(No Model.)

2 Sheets—Sheet 1.

F. L. MONTGOMERY.

ROLLER COTTON GIN.

No. 597,999. Patented Jan. 25, 1898.

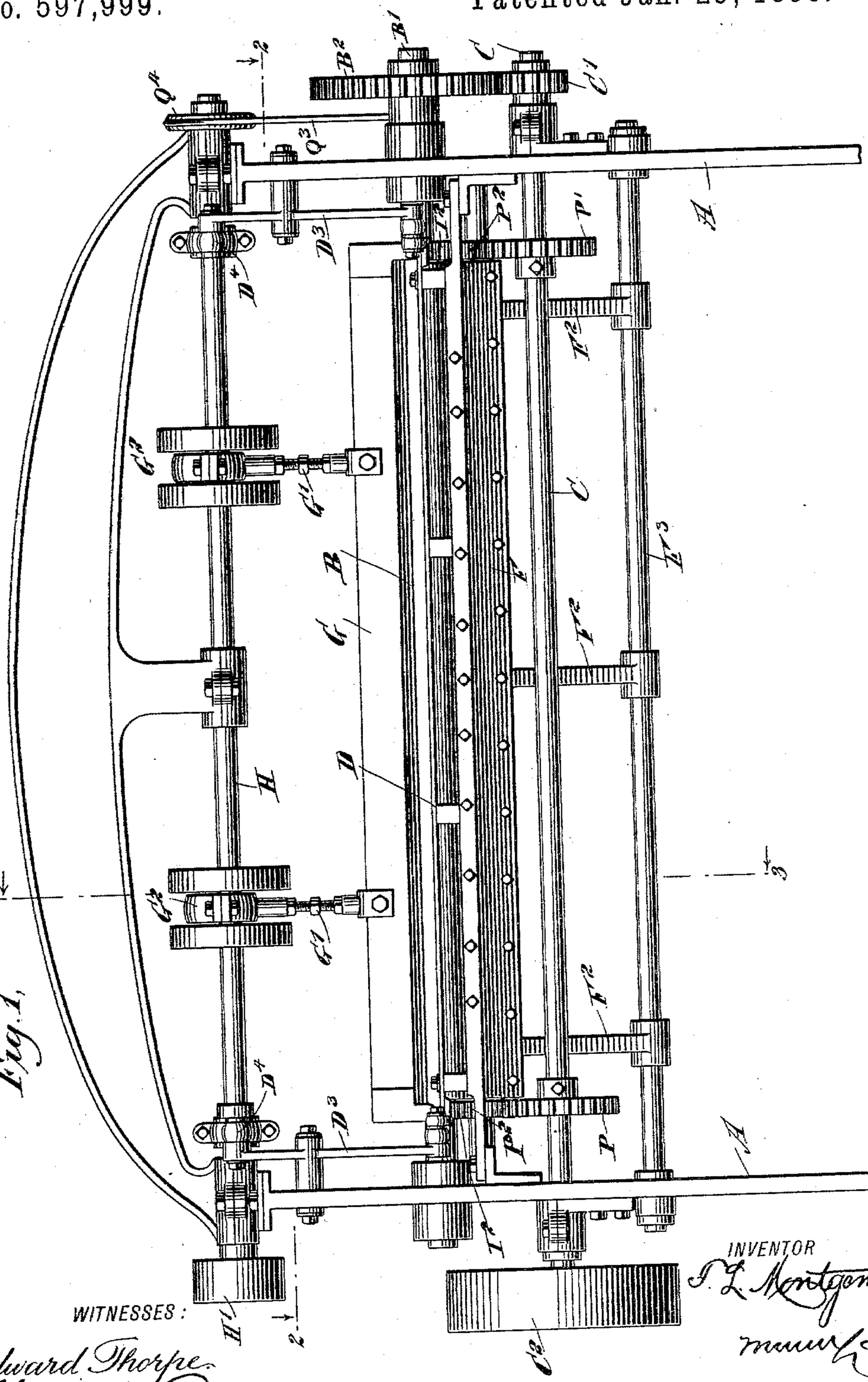

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2,

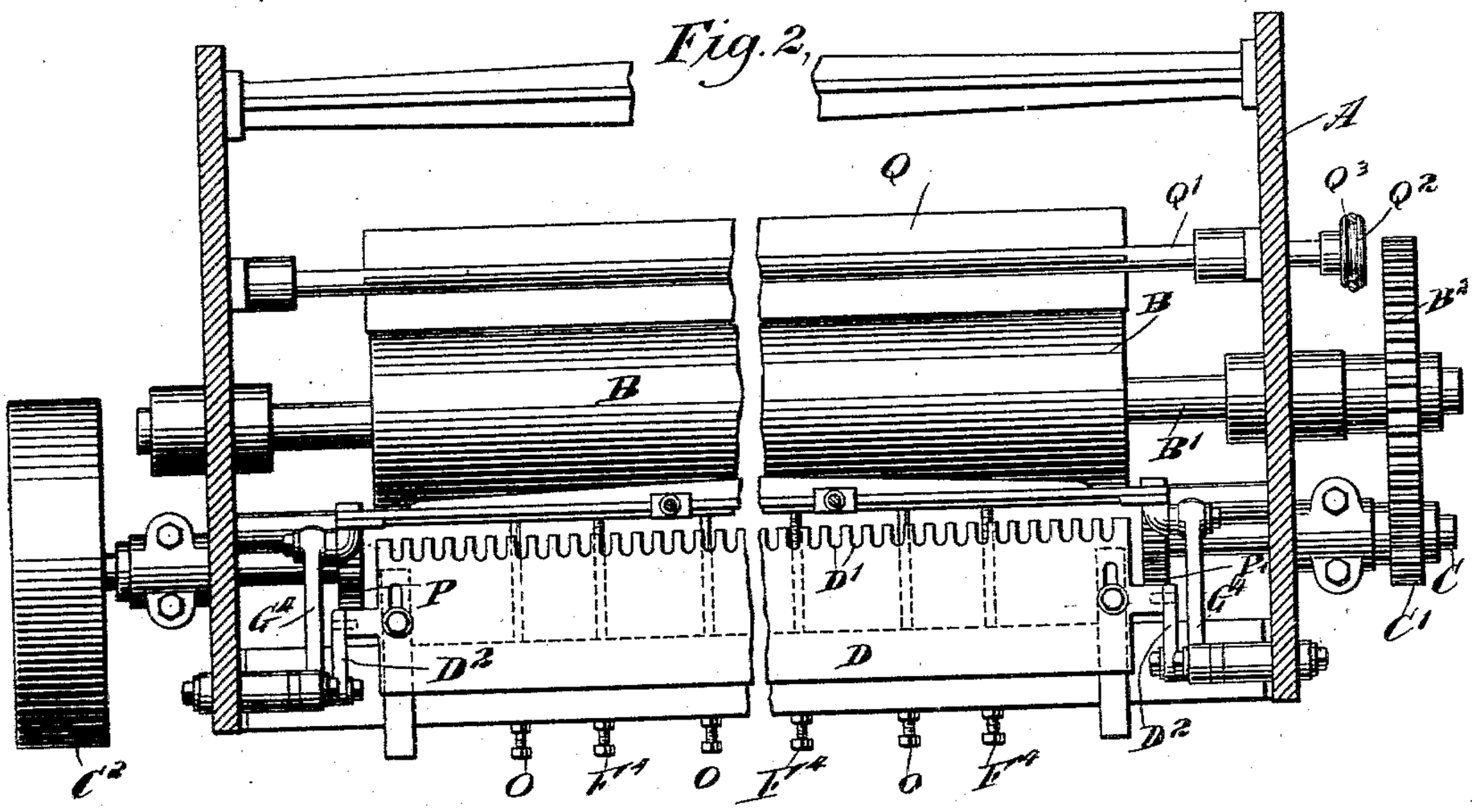


Fig. 3,

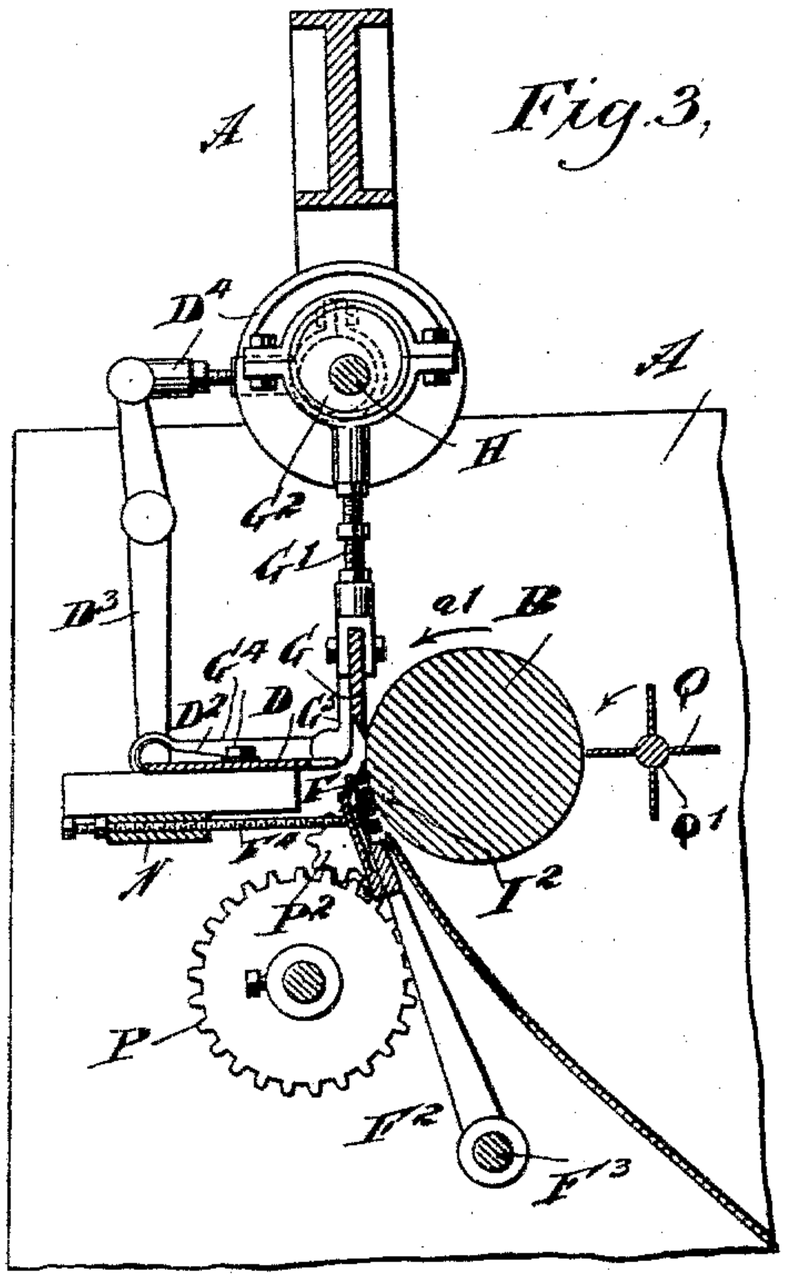
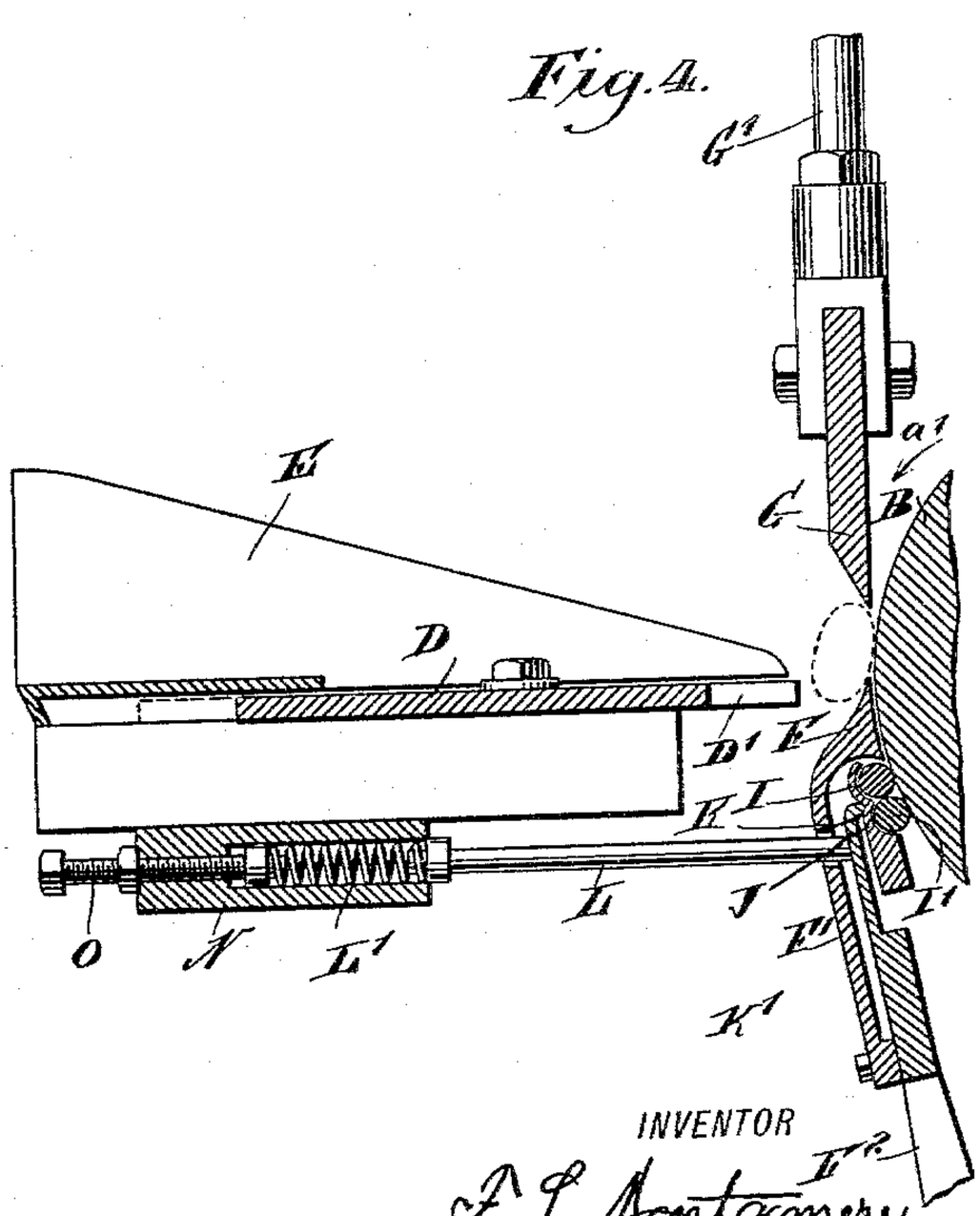


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICK L. MONTGOMERY, OF NEW YORK, N. Y., ASSIGNOR TO THE MONTGOMERY FIBRE-SAVING COTTON GIN COMPANY, OF SAME PLACE.

ROLLER COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 597,999, dated January 25, 1898.

Application filed October 6, 1896. Serial No. 608,040. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK L. MONTGOMERY, of New York city, in the county and State of New York, have invented a new and Improved Roller Cotton-Gin, of which the following is a full, clear, and exact description.

The invention relates to roller cotton-gins such as shown and described in the Letters Patent of the United States, No. 499,560, granted to me on June 13, 1893.

The object of the present invention is to provide a new and improved roller cotton-gin arranged to properly strip the seed from the lint of upland or other cotton without danger of tearing or pulling the fibers apart and without crushing or otherwise injuring the seed.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 1; and Fig. 4 is an enlarged cross-section of the ginning-roller, the stripper, and the feed-table.

The improved roller cotton-gin is mounted on a suitably-constructed frame A, in which is journaled a shaft B′, carrying a ginning-roller B, having a roughened peripheral surface, upon which passes the cotton to be ginned, as hereinafter more fully described.

On the outer end of the shaft B′ is secured a gear-wheel B^2, in mesh with a pinion C′, secured on a driving-shaft C, carrying a pulley C^2, connected with suitable machinery for imparting a rotary motion to the said shaft C and by the gear-wheels C′ and B^2 to the shaft B′ and the ginning-roller B, so as to rotate the latter in the direction of the arrow *a*′. In front of the ginning-roller B is arranged to reciprocate a horizontally-disposed feed-table D, formed at its forward end with openings D′ for the passage of the cotton-seed forced out of the boll, as hereinafter mentioned.

The cotton-bolls to be treated are placed in a hopper E, under the bottom of which reciprocates the outer end of the said feed-table D, the bolls passing from the hopper upon the feed-table, to be delivered by the latter upon the ginning-roller B and the fixed stripper-plate F, the inner face of which is concaved or segmental and in close proximity to the peripheral surface of the ginning-roller B. The upper end of the stripper-plate F is formed into a knife-edge, the back of which is curved, as indicated in Fig. 4, with the shank F′ of the stripper-plate made of spring metal, so that the plate can readily yield toward and from the ginning-roller, according to the size of the lint passing between the stripper-plate and the roller. The lower end of the shank F′ is bolted or otherwise secured to a number of arms F^2, attached to a transversely-extending rod F^3, secured at its ends to the sides of the frame A. A series of screw-rods F^4 engage the shank of the stripper-plate to set the latter closer to or farther from the ginning-roller.

Directly over the stripper-plate F and close to the ginning-roller B operates a stripper G, made in the form of a knife and serving to push the seed out of the boll as the lint portion of the latter passes between the stripper F and the ginning-roller B. The stripper G operates in conjunction with the feed-table D—that is, when the latter moves inward the stripper moves upward and when the stripper moves downward the feed-table recedes after having delivered the cotton-bolls to the drum and the stripper-plate F for the stripper G to act on the boll and press out the seed.

The stripper G is secured to two or more eccentric-rods G′ of the eccentrics G^2, held on a shaft H, journaled in suitable bearings in the frame A and provided with a pulley H′, connected with suitable machinery for imparting a rotary motion to the said shaft H independent of the motion given to the shaft C. The reciprocating feed-table D is actuated from the shaft H, and for this purpose the said table is connected at its end by links D^2 with vertically-disposed levers D^3, fulcrumed on the main frame A and connected at their upper ends with the eccentric-rods of eccentrics D^4 on the shaft H. The eccen-

trics D^4 stand approximately at right angles to the eccentrics G^2, and the lower ends of the levers D^3 are connected by links G^4 with brackets G^5, extending downwardly from the ends of the stripper G, so that a reciprocating motion is give to the feed-table D and an elliptical motion is given to the stripper G when the shaft H is rotated.

Now it will be seen that the cotton-bolls being delivered by the feed-table D to the ginning-roller by the fixed stripper-plate F causes the lint to be drawn between the ginning-roller B and the stripper-plate F, so that the seed end of the boll remains on the top sharp edge of the stripper-plate, and then the stripper G in descending acts in conjunction with the said plate to push the seed out of the end of the cotton-boll, the seed falling down between the receding table D and the stripper-plate F to a suitable receptacle held below in the frame A.

In order to insure a positive drawing down of the lint between the stripper-plate F and the ginning-roller B, I provide a drawing mechanism located under the stripper-plate F and preferably formed by two rollers I I′, arranged one above the other and preferably in contact with the ginning-roller B throughout the length of the latter.

The rollers I and I′ are held at their outer peripheral surfaces in an equalizing-bar J, extending throughout the length of the said rollers and formed at its middle with a depression engaged by a rib K, forming the pivot for the said equalizing-bar to rock on, the said rib being formed or secured to a transversely-extending plate K′, held on the upper ends of the arms F^2 previously mentioned. A series of rods L press on the rib K to hold the equalizing-bar J in sufficient contact with the rollers I and I′ so as to press the latter with the necessary force in contact with the ginning-roller B and the cotton passing down the same. The rods L′ are pressed on at their outer ends by springs L′, held in a bearing N, and a screw-rod O, screwing in the said bearing N, serves to regulate the tension of the springs L′ and hold the rollers I and I′ with more or less force in contact with the ginning-roller B.

The rollers I and I′ are rotated from the main shaft, and for this purpose the latter is provided with gear-wheels P P′, in mesh with intermediate gear-wheels P^2, in mesh with gear-wheels I^2 on opposite ends of the rollers I I′. A stripper-cylinder Q operates with its wings in close contact with the rear of the ginning-roller B, so as to remove any lint that may adhere to the said ginning-roller. The cylinder Q has its shaft Q′ provided with a pulley Q^2, over which passes a belt Q^3, passing over a pulley Q^4, secured on the shaft H. Thus when the latter is rotated a rotary motion is given to the said stripping-cylinder Q.

The operation is as follows: When the machine is in motion and the shafts C and H are rotated, then the cotton placed in the hopper E is fed by hand or otherwise onto the reciprocating feed-table D, which delivers the cotton to the peripheral surface of the roller B directly above the knife-edge of the stripper-plate F, and the lint, coming in contact with the rough surface of the said roller, is drawn down between the concave inner face of the stripper-plate and the ginning-roller to be taken hold of first by the roller I and then by the roller I′ to draw the lint positively downward. The stripper on its downward stroke moves with its knife-edge upon the cotton above and in front of the knife-edge of the stripper-plate, and as the said stripper knife-edge moves close to the stripper-plate knife-edge and then farther downward and outward over the curved back of the stripper-plate it is evident that the said stripper loosens the cotton-seed and finally strips the same out of the end of the boll, the seed falling down over the curved back of the plate F into a suitable receptacle beneath. The upward or return stroke of the stripper edge is a suitable distance away from the stripper-plate F, and as this return movement is upward and rearward the knife-edge of the stripper readily passes away from the cotton without carrying the cotton along or disturbing the feeding of the cotton to the ginning-roller by the feed-table, especially as the inward movement of the said table takes place during the return stroke of the stripper. As the stripping actions of the stripper take place in rapid succession and a continuous pull is exerted by the drawing device, (rollers I I′,) it is evident that the seed is gradually loosened in the lint and gently pushed or stripped out of the same without tearing or pulling the fiber of the lint apart and without injuring the seed in the least. It will further be seen that as the descending knife-edge of the stripper moves close to the periphery of the ginning-roller and then outward and downward close to the knife-edge and back of the stripping-plate the seed at no time can come between the knife-edges of the stripper-plate and stripper and be crushed or otherwise injured.

The flexible shank of the stripper-plate permits the latter to yield sufficiently toward and from the ginning-roller B to allow lint of more or less thickness to readily pass downward between the adjacent surfaces of the ginning-roller and stripping-plate without clogging the machine.

The drawing-rollers I and I′ operate in conjunction with the ginning-roller approximately the same as described in the Letters Patent above referred to, with the only difference that the rollers, on account of being held in a fulcrumed and spring-pressed bar, can readily accommodate themselves to the thickness of the lint passing down on the surface of the ginning-roller. As the drawing device exerts a continuous pull on the lint, it is evident that the seed end of the boll is drawn closer and closer to the knife-edge of the strip-

per-plate and the ginning-roller, so that the action of the descending stripper and knife-edge is very effective against this end of the boll at the stripper-plate edge for dislodging the seed as above described.

The eccentric-rods G′ are made adjustable for lengthening and shortening the same, to set the stripper closer to or farther from the stripper-plate, according to the nature of the cotton under treatment. The rods of the eccentric D^4 are also made adjustable (see Fig. 3) to regulate the throw of the feed-table D, and the lead of the latter relatively to the stripper G can be regulated by setting the eccentrics D^4 and G^2 accordingly on the shaft H.

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

1. A roller cotton-gin provided with a ginning-roller, a fixed stripper-plate having its inner face concave and in close proximity to the peripheral face of the said roller, the upper end of the said plate being formed into a knife-edge, a movable stripper operating over the said plate and a drawing device located under the said stripper-plate and provided with rollers located one in front of the other and held in peripheral contact with the said ginning-roller, substantially as described.

2. A roller cotton-gin provided with a ginning roller or drum, a stripper and a drawing device for the lint, comprising two rollers located one in front of the other and held in peripheral contact with the said ginning-roller throughout the width of the same, and an equalizing-bar for the said rollers hung at a center between the rollers, substantially as described.

3. A roller cotton-gin provided with a ginning roller or drum, a stripper and a drawing device for the lint, comprising two rollers located one in front of the other and held in peripheral contact with the said ginning-roller throughout the width of the same, an equalizing-bar for the said rollers, hung at a center between the rollers, and a spring-pressed center or pivot to permit the said bar to swing and to yield, substantially as described.

4. A roller cotton-gin provided with a ginning roller or drum, a stripper-plate in close proximity to the said roller or drum, and a drawing device located next to the said plate and in peripheral contact with the said ginning-roller, to draw the lint between the plate and roller, the said drawing device comprising two rollers arranged one alongside the other, and a spring-pressed equalizing-bar engaging the said rollers throughout their length to press the same in contact with the ginning-roller, substantially as described.

5. A roller cotton-gin provided with a drawing device comprising a pair of rollers for peripheral contact with the ginning-roller, an equalizing-bar engaging the said rollers, and a center rib or pivot engaging the said bar between the said rollers to permit the bar to swing, substantially as described.

6. A roller cotton-gin provided with a drawing device comprising a pair of rollers for peripheral contact with the ginning-roller, an equalizing-bar engaging the said rollers, a center rib or pivot engaging the said bar between the said rollers to permit the bar to swing, and a spring-pressed rod in engagement with the said center rib, substantially as described.

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Witnesses:
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