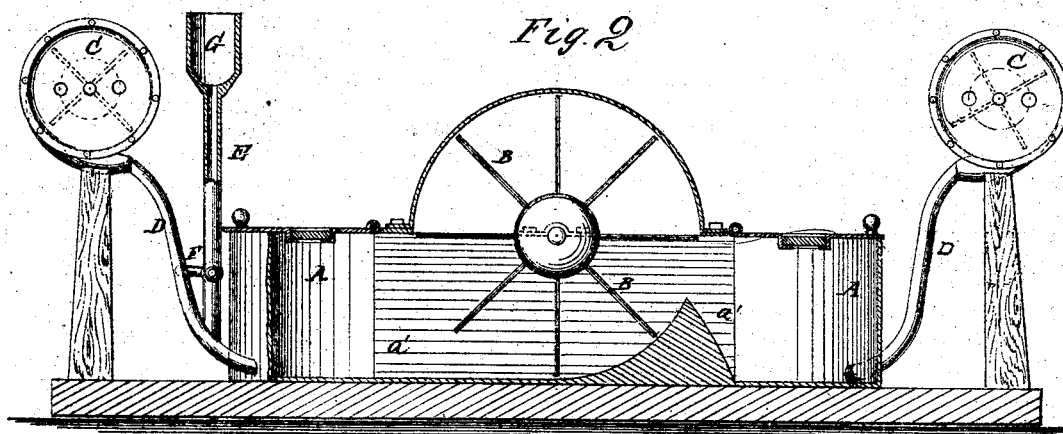
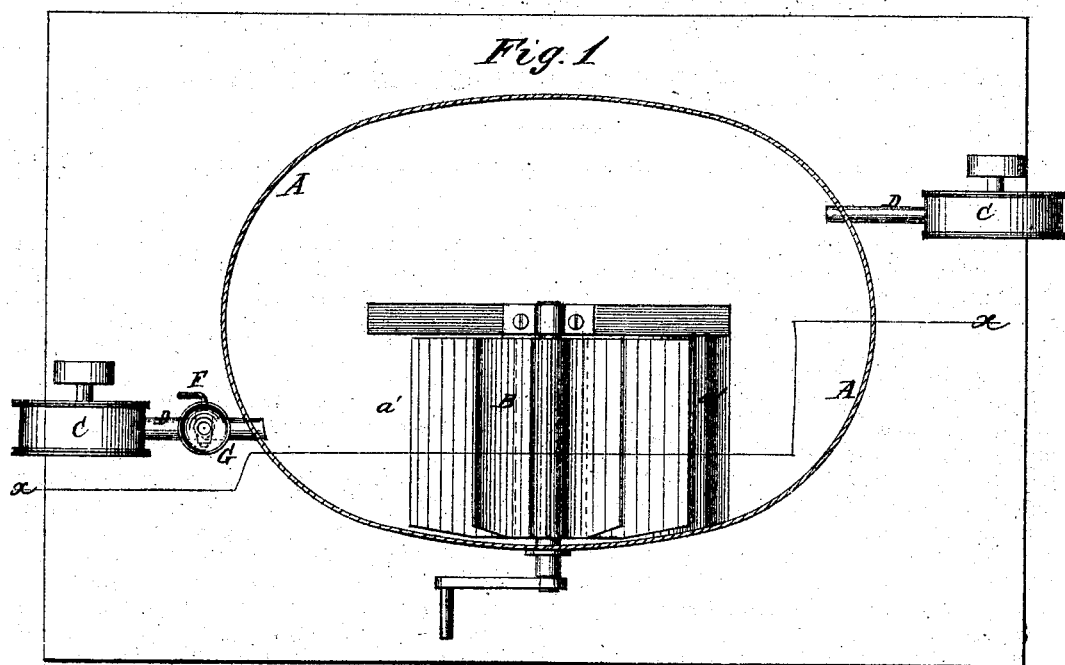


JOHN CAMPBELL.

Preparing and Bleaching Paper Pulp.

No. 116,020.

Patented June 20, 1871.



Witnesses:

*A. W. Almqvist*  
*Wm. H. C. Smith.*

Inventor:

*J. Campbell.*

PER

*Munn & Co.*  
Attorneys.

# UNITED STATES PATENT OFFICE.

JOHN CAMPBELL, OF CHATHAM VILLAGE, NEW YORK.

## IMPROVEMENT IN PREPARING AND BLEACHING PAPER-PULP.

Specification forming part of Letters Patent No. 116,020, dated June 20, 1871.

*To all whom it may concern:*

Be it known that I, JOHN CAMPBELL, of Chatham Village, in the county of Columbia and State of New York, have invented a new and useful Improvement in Preparing and Bleaching Paper-Pulp and other Fibrous Materials; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a top view of my improved apparatus, the cover being removed. Fig. 2 is a detail vertical section of the same taken through line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the apparatus for preparing and bleaching paper-pulp and other fibrous materials, described in Letters Patent No. 87,779, dated March 16, 1869, so as to make it simpler in construction, cheaper, and more effective in operation; and it consists in the combination of a receiver and supply-tube with the induction air-pipe, as hereinafter more fully described.

A is the engine or other vessel in which the paper-pulp or other material is placed to be bleached, and in which it is agitated and thoroughly mixed by the paddle-wheel B, working in the compartment *a'* with an inclined or curved floor, in the ordinary manner. C are fan-blowers, one or more of which may be used. An air-pump or blower may be used, or anything that will force the atmospheric air through the mass. I prefer to use two, one at each end of the engine A, or in any other vessel holding the material to be bleached. D are the pipes which conduct the blast of air from the fan-blowers C and introduce it into the engine A near its bottom. The pipes D are led into the engine A in such a direction that the currents of air, in addition to hastening the bleaching of the material by rapidly combining with said material the chemicals used, will also drive

the mass in the same direction in which it is driven by the wheel B. With one or both the air-pipes D is connected a tube, E, provided with a stop-cock, F, near its intersection with the said air-pipe D. To the upper end of the tube E is attached, or with it is connected, a cup or receiver, G, to receive the chemicals to be introduced into the engine or vessel holding the material to be bleached.

With this construction of the apparatus a chlorine solution of one-third less strength than is used in any other process is placed in the engine, and the chemicals to be introduced into the solution are placed in the receiver G.

The paper-pulp or other material to be bleached is placed in the engine, and the wheel B and fan or fans B are set in motion. Then, by adjusting the stop-cock F in the pipe E, the chemicals in the receiver G are introduced with more or less rapidity, as may be desired, into the pipe D, and are carried by the blast of air into the engine A and thoroughly and rapidly intermingled with the material in said engine, thus producing the powerful bleaching agent known as the ozone modification of oxygen with great rapidity, without the use of a chlorine-gas generator, and bleaching the mass of pulp or other material in fifteen minutes.

When the bleaching is completed, the stop-cock F is closed and the stirring and air-blast are continued for a sufficient length of time to drive off all the remaining gases before they have had time to injure the material.

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

The combination of a receiver, G, and tube E provided with a stop-cock, F, with the pipe or pipes D that introduce the air-blast and chemicals into the engine A, substantially as herein shown and described.

JOHN CAMPBELL.

Witnesses:

EDGAR SMITH,  
W. H. PLATT.