

(No Model.)

2 Sheets—Sheet 1.

A. A. LANGEWALD.
CARDING ENGINE.

No. 562,837.

Patented June 30, 1896.

FIG. 1.

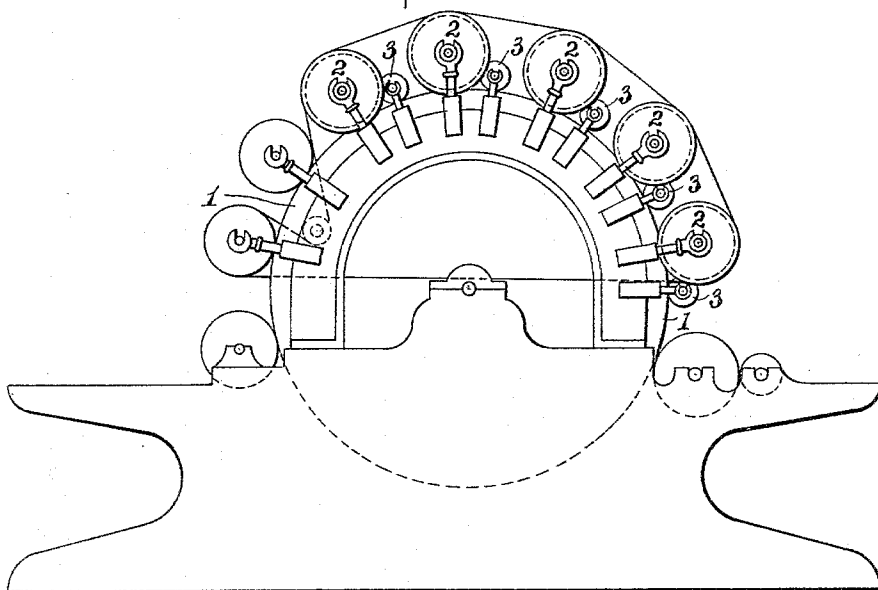
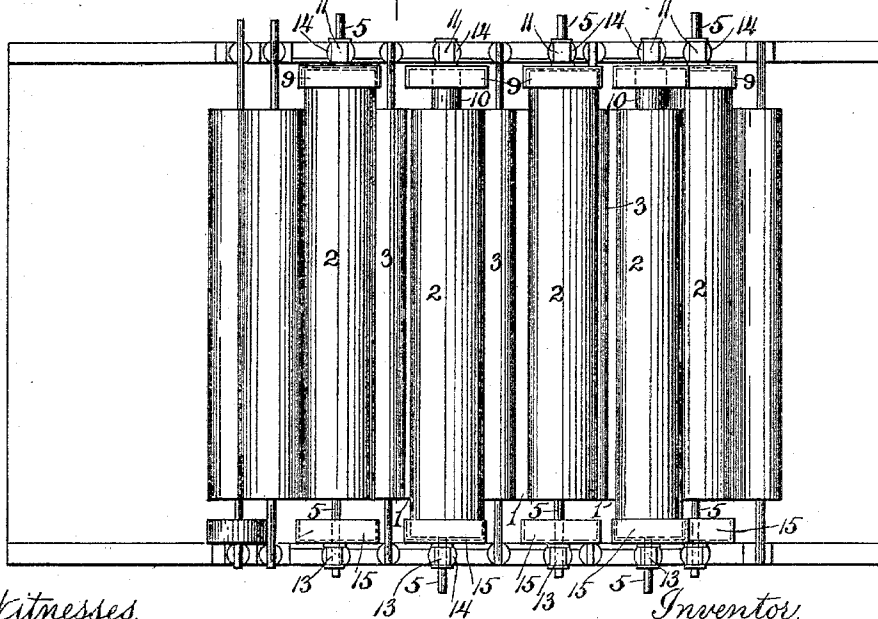


FIG. 2.



Witnesses.
Walter E. Allen.
Ed. E. Conner

Inventor.
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By *Knight*

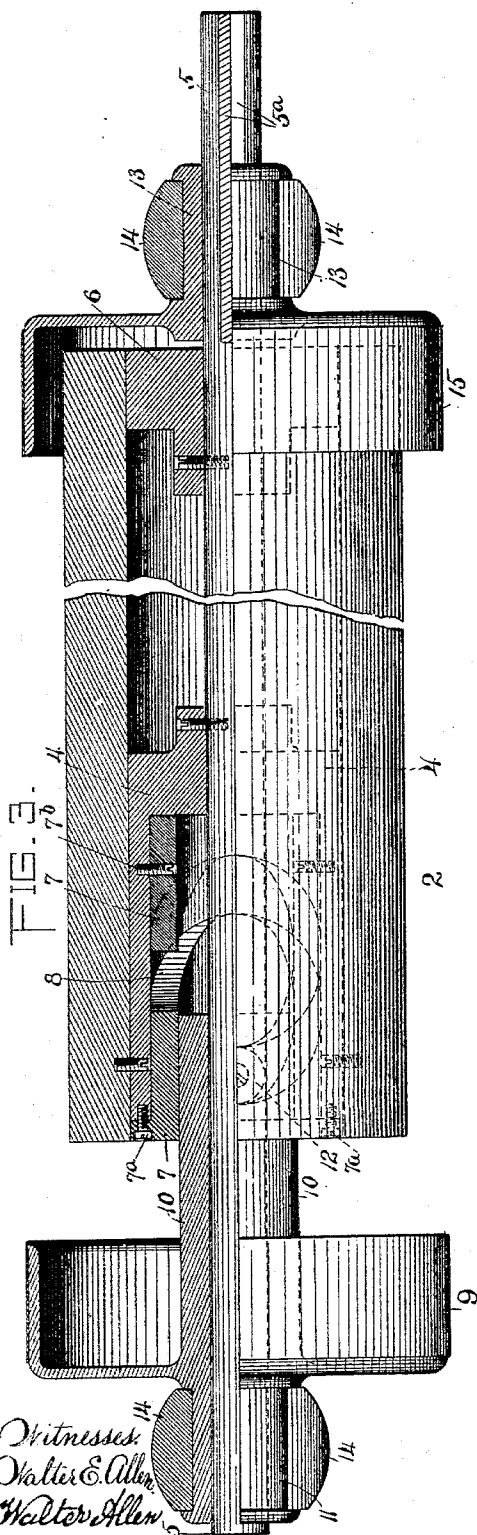
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Witnesses
Walter E. Allen
Walter Allen

FIG. 6.

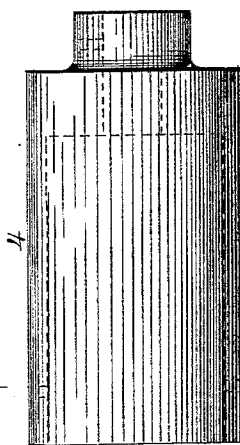


FIG. 5.

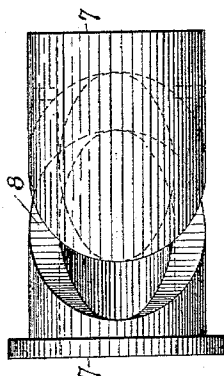
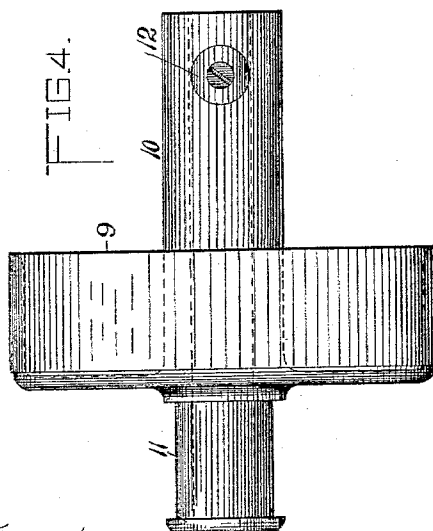


FIG. 4.



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UNITED STATES PATENT OFFICE.

ALFRED A. LANGEWALD, OF WARREN, MASSACHUSETTS.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 562,837, dated June 30, 1896.

Application filed December 26, 1894. Serial No. 533,017. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. LANGEWALD, a citizen of the United States, residing at Warren, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Carding-Engines, of which the following is a specification.

My invention is applicable for the most part to breaking as well as finishing cards, though intended more particularly for finishing carders, and has for its object to provide longitudinally-vibrating workers in combination with a non-vibrating main cylinder and the lick-in, tumbler, strippers, and doffer, all bearing a fixed relation to said cylinder, the longitudinally-vibrating workers being each elongated axially to an extent at least equal to the amplitude of its vibration or the length of its stroke, and so mounted with relation to the main cylinder that neither of its ends can move inwardly beyond the outer edge of said cylinder, with the result that at no time does any portion of the cylinder escape the action of all the workers.

It has heretofore been proposed to vibrate the fancy cylinders and the main cylinder, and even to vibrate other parts of the carding-engine in order to accomplish divers objects, but all of these previously-known arrangements in which the relations are changed between the main cylinder and the lick-in, or tumbler, or strippers, or doffer, or other parts, necessarily result in the production of ragged edges on the staple, and these ragged edges being not available for yarn cause a great waste. With my new construction of carding-engine I am enabled to maintain all of the advantages of the relative longitudinal movement between the parts, and at the same time to make the staple the full width of the card and with straight edges that permit of the entire output being utilized for yarn. The importance of this may be seen from the fact that a forty-inch card of my construction will yield a seven and one-half per cent. increase in available production over the old forms of machine.

My invention further consists in certain features in the construction of the workers whereby they receive their rotary and recip-

rocatory movements from separate working connections.

My invention will be fully understood upon reference to the accompanying drawings, in which—

Figures 1 and 2 represent in side elevation and top plan, respectively, a carding-engine to which my improvements are applied. Fig. 3 shows half-sectional view of one of the workers constructed in accordance with my invention. Figs. 4, 5, and 6 show views of the parts which cause the vibration—that is to say, the pulley and hub carrying a radial pin, the cam-sleeve in which said pin engages, and the spider in which said cam-sleeve is secured and which supports the cylinder on the shaft.

1 represents the main carding-cylinder, which may be surrounded by the usual carding accessories, among which are the workers 2 and strippers 3. As will be seen upon reference to Fig. 2, the workers are extended axially considerably more than is necessary to reach across the periphery of the main cylinder, and upon reference to Figs. 3 to 6 it will be seen that the main portion 2 of each worker, as will be described, has provision made for receiving simultaneously with its rotation a longitudinal vibration in the line of its axis.

The dimensions of the parts are such that the worker-cylinders 2 receive but a limited vibration with their shafts 5, and the positions of the bearings for these shafts 5, with relation to the main carding-cylinder, are such that at neither limit of the stroke does the end of a worker reach inward beyond the outer edge of said main cylinder, so that at all times the main cylinder is guarded throughout its length by all the workers.

Each cylinder 2 is provided with spiders 4 and 6, by which it is supported and fixed upon the shaft 5, and one of these spiders, as 4, is elongated to receive the cam-sleeve 7, which fits within it and is secured by any suitable means, such, for instance, as screws 7^a and 7^b. Cam-sleeve 7 is provided with the cam-slot 8, which passes around it in a plane inclined to the axis of the worker. 9 represents a pulley, which is provided with a hub 10 and journal 11, through which the shaft 5 is inserted, and upon the hub 10 is mounted a radial pin 12,

which engages in the slot 8 of cam-sleeve 7 when the parts are properly assembled. The cam-sleeve 7 and hub 10 with its pin 12 constitute the vibrator for the worker, and the pulley 9 is the driving-pulley for said vibrator. On the opposite end of the worker is a pulley for rotating it. I have shown the cylinder 2 fixed through the medium of spiders 4 and 6 to shaft 5, and I have shown the pulley 9, hub 10, pin 12, and cam-sleeve 7 for vibrating the cylinder 2 with shaft 5. In order therefore to impart rotary movement to said cylinder without interfering with its vibration, working connection is established between said pulley 15 and cylinder 2 by means of a spline 5^a, fixed to the shaft 5 and working in a groove, which permits said spline to slide longitudinally in the hub of the pulley 15, but prevents the pulley from turning on the shaft 5. The journal 11 on the vibrator-pulley 9 and the journal 13 on the opposite rotating pulley 15 of the worker are mounted in fixed bearings 14, as shown.

When rotary movement is imparted from pulley 15 through spline 5^a to the shaft 5 and from said shaft through spiders 4 and 6 to the cylinder 2, and at the same time the pulley 9 is rotated at a different rate of speed from that of the pulley 15, it is obvious that there must be relative movement between pin 12 and the cam-sleeve, and said pin will seek to move in the slot 8. This causes said pin to feed the cylinder 2 axially, commencing at the position in which the pin is shown, first to the left and then to the right, the rate of such vibration depending entirely upon the difference of the speed of the two pulleys 9 and 15.

From the foregoing description it will be observed that I have provided a simple and efficient construction for imparting reciprocatory movement to the cylinder 4, so that said reciprocation can be controlled at will.

In vibrating the worker, I mix up the stock more evenly than when it passes through the card in a straight line, and I thereby get the stock more evenly blended. Furthermore, I take the stock off the cylinder at a different place from where it is received by cylinder,

as I carry the stock from side to side by means of the vibrating workers.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a carding-engine, the combination of a main cylinder and other carding accessories, a worker of greater length than the cylinder and accessories and mounted on a shaft so as to be rotated and longitudinally vibrated, a cam-and-groove connection between said worker and shaft, and suitable means for rotating the worker and cam at different rates of speed so as to cause relative movement between the cam and groove for vibrating the worker, substantially as shown and described.

2. In a carding-engine the combination of a roller of substantially the characters specified; a shaft upon which said roller is mounted and with which it has spline-and-groove connection, a pulley for driving said shaft, and an independent pulley mounted loosely on said shaft and having cam connection with the roller; all substantially as and for the purpose set forth.

3. In a carding-engine the combination of a longitudinally-movable worker, and a pulley mounted upon the shaft of said worker and having a hub projecting within the same; one of said parts being provided with an inclined circumferential slot and the other being provided with a pin engaging the same, whereby they are relatively shifted as explained.

4. In a carding-engine the combination of a roller of substantially the character specified, a shaft upon which said roller is mounted, a cam-cylinder 7 fitted within the roller and having the circumferential cam-slot 8 inclined to its axis, and the pulley 9 having a hub 10 fitting upon the roller-shaft and also fitting within the cam-cylinder and having a roller-pin 12 engaging in the slot 8 of said cylinder, all substantially as and for the purposes set forth.

ALFRED A. LANGEWALD.

Witnesses:

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