(No Model.)

R. KITSON.

MACHINE FOR OPENING AND PREPARING COTTON.

No. 375,362. Patented Dec. 27, 1887.

Fig. 3.

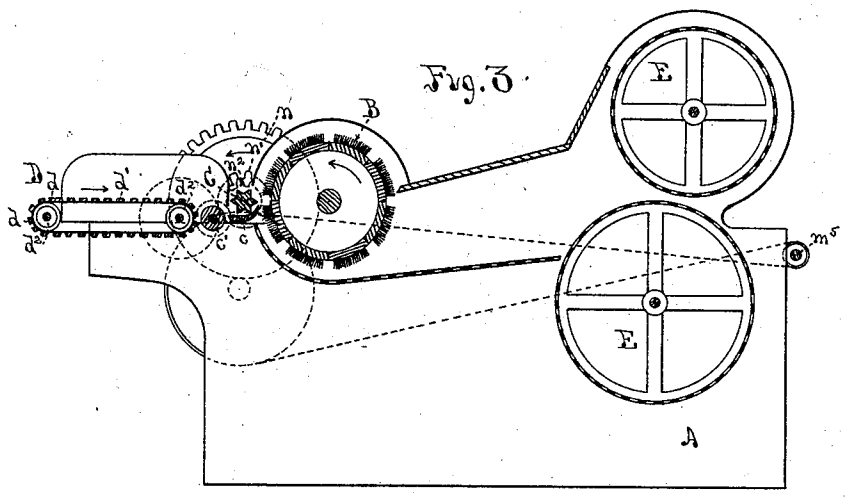


Fig. 1.

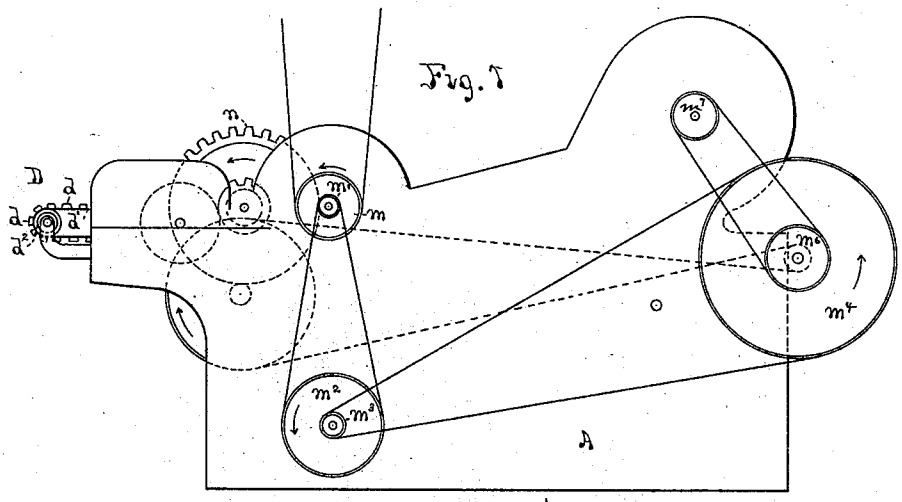
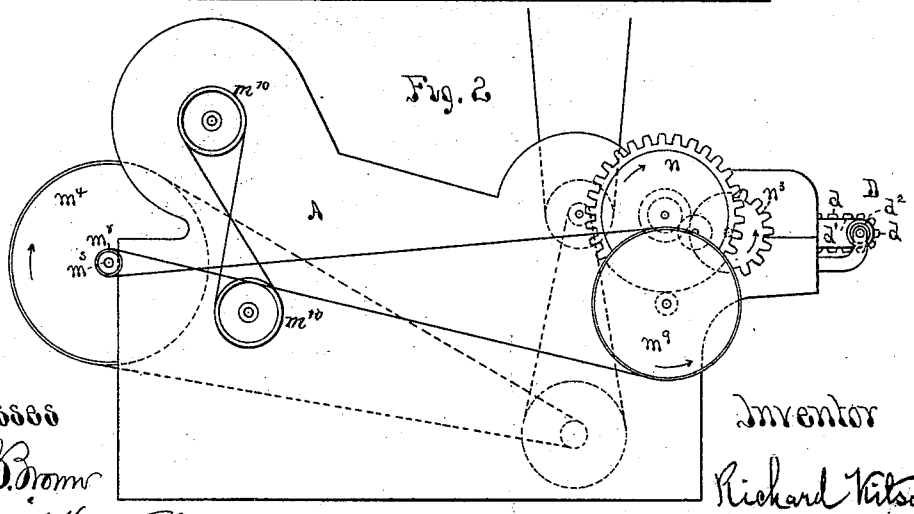


Fig. 2.



Witnesses
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MACHINE FOR OPENING AND PREPARING COTTON.

SPECIFICATION forming part of Letters Patent No. 375,362, dated December 27, 1887.

Application filed February 28, 1885. Serial No. 157,332. (No model.)

To all whom it may concern:

Be it known that I, RICHARD KITSON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Machines for Opening and Preparing Cotton, of which the following is a specification.

My improvement relates to machines for opening and preparing cotton and other fibrous substances, and it consists in certain novel combinations of the working parts of such machines, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of a cotton-opener provided with my improvement. Fig. 2 is a side elevation of the opposite side of the machine from that shown in Fig. 1. Fig. 3 is a central longitudinal vertical section of the machine through Fig. 1.

A is the outer casing of the machine.

B is the picker-cylinder, clothed with card-teeth formed of small steel wires around its periphery, adapted to divide the fibers fed to it.

C is a grooved feed-roller revolving above and in combination with a fixed concave plate or bar, *c*, extending from side to side of the machine and attached at its ends to the inner faces of the casing A. The cotton is fed to this feed-roll and concave plate, and thence by the latter to the picker-cylinder, in the usual manner.

D is a feed-apron, formed of transverse slats *d*, attached to an endless flexible belt, *d'*, which extends around two rollers, d^2 d^2, mounted on shafts journaled in the casing A in the usual manner. The apron formed with a slatted surface in this manner takes hold of masses or flakes of matted fiber spread upon it better than a smooth apron; but when used to feed the cotton directly to the plate *c* and grooved feed-roll C it is found that it draws the fibers down between the apron-slats *d* and the rear edge of the plate as the apron passes around the roller d^2 nearest to the plate and past said edge. This is especially the case when the grooves in the roller C and between the slats of the apron coincide as they pass each other when set and revolved in the usual manner, so that the feed-roll C takes the fiber directly from the apron, as in such case short fibers are carried around past the plate *c* and grooved roller C by the apron, and not delivered to them. To obviate this difficulty, I have interposed the smooth roller *c'* between the apron D and plate *c*, which revolves in the same direction as the rollers d^2, and is placed so close to the rear edge of the plate *c* that the fiber cannot pass down between them, but is delivered on the top surface of the plate. The direction of the revolution of the roller *c'* also prevents the fiber from passing down between it and the apron, as it did when the apron was used to deliver the fiber directly to the grooved roller C and plate *c*.

The apron D moves in the direction indicated by the arrow in Fig. 3, and the picker-cylinder B also moves in the direction indicated by the arrow upon it. The fiber, after leaving the picker-cylinder, is blown against the perforated screen-cylinders E E and delivered from them in a sheet or lap.

It will be observed that I construct the roller *c'* small enough in diameter to enable the flakes or masses of fiber to be regularly fed across its upper surface by the conjoint effect of its own rotation and of other flakes or masses of fiber continually pressing behind the former ones by the feeding action of the apron D.

The belts and gearing driving the several parts are clearly shown in the drawings. The pulley *m* is attached to the shaft of the picker-cylinder and driven from any suitable counter-shaft. The pulley *m'* is attached to the same shaft and belted to pulley m^2. The latter is upon a shaft journaled upon a stud fixed in and projecting from casing A and is attached to the pulley m^3. This pulley m^3 is belted to pulley m^4, which is attached to the shaft m^5. A pulley, m^{10}, is attached to the projecting end of the shaft of upper screen E, and another to the projecting end of lower screen E, Fig. 2, outside the casing of the machine, and a crossed belt connects these pulleys and drives the lower screen-cylinder, extending across the front end of the machine. Another pulley, m^6, upon this same shaft is belted with pulley m^7, which is attached to the projecting end of the shaft upon which the upper screen-cylinder is mounted. Upon the opposite end of the shaft m^5, which projects outside of the casing A, is attached the pulley m^8, which is belted to the pulley m^9, the latter revolving

upon a stud projecting outward from the casing A. Attached to the inside face of pulley m^9 is a pinion which drives the gear-wheel n, which is attached to the outer projecting end of the shaft of feed-roll C. Two pinions, n' n^2, are also attached to the same end of this shaft. The pinion n' drives the gear n^3, attached to the shaft of one of the rollers d^2, and the pinion n^2 meshes with another pinion attached to the projecting end of the shaft of roller c', and thus revolves the latter, as before described. All these driving mechanisms are old and well understood, excepting the pinion n^4, which revolves the roller c'.

What I claim as new and of my invention is—

The combination, in a fiber-opening machine, of the feed-apron D, having its surface formed of a series of transverse slats, the smooth-surfaced feed-roller c', revolving in a direction adapted to carry the fiber over it from the apron, devices for operating the feed roll and apron, plate c, having its edge contiguous to roll c' and adapted to doff the fiber from its surface, grooved feed-roll C, and picker-cylinder B, substantially as described.

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