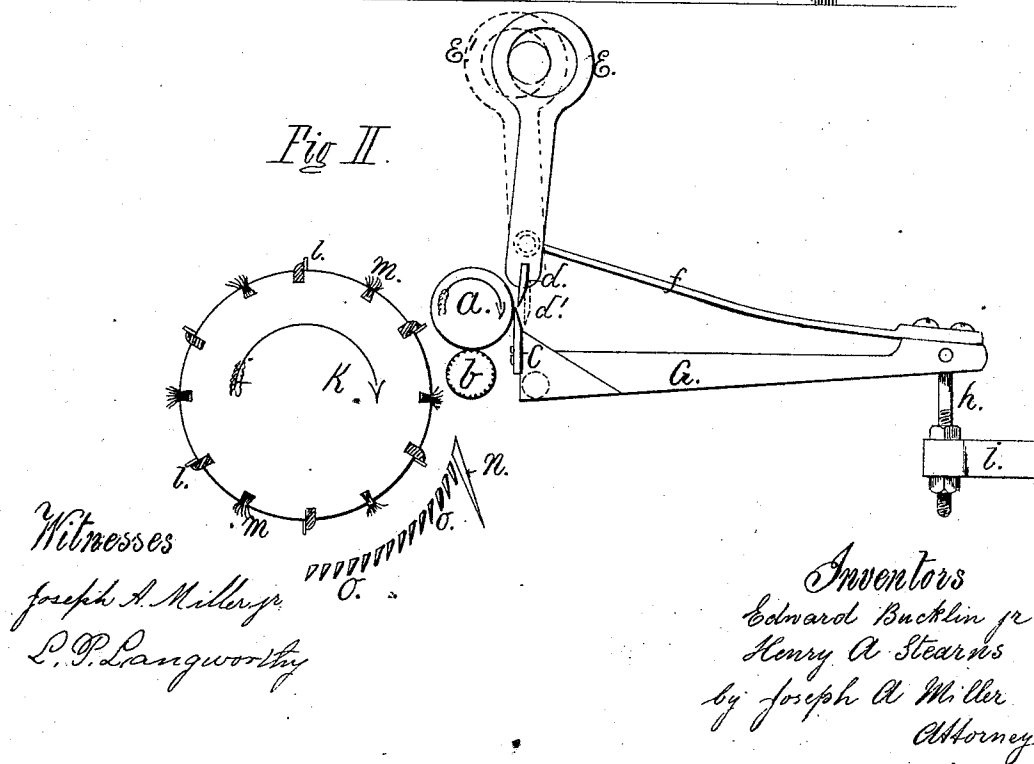
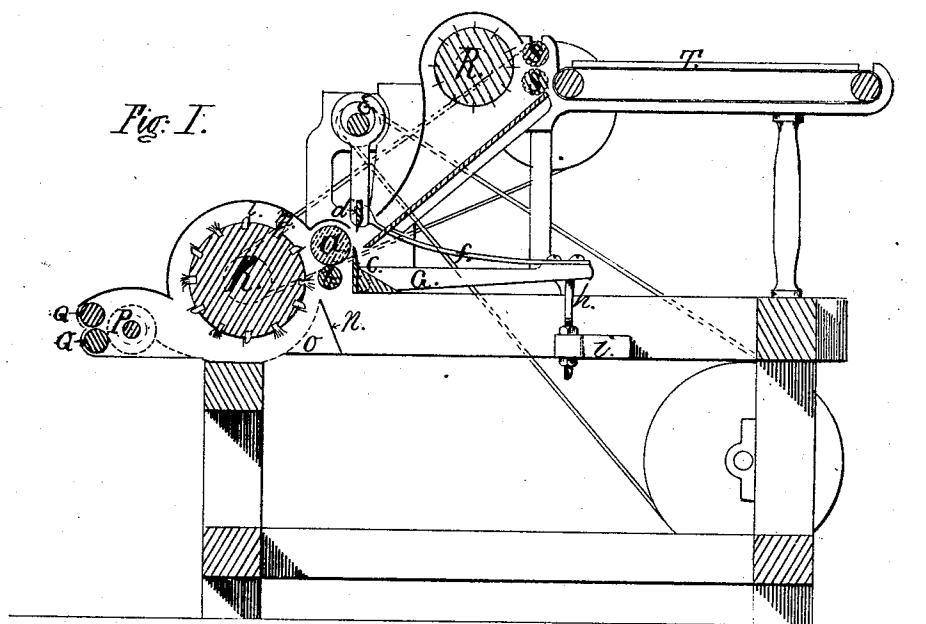


2 Sheets--Sheet 1.
E. BUCKLIN, Jr. & H. A. STEARNS.
Cotton-Gin.

No. 160,302.

Patented March 2, 1875.



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Fig: III.

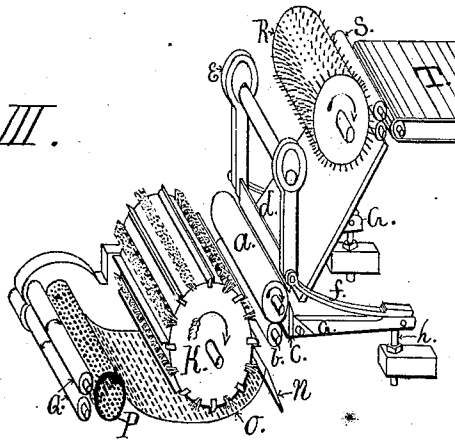
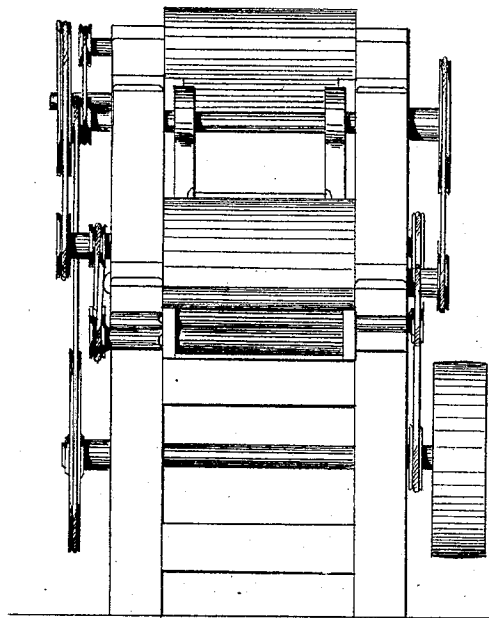


Fig IV



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD BUCKLIN, JR., OF PAWTUCKET, AND HENRY A. STEARNS, OF LINCOLN, ASSIGNORS OF THREE-EIGHTHS THEIR RIGHT TO LYSANDER FLAGG, OF LINCOLN, RHODE ISLAND.

IMPROVEMENT IN COTTON-GINS.

Specification forming part of Letters Patent No. **160,302**, dated March 2, 1875; application filed September 30, 1874.

To all whom it may concern:

Be it known that we, EDWARD BUCKLIN, Jr., of Pawtucket, in the county of Providence, and HENRY A. STEARNS, of the town of Lincoln, both in the State of Rhode Island, have invented new and useful Improvements in Cotton-Gins; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification.

Figure 1 is a vertical section of our improved gin, showing the relative positions of the different parts of the same. Fig. 2 is an enlarged section of the rollers A and B, the beater-drum K, the blast-board N, and screen O, as also the adjustable knives C and D. Fig. 3 is a perspective view of the working parts of the improved cotton-gin. Fig. 4 is an end view of our cotton-gin, looking from the forward or delivery end of the same.

Our invention has reference to that class of cotton-gins known as roller-gins, in which the cotton fiber is drawn in between an elastic roller and a fluted roller, while the seed and other impurities are prevented from passing between the rollers; and it consists in combining with said rollers a stationary and a reciprocating knife, they being made adjustable with reference to the elastic roller, as will be more fully described hereinafter.

In our present invention, A is a roller made of rubber or other elastic substance. Immediately below and close to the roller A is the roller B. These two rollers are driven by gears or bands, so that their surfaces, when in contact, are moving in the same direction. Close to the roller A, and with its edge at or near the central line of the same, is placed the knife C. This knife is perfectly straight at the side nearest the roller A, so that, the edge being close to the roller, all the surface is farther from the roller than this edge. The knife C is secured to a strong triangular bar, which is secured to the two arms G, one on each end of the bar. This bar, which we call the knife-bar, is supported by journals projecting from each end and resting in proper

boxes secured to the main frame. The other end of the arms G G have bolts *h* secured to them, which bolts pass through the blocks I, and are provided with nuts, one on the top and one on the bottom of said blocks, for the purpose of adjusting the distance between the roller A and knife C. *d* is the stripper-knife, and is secured to two arms, one at each end thereof. These arms surround the revolving eccentrics E, and, by means of said eccentrics, communicate a reciprocating motion to the knife *d*. They are also connected, by the springs *ff*, to the outer ends of the arms G G, and by means of this connection, and the rotation of the eccentric, the knife *d*, while reciprocating vertically, describes a curve, which greatly facilitates the operation of detaching the cotton-seed from the fiber while passing the roller A and the knife C.

Another important object is secured by this arrangement. The knife *d*, to accomplish the object intended, must pass on its descending curve close by the edge of the knife C. This knife requires to be adjusted, by the bolts *h*, to the roller A, and such adjustment would not interfere with the accuracy of the knife *d*, as the arms of both knives are united by the springs *ff* at the point where the adjusting-bolts *h* are placed, as a consequence of which both knives always retain their relative positions.

Another advantage of the spring *f* is, that it aids in forcing the knife down, and this being the direction in which the same performs work, the power consumed in raising it is not lost, but assists in performing the work required when the knife descends. A crank may be used in place of the eccentric E with the same results.

K is the beater-drum, placed in front of the rollers A and B, and is surrounded by alternate bars L, the front faces of which have pieces of vulcanized rubber or leather secured to them, and rows of brushes M. The object of placing rubber or leather on the face of the bars L is to prevent the possibility of producing fire by either friction or by striking the bars against small pieces of stone or other foreign substance, as is the case when such bars are

faced with metal, the drum running at high velocity. Below the roller *b*, and near the beater-drum *K*, the blast-board *N* is placed, and continuing nearly concentric with the drum *K* from the upper point of the blast-board *N* is placed the screen *O*, which rises slightly until it reaches the condenser *P*, from which the cotton is removed by the delivery-rollers *Q Q*. *R* is the opener, and consists of a drum or cylinder, the surface of which having a sufficient number of projecting pins, which, revolving rapidly, open the cotton fiber as the same is delivered by the feed-rollers *S S*. *T* is the feed-apron, on which the operator feeds the cotton to be cleaned and ginned.

We will now describe the operation of our improved cotton-gin:

Cotton containing seed and other impurities is placed by the operator on the apron *T*. Such cotton is usually in a matted condition, the fiber adheres to the seed, and, when so presented to either a roller or saw gin, much of the fiber must be torn and broken before it can be separated from the seed. This not only injures the fiber, as it destroys its spiral form, and thereby its elasticity, but it also diminishes the value in reducing the length of the fiber. To obviate this the cotton in our gin is passed between the feed-rollers *S S*, and, while held by the same, is operated upon by the opener-drum *R*, which, revolving at considerable speed, combs out the fiber, and loosens all matted and intertwined bolls. The cotton so opened descends the incline, and is brought in contact with the elastic roller *A*, and the loosened fiber is drawn down between the roller *A* and the knife *C*. The distance between the roller *A* and knife *C* can be adjusted, as has been before described, with great nicety. Cotton adheres so firmly to the seed that the whole edge of the knife *C* would soon be covered with seed. The knife *d* is, therefore, made to pass in a curved line close by the edge of the knife *C*, and at each downward passage detaches the seed, thus keeping the knife free. The cotton fiber, following the revolving roller *A*, passes between the same and the roller *b*, where it is further cleaned and brushed by the alternating bars *l* and brushes *M* of the beater-drum *K*. This drum, revolving at a high velocity, not only brushes and beats the fiber, but a strong current of air entering above the blast-board *N* is forced through the fiber, and, while all heavy matter is driven against the inflowing current above the blast-board, all fine dust is blown through the screen *O*, and the perfectly-cleaned cotton is driven against the condenser *P*, which, revolving, carries the same to the delivery-rollers *Q Q*, where it is discharged, free from dust, dirt, and all foreign matter, having the full

length of the natural fiber, preserving its elastic spiral form, and producing more cotton, in better condition, and the seed cleaner, than has heretofore been possible with other methods of ginning.

The operations performed simultaneously by our cotton-gin are, the opening of the bolls, the removal of the seed, and the cleaning and brushing of the fiber.

We are aware that elastic rollers have been used before; but such elastic rollers have been used in connection with concave bars, and the cotton fiber was drawn in between the said elastic roller and concave bar. The result was that the fiber rolled on the concave bar, and the cotton came out matted and in rolls, whereas in our gin the side of the knife near the elastic roller is perfectly straight, and the distance between the knife and elastic roller increases immediately below the edge, and continues to increase, so that the fiber cannot follow the knife and roll on the same, but is drawn out loosely the whole of its natural length—a result which makes the cotton more suitable for manufacturing purposes, and consequently enhances its value.

We are also aware that the beater-drum and screen, as also the condenser, have been used for cleaning cotton; but they have not been used in connection with a roller-gin, and arranged as ours, so as to clean the cotton perfectly when it has been drawn from the seed and is perfectly open, all fibers being in the best condition, for the purpose of thoroughly cleaning the same.

The whole operation is, therefore, performed in one machine, thus saving time and cost in handling, while only the pure clean cotton, in the best possible condition, is sent to market, thus saving in freight and handling of the foreign matter now contained in most cotton, and which must at last be removed by subsequent operations before the same can be spun.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

In combination with the elastic feeding-roller *A* of a cotton-ginning machine, a stationary knife attached to an adjustable arm, a reciprocating knife operated by an eccentric or equivalent device, and a spring for connecting the reciprocating knife to the arm of the stationary one, and regulating their positions with reference to the roller *A* without changing their positions relative to each other, substantially as and for the purpose described.

EDWARD BUCKLIN, JR.
 H. A. STEARNS.

Witnesses:

WALTER C. KING,
 JOSEPH A. MILLER.