

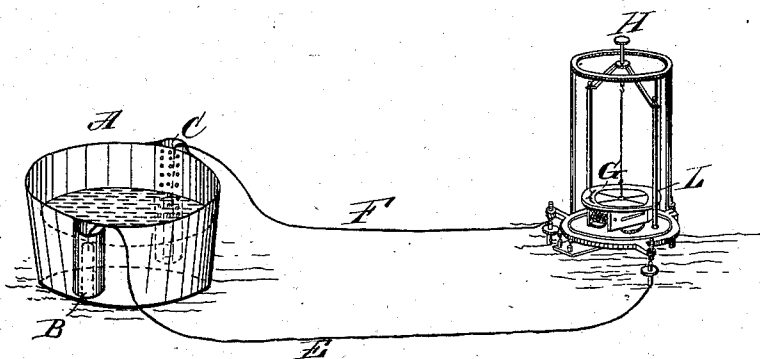
(No Model.)

L. WHITE & K. WHITCOMB.

APPARATUS FOR DETERMINING THE NUTRITION OF CELLULAR FIBER.

No. 254,751.

Patented Mar. 7, 1882.



Witnesses.

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APPARATUS FOR DETERMINING THE NITRITION OF CELLULAR FIBER.

SPECIFICATION forming part of Letters Patent No. 254,751, dated March 7, 1882.

Application filed December 19, 1881. (No model.)

To all whom it may concern:

Be it known that we, LEWIS WHITE and KIRK WHITCOMB, both citizens of the United States, and residing at Hoosick Falls, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in an Apparatus for Determining the Nitrition of Cellulose Fiber, &c., of which the following is a specification.

10 This invention has for its object the determination or visible indication of the nitrition of cotton or cellulose fiber, or the action in the presence of sulphuric and nitric acids as used in the manufacture of pyroxyline; and the invention consists chiefly in connecting the vessel in which the cotton fiber is subjected to the sulphuric and nitric acids with a galvanometer or its equivalent in such a manner that a piece of platina suspended in one side of the vessel and a piece of antimony in the opposite side will indicate on the galvanometer the degree of action of the acids upon the fiber, and thereby become a test of the degree of nitrition of the fiber, as will hereinafter appear.

25 The drawing shows a vessel at A for holding the fiber to be treated, and which may be made of any suitable size and shape, but must be of such materials as to resist the action of the acids.

30 Upon the opposite sides of the vessel may be formed pockets, as at B and C, to receive the opposite poles or wires E and F from the galvanometer, which may be of the ordinary form, the needle of which is represented at G suspended from the adjusting-screw H over the graduated circle L. Said pockets communicate with the interior of the vessel A, so that free communication with the substances in it may be made, and in one of said pockets, as at B, a strip or piece of platinum is suspended from the wire—say at E—and in the opposite pocket, at C, a piece of antimony or lead is suspended to the wire at F, so that when there is any acid action the needle at G will indicate the degree of action or its absence. Consequently, in the preparation of such substances as pyroxyline, if a testing-vessel, as at A, be employed, and the material be placed in it and subjected to the action of the acids, and the ends of the wires or poles be kept at the same distance apart, the degree of the acid action will be indicated by the deflection. For a cer-

tain quality, which having been thus determined, the same deflection will indicate the same quality or degree of action in all future charges of the same vessel, and thus, by the action of the galvanic current, the quality of the contents of the vessel may be determined— or, in other words, the nitrition of the cotton fiber may be ascertained. Such an arrangement of devices will be useful also to determine the conditions of the acids before the fiber is introduced, or whether they are thoroughly commingled and properly ready for the fiber.

It will be evident to any one familiar with such subjects that the power of the galvanic current may be indicated by a solution of some kind (as iodide of potassium) in a cup in which the end of the wires are inserted, and which will give a change of color by the action of the current; but this is not so definite as the needle, nor so easily registered.

Other elements may also be used in the place of the potassium; but we prefer the galvanometer.

We therefore claim—

1. In the manufacture of pyroxyline or the combining of acids for similar purposes, the employment of a mixing-vessel in combination with a galvanometer or its equivalent for determining the condition of the compound, as hereinbefore set forth.

2. The combination, with the mixing-vessel, of the pockets at opposite sides for holding the anode and the cathode attached to a galvanometer or its equivalent, as hereinbefore set forth.

3. The method of determining the nitrition of cellulose fiber or the condition of the acids for the same, which consists in mixing the elements always in the same vessel or one of the same size and connecting the opposite sides by an anode and a cathode attached to a magnetic needle or its equivalent, as hereinbefore set forth.

In witness whereof we have hereunto subscribed our names as joint inventors and affixed our seals in the presence of two subscribing witnesses.

LEWIS WHITE. [L. S.]
KIRK WHITCOMB. [L. S.]

Witnesses:

EUGENE N. ELIOT,
THOMAS J. MCARTHUR.