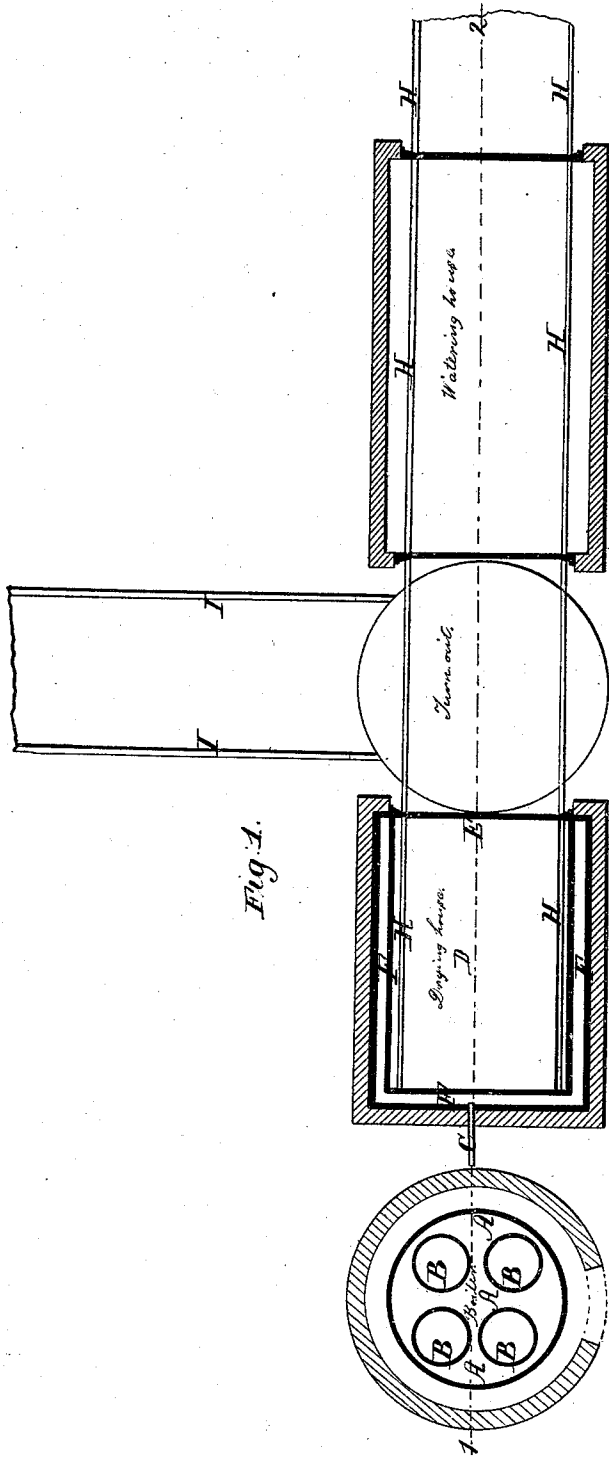


R. Deering, Sr. Sheet 1. 2 Sheets.
Pulp Digester.
N^o 4,093. Patented Jun. 25, 1845.



R. Deering, Sr. Sheet 2. of 2 Sheets.
Pulp Digester.

N^o 4,093.

Patented Jun. 25, 1845.

Fig: 2.

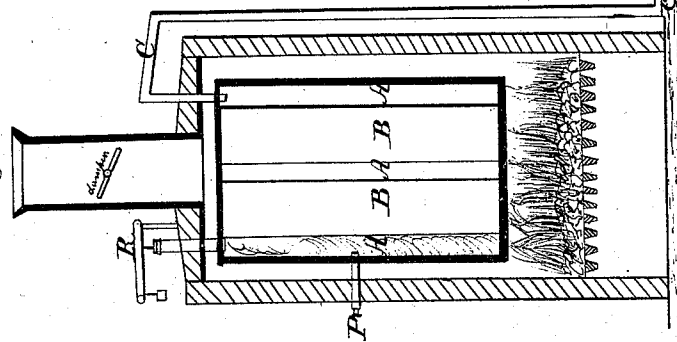
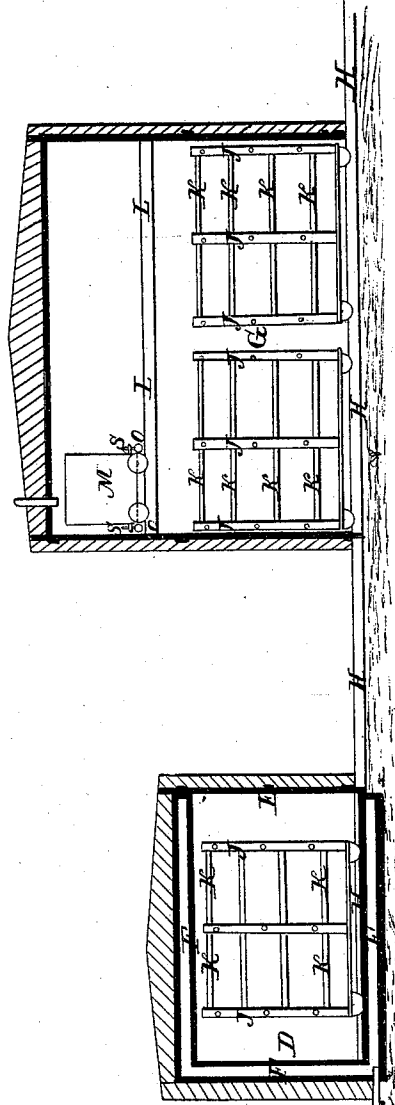
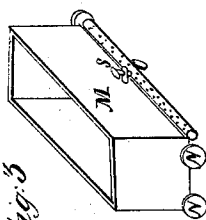


Fig: 3



UNITED STATES PATENT OFFICE.

RICHARD DEERING, SR., OF LOUISVILLE, KENTUCKY.

PREPARATION OF HEMP.

Specification of Letters Patent No. 4,093, dated June 25, 1845.

To all whom it may concern:

Be it known that I, RICHARD DEERING, Sr., of the city of Louisville and State of Kentucky, have invented a new, expeditious, and economical mode of water rotting, bleaching, drying, and managing or manner of handling hemp or any similar fibrous substance preparatory to bringing it to the machine for breaking and cleaning it and also for preparing the fiber of hemp, &c., by heat or steam after it has been separated from the boon in its unrotted condition; and I, the said RICHARD DEERING, Sr., do declare the nature of my said invention consists in the construction and arrangement of suitable houses, cars, boiler, and furnace and other necessary apparatus, by the proper management of which the great labor, irregularity, and uncertainty of the present modes of dew and water rotting will be almost entirely overcome, the preparation be greatly expedited, and the equality of the fiber greatly improved.

My invention is particularly described by the following description thereof, reference being had to the drawing hereunto annexed.

Figure 1 is a ground plan, shows the boiler above the grate; and a horizontal section of the drying and watering houses, &c., at the surface of the ground. Fig. 2 is a longitudinal section at the line 1, 2. Fig. 3 is a perspective view of the cistern, &c.

The steam boiler marked A is for generating heat; it may be about 20 feet high and three and a half feet diameter, having four cylindrical flues B, B, B, B, within the boiler, and attached to it in the same manner as the flues of the common horizontal cylindrical boilers. The boiler is set perpendicularly on one end; the lower half of the boiler and flues are to be boiler iron, and the upper half of cast iron. Gage cocks marked P, to indicate the quantity of water are fixed about the middle of the boiler, say at or near the point of connection of the lower and upper halves; and a suitable safety valve marked R, is also attached to the upper part of the boiler. The boiler is set in a suitable furnace, and inclosed with brick work, so as to leave a sufficient space (between the boiler and brickwork) to form a flue around the boiler, from the bottom to the top, so as to permit the fire and heat to ascend through the flue so formed, as well as through the flues formed within the boiler. The furnace and ash pit doors when

shut are to exclude the atmosphere from the fire in the furnace, as much as possible; and a damper is to be fixed in the chimney above the boiler, so as to regulate the temperature of the steam in the boiler to any required degree.

A steam pipe marked C is attached to the top of the boiler, and conveys the steam under the floor of the drying house, in which the hemp is to be prepared. This drying house marked D, is to be made of either cast or wrought iron plates forming a double floor, walls, and covering of iron plates, with a hollow space F, between, and put together so as to be steam tight, and permit the steam to come in contact with and surround the house (except at one end E, which is left open, and fitted with large double doors, so as to be closely shut up, or opened at pleasure). This iron house is to be inclosed (except at the end where the doors are) with some nonconducting material.

The house for watering the hemp, marked G, is near to, but not connected with, the drying house; the outer ends of the watering house are also open, and fitted with large doors, so as to be opened and shut at pleasure. Both the watering and drying houses may be of such dimensions as will be found most convenient; and the heating apparatus is to be so managed by the dampers, &c., as to keep the drying house heated to a temperature of three hundred degrees, or more if required, while the temperature of the watering house (which is to be heated by a steam pipe from the boiler,) may be only one hundred degrees, or less if necessary.

A railway track H, H, H, is laid through the drying and watering houses, and extends outside of the houses, to where the hemp is to be put on the cars. Connected with this track is a turnout and branch railway I, I, I, to bring the cars with the prepared hemp, from the drying house to the hemp brake. A suitable number of cars, to be filled with unrotted hemp, are placed on the railway. The hemp is set up closely and nearly perpendicularly in the cars; and by suitable standards J, J, J, J, and cross pieces K, K, K, K (that can be slipped in and out at pleasure) the hemp is kept in an upright position. The cars thus loaded, are then run into the houses, to be subjected to the process or rotting, &c.

Within the watering house (and at a suitable height above the cars containing the

hemp,) a railway track L, L, is constructed;
 extending from one end to the other;
 throughout the whole length of the house.
 A suitable car N, N, with a cistern M, for
 5 containing water; (or the liquid intended
 for bleaching) is placed on this upper rail-
 way. A perforated pipe O, connected with
 or attached to the bottom of the cistern, is
 so arranged with a valve or stop cock as
 10 to be supplied with water from the cistern,
 at pleasure. The car N, and cistern M, are
 moved backward, and forward, on the rail-
 way, by power from an engine, and the
 water to supply the cistern is pumped up
 15 by the same power. When the cars are
 moved along the railway the valve or cock
 S is opened and the water passes from the
 cistern through the perforated tube; and
 is sprinkled on the hemp in the cars below;
 20 and by a repetition of the sprinkling; the
 hemp may be moistened to any degree that
 may be necessary. The number of cars are
 to be sufficient (and they are to be so man-
 aged) that one or more car loads per day
 25 shall have been subjected to this watering
 process a sufficient length of time to be prop-
 erly rotted and prepared so as to be run into
 the dry house. The succeeding cars are
 then moved forward; and another car load
 30 of unrotted hemp is run into the watering
 house. If unbroken hemp is to be prepared
 by heat (without rotting) it should be
 placed on the cars in the manner above
 described; and kept in the dry house for
 35 such periods of time as may be necessary
 for its preparation. And to prepare un-
 rotted hemp, that has been previously broke,
 and cleaned; it should be suspended in a
 loose manner, on cords, or strips, attached
 40 to the upright standards of the cars; and
 kept in the drying house, until it is prop-
 erly seasoned and prepared, which seasoning
 is effected in a very short time; when the
 temperature of the drying house exceeds,
 45 one hundred and sixty degrees.

If steam is to be employed for rotting
 the hemp the steam from the boiler is ad-
 mitted through the floor of the drying house,

and ascends or passes up among the hemp
 through a sufficient number of small holes 50
 perforated in the bottoms of the cars.

The drying house and apparatus when
 used for preparing unbroken hemp by a
 bleaching process is designed to be con-
 55 structed in the same manner as above de-
 scribed;—except in the following particu-
 lars viz. The floor is to be inclined so as
 to collect the water (after it has passed the
 hemp) into a reservoir in one corner of the
 house; from which it is pumped again into 60
 the cistern above; and so passed again, and
 again; through the hemp as many times
 as may be necessary.

The temperature of the house is to be
 regulated by the furnace, as may be re- 65
 quired; and a suitable preparation com-
 posed of water; and bleaching ingredients;
 such as chlorin, lime, ashes, salt, &c., in
 proper proportions is to be used for bleach-
 ing; and rotting the hemp. 70

What I claim and desire to secure by
 Letters Patent is—

1. The arrangement and combination of
 the furnace and boiler; or other similar
 heating apparatus; with the drying and 75
 watering houses, railways, and watering
 apparatus, as above described.

2. I also claim as new, and as my inven-
 tion; the peculiar construction of the water-
 ing house; and the mode of managing the 80
 hemp by putting in an upright position on
 railroad cars, and subjecting it to the proc-
 ess of preparation (either in watering
 houses; or in pools of water) and while
 on the cars; and in an upright position. 85

I do not claim to be the discoverer of the
 mode of preparing unrotted hemp by the
 heating process; this is claimed by Mr.
 James Anderson, of Louisville, Ky., and I
 have referred to this method of preparation; 90
 in the manner above described with his
 permission.

RICHD. DEERING, SEN.

Witnesses:

CLEMT. T. COOTE,
 E. G. SMITH.