No. 710,014. Patented Sept. 30, 1902.

E. L. SAVAGE.

BEATING ENGINE.

(Application filed Feb. 17, 1902.)

(No Model.)

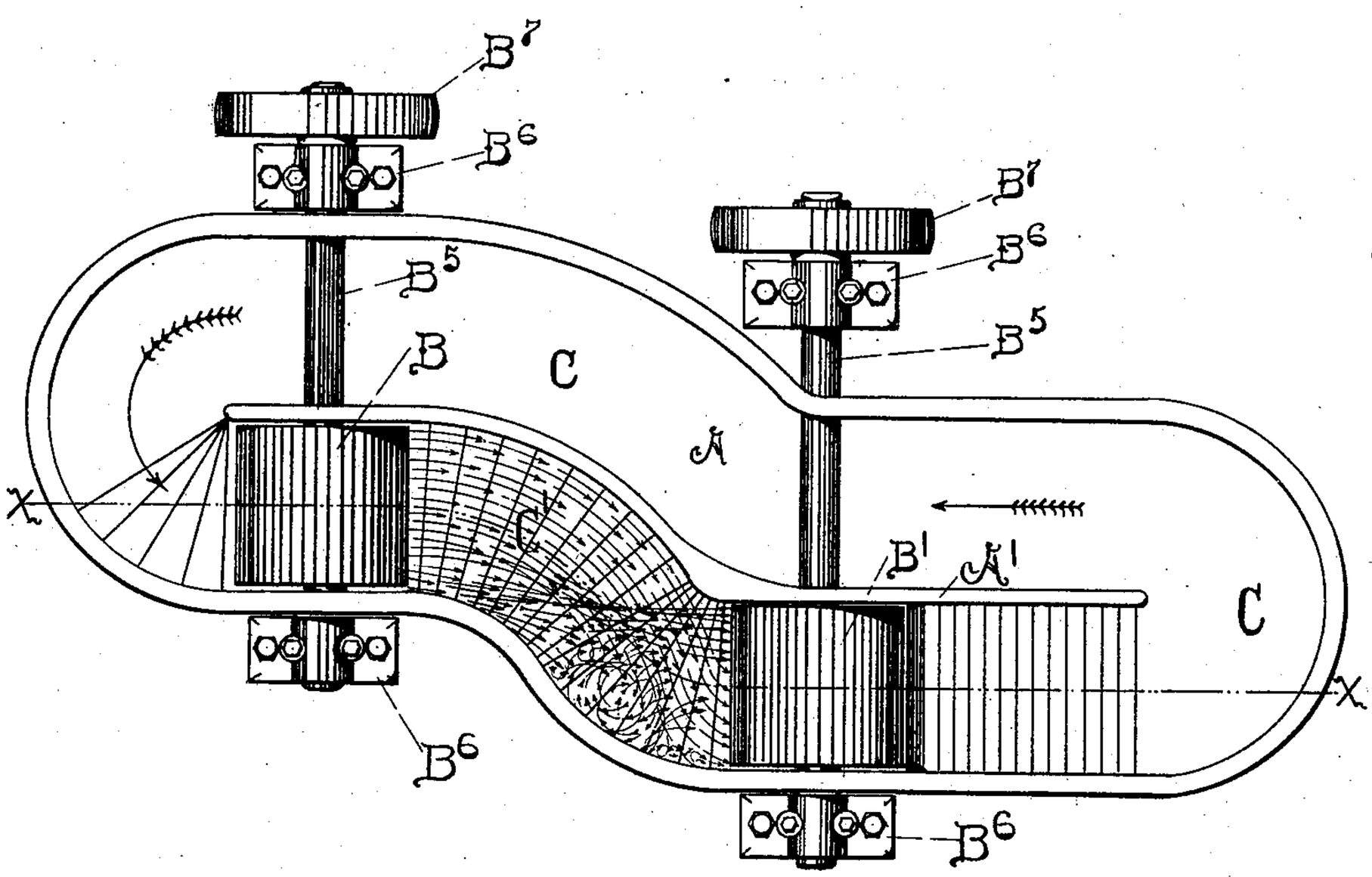

FIG. 1.

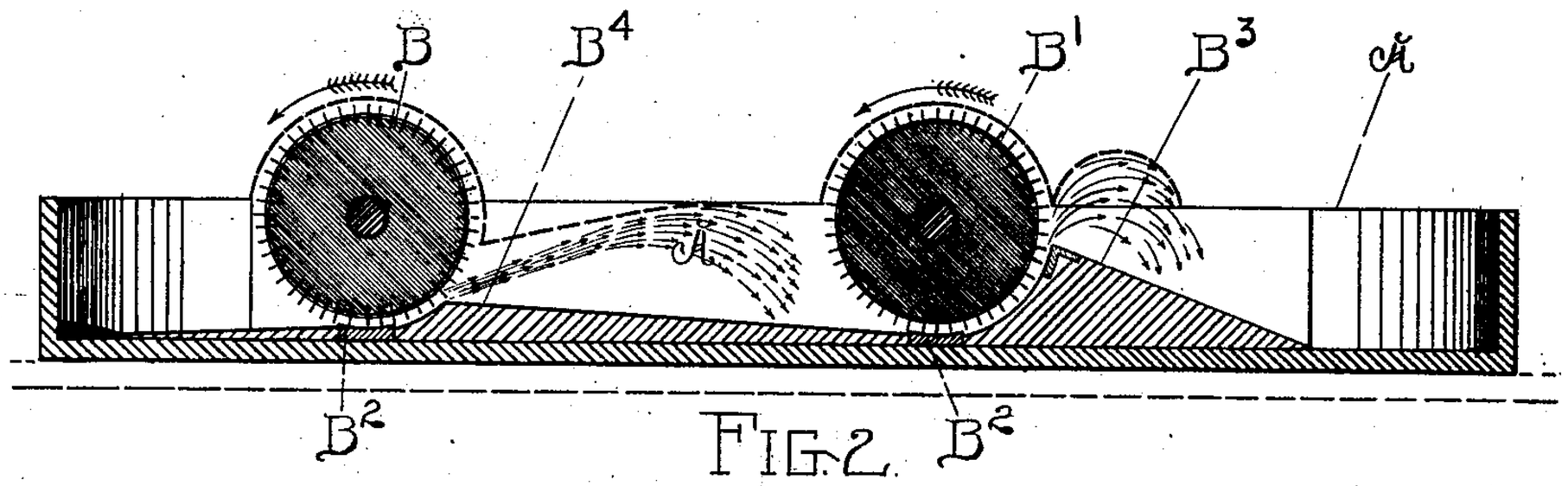

FIG. 2.

WITNESSES

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ERNEST L. SAVAGE, OF LANCASTER, NEW HAMPSHIRE.

BEATING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 710,014, dated September 30, 1902.

Application filed February 17, 1902. Serial No. 94,404. (No model.)

To all whom it may concern:

Be it known that I, ERNEST L. SAVAGE, a citizen of the United States, residing at Lancaster, in the county of Coos and State of New Hampshire, have invented certain new and useful Improvements in Beating-Engines, of which the following is a specification.

My invention relates to improvements in that class of beating-engines known as the "Holland" engine, the essential elements of which are an oval tub having a central partition or "mid-feather," between which and the walls of the tub is an endless channel for the circulation of the paper-stock, a horizontal beating-cylinder armed with metal blades and rotating in close proximity to a stationary bed-plate placed in the bottom of the channel, and a backfall to regulate the flowing of the stock. By the rotation of the cylinder the stock is drawn between the cylinder and the bed-plate, carried over the backfall, and caused to circulate through the endless channel until thoroughly mixed and comminuted by the action of the blades. An important office of these engines is to thoroughly mix the coloring-matter and the fibers of the stock and reduce the stock to a uniform consistency and color. The stock is usually quite thick, and as it moves very slowly through the endless channel the process of mixing and beating is necessarily slow.

In the accompanying drawings, Figure 1 is a plan of my invention. Fig. 2 is a section of same, taken at line $x\ x$, Fig. 1.

A is the tub; A′, the mid-feather.

B B′ are beating-cylinders.

B^2 B^2 are the bed-plates; B^3 B^4, the backfalls; C, the channel.

A section C′ of the channel is offset or crooked to one side, and the cylinders B B′ are arranged at either end of the crooked section.

The cylinders are mounted upon shafts B^5 B^5, resting in journal-boxes B^6 B^6 B^6 B^6 and provided with pulleys B^7 B^7 to receive driving-belts.

The backfall B^3 is of the usual form. The stock brought up by the blades of the cylinder B′ falls upon the inclined surface of the backfall B^3 and sliding down the incline flows slowly through the channel C until it encounters and is drawn under the cylinder B. The cylinder B′ rotates at a faster speed than the cylinder B and draws the stock out of the section C′ as fast as it issues from beneath the cylinder B. The section C′ being always nearly empty and the backfall B^4 being quite low, the stock is thrown over the backfall with considerable velocity and flows rapidly through the section C′.

The concave walls of the crooked section C′ of the channel obstruct the flow of the stream of stock and cause it to pile up against the concave walls, while the convex walls offer little resistance to the stream and allow it to flow on in a straight line until obstructed by the stock deflected from the opposite concave wall.

Obstructing the flow of one side of the stream of stock causes eddy-currents in the stream, and the eddy-currents mix and rearrange the fibers of the stock and prevent the probability of the fibers being struck by the blades of the cylinder B′ at exactly the same angle as they are struck by the blades of the cylinder B.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a beating-engine, a tub containing an endless channel for the circulation of the paper-stock, a section of the channel being crooked to cause eddy-currents in the stream of stock, combined with two horizontal beating-cylinders acting in conjunction with suitable bed-plates and backfalls to beat the stock, the cylinders being placed one at each end of the crooked section of the channel the arrangement of the backfalls and the ratio of speed of the two cylinders being such as to cause the stock to flow rapidly through the crooked section of the channel, and slowly through the remaining portion of the channel, and with means for rotating the cylinders above and in close proximity to the bed-plates, substantially as described.

ERNEST L. SAVAGE.

Witnesses:

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