

(No Model.)

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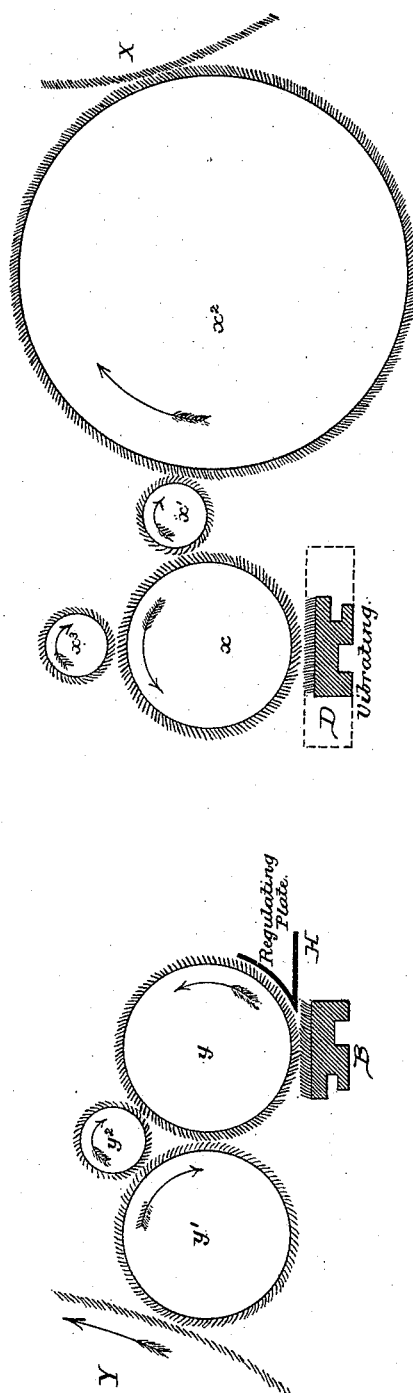
W. FERGUSON.

FEEDING MECHANISM FOR CARDING MACHINES.

No. 418,558.

Patented Dec. 31, 1889.

FIG. 1.



Witnesses:
John Wilson
William D. Corney

Inventor:
William Ferguson
by his Attorneys
Hosmer & Hosmer

(No Model.)

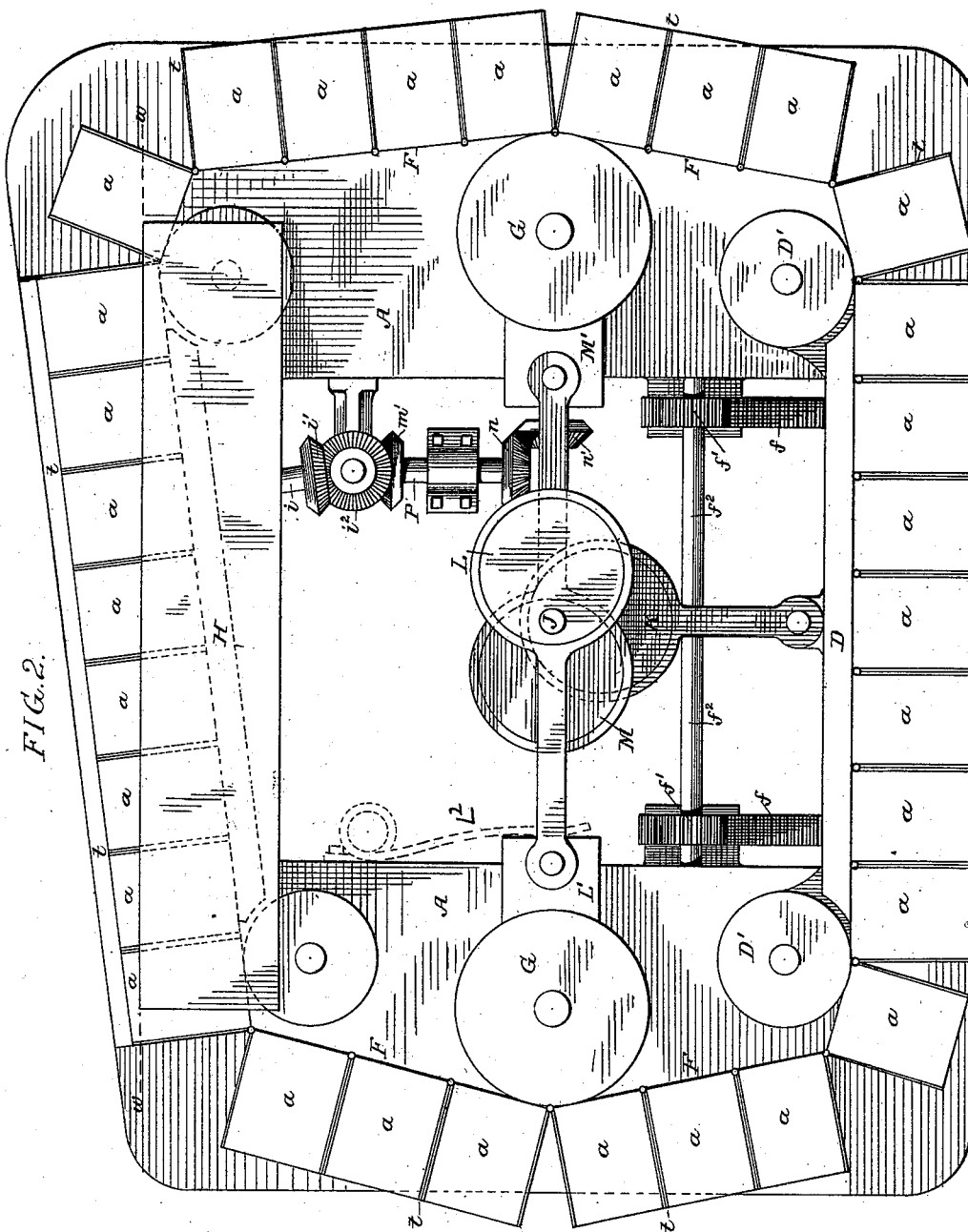
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William D. Bonner.

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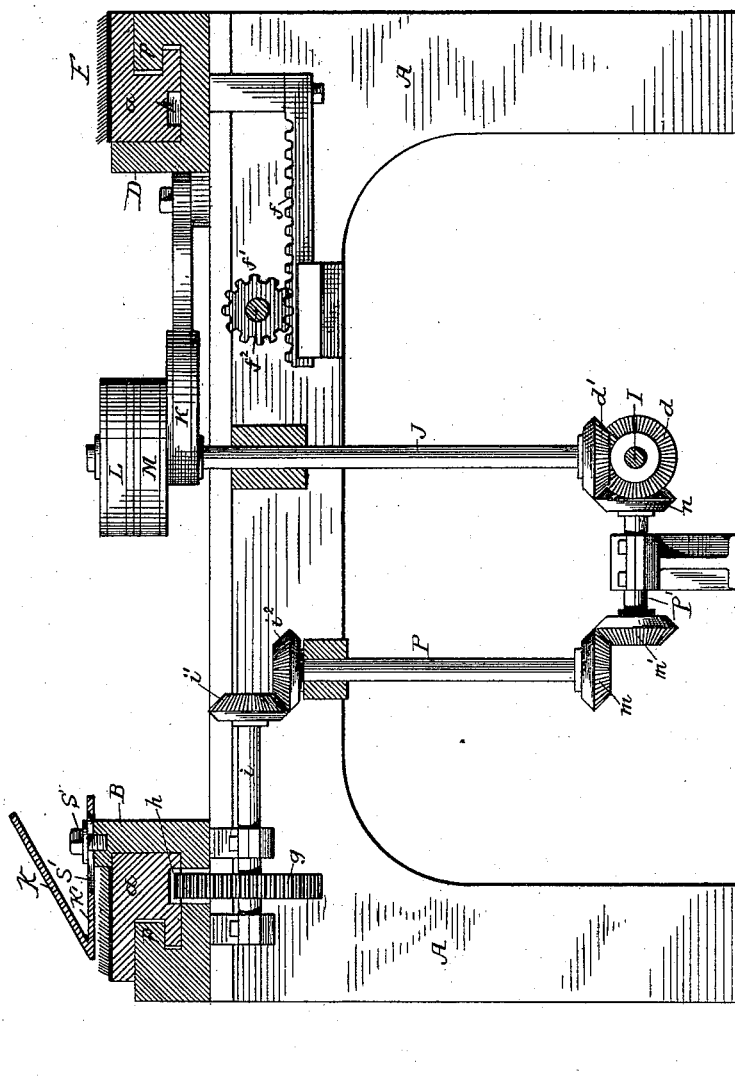
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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 418,558, dated December 31, 1889.

Application filed March 22, 1889. Serial No. 304,276. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FERGUSON, a citizen of the United States, and a resident of Groveland, Essex county, Massachusetts, have invented certain Improvements in Feeding Mechanism for Carding-Machines, of which the following is a specification.

My invention consists of certain improvements in that class of carding-machine feeders which is employed for receiving the fleece from one machine and conveying it to another—as, for instance, from the first breaker to the second breaker, or from the second breaker to the finisher.

The objects of my invention are to insure the effective removal of the fleece from the doffer or delivery-cylinder of one machine and its effective application to the licker-in of the other machine, so as to insure the production of even work and prevent waste; to provide for readily regulating the character of the feed to the receiving-machine, and to effect a supplementary combing or carding of the fleece by the action of the feeder. These objects I attain in the manner herein-after set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional diagram showing parts of two adjoining carding-machines and parts of the interposed feeder. Fig. 2 is a plan view of the feeder, the toothed coverings of the feed-blocks being omitted; and Fig. 3 is a transverse section of the feeder, partly in elevation.

To bearings on a suitable standard or frame-work A are adapted a stationary guide B, and a movable guide D for opposite portions of an endless chain or conveyer F, consisting of a series of fleece-carriers, each of which is in the present instance in the form of a block *a*, these blocks being suitably hinged together at their inner corners and having projecting teeth at the top, as shown in Figs. 1 and 3, the portions of the conveyer between the opposite guides being guided by rollers G, also movable, as described herein-after.

The movable guide D is parallel with the axis of the delivery-roll *x* of the carding-

machine X, the movement of said guide being in a direction transverse to the axis of the roller, the limits of movement being indicated by dotted lines in Fig. 1.

The delivery-roll *x* in the present instance receives the fleece from a stripper *x'*, which takes it from a doffer *x²* of the cylinder X, a fancy-cylinder *x³* serving to raise the stock on the teeth of the delivery-roller, so that it can be readily removed therefrom by the toothed upper faces of the fleece-carriers *a* of the feeder. The opposite or delivery portion of the conveyer occupies a fixed relation in respect to the licker-in *y* of the receiving-machine Y, this licker-in being in the present instance stripped by a roll *y'*, which is in turn stripped by the main cylinder Y, the fancy-roll *y²* serving to raise the stock on the teeth of the licker-in *y* for the effective action of the stripper *y'*.

The guide B, which controls the conveyer adjacent to the receiving-machine, is inclined in respect to the longitudinal axis of the licker-in *y*, which may, for instance, be represented by the dotted line *ww* in Fig. 2, so that at one end the licker-in acts only upon the extreme outer portions of the toothed fleece-carrier *a* of the chain, more and more of each carrier being brought under the influence of the licker-in as said carrier travels along the latter, until at the opposite end of the licker-in the whole extent of the carrier has been subjected to the action of the same.

Owing to the combined longitudinal traversing and transverse reciprocating movement of the fleece-carriers adjacent to the cylinder *x* of the delivery-machine, the fleece is deposited throughout the entire surface of said carriers, and the speed of the transverse reciprocation is preferably so timed in respect to the speed of the longitudinal traverse that no portion of any carrier will act upon the cylinder oftener than any other portion of the same, so that a uniform deposit of fleece upon each carrier will be insured.

By reason of the inclined course of the toothed fleece-carriers adjacent to the licker-in of the receiving-machine, the fleece is uniformly delivered to said licker-in, fresh sur-

faces of each carrier, with its load of fleece, being continuously brought under the action of the licker-in as said carrier travels from end to end of the latter. In case, however, it is desirable to regulate or vary the delivery of the fleece to the licker-in, I provide a shield or guard H, the front edge of which, under ordinary circumstances, is parallel with the axis of the licker-in, so that the feeding of the fleece to the latter is governed wholly by the angle of the travel of the carriers *a*. If, however, it is desired to feed more or less than the normal amount of stock to one or the other end of the licker-in, this can be readily effected by so adjusting the guard or shield H as to uncover less or more of the surface of the fleece-carrier at said end, as will be readily understood.

The amount of fleece upon each carrier of the endless feeder can be readily governed by a proper regulation of the speed of the chain, the rule being that the faster the latter is run the less stock will be deposited upon each carrier, and the slower the chain is run the more stock will be received by each carrier, the speed of the chain, however, never varying sufficiently to affect the uniform deposit of stock upon and its delivery from the surface of each carrier.

As each carrier receives fiber from all parts of the width of the delivery-cylinder and delivers it to all parts of the width of the licker-in, it will be evident that the stock is thoroughly mixed, and defects—such as thick or thin spots in the fleece on part of one machine—are not repeated in the following machine of the set.

Having thus described the important features of the device constituting my invention, it will be evident that various combinations of mechanism may be employed for operating the various parts. In Figs. 2 and 3, however, I have shown one construction which can be adopted, and which I will now proceed to describe.

A suitable shaft I at the base of the machine drives, by gears *d d'*, a vertical shaft J, which has at the upper end three eccentrics K, L, and M. The strap of the eccentric K is connected to the movable guide D of the chain of fleece-carriers, this guide having at its opposite ends rollers D', around which the chain passes in approaching or leaving the guide. In order to insure perfectly-parallel movement of the guide D, the same has near each end a projecting rack *f*, engaging with a spur-pinion *f'* on a shaft *f''*, so that each end of the rack must necessarily move at the same speed, the shaft, with its pinions and racks, serving to hold the guide D rigidly in its proper alignment by effectively preventing any twisting or distorting of said guide. The straps of the eccentrics L and M are connected, respectively, to the slides L' and M', which carry the bearings for the intermediate rollers G, the eccentrics being so set that these intermediate rollers will move toward

and from each other in accordance with the inward and outward movements of the guide D, so as to keep the chain of fleece-carriers always under proper tension. Instead of being positively actuated in this way, however, the slides carrying the rollers G may, as will be evident, be acted on by springs or weights, tending to move them outward and impart the proper tension to the belt. (See, for instance, spring L², shown by dotted lines in connection with slide L', Fig. 2.) The movement of the endless chain of fleece-carriers is effected by a spur-pinion *g*, which engages with a rack *h*, formed in the under sides of said carriers, as shown in Fig. 3, the pinion being carried by a shaft *i*, which is driven by bevel-wheels *i' i''* from a vertical shaft P, the latter being driven by bevel-wheels *m m'* from a short horizontal counter-shaft P', geared by bevel-wheels *n n'* to the driving-shaft I.

As it is important that the fleece-carriers *a* should be held in their proper vertical position in respect to the delivery-cylinder *x* and licker-in *y*, the outer faces of the carriers are grooved for the reception of ribs *p* in the guides B and D, as shown in Fig. 3, so that the carriers are properly held in position upon their bearings on the fixed frame of the machine.

It will be observed on reference to Fig. 1 that the teeth of the fleece-carriers bear such relation to the teeth of the delivery-cylinder *x* as to effect the combing or carding of the fibers at the same time that they are transferred from said delivery-cylinder to the carriers.

In order to prevent any entanglement of the fibers and to prevent said fibers from gaining access to the spaces between the carriers, I prefer to interpose between the successive carriers thin strips *t*, of leather or equivalent material, the upper edges of which should be flush with the tops of the teeth. In the drawings these strips are shown as applied to each end of each block *a*. I have also shown the shield H as comprising an upper concave plate *k* and a lower horizontal plate *k'*, the latter being mounted upon a guide B and being secured thereto by set-screws *s*, adapted to slots *s'*, to permit of the adjustment of the shield, as above set forth.

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

1. In a feeder for carding-machines, the combination of the delivery-cylinder of one machine and the licker-in of another machine with a series of toothed fleece-carriers and means for moving the same from the delivery-cylinder to the licker-in and traversing them longitudinally past said cylinder and licker-in, substantially as specified.

2. In a feeder for carding-machines, the combination of the delivery-cylinder of one machine and the licker-in of another machine with the endless chain of toothed fleece-carriers, means for moving the chain, guides for the chain, and means for recipro-

cating one of said guides, whereby the fleece-carriers are caused to move transversely to the axis of the delivery-cylinder while being moved longitudinally across the face of said cylinder, substantially as specified.

3. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine with the endless chain of toothed fleece-carriers, means for moving the same from the delivery-cylinder to the licker-in, and a guide for said carriers adjacent to the licker-in of the receiving-machine, said guide being at an angle in respect to the longitudinal axis of said licker-in, substantially as specified.

4. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine with a chain of toothed fleece-carriers having their teeth set reversely in respect to those of the delivery-cylinder at the delivery-point of the latter, and with means for moving the chain of fleece-carriers longitudinally and transversely across the face of the cylinder, whereby the fibers are combed or carded as they are delivered to the fleece-carrier, substantially as specified.

5. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine with the endless chain of toothed fleece-carriers, means for moving the same from the delivery-cylinder to the licker-in, a guide for that portion of the chain which is adjacent to the cylinder of the delivery-machine, means for reciprocating said guide, a guide for the chain at the licker-in of the receiving-machine, and yielding guide-rolls for the intermediate portion of the chain, substantially as specified.

6. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine with the endless chain of toothed fleece-carriers, means for moving the same from the delivery-cylinder to the licker-in, a guide for that portion of the chain which is adjacent to the delivery-cylinder, means for reciprocating said guide, racks at the opposite ends of

the guide, pinions gearing into said racks, and a shaft carrying said pinions, whereby the parallelism of the guide is secured, substantially as specified.

7. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine with an endless chain of toothed fleece-carriers, means for moving the same from the delivery-cylinder to the licker-in, a guide inclined in respect to the axis of the licker-in, a shield or guard whereby more or less of the fleece-carriers adjacent to said licker-in may be covered or exposed, and means for adjusting said shield, substantially as specified.

8. The combination, in a feeder for carding-machines, of the delivery-cylinder of one machine and the licker-in of the other machine, with an endless chain of toothed fleece-carriers, means for moving the same from the delivery-cylinder to the licker-in, a guide for that portion of the chain which is adjacent to the delivery-cylinder, rollers for guiding and supporting the intermediate portion of the chain, and means for imparting movement simultaneously to the chain-guide and to said rollers, substantially as specified.

9. The combination, in a feeder for carding-machines, of an endless chain of toothed fleece-carriers having racks formed in their under sides, guides for said chain, a pinion engaging with the racks of the fleece-carriers, and mechanism for rotating said pinion, substantially as specified.

10. The combination, in a feeder for carding-machines, of an endless chain of toothed fleece-carriers, means for imparting movement to said chain, and a guide having a rib for engaging with each carrier and retaining the same in its proper vertical position, substantially as specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM FERGUSON.

Witnesses:

WM. A. HORN,
HARRY SMITH.