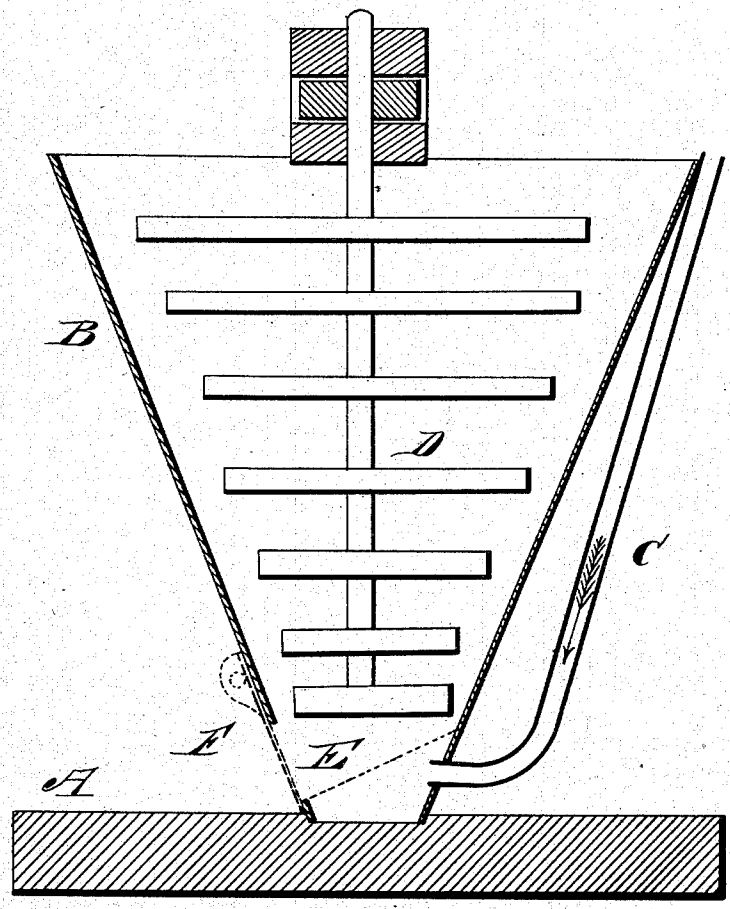
W. C. JOY & J. CAMPBELL.

Bleaching Paper Pulp.

No. 66,353. Patented July 2, 1867.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM C. JOY AND JOHN CAMPBELL, OF PENN YAN, NEW YORK.

IMPROVEMENT IN BLEACHING PAPER-PULP.

Specification forming part of Letters Patent No. **66,353**, dated July 2, 1867.

To all whom it may concern:

Be it known that we, WILLIAM C. JOY and JOHN CAMPBELL, of Penn Yan, in the county of Yates and State of New York, have invented a new and useful Improvement in Bleaching; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, and in which the figure is a transverse vertical section.

The nature of our invention consists in bleaching paper-pulp by introducing air into and through the mass while it is contained in the receptacle where the chemicals are applied, or in any other condition or situation where the air can be applied for the same purpose. We introduce the air at or near the bottom of the mass, so that all its parts may be alike affected by the air coming in contact with the material. We introduce the air by means of a pump, bellows, or fan-blower, and may use any mechanism that will inject sufficient air for the quantity to be treated. We have no resistance to the eduction of the air from the receptacle other than the resistance of the atmosphere, nor do we need any, for our improvement will bleach paper-pulp and other materials, if it is contained in an open vessel; or we can use a closed vessel, and with an exhausting-pump draw sufficient air through the mass to produce the desired result. We can use the air heated, if necessary, or mixed with any kind of gas that will aid or facilitate the bleaching. We use our invention, after the paper-pulp has been treated, with any kind of chemicals or bleaching substance that may be used for the various kinds of paper-pulp that require bleaching.

To enable others skilled in the art to use our improvement, we will proceed to describe the mode of applying it; also one kind of receptacle that may be used to contain the material to be bleached.

A is the frame that supports the receptacle. B is the receptacle. Its use is to contain the material to be bleached so that it may be treated, and to hold the material in mass while air is being passed through it. To prevent the air or gases escaping into the room or building, the receptacle may be covered and have a spout to conduct the air and gases outside of the building. If a suction fan or pump is used to draw the air through the mass of material, the cover and spout may be used for that purpose also. When the receptacle is covered or closed, sections of glass may be put in any portion of it for the purpose of admitting light. When the bottom is made in shape as represented in the figure, it may be provided with a perforated diaphragm, that is placed in an inclined position to allow the material to pass off freely when the receptacle is to be emptied. The material may be agitated by the agitator D being revolved; or, when preferable, motion may be given to the receptacle, in which case the induction air-pipe must be made to suit the condition of the receptacle.

C is an air-pipe, that is used to conduct the air into the receptacle. It may be made and applied as represented in the figure, and may be provided with branches or inlet-pipes connected with it, when it is desirable to introduce any of the gases with the air. This pipe may pass over the side of the receptacle and down to the bottom of the mass, and be provided with branches that are perforated to distribute the air through the mass; and when a receptacle is made to be revolved upon trunnions, the air-pipe should pass into one of the trunnions and down to the bottom of the mass. The other trunnion must be provided with a larger pipe, that must pass inward and upward above the top of the mass, so that the air will in no case be compressed.

D is an agitator. It may be made in shape as represented in the figure, or any other shape desired. It may be driven by any kind of mechanism applied to the upper end of its spindle. When the receptacle is made to revolve, this may be made to remain stationary.

E is a perforated diaphragm. It is placed in an inclined position, for the purpose of allowing the material to pass out of the outlet F freely. The use of this diaphragm is to distribute the air through the mass. In other-shaped receptacles this may be varied to suit, or its equivalent may be used.

F is an eduction-passage for the material to pass out. It should be provided with a gate or faucet that will close it tight, and it may

be provided with a spout or conduit-pipe to convey the material bleached to any other receptacle or place.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

Treating paper-pulp of all kinds with air, pure or mixed, at any temperature, by causing a current or currents of air to pass through the mass by means of a forced blast or current, or by an exhausting fan or pump that will cause sufficient air to pass through the mass to accomplish the result specified, substantially as and for the purpose set forth.

WILLIAM C. JOY.
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Witnesses:
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