(No Model.)

W. H. RANKIN.

CARDING MACHINE.

No. 336,587. Patented Feb. 23, 1886.

Fig: 7.

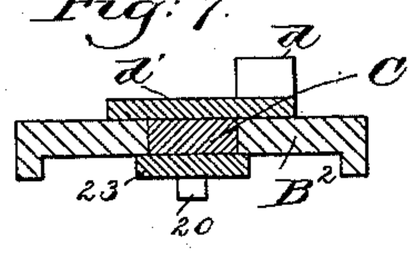


Fig: 1.

Fig: 8.

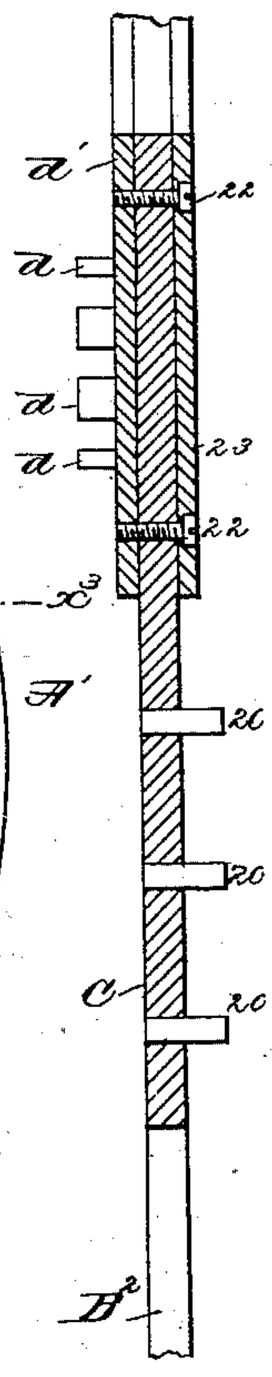


Fig: 2.

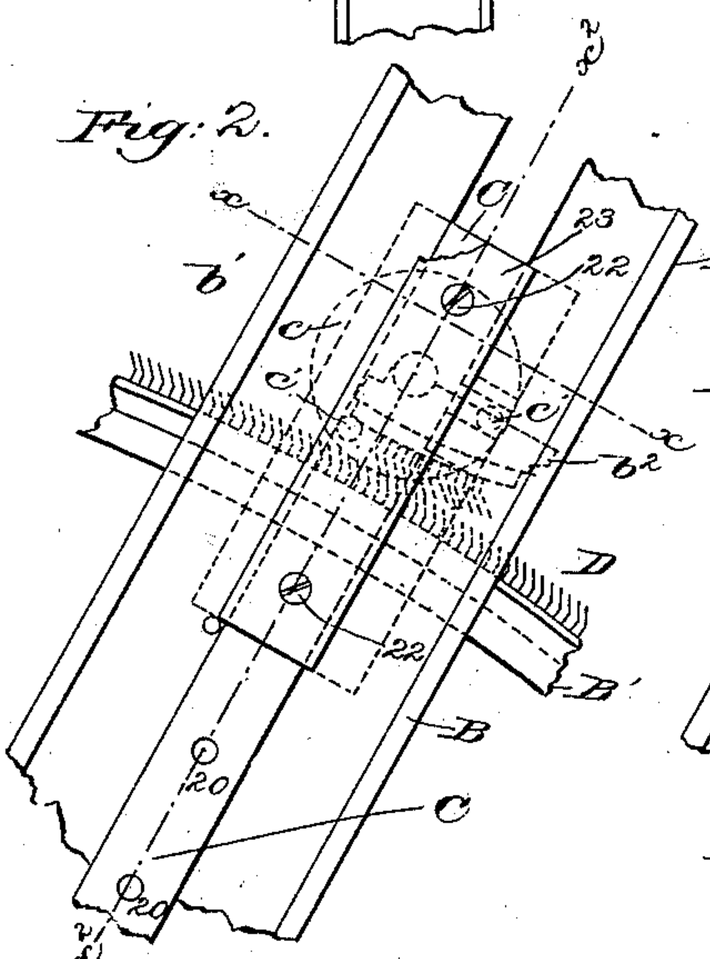


Fig: 3.

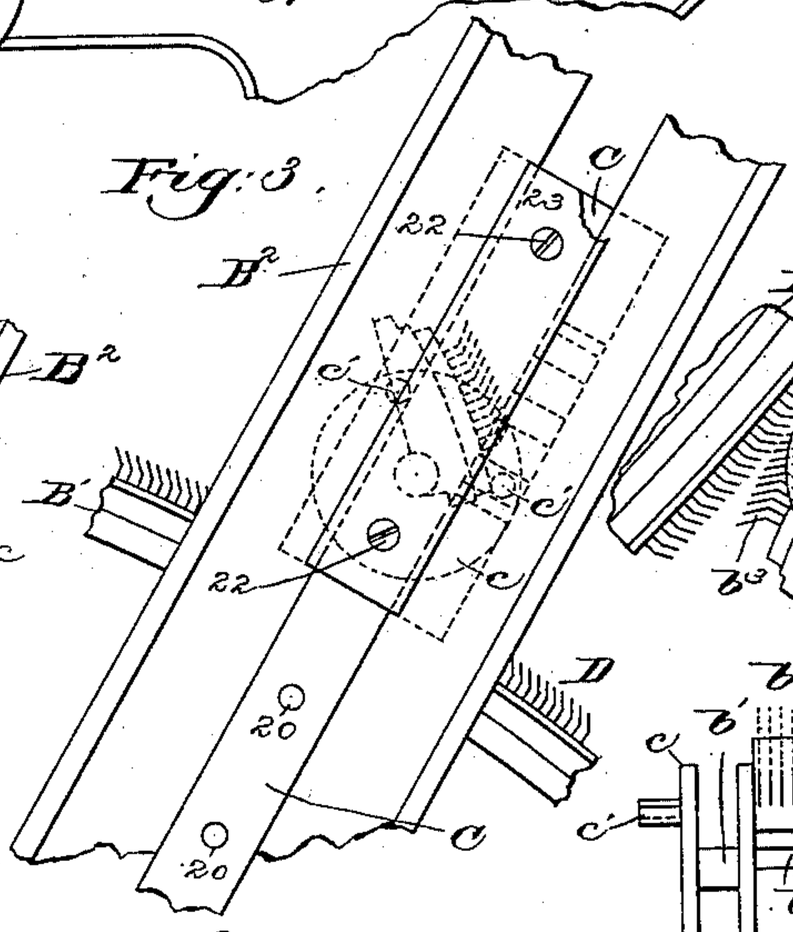


Fig: 4.

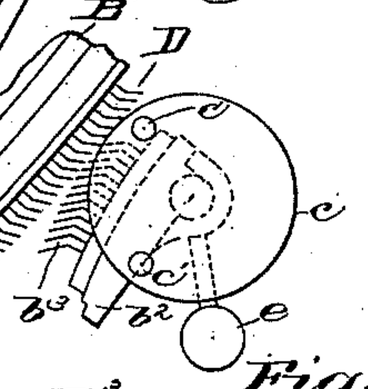


Fig: 5.

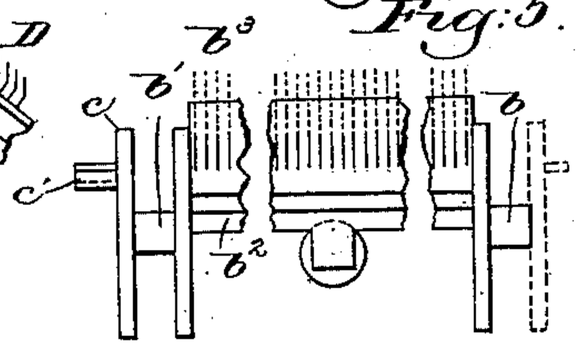
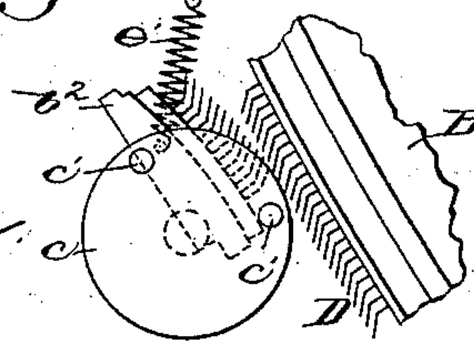


Fig: 6.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. RANKIN, OF LAWRENCE, MASSACHUSETTS.

CARDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 336,587, dated February 23, 1886.

Application filed October 7, 1885. Serial No. 179,219. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RANKIN, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Carding-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve the construction of carding-machines, whereby, with like speed of the main cylinder, the quantity of cotton carded in a given time may be increased and the quality of the carding be improved.

In accordance with my invention, I have dispensed with the usual top-flats, and in their place have employed a series of segmental workers, having at each end journals supported in stands erected on the arches of the side frames, each of the said segmental workers having an attached disk provided with one or more laterally-extended pins to co-operate with teeth or projections on a sliding carriage, the shank of which is provided with pins which are engaged by cam projections at the rear side of a cam-wheel—such as usually found upon the swinging frame of a Wellman stripper, substantially such as shown in United States Patent No. 291,471. The teeth or projections of the said carriage, as the latter is reciprocated longitudinally, act one after the other on the pins of the disk of the worker next to be stripped, rotating the worker until it is inverted, when the card-clothed surface of the worker is stripped by a stripper, the latter having co-operating with it a receiving-card carried by the usual swinging frame, the said receiving-card taking and retaining the waste from the stripper. The segmental workers, which are located below a line drawn through the center of and cutting the shaft of the main cylinder longitudinally, are provided with holding devices for retaining the said workers with their teeth in proper position with relation to the card-clothing of the main cylinder, the said holding devices being either a weight and arm, or its equivalent, a spring, which will be described.

Figure 1 is a partial side elevation of a sufficient portion of a carding-machine which, taken in connection with the well-known Wellman carding-machine, will enable my invention to be understood, only a part of the cylinder-clothing being shown and but a few of the segmental workers, the stands at the left-hand side being broken off. Fig. 2 is a diagram, on an enlarged scale, showing a part of the main cylinder, part of the swinging frame, part of the carriage and its shank to operate the segmental worker, and one of the segmental workers in operative position. Fig. 3 shows like parts, with the segmental worker in position to be stripped. Fig. 4 is an end view of one of the segmental workers, its attached holding device and disk, and a portion of the card-cylinder. Fig. 5 is a detail of one of the workers, broken out to save space in the drawing. Fig. 6 shows a modification of the holding device for the worker and a portion of the main cylinder; Fig. 7, a section in the line $x\ x$, Fig. 2, of only the swinging frame and carriage therein, and Fig. 8 is a longitudinal section in the line $x^2\ x^2$, Fig. 2, the figure showing only the swinging frame, the carriage, and its shank.

The frame A supports the arches A′ and the standard A^2. The standards A^2, at each side of the frame, receive the shaft B of the main cylinder B′, of usual construction, provided with card-clothing D, in usual manner, the said shaft deriving its rotation in any usual way—as, for instance, in the Wellman carding-machine, or a carding-machine substantially such as represented in United States Patent No. 291,471. The swinging frame B^2, the stud B^3 thereon, and the toothed gears B^4, one at each end of the machine, but only one herein shown, and provided at their rear sides with cam projections, (shown by dotted lines, Fig. 1,) and also the shanks or slide-bars C, provided with pins 20, to be acted upon by the cam projections at the inner sides of the said gears B^4, are all as usual in the said Wellman carding-machine; and in practice the toothed gear B^4 will be rotated, and the swinging frame will be traversed intermittingly over the arches, as in the said Wellman machine, or in other usual manner. The toothed gear B^4, at its outer side, is provided with the usual cam-groove, a, which receives a stud, a', of an arm, a^2, fast on a rock-shaft, a^3, having at each end an upwardly-

extended arm, a^4, one only being shown, which arms are provided with fingers 24, having connected therewith the stripper a^5, which, when the segmental workers (to be described) are partially rotated and inverted, acts upon the teeth of said workers and take the cotton therefrom, and the said stripper, after receiving the waste from the worker, is moved over a stationary waste-receiving card, a^6, which, as the stripper is moved, enables it to deposit upon the said card the waste carried by it, the card retaining the said waste until removed by hand. Stands b, erected upon the arches, receive the journals b' of the segmental workers b^2, provided with card-clothing b^3, attached thereto in usual manner. The shaft or journal of each worker, at the outer side of one or both of the stands b, has attached to it a disk, c, provided with two or more laterally-extended pins, c' c', herein shown as two, the said pins being engaged one after the other by the teeth or projections d of the carriage d', connected with the upper end of the shank or slide C, common to the Wellman carding-machine, the lifting of the shank and carriage by the projections at the inner side of the gear B^4 acting on the usual pins, 20, of the shank, while the swinging frame is held in any one of its numerous positions at each side of the machine, positively rotating each segmental worker at the projections from its normal operative position, Fig. 2, partially inverting it into the position, Fig. 3, where it will be stripped, as stated, the lowering of the carriage restoring the worker to its former position. The carriages d' are shown as attached to the shanks by screws 22 22, extended through plates 23. The segmental workers b^2, which are arranged about the arch below the dotted line x^3 x^3, inasmuch as the said workers are pivoted eccentrically, must be held in working position with relation to the card-clothing of the main cylinder, and to do this I have provided the workers with holders. In Fig. 1 at the right and in Fig. 4 the said holder is shown as a weighted arm, e, but instead I might use a coiled spring, e', as in Fig. 1 at the left and in Fig. 6, one end of the spring being connected with the worker and the other with the arch. In practice the workers will be located entirely about the arch A', the employment of segmental workers arranged as described enabling me to provide about the main cylinder a much greater area of carding-surface than with any arrangement of top and under flats known to me. In practice I prefer to make the workers b^2 of iron and attach to them the card-clothing. When the carriage d' is down, or is drawn into the swinging frame, its teeth or projections d are in such position as to enable the swinging frame to be turned freely without striking the pins c', the said frame being stopped opposite any desired worker in the order in which the said workers are to be overturned and cleaned.

It will be seen and understood that the part shown in Fig. 1 as carried by the swinging frame will be duplicated at the opposite end of the machine.

I claim—

1. The swinging frame, the toothed carriage, its toothed shank, and the gear B^4, provided with a cam to reciprocate the said shank and carriage, combined with the arches, the stands or bearings thereon, the segmental card-clothed workers, and the attached disks provided with pins to be engaged by the teeth of the carriage and to be partially rotated or inverted to place the card-clothed surface of the said workers in position to be stripped, substantially as described.

2. The swinging frame, the toothed shank and the toothed carriage, and the gear provided with a cam to reciprocate the said shank and carriage, the arches, the stands or bearings thereon, the segmental card-clothed workers and their attached disks provided with pins to be engaged by the toothed carriages and to be partially rotated positively to invert the said workers, combined with the stripper actuated by the cam of the said gear to strip the workers at the proper time, as and for the purpose set forth.

3. The swinging frame, the toothed shank and toothed carriage, and the gear B^4, provided with a cam to reciprocate the said shank and carriage, the arches, the stands or bearings thereon, the segmental card-clothed workers and their attached disks provided with pins to be engaged by the toothed carriage and to be partially rotated positively to invert the said workers, combined with the stripper actuated by the cam of the said gear B^4, and with the receiving-card to take the waste from the stripper, substantially as described.

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

WILLIAM H. RANKIN.

Witnesses:
G. W. GREGORY,
F. L. EMERY.