D. T. ETHERIDGE.
Cotton-Gin.

No. 206,097. **Patented July 16, 1878.**

Fig. 1.

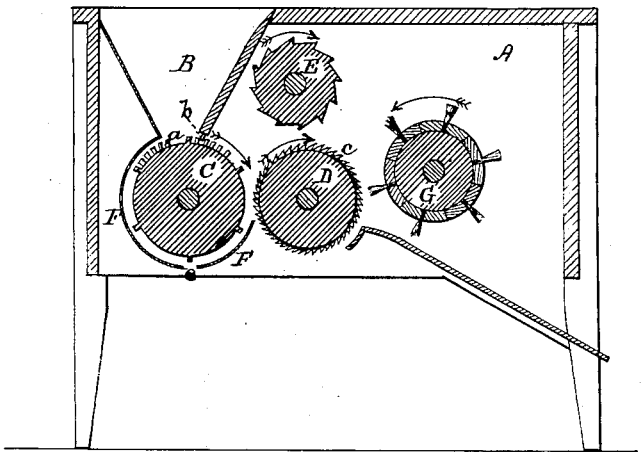
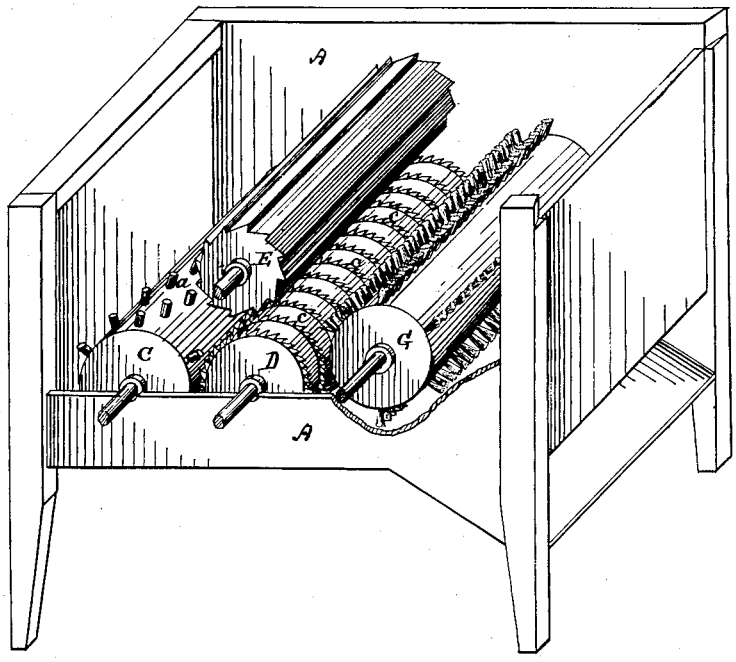


Fig. 2.



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UNITED STATES PATENT OFFICE.

DANIEL T. ETHERIDGE, OF FALLS COUNTY, TEXAS.

IMPROVEMENT IN COTTON-GINS.

Specification forming part of Letters Patent No. **206,097**, dated July 16, 1878; application filed June 6, 1878.

To all whom it may concern:

Be it known that I, DANIEL T. ETHERIDGE, a resident of Falls county, in the State of Texas, have invented certain new and useful Improvements in Cotton-Gins, of which the following is a specification:

The machine in which my invention is comprised is intended to take the place of hand-picking in separating the cotton from the boll.

The invention can best be explained and understood by reference to the accompanying drawing, in which Figure 1 is a longitudinal vertical central section of a machine embodying my improvements. Fig. 2 is an isometric perspective of the same, the side of the case being broken away to show more clearly the interior working parts.

The mechanism is contained and inclosed in a case or frame, A, of suitable material and construction. The cotton in the boll is fed to the machine through a hopper, B, and meets first a toothed breaking-cylinder, C, which, when combined with stationary pins or teeth on the front of the hopper, as hereinafter described, is intended to crush the bolls and to pass the cotton along to the succeeding mechanism. This cylinder is armed with teeth *a*, consisting of pins, which are set in parallel rows, extending diagonally or spirally around the cylinder.

In the sectional view, Fig. 1, I have indicated only a few of the teeth. They extend, of course, all around the cylinder.

The cylinder I have used for the purpose is twelve inches in diameter, with teeth set one and one-half inch apart, each tooth having a diameter of one-half inch and protruding three-quarters of an inch from the cylinder. These proportions, of course, may be varied. The teeth are so placed as to register with and pass between similar stationary teeth *b*, arranged in a row on the lower end of the front of the hopper, as shown in Fig. 1. In some instances these stationary teeth may be dispensed with, in which case cylinder C will act only as a feed-cylinder to take from the hopper the bolls and deliver or present the same to the action of the saw-cylinder, hereinafter described. If, however, the stationary teeth or pins be employed in combination with cylinder C, then, by conjoined action of these parts, when the cylinder is revolving in the direction indicated by its arrow, the bolls are crushed and the cotton is passed to the teeth of saws *c*, set in another cylinder, D, of about the dimensions of the first cylinder. These saws surround the cylinder, and are set at a proper distance apart. Preferably they are three-eighths of an inch apart, protruding three-eighths of an inch above the surface of the cylinder, with teeth from one-eighth to three-sixteenths of an inch in depth, the outer ends of the teeth having a round needle-point.

The teeth of the saws and the pins on the first or thrashing cylinder are so arranged that they will, in their revolutions, just pass or clear one another without touching.

The front wall of the hopper forms a diaphragm, which prevents any bolls reaching the saw-cylinder, save those fed by the first cylinder C, whether that cylinder be used as a feed-cylinder only or as a breaking-cylinder also. Above, and with its axis slightly behind a perpendicular plane passing longitudinally through the axis of the saw-cylinder, so as to occupy, in effect, a position intermediate between the saw and feed or breaking cylinders, is a clearing-drum, E, provided with longitudinal ribs *d*, each formed, as shown, of a short side at right angles, or thereabout, to the axis of the drum, and a long slanting face extending from the base of one short side to the top of the next short side, the drum having a section somewhat approaching a ratchet-wheel in appearance. This drum is so rotated that its lower or acting face in proximity to the saw-cylinder moves in a direction opposite to that in which the contiguous face of the saw-cylinder moves, as indicated by the arrows. Its function is to brush back the bolls and trash and dirt from the saws, leaving on the latter only the clean cotton. All the bolls and other refuse pass down into the fixed apron F, of sheet-iron or other suitable material, which is continued from the hopper around below the first cylinder, and serves to separate, in a measure, that cylinder from the saws of the succeeding cylinder. The bolls and refuse pass from the apron through an opening, *e*, in the bottom of the same.

In advance of the saw-cylinder is stationed a revolving brush-cylinder, G, which moves in

the direction indicated by the arrow, so that its face next to the saws will revolve in the same direction as the saws, to brush off the clean cotton and deliver it in proper condition for the gin.

The proportions of the brush-wheel may be, of course, varied. I have used one of from eight to ten inches in diameter, with longitudinal rows of stiff hair or bristles, set, say, three inches apart, and arranged in close proximity to the saws, so as to take therefrom the cleaned cotton.

The several cylinders and drums described are geared together so as to move as indicated by the arrows when the machine is in operation. I have not deemed it necessary to represent the gearing, since this is within the knowledge of the mechanic. Either belting or gear-wheels may be used. The parts should, preferably, be so geared that the saw-cylinder will revolve somewhat faster than the breaking or thrashing cylinder, and the clearing-drum and brush-cylinder considerably faster than the saw-cylinder.

The machine may be run by any suitable power.

Having described my improvements, what I claim, and desire to secure by Letters Patent, is—

1. The combination, substantially as set forth, of the breaking or thrashing cylinder, the stationary pins or teeth in conjunction with which said cylinder acts, and the saw-cylinder, for joint operation, as described.

2. The combination of the breaking or thrashing cylinder, the stationary pins or teeth in conjunction with which said cylinder acts, the saw-cylinder, and the clearing-drum, for operation as set forth.

3. In combination, the breaking or thrashing cylinder, the stationary pins or teeth in conjunction with which said cylinder acts, the saw-cylinder, the clearing-drum, the hopper, and the receiving-apron, extending around below the breaking-cylinder and between said cylinder and the saw-cylinder, as set forth.

4. The combination of the hopper and receiving-apron, the breaking-cylinder and stationary breaking-teeth, the saw-cylinder, the clearing-drum, and the brush-cylinder, under the arrangement and for operation as set forth.

5. In combination with the hopper and the saw-cylinder, the intermediate feed-cylinder C, arranged to deliver bolls from the hopper to the saw-cylinder, these parts being arranged together for operation as shown and set forth.

6. In combination with the feed-cylinder C, the hopper, and the saw-cylinder, the clearing-drum, arranged above and slightly to the rear of the saw-cylinder, so as to occupy a position intermediate between said cylinders, as shown and set forth.

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