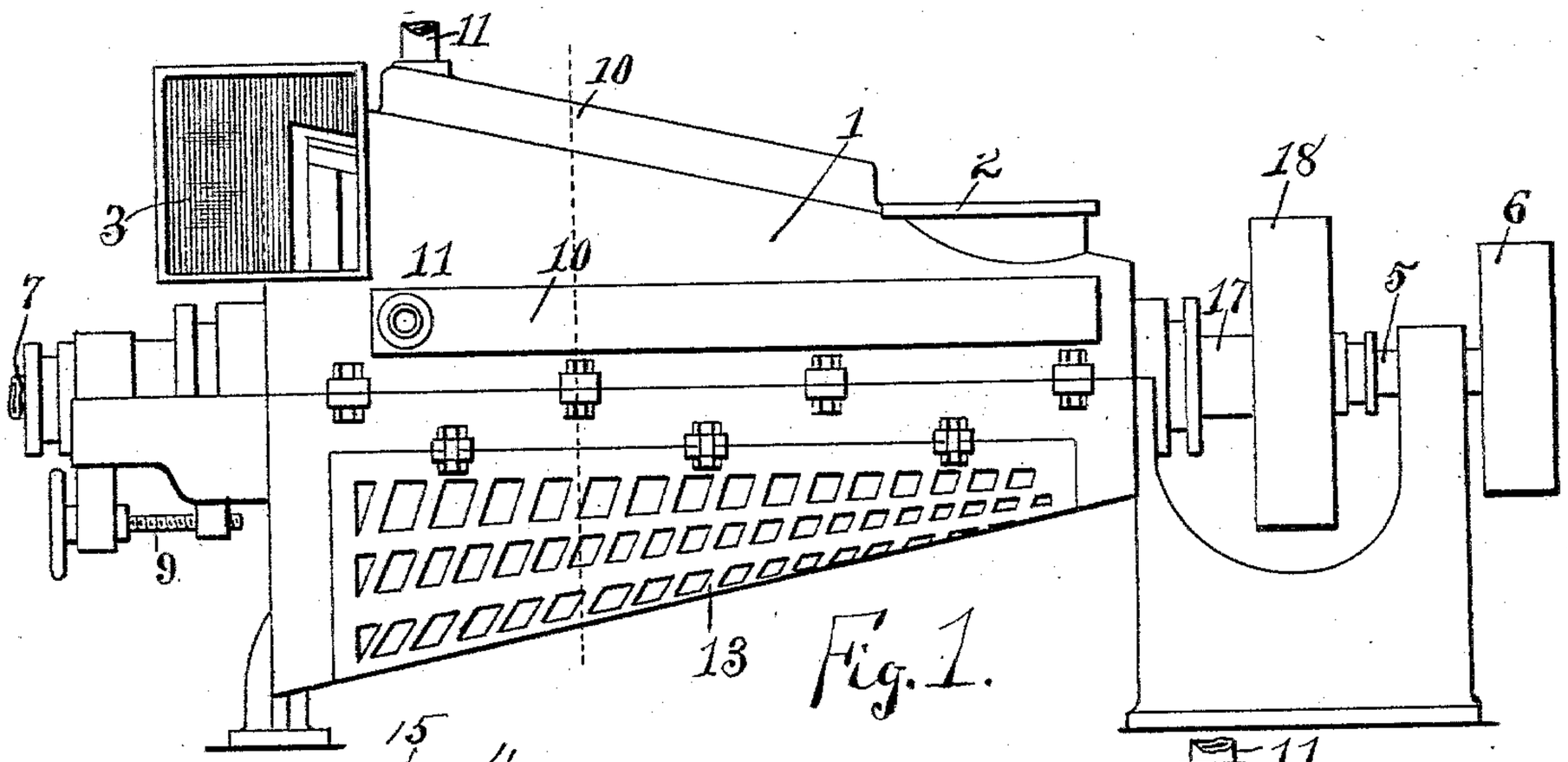

Fig. 1.

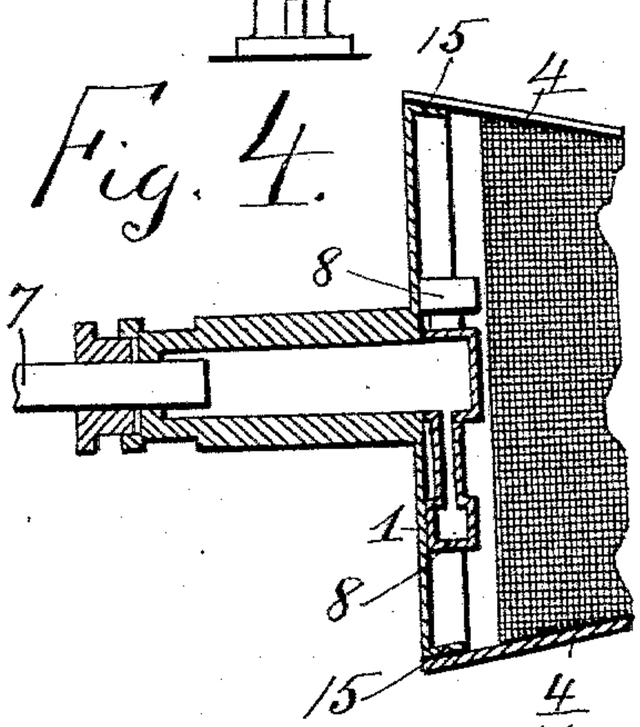

Fig. 4.

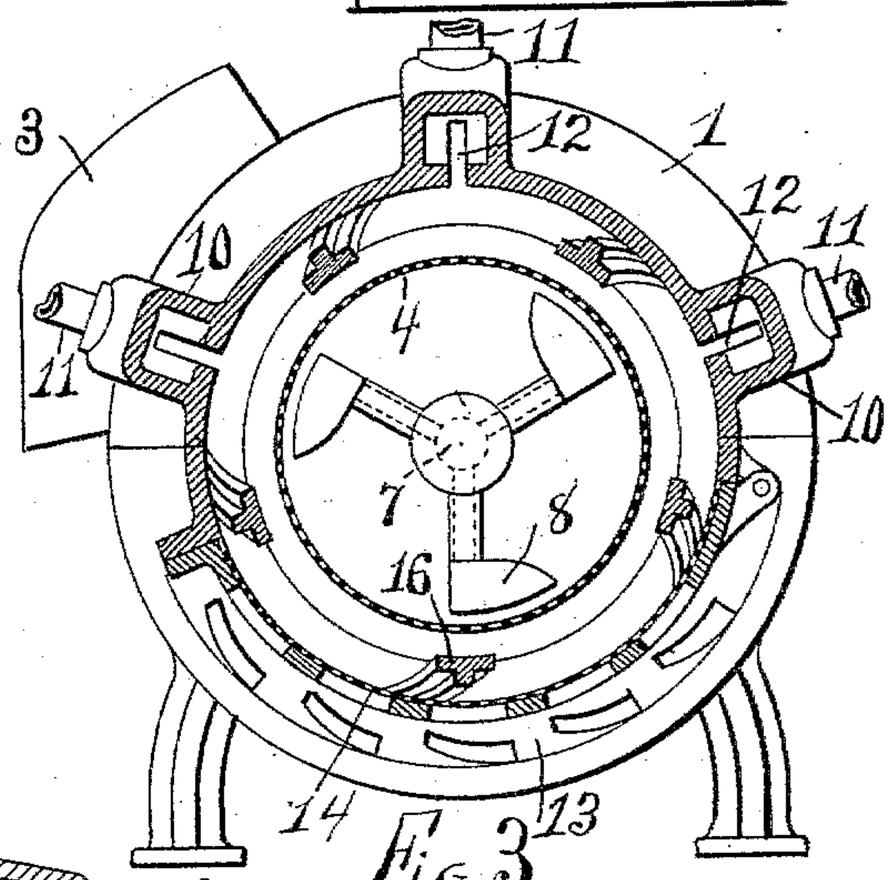

Fig. 3.

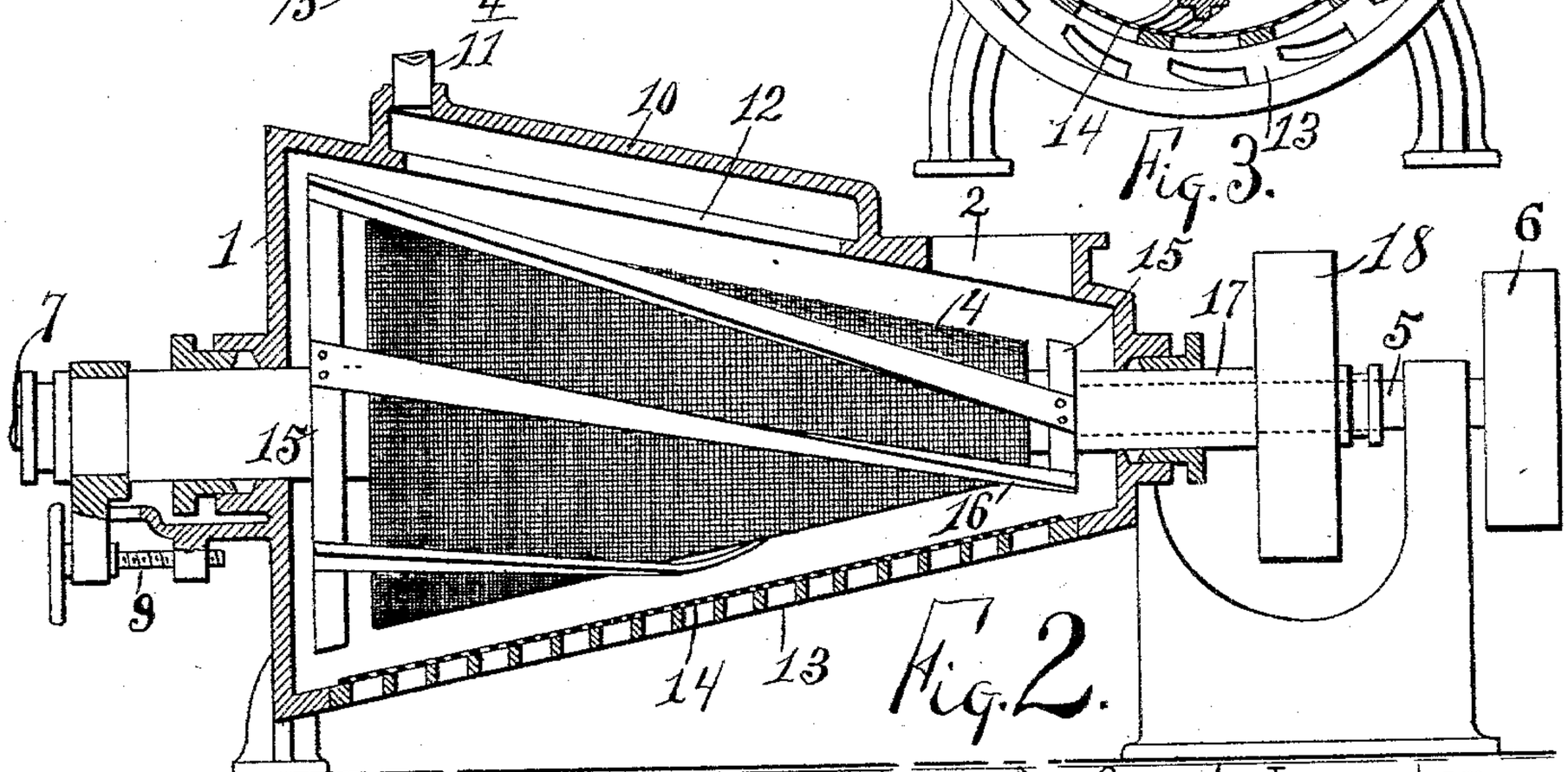

Fig. 2.

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UNITED STATES PATENT OFFICE.

MICHAEL J. ROACH, OF ANDERSON, INDIANA.

WASHING-MACHINE FOR PAPER-STOCK.

SPECIFICATION forming part of Letters Patent No. 569,673, dated October 20, 1896.

Application filed October 3, 1895. Serial No. 564,517. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. ROACH, of Anderson, Madison county, Indiana, have invented certain new and useful Improvements in Washing-Machines for Paper-Stock, of which the following is a specification.

This invention pertains to improvements in machines for washing paper-makers' stock, particularly straw stock.

My improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a machine exemplifying my invention; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a vertical transverse section of the same; and Fig. 4, a vertical longitudinal detail section, partly broken away, showing the dipper arrangement.

In the drawings, 1 indicates a horizontal conical casing made, preferably, in two halves united by a horizontal joint; 2, an inlet-opening at the smaller end of the casing to admit the stock which is to be washed; 3, an outlet-opening at the larger end of the casing for the discharge of the washed stock; 4, a hollow conical revolver mounted to turn within the casing, the periphery of this revolver being foraminous by being formed of wire-cloth or perforated metal, which will permit the passage inwardly of water, but not of stock, the revolver being built up on spiders and skeleton framing, as is usual in the construction of wire-cloth cylinders used in paper-mills; 5, the shaft of the revolver; 6, the driving-pulley of the revolver, fast on shaft 5; 7, a water-discharge pipe leading into the interior of the revolver 4; 8, clearing-dippers, of ordinary construction, arranged within the revolver and turning with it and communicating with discharge-pipe 7, so as to carry outwardly the water accumulating in the revolver; 9, screw for adjusting the revolver endwise in the casing in order to increase or decrease the width of the annular space within the casing around the revolver; 10, longitudinal side pipes cast upon the exterior of the casing; 11, water-inlet pipes placing the side pipes in communication with any proper source of free supply of washing-water; 12, longitudinal slots through the wall of the casing at the side pipes to admit water from the side pipes to the space around the revolver freely from end to end; 13, the lower portion or floor of the casing, in grate form, and arranged to open downwardly to give access to its interior surface; 14, a foraminous lining for the openable floor portion of the casing, this lining being formed of perforated metal or wire-cloth adapted to permit the outward passage of water, but prevent the outward passage of stock; 15, spiders, one at each end of the revolver 4 and loose on the shaft or necks of the revolver, so as to be capable of turning independent of the revolver; 16, a series of ribs spirally arranged and having their ends secured to the spiders 15, these ribs turning in the annular space around the revolver and clear of the revolver and of the casing; 17, a hollow shaft loose on the shaft of the revolver and fast with one of the spiders 15 and projecting out through one end of the casing, and 18 a driving-pulley fast on the hollow shaft 17.

Rotary motion in the same direction may be given to the revolver and to the ribs at different speeds. The stock to be washed is admitted at opening 2 and moves toward the larger end of the machine, being urged by centrifugal force and by the action of the ribs 16. Washing-water enters through slots 12, the stock receiving fresh clean water as it moves toward the large end of the casing. The stock is carried around in the annular space and tumbled and turned and moved endwise, much of the dirty washing-water leaving through the foraminous floor of the casing and much of it passing into the interior of the revolver, whence it is drawn off through pipe 7. Cleaned stock leaves at opening 3. The washing, it will be observed, is done between two foraminous surfaces over which the stock is rubbed by the action of the spiral ribs. The ribs may be given any desired speed with relation to the speed of the revolver so as to accomplish the washing in the best manner and feed forward the stock at desired rate. Power may be applied to the machine by separate belts on pulleys 6 and 18, or, for a fixed relationship of speed, suitable gearing may be employed in connection with a single belt for giving the differential speeds. The dippers 8 may, if desired,

be dispensed with and the water drawn from the interior of the revolver through pipe 7, employed as an ordinary dip-pipe, that is to say, with an end within the revolver dipping down to near its wall, as in the case of a single dipper maintaining a fixed downward position.

I claim as my invention—

1. The combination, substantially as set forth, of a circular casing having an inlet and an outlet for stock, a hollow revolver mounted therein and having a foraminous periphery, a series of ribs mounted to turn in the annular space within the casing and around the revolver, means for turning said revolver and series of ribs independently, and an inlet and outlet for washing-water.

2. The combination with a casing provided with an inlet and outlet for stock at its opposite ends and with a longitudinal water-inlet opening or slot extending continuously, substantially from end to end of the casing, the edge of said opening constituting a ledge against which the stock is dashed and separated, and a supply-pipe or conduit designed to supply water to the inlet-opening along its entire length to simultaneously dislodge the stock adhering to the ledge and to supply the interior of the casing with water, and a revolver within the casing designed to agitate the stock.

3. The combination, substantially as set forth, of a circular casing having an inlet and outlet for stock and having a foraminous wall portion, a circular revolver mounted in the casing and having a foraminous periphery, and a series of ribs mounted to travel independently in the annular space between the casing and revolver.

4. The combination, substantially as set forth, of a circular conical casing, a conical casing mounted to turn therein and having a foraminous periphery, a dipper within the larger end of the revolver, and a discharge-pipe communicating with said dipper.

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