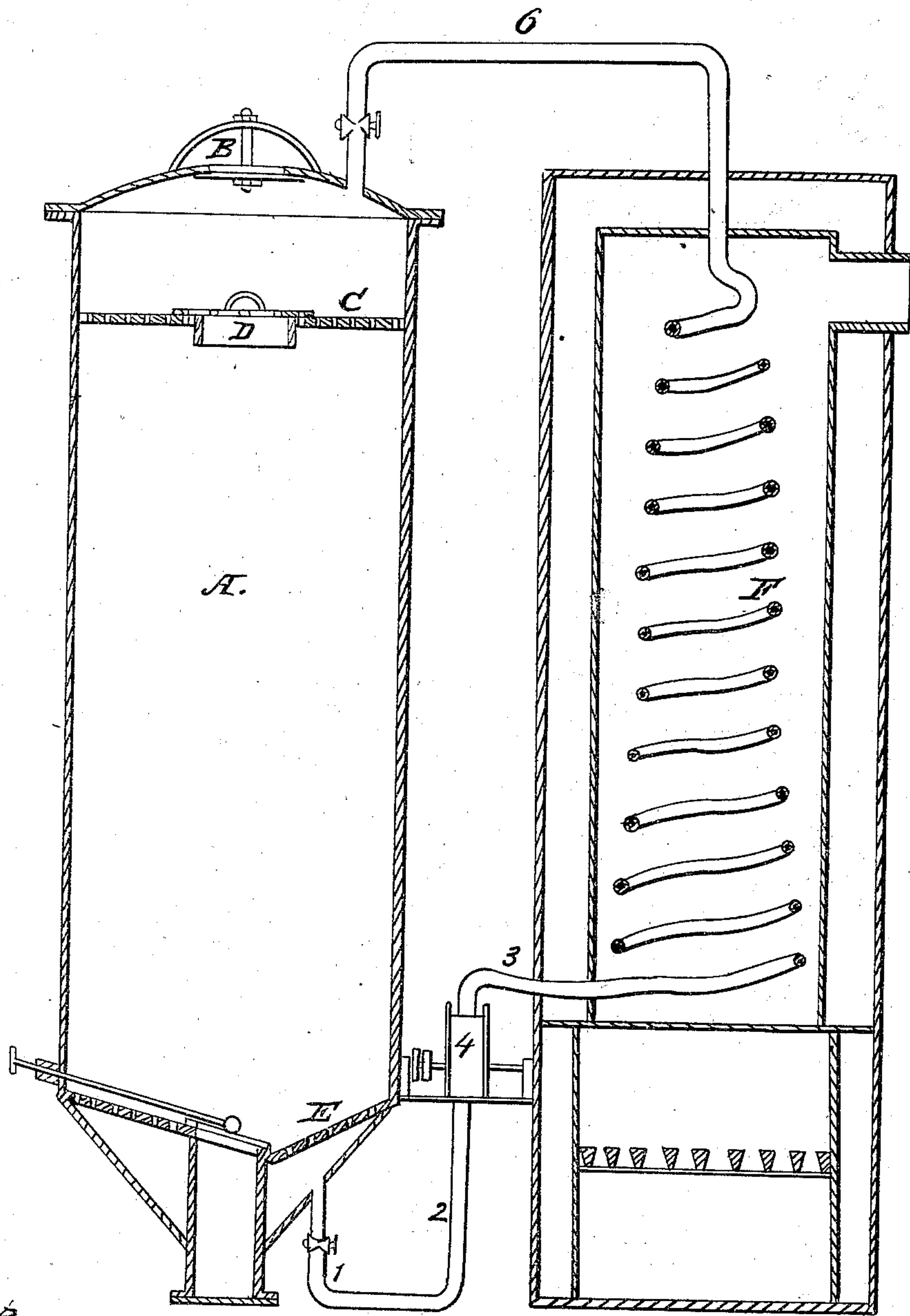


*J. W. Dixon*

*Pulp Digester*

*Nº 55,835.*

*Patented Jun. 26, 1866.*



*Witnesses.*

*Chas. H. White*  
*J. McFarley*

*Inventor.*

*John W. Dixon*

# UNITED STATES PATENT OFFICE.

JOHN W. DIXON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED APPARATUS FOR MAKING PAPER-PULP FROM WOOD, STRAW, AND OTHER MATERIALS.

Specification forming part of Letters Patent No. 55,835, dated June 26, 1866.

*To all whom it may concern:*

Be it known that I, JOHN W. DIXON, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Apparatus for Making Paper-Pulp from Wood, Straw, or other Analogous Vegetable Fibrous Material; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings.

The nature of my improvement consists in combining with a wood or straw pulp digester a circulating-pump, whereby the digesting-liquor is forced to circulate continuously from the bottom or end of the digester onto the top of and through the vegetable fibrous mass to be pulped; and also in combining with such a digester and pump an intermediate coil or equivalent heating apparatus, through which the digesting-liquor shall be forced and heated while in its passage from the bottom or end of the digester onto the top of the vegetable fibrous material to be pulped within the digester.

A represents the pulp-digester, which is a boiler made of strong iron, capable of resisting a pressure of from one hundred to three hundred pounds, say four feet in diameter and twelve feet high. It is furnished with a man-hole cover, B, and a perforated diaphragm, C, a central removable cover, D, and a lower perforated diaphragm, E, with a sliding valve.

F is a conical coil built in a furnace and connecting at its lower extremity with the lower part of the pulp-digester A by means of the tube 1 2 3. At 4 a rotary or other pump is placed in the course of this tube. The upper part of the coil or heater F is connected by the tube 6 with the interior of the digester A at its top.

The upper diaphragm, C, may be omitted, and a rose-head or tubular sprinkler may be attached to the extremity of the tube 6.

Instead of the coil F a vertical tubular heater (such as used on locomotives) may be used, or

no heating apparatus need be placed in the course of the circulating apparatus at all. In the latter case the pump will operate to cause a constant circulation from the bottom onto the top of the digester, and the heat can be applied by steam, hot water, or fire at the bottom of the digester A.

This apparatus may be used to digest wood, straw, or other analogous vegetable fibrous material either with highly-heated water under pressure alone, or with dilute solutions, heated and under pressure, of caustic soda, carbonate of soda, or other liquid capable of digesting or pulping wood, straw, or other analogous vegetable fibrous material under pressure.

The operation of the apparatus is as follows: The wood, straw, or other analogous vegetable fibrous material is placed in the digester A through the man-hole B, and the digesting-liquid is then fed in. The man-hole is then closed tight and the fire made and the pump started, causing a rapid circulation of the hot digesting-liquid continually from the bottom onto the top of the material within the digester. Heat is applied to the liquid while passing through the tubes from the bottom to the top of the digester, or it may be applied directly to the bottom of the digester. After the pulping has been completed the valve in the lower diaphragm is opened and the pulp withdrawn to other vats or tanks for bleaching.

Having thus described my improved apparatus, what I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the circulating-pump, the pulp-digester, and heating-coil, or its equivalent, for heating the liquid while being made to circulate by the pump.

JOHN W. DIXON.

Witnesses:

CHAS. H. WHITE,  
J. E. MCCAULLEY.