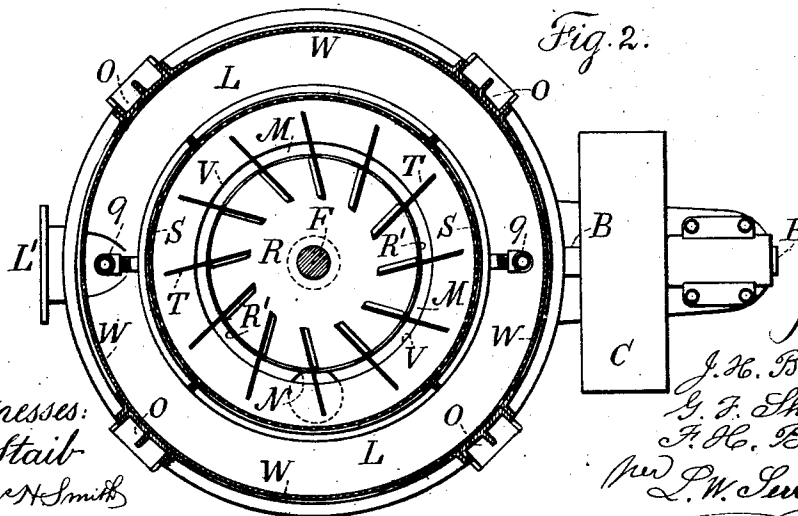
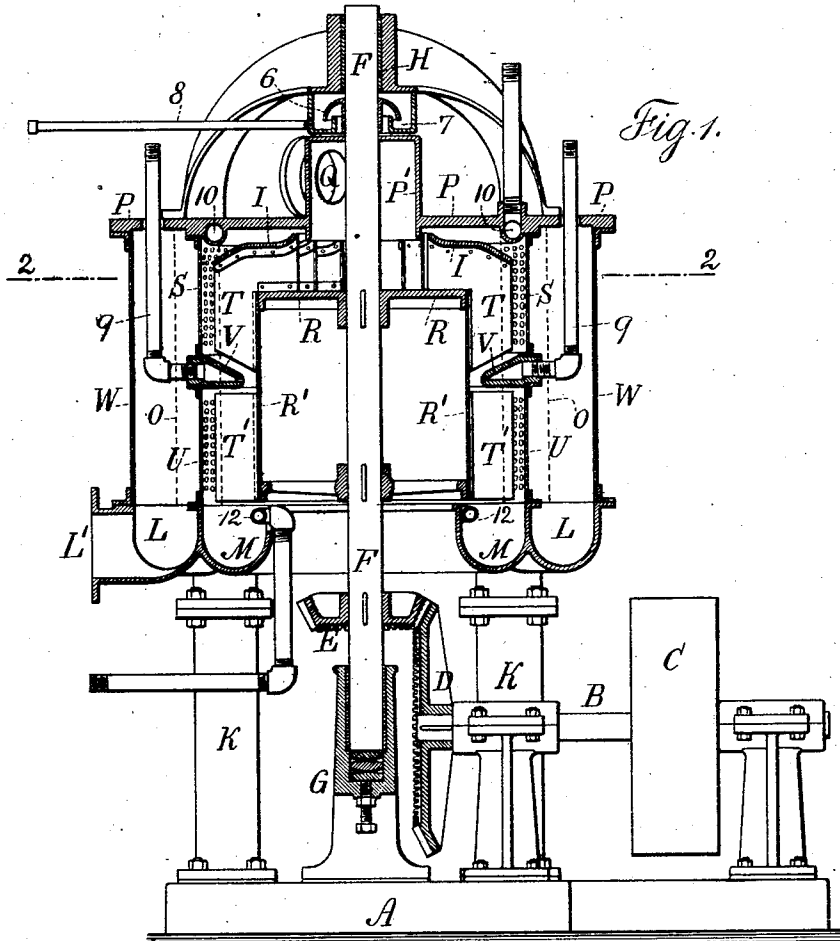


(No Model.)

J. H. BAKER, G. F. SHEVLIN & F. H. BAKER.
PULP SCREEN.

No. 591,645.

Patented Oct. 12, 1897.



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UNITED STATES PATENT OFFICE.

JAMES H. BAKER, GEORGE F. SHEVLIN, AND FREDERICK H. BAKER, OF
SARATOGA SPRINGS, NEW YORK.

PULP-SCREEN.

SPECIFICATION forming part of Letters Patent No. 591,645, dated October 12, 1897.

Application filed May 5, 1897. Serial No. 635,139. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. BAKER, GEORGE F. SHEVLIN, and FREDERICK H. BAKER, citizens of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, have invented an Improvement in Pulp-Screens, of which the following is a specification.

This pulp-screen is especially intended for wood-pulp, and the screening operation is effected centrifugally, and the pulp is acted upon twice or more as it passes through the machine and the fine stock delivered at one place, and the coarse stock and slivers that do not pass through the screens are delivered separately for subsequent treatment.

In this machine the paper-stock is supplied upon a centrifugal plate and thrown off by the action of the same and by fans against a circular screen, the fine stock passing through such screen and the coarser stock being washed down and by an inward deflector and spray issuing therefrom is carried back to the cylinder and again thrown off centrifugally by the fans thereon and against a second circular screen, and the material that does not pass through such screen is washed down into an annular trough and delivered separately, and the fine stock that passes through the screens is received into a second annular trough and delivered by a pipe, and water is supplied to wash the material from the surfaces of the screens and to carry such stock to the place of delivery.

In the drawings, Figure 1 is a vertical section of the centrifugal pulp-screen, and Fig. 2 is a sectional plan at the line 2 2.

The base A is to be of a suitable size and shape and provided with bearings for supporting the driving-shaft B, having a pulley C and gear D for giving motion to the beveled pinion E and vertical shaft F, which is supported upon a suitable step or bearing G upon the base A, and this vertical shaft F is also provided with a bearing H at the upper end, the same being supported by the parts hereinafter described.

The standards K support the two annular troughs L and M, there being a discharge-pipe I' from the outer trough L and a discharge-pipe N from the inner trough M, and we find

it advantageous to make the standards K tubular and to bolt them to the bed A and to the downward projections upon the annular troughs, as shown.

The frames O rise from the outer edges of the trough L and support at their upper ends the top plate P, and this plate P receives the outer ends of the arch-bars or frame carrying the bearing H, the parts being properly bolted together.

In order to prevent lubricating material that may be applied to the top bearing H passing down the vertical shaft F and into the apparatus, a dome 6 is fastened around the shaft, with its edges extending into the annular cup 7, from which a tube 8 extends for allowing lubricating material to run out.

Upon the central portion of the top plate P a cylinder P' rises with a supply-pipe Q, through which the paper-stock and water are allowed to flow, and upon the vertical shaft F is a centrifugal plate R, upon which the stock is arrested and thrown off by the centrifugal force against the cylindrical screen S, and this operation is promoted by the action of wings or fans T, which are advantageously at an angle to the radial lines, as shown in Fig. 2, so as to promote their centrifugal action, and these wings are upon the surface of the cylinder R' and extend over the plate R.

There is a second cylindrical screen U below the screen S and resting at its lower edge upon the partition between the annular troughs L and M, and there is an inward deflector V between the screens S and U, such deflector being hollow and the upper surface conical or inclined inward, and water is supplied to this hollow deflector by pipes 9, and there are jet-openings around the inner edge for the passage of water, and in the top plate P is an annular tube 10, to which water is supplied, and there are jet-openings for directing the water down upon the inner surface of the cylindrical screen S, so that slivers and coarse stock that do not pass through the upper screen S will be washed down and discharged from the surface of the inward deflector V toward the vertical shaft F, so as to again be thrown outward by the lower wings or fans T' and projected with force against the lower cylindrical screen U, and the coarser

stock, which does not go through such cylindrical screen U, runs down into the inner annular trough M and thence by the discharge-pipe N, so as to be reground or otherwise utilized.

The segmental plates W, introduced between the frames O, form a cylindrical inclosure, so that all the fine stock and water passing through the screens S and U are directed to the outer annular trough L and flow away by the discharge-pipe L'. We find it advantageous to connect the upper ends of the wings or fans T by a conical ring I, the parts being secured together by angle-irons, and the wings T are also secured to the centrifugal plate R by angle-irons, and hence the water and paper-stock supplied through the pipe Q and cylinder P' are reliably discharged by the centrifugal plate R and wings or fans T against the screen S and with sufficient force to cause the fine stock to pass through the screen, while the coarser stock is retained and subjected to the second screening operation by the lower wings or deflectors T' after such coarse stock has been discharged by the inward deflector V and the water supplied, as before set forth.

By this improvement the paper-stock is screened with great rapidity, the screens are kept free, and by the second centrifugal screening operation the fine paper-stock is separated from the coarser stock, so that the latter is in a condition for refining.

The pipe 12, passing around the inner annular trough M, supplies the water necessary for washing the coarse pulp to the place of delivery.

We claim as our invention—

1. The combination in a machine for screening paper-stock and similar material, of a centrifugal plate upon which the materials to be screened are delivered, a surrounding vertical screen through which the water and fine materials are passed by the centrifugal action, means for supplying water at the top of the screen for washing down the materials that

do not pass through the screen and an annular deflector for directing the materials inward, a centrifugal device for acting on such materials, and a screen against which such materials are projected, substantially as set forth.

2. The combination in a machine for screening paper-stock and similar material, of a centrifugal device, means for supplying the material to be screened upon such centrifugal device, a surrounding screen through which the water and fine materials are passed by the centrifugal action, means for supplying water at the upper part of the screen to wash down the materials that do not pass through the same, a deflector for passing the materials inward and means for supplying water at such deflector, and a screen below the same against which the materials are projected by the centrifugal device, substantially as set forth.

3. The combination in a machine for screening paper-stock and similar material, of a centrifugal device and means for supplying the material to be screened, a screen against which the materials are centrifugally projected, and means for supplying water upon the upper part of the stationary screen for washing down the materials that do not pass through such screen, substantially as specified.

4. The combination in a centrifugal pulp-separator, of upper and lower cylindrical screens, an intervening hollow inward deflector with jet-openings and a water-supply pipe to the same, and a centrifugal device within the screens for directing the water and paper-stock against the upper and lower screens, substantially as set forth.

Signed by us this 22d day of April, 1897.

JAMES H. BAKER.

GEO. F. SHEVLIN.

FREDK. H. BAKER.

Witnesses:

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