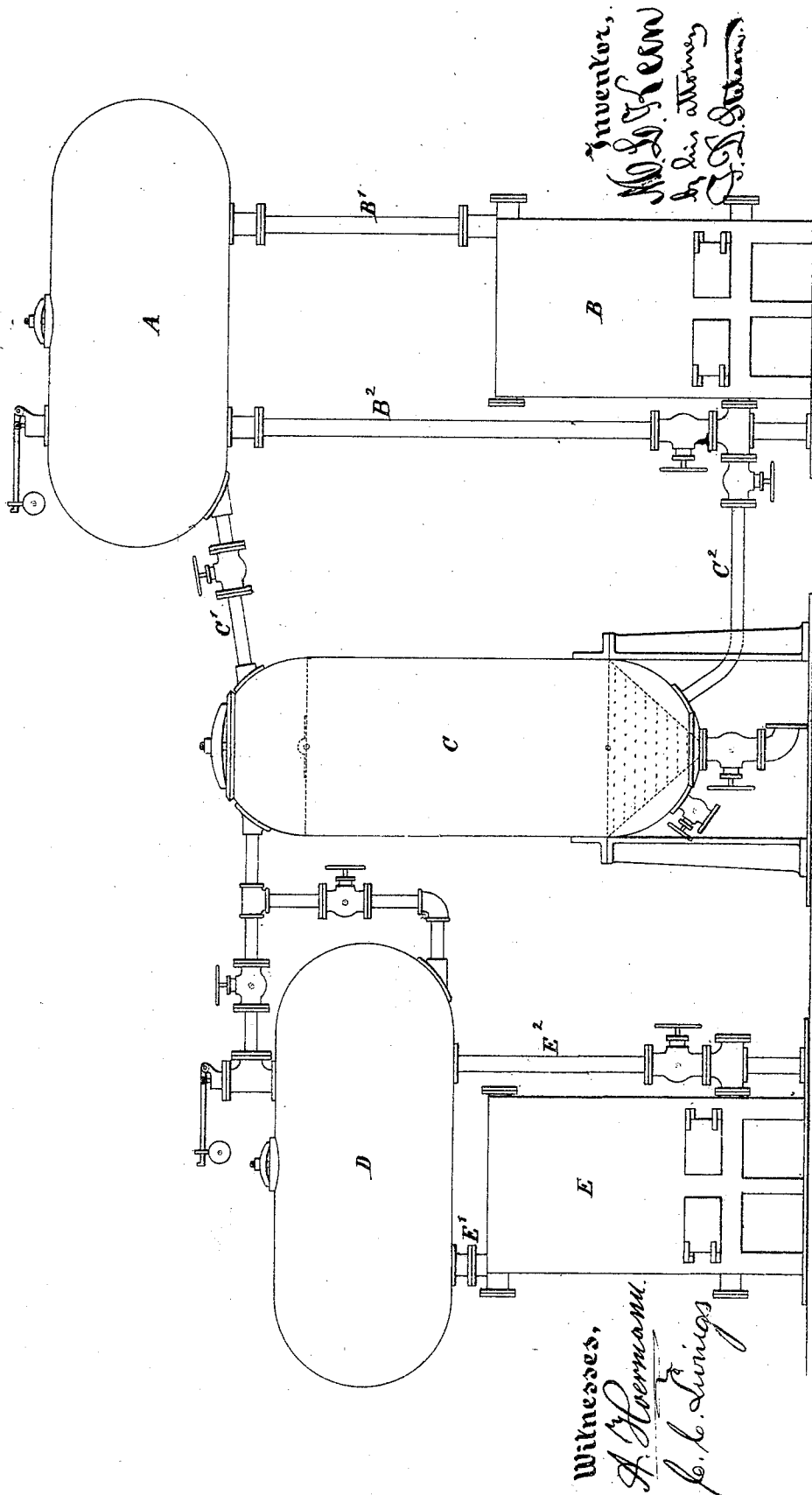


M. L. KEEN.

Improvement in Apparatus for the Manufacture of Paper-Pulp.

Patented May 2, 1871.

No. 114,301.



United States Patent Office.

MORRIS L. KEEN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO HIMSELF
AND SAMUEL A. WALSH, OF NEW YORK CITY.

Letters Patent No. 114,301, dated May 2, 1871.

IMPROVEMENT IN APPARATUS FOR MANUFACTURE OF PAPER-PULP.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MORRIS L. KEEN, of Jersey City, State of New Jersey, have invented certain new and useful Improvements in Apparatus for the Manufacture of Paper-Stock or Pulp; and I do hereby declare that the following is a full and exact description thereof.

The accompanying drawing, with the letters of reference thereon, forms a part of this specification.

The drawing is a side elevation of the improved apparatus.

The drawing represents the parts containing the novelty, with so much of the other parts as is necessary to indicate their relation thereto.

My invention is adapted to the treatment of wood, straw, cane, esparto-grass, flax, flax-tow, hemp, hemp-tow, jute, jute-tow, manila-grass or rope, manila-tow, and all analogous materials or vegetable substances for the manufacture of paper-stock or pulp therefrom.

It has long been common to treat some or all of these materials with alkaline solutions.

My invention constitutes a novel and convenient apparatus for applying the alkali and maintaining the temperature in the alkaline solution preparatory to and during the treatment of the paper-stock with said solutions.

I heat the alkaline fluid by a coil, through which the alkali circulates, to which coil is attached, in an elevated position, a large alkali-reservoir or charging-drum, A. A fire being maintained in a furnace, in connection with the coil, the alkali is heated at each passage through the coil.

The coil is inclosed in a casing, B, and may be of any ordinary construction. The alkali circulates between the coil B and the charging-drum A, and thus maintains any desired temperature in the charging-drum for any period.

Under these conditions, when the stock-boiler C is charged with the alkali it is done at the desired temperature, which temperature is maintained in stock-boiler C by circulation of the alkali through the coil.

I take care to make the charging-drum A of such capacity, and to supply such a quantity of alkali thereto, that there shall remain sufficient alkali in the charging-drum A after the stock-boiler has been filled to maintain a thorough circulation of alkali through the coil B, charging-drum A, pipe C¹, stock-boiler C, and pipe C² into coil B, during which time the valve in pipe B² may be closed, the other valves all open.

After the paper-stock boiler C has been sufficiently treated it is intended that five-sixths of the alkali in

use during this process shall be returned to the alkali-charging drum A. This may be conveniently effected by steam admitted from the steam hot-water drum D, which is similarly heated by coil E, with similar circulating-pipes E¹ E².

It is intended that one-sixth new alkali-liquor shall be added to it to form a fresh charge for the next operation.

If weak alkaline solutions are employed the entire charge of alkali used may be discarded after each treatment, and a fresh charge of the solution admitted to the charging-drum from a suitable reservoir or other source, not represented; but in either case the temperature is maintained in the charging-drum by means of the coil and connections, arranged as represented.

It will be understood that the alkali is conducted from the charging-drum A to the stock-boiler C through pipe C¹; and when the steam is admitted to drive back the alkali the valve in the pipe C¹ is closed, and the valve in the lower pipe C² being opened the steam from the hot-water boiler D, being admitted to the top of the pulp-boiler C, presses downward on the alkali contained in the interstices of the pulp and forces it down, through the strainer at the bottom and through the pipe C², into the heating-coil B and pipes B¹ and B², into alkali-charging drum A, to be there retained while the pulp is removed and all is made ready for the treatment of a new charge.

Claims.

I claim as my invention—

1. The charging-drum A, arranged as represented relatively to the pulp-boiler C and to suitable connections, and capable of holding more than one complete charge and maintaining it at a high temperature, ready for immediate use in the pulp-boiler C, as specified.

2. In combination with the elevated capacious reservoir or charging-drum A and pulp-boiler C, with their connections and controlling means C¹ C², as represented, the heating-coil B and furnace, with the connections B¹ B², adapted to maintain an independent circulation between the charging-drum A and the heating-coil, as specified.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

MORRIS L. KEEN.

Witnesses:

C. C. LIVINGS,
A. HOERMANN.