

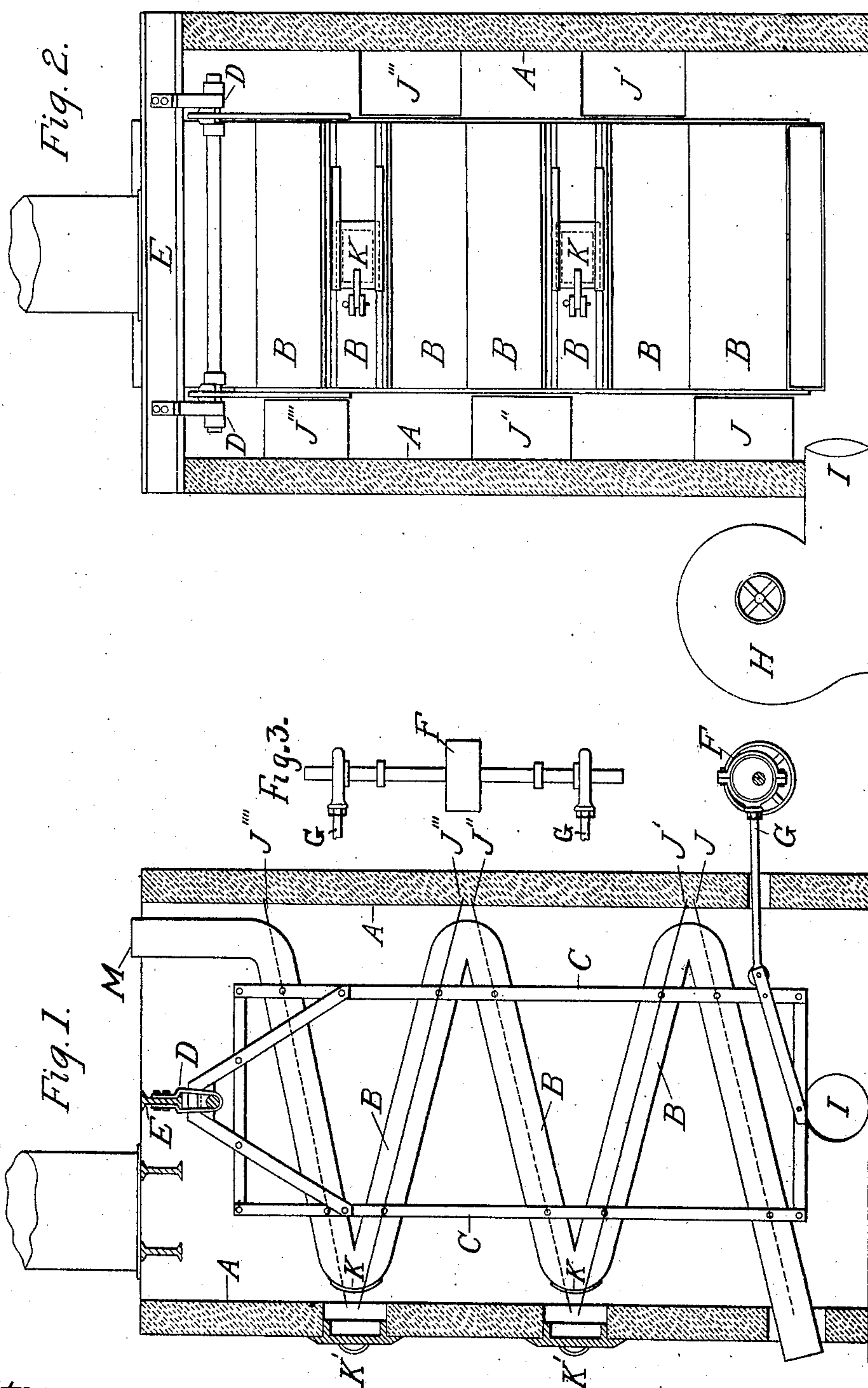
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C. B. CLARK.

CHIP DRIER.

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Witnesses.

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CHIP-DRIER.

No. 830,569.

Specification of Letters Patent.

Patented Sept. 11, 1906.

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To all whom it may concern:

Be it known that I, CHARLES B. CLARK, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Chip-Driers, of which the following is a specification.

My invention consists of an improved chip-drier for use especially in the manufacture of pulp, and is fully illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with inclosing shell in vertical section. Fig. 2 is a front elevation with shell in vertical section. Fig. 3 is a plan view of the motor, its shaft, and the connecting-rods, the latter being partly broken away.

Similar letters refer to corresponding parts throughout the figures.

In the manufacture of sulfite pulp the chips are generally washed immediately before being cooked, and so enter the digester at a low temperature and carry an excess of moisture, whereby the cooking is retarded and the chemicals used are diluted, and there is a very considerable resultant loss.

The object of my invention is to counteract these difficulties in an economical manner, and to this end I dry the chips before they enter the digester in a drier which I have devised for the purpose, utilizing therefor the waste heat from the boiler-furnaces before it passes into the stacks.

In the drawings, A is a shell, preferably of masonry of such form and dimensions as to contain the operative parts of my device.

B is a large wide flattened tube with one or more bends or zigzags, the entrance to which is at the top of the shell and which emerges through the side of the shell near the bottom.

This tube is attached to a frame C, which is hung upon saddle-bearings D, suspended from an I-beam E within and crossing laterally the top of the shell. Being thus suspended the tube is susceptible of motion forward and back within the shell, and such motion is communicated by means of a motor F outside the shell and connecting-rods G, passing through the shell and connecting the frame or tube with the motor. The waste heat from the furnaces is conducted by induced draft through the blower H and conductor I to the bottom of the shell at one side beneath a baffle-plate J, extending from front to back of the shell and filling the space between that side of the shell and the adja-

cent side of the tube and following the inclination of the tube. The heat is thus forced to pass under the bottom of the tube and cross to the other side of the shell, where it rises between the side of the tube and shell and still rising is deflected sidewise by a second baffle-plate J' and forced to pass under the second bend or section of the tube, and so zigzags on by the baffle-plates J'' J''' J'''' to the top of the shell, where it is permitted to escape into the stack. The waste heat of the furnaces is thus utilized and every portion of the tube from bottom to top is intensely heated. I further provide doors K at the bends in the tube and doors K' in the shell opposite the doors K, whereby access to the tube may be had if the tube becomes clogged.

In operation the chips are transported by a carrier to the top of the shell and dumped into the top of the tube at M. The motor is operated and the tube rocked forward and back. By gravity and assisted by the rocking motion the chips descend gradually through the tube, from the lower end of which they are carried to the digester after having been dried and heated during their passage to such extent as materially to hasten the process of cooking and to effect a material saving in the chemicals used in the cook. I find in practice that by the use of this process I make gains as follows: in cooks, about five per cent.; in sulfur, about eight and one-third per cent.; in lime, about ten per cent. There is also a considerable saving in steam, as where formerly the chips entered the digester at a temperature of about 30° they go in after being treated as above at about 90°.

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

1. A device for drying chips consisting of the combination of a shell having a hot-air intake at or near the bottom, and a hot-air vent at or near the top; a zigzag tube so suspended within said shell as to be capable of receiving a rocking motion and adapted to receive chips from outside the shell and discharge them outside the shell; means for rocking said tube, and baffle-plates between the shell and the sides of the tube placed alternately on opposite sides of the shell.

2. A device for drying chips consisting of the combination of a shell having a hot-air intake at or near the bottom and a hot-air vent at or near the top; and a zigzag tube so suspended within said shell as to be capable

of receiving a rocking motion and adapted to receive chips from outside the shell and discharge them outside the shell, and means for rocking said tube.

5 3. A device for drying chips consisting of the combination of a shell having a hot-air intake at or near the bottom and a hot-air vent at or near the top; a zigzag tube so suspended within said shell as to be capable of
10 receiving a rocking motion and adapted to

receive chips from outside the shell and discharge them outside the shell; means for rocking said tube, one or more doors in said tube, and one or more doors in the shell opposite the door or doors in the tubes.

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Witnesses:

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