

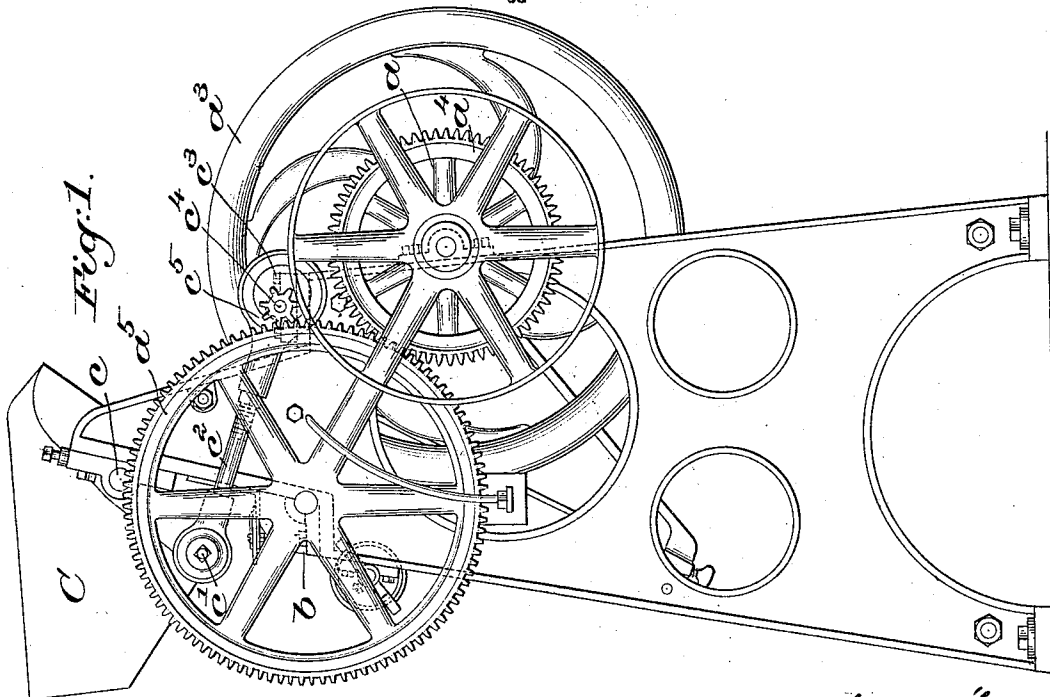
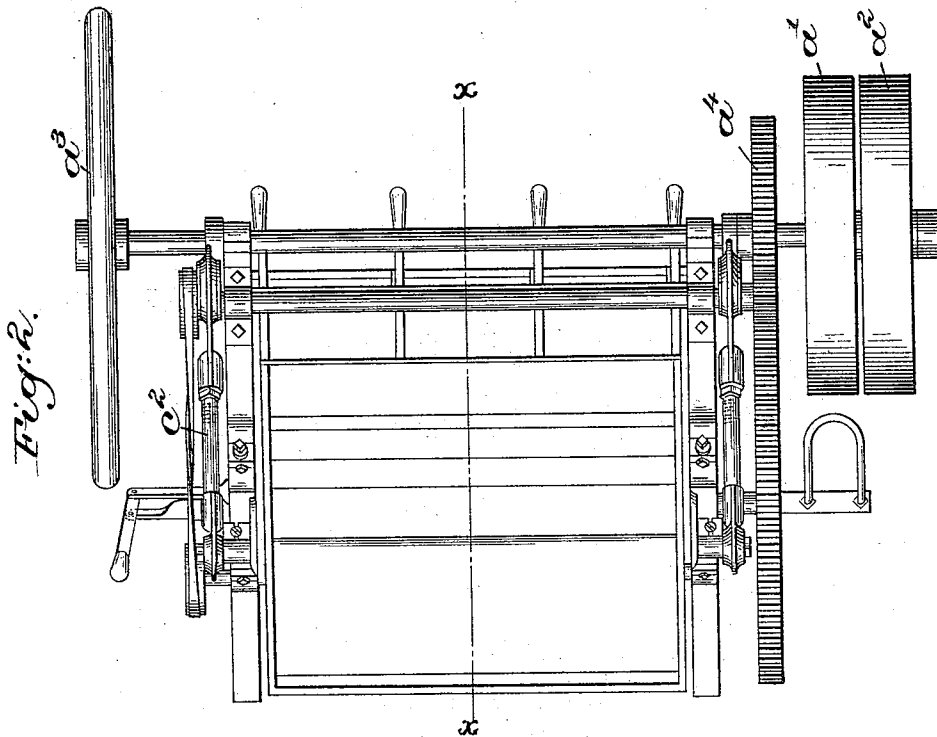
(No Model.)

2 Sheets—Sheet 1.

M. PRIOR.
ROLLER COTTON GIN.

No. 511,711.

Patented Dec. 26, 1893.



Witnesses.

Fred S. Gunkhof
Louis W. Gourell.

Inventor.

Matthew Prior
by Crosby & Breckon, Attys.

(No Model.)

2 Sheets—Sheet 2.

M. PRIOR.
ROLLER COTTON GIN.

No. 511,711.

Patented Dec. 26, 1893.

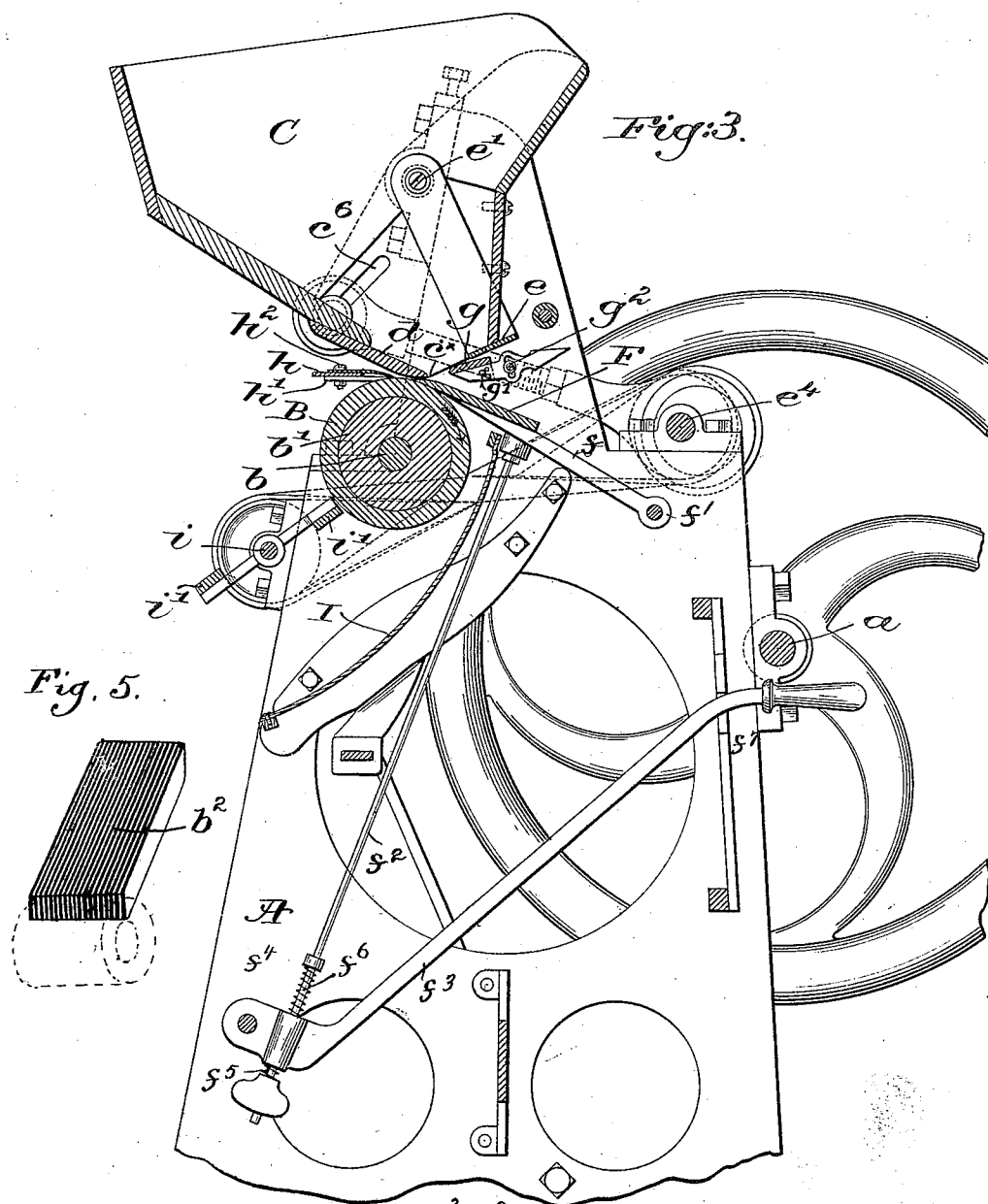
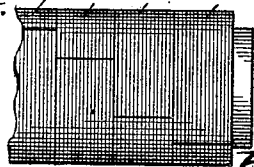


Fig. 4. $b'' b'' b'' b''$



Witnesses,

Fred S. Gumbaf.

Louis N. Souell.

Inventor,

Matthew Prior.

by Crosby & Gregory
attys.

UNITED STATES PATENT OFFICE.

MATTHEW PRIOR, OF WATERTOWN, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CENTURY COTTON COMPANY, OF WEST VIRGINIA.

ROLLER COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 511,711, dated December 26, 1893.

Application filed January 31, 1893. Serial No. 460,197. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW PRIOR, of Watertown, county of Middlesex, State of Massachusetts, have invented an Improvement in Roller Cotton-Gins, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object to provide an improved roller cotton-gin, the invention having especial reference to the construction of the roller.

Prior to this invention, rollers for cotton-gins have been covered with leather, canvas, and other soft or yielding material, such materials being considered preferable for catching and drawing the cotton fiber from the seeds. From the nature of the cotton fiber I became convinced that the best results might be attained in roller gins by providing the roller with a great number of fine points, and yet these points must be yielding and non-metallic, and as a result of my experiments I have devised a novel roller the use of which materially increases the capacity of the gin.

My improved roller has at its periphery a series of hairs the points of which engage the cotton fiber. These hairs, horse hair or bristles, stand with their ends directed outwardly, and act very effectually to draw the cotton from the seeds, yet without tearing or breaking the fiber of the cotton.

Another important feature of the invention consists in providing a vibrating hopper located above the roller, the cotton to be seeded being placed in this hopper and delivered through the opening in the bottom thereof to the roller, the vibrations of the hopper being preferably utilized to clear the seeds from the cotton.

This invention also comprehends other features to be hereinafter described and claimed, which operate to increase the capacity of the machine and to improve the quality of the cotton.

Figure 1 represents in side elevation one form of cotton-gin embodying this invention; Fig. 2, a top or plan view thereof; Fig. 3, a vertical section on an enlarged scale, the section being taken on the dotted line $x-x$, Fig. 2;

Fig. 4, a detail showing the construction of the roller, and Fig. 5, a perspective detail on an enlarged scale showing one of the completed roller sections before it is coiled about a core, the dotted lines showing the manner of coiling the same about the core.

Referring to the drawings, in the particular form of cotton-gin shown, the frame consists of the two suitably connected side plates or frames A of proper shape to sustain the various working parts. The main shaft a , journaled in suitable bearings in the frame and provided at one end with the fast and loose pulleys a' , a'' , and at its opposite end with the balance or hand wheel a^3 , has fast upon it a spur-wheel a^4 , in mesh with and driving a spur-wheel a^5 fast on one end of the roller shaft b on which is mounted between the side frames A, the roller B of a construction to be hereinafter set forth. Above this roller is arranged a vibrating hopper C, pivoted at c in bearings in the frame, and having an outlet opening c^x at its bottom above the roller, said hopper at each side having jointed to it at c' , the ends of like eccentric rods c^2 , actuated by eccentrics c^3 on a shaft c^4 to vibrate the hopper horizontally. The shaft c^4 is rotated by a pinion c^5 in mesh with the spur-gear a^5 , Fig. 1. The eccentric rods c^2 are made adjustable as to their length by means of the nuts 5 to thereby vary the position of the outlet c^x with relation to the roller. One side of the outlet opening c^x is formed by the clearer-bar d secured to the hopper, while the other side of the said opening is formed by the U-shaped bar e , pivoted for adjustment at e' to the sides of the hopper, and adapted to be moved to vary the size or width of the outlet opening according as it is moved on its pivots toward or from the clearer d , it being held frictionally in adjusted position by tightening of the pivot screws e' .

F is the knife blade, the carrier f of which is pivoted at f' to the frame and is provided with bosses into which are screwed the ends of the rods f^2 , connected at their lower ends to the hand levers f^3 pivoted at f^4 , said rods, in the present instance, being extended through holes in the said levers close to the fulera of the latter, a thumb-nut being

threaded upon the ends of the box below the levers. Springs f^5 are preferably interposed between the thumb-nuts and levers to give to the machine a slight yield or elasticity. Springs f^6 act to raise the knife from the periphery of the rollers when the machine is not in use, but when in use, the knife may be drawn down upon the roller with greater or less force by depressing the levers f^3 , retaining devices f^7 , on the frame holding the levers in desired position.

When the hopper is moved into its position Fig. 3, its outlet c^x is closed by the stationary plate g , which prevents escape of the cotton, said plate being shown as pivoted at g' , and thereby adjustable to vary the distance between its under side and the knife F , according to the various sizes of seeds which different grades of cotton contain. In practice this plate is adjusted to leave a space between it and the knife just sufficient to permit the bare seeds of the cotton to pass through, so that any seeds from which the cotton fiber has not been completely removed are prevented from escaping until stripped of their fiber, after which they escape to make room for additional seeds. The plate g is held in adjusted position by the screws g^2 , passed through slots in the upturned ends of the plate. See Fig. 3.

The amount of roller surface which is exposed beneath the outlet of the hopper is varied by means of the shield h , supported by brackets h' , the shield being adjustable toward and from the edge of the knife F , by means of screws h^2 passed through slots in the shield. A shaft i , belted to and driven by the shaft c^4 , see Fig. 3, carries a doffer i' , which, as it revolves, brushes the cotton fiber from the roller upon the apron I .

The machine having been set in operation the cotton to be seeded is placed in the vibrating hopper C , the vibrations of the hopper agitating the cotton so that the latter more easily moves toward the outlet. As the hopper in its vibrating movements reaches a position with its outlet directly above the exposed surface of the roller between the shield and the knife, the said roller, revolving in the direction of the arrow Fig. 3, catches the cotton fiber and draws the same down between the surfaces of the roller and the knife, the clearer d at the next vibration of the hopper pushing the seeds down over the top of the knife to thereby unroll the fiber from the seeds, the fiber thus unrolled being drawn down between the roller and knife as the seed is pushed back by the bar e , when the hopper returns to its central position, this unrolling and taking up of the fiber being continued until the seeds are cleared when they roll down the knife F and other seeds take their place to pass through the same operation.

The bar e may be adjusted to vary the size of the outlet according to the grade of cotton being treated, and the exposed area of the roller surface may also be varied by means of

the adjustable shield h , to accommodate various grades of cotton, for with some grades if the exposed roller surface be too great the machine will be choked, hence the necessity for means to regulate the area of such surface.

The best way known to me for utilizing hair or bristles in the manufacture of my improved roller, is to weave the hair or bristles as the weft of a fabric, the warp being of cotton, linen or other thread. This fabric is then cut into strips either parallel with the warp or on the bias, and said narrow strips are then placed one upon another either with or without interposed strips of canvas, rubber or other soft material but preferably rubber, until a section of sufficient width has been formed. This section which, if a rubber is used, is preferably vulcanized to thereby bind the bristles and the interposed rubber layers together is then bent about or laid upon the periphery of a core, and again vulcanized while on the core the edges of the strips forming the surface of the roll, other like sections being laid upon the core in similar manner, with broken joints, until the entire roll has been formed in this manner, the sections so applied constituting a covering for the core, the entire surface of the roll being formed by the edges of the strips laid upon the core, the ends of the hair or bristles in the strips being exposed to form a large number of small points on the surface of the roll. By revulcanizing the covering sections after they are placed upon or curved about the core they are so thoroughly set that the roller may be used until the covering is practically worn down to the core before it is necessary to re-cover.

Referring now to Figs. 3 and 4, the roller B has a wood or other core b' , about which are coiled the several sections b^2 of bristle-like material, the joints of the several sections being broken, as shown in Fig. 4. Each section b^2 is made up of hair-cloth, or other bristle-like material, and canvas, rubber or other material, as described. The ends of the exposed hairs furnish a roller surface which catches the cotton fiber and draws the same off from the seeds much more rapidly than a smooth or soft roller, and this too without in any way breaking or injuring the fibers. The use of this roller with its greater drawing capacity greatly increases the capacity of the machine over the machines employing the ordinary roller.

The term "hair" as employed in the claim includes not only the hair of hair-cloth, but bristles, whale-bone strips, or any recognized equivalent of hair which possesses the qualities which the hair possesses for catching and drawing in the cotton fiber.

The length of the vibrations of the hopper C may be varied by adjusting the connecting point C' of the eccentric rod c^2 in the slot c^6 , provided for that purpose. The vibrations of the hopper being in a plane parallel with the floor do not set up the excessive vibra-

tions in the building which result from a vertical vibration.

This invention is not limited to the particular arrangement, shape or construction of the various parts herein shown, as the same may be varied without departing from the scope of the invention.

I claim—

1. The herein described rubber roller for cotton gins, the same consisting of a core about which are coiled one or more previously formed sections of covering, each covering section consisting of alternate layers of hair or its described equivalent and rubber material vulcanized together and coiled about the core and again vulcanized upon the core with the edges of said layers forming the outer peripheral surface of the roller, whereby the ends of the said hairs are exposed at the periphery of said roller, substantially as described.

2. In a roller cotton gin, the combination with a roller, of a vibrating hopper located above the same and having its outlet adjacent the said roller, a knife, and a co-operating vibrating clearer, to operate, substantially as described.

3. In a roller cotton gin, the combination with a roller, of a vibrating hopper having its outlet adjacent the said roller, a clearer on said hopper, and a knife, substantially as described.

4. In a roller cotton gin, a roller, a knife, and a vibrating clearer co-operating therewith, combined with a shield arranged facing said knife but separated therefrom to leave a portion of the roller surface exposed, and adjusting devices for and whereby said shield may be moved toward and from said knife to vary the area of exposed roller surface between, substantially as described.

5. In a roller cotton gin, a roller, combined with a vibrating hopper arranged above the same, and having an adjustable outlet opening whereby to vary the quantity of cotton discharged from the hopper, a fixed knife, and a co-operating vibrating clearer to act

upon the cotton delivered to the roller from said hopper, the quantity of cotton delivered being varied in accordance with the speed of movement of the vibrating clearer, substantially as described.

6. In a roller cotton gin, a roller, combined with a movable knife, a handle, and a rod connecting the same with the said knife, whereby the operator by movement of said handle is enabled to throw said knife quickly away from and out of contact with said roller when the gin is not in use to prevent creasing or injuring the roller, and locking devices for said handle, substantially as described.

7. In a roller cotton gin, a roller, a fixed knife bearing upon the same, and a vibrating clearer, combined with a bar arranged above and movable toward and from the upper side of said knife to form a variable opening between it and the knife through which the cotton seeds freed by the clearer may escape, the width of said opening being varied to accommodate various sizes of seed, substantially as described.

8. In a roller cotton gin, a roller, and a vibrating hopper above the same, combined with a bar to close the outlet of said hopper when the latter is vibrated away from the said roller, substantially as described.

9. In a roller cotton gin, a roller, combined with a movable knife, a handle, a connection between the same and said knife, and a spring interposed in said connection whereby a yielding movement is obtained to press the knife upon said roller, substantially as described.

10. In a roller cotton gin, a roller, combined with a movable knife F , its carrier f , rod f^2 , handle f^3 , springs f^5 and f^6 , and the locking device f^7 , substantially as described.

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

MATTHEW PRIOR.

Witnesses:

FREDERICK L. EMERY,
JOHN C. EDWARDS.