C. L. HAMILTON.

Cooling Beating-Engines for Paper-Pulp.

No. 200,828. Patented March 5, 1878.

Fig. 1.

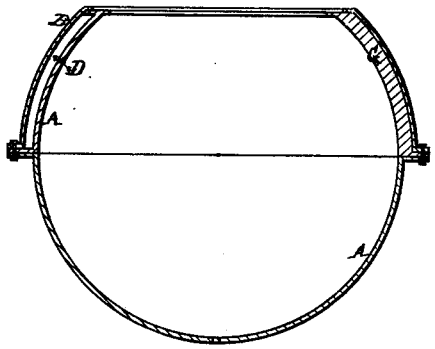
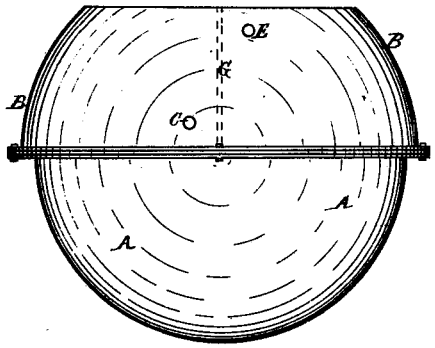


Fig. 2.



Witnesses

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CHARLES L. HAMILTON, OF ROXBOROUGH, PENNSYLVANIA.

IMPROVEMENT IN COOLING BEATING-ENGINES FOR PAPER-PULP.

Specification forming part of Letters Patent No. **200,828**, dated March 5, 1878; application filed December 20, 1876.

To all whom it may concern:

Be it known that I, CHARLES L. HAMILTON, of Roxborough, State of Pennsylvania, have invented a new and useful Improvement in Beating Pulp used in the Manufacture of Paper; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part hereof.

My invention consists of the process of directing a running stream of water around or upon the shell of the beating-engine, whereby the shell is cooled, and the heat engendered by the process of beating the rags or fibrous material in the interior is continuously carried off.

To enable others skilled in the art to use my invention, I will describe it in detail.

In the drawings, Figure 1 is a vertical cross-section of a Gould beating-engine, with a half outer shell inclosing an annular chamber between itself and the shell of the engine. Fig. 2 is a side view of such a beater, with the half outer shell, also showing two openings—one for the income, and the other for the outlet of the water to and from the annular chamber.

I will describe the operation of my device with the Gould beating-engine.

The Gould beating-engine is well known to paper-manufacturers, and requires no special description here. It has a nearly spherical inclosing-shell, made of cast-iron. This shell, in the operation of rapid beating, becomes very hot—so much so as to materially and unfavorably affect the sizing and the color, and, in many instances, the quality of the paper itself. The heat acts very unfavorably upon the fine pulp fiber. This heat is engendered by the rapid action of the beater upon the pulp which comes between it and the bed-plate.

The object of my device is simply to overcome this defect. This I accomplish by bringing in contact with the main shell a continuous flowing stream of cool water. The water absorbs this heat, and the flow carries it off.

In the apparatus which I show, the main shell is supplemented by an outer half inclosing-shell, so much larger than the inner one as to leave an annular space between them.

In the drawings, A is the main shell of the beating-engine; B, the outer shell above referred to; C, inlet for the water into annular chamber D; E, the outlet for the water; G, a division in the annular chamber between the inlet and outlet holes, to cause the water to circulate around the whole shell before it escapes.

The outer shell B may be made of wood, cast-iron, or other desirable material. Zinc or galvanized heavy sheet-iron would do, as it is simply required to hold water. It may be extended all around the whole main shell of the beater, or may be placed on the lower half, or may extend in an annular belt or chamber around the largest part of the main shell.

The guide-stops on the inside of the main shell A, which are used to give direction to the motion of the fiber under treatment in the Gould engine, may be made hollow, and a stream of water directed through them; or inner coils may be used, or inner shells or annular chambers, filled with running water. In fact, many and various means may be devised to attain the end sought by the above apparatus.

The cool water is run into the annular chamber D through the inlet-opening C from a hydrant, which is connected thereto by a closed pipe. When the annular chamber D is filled, the water commences to run out of the outlet-opening E. Thereafter the pressure of the water entering at C will continuously force an equal amount out through opening E, thus securing a steadily-running stream and contact of the water with every part of the main shell covered by the annular chamber.

The water from outlet E is utilized in the subsequent washing of pulp.

The bed-plate or stand of the bed-plate may be made hollow, and a stream of water may be passed through it.

The joints may be filled with red lead, rubber washers, or other packing material, to make them water-tight.

I regulate the supply of water by a stop-cock on the inlet-pipe. The annular chamber may be emptied by a similar cock in its lower part.

The same results may be accomplished by having a simple dam or upwardly-projecting

high lip around the flange of the shell of the heater, and a stream of water may be passed around it, or the shell may be partially sunk or immersed in a tank of water. In each case, of course, the water should be continually changed, so as to carry off the absorbed heat.

The same object may be accomplished by means of currents of cool air, used in substantially the same way, the object being to bring a flowing cooling agent in contact with the heated parts, whether externally or internally, so as not only to absorb, but also to carry off the resultant heat, and thus to keep the machine, and consequently its subjective material, cool, and attain better results in manufacture.

An air-pump or fan may be conveniently used to propel the air.

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

The process of directing a flowing stream of cool water around and upon the shell of a beating-engine, to absorb and carry off the heat engendered by the operation of beating the fibrous materials in the interior, substantially as and for the purpose described.

CHARLES L. HAMILTON.

Witnesses:
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