

# Cotton Gin.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN COTTON-GINS.

Specification forming part of Letters Patent No. 19,097, dated January 12, 1858.

*To all whom it may concern:*

Be it known that I, DAVID G. OLMSTEAD, of Vicksburg, in the county of Warren and State of Mississippi, have invented a new and Improved Cotton-Gin; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a longitudinal vertical section of the cotton-gin; Fig. 2, a front elevation thereof, the front side of the hopper or feed-box being removed to show the interior arrangement; Fig. 3, a front view of the boll-separating ribs; Fig. 4, a side view of one of the ribs; Fig. 5, a view of the revolving mote-screen.

Like letters designate corresponding parts in all the figures.

My improved cotton-gin is designed for ginning cotton which shall not have been separated from the bolls, and the improvements are mainly applied so as to act on the cotton before it shall be subjected to the ordinary operation of ginning—that is, of separating the fibers from the seeds. Therefore, the saws B B, grate L, and stripping-brush C, as well as the general arrangement of the frame A, may be substantially as usual; or the improvements may be added to any gins of ordinary construction.

Instead of feeding the unginmed cotton directly into the roll-box H, it is first placed in a hopper or feed box, G, in front of the roll-box. The two compartments are separated by a "breast-board" or partition, M, as seen in Fig. 1. To this breast-board, at its lower edge, is secured a set of knee-shaped ribs, I I, the lower ends of which reach backward nearly or quite to the front surface of the ginning-grate L. In fact I cause the lower edge of the breast-board M to be movable and adjustable backward and forward by means of set-screws *a a* or a convenient equivalent device, whereby either the cotton-seeds may have a free exit between the lower ends of the ribs I I and the grate L, or said ribs may be moved close to the grate, so as to prevent the escape of the seeds there, as indicated at *m*, Fig. 1. If a sufficient space is left between the ribs and grate, the cotton-seeds, as fast as freed from the fibers, will fall through and escape along

the whole width of the gin; but when it is desired to discharge the seeds only in one place, the space between the ribs and grate is closed, and a discharging-outlet formed at one side of the gin by making one or two of the ribs I I shorter than the others, as seen at P, Fig. 3, or by providing a spout through the side of the gin. By this arrangement the seeds will find a vent at one end, and will gradually work thither from all parts of the roll-box, and in their passage will be more thoroughly deprived of their fibers. This is not necessary in some conditions of the cotton, but useful in others. Hence the advantage of employing sometimes one mode of discharging the seeds and at other times the other mode. The saws B B pass between these ribs I I as well as between the ribs of the grate L. The spaces between the ribs are, however, considerably greater than between the ginning-ribs, since they are to allow the free passage of the cotton-seeds with the fibers through them; but along the greater part of their length, by the side of which the saws extend, the width of the spaces is comparatively small, as indicated at *c c*, Fig. 3, while around where the teeth of the saws pass up between the ribs the space is considerably enlarged, so as to allow a free passage of the seeds, as shown at *b b* in the same figure. Just at the rear edge of the breast-board M the ribs close together.

From the center of the lower side of each rib I a thin wing, *d*, projects, extending longitudinally along, substantially as represented. These serve to keep the bolls and large impurities, as well as matted bunches of cotton, away from the ribs sufficiently to allow the saws to have free passage upward to the ribs. Just below these ribs and the bottom of the hopper or feed-box G is located a cylindrical screen, D, composed of rods *g g*, or their equivalents, arranged in a circle, as represented, the spaces between them being wide enough to allow the separated hulls or bolls to pass down through. The screen revolves in the direction indicated by the arrow in Fig. 1, and serves both to feed along and sustain the cotton as it comes down from the hopper G, to enable the saws B B to reach and convey it up between the ribs I I into the roll-box H, and also to discharge the separated bolls between its rods *g g*. By this arrangement of the ribs



I I and revolving screen D, in connection with the saws, I am enabled to separate the bolls from the cotton, the saws conveying the still unginned cotton upward into the roll-box H, whence they draw the fibers through the grate L in the usual manner. The ginning is not a mere uninterrupted continuation of the process of conveying the seed-cotton up into the roll-box H, for as soon as the seed-cotton enters the roll-box it unites with the mass already there and forms a revolving "roll," in the usual manner, while the saws quit the cotton which they first introduce into the roll-box, and seize other fibers farther up the roll for separating from the seeds. A gate, N, is located at the bottom of the hopper G, and is made adjustable by means of the notched rod *f*, or other convenient means, so that the quantity of cotton let down to the saws may be varied at pleasure, whereby the roll in the roll-box is increased or diminished as required.

Beneath the revolving screen D and a little distance below it is a concave and nearly concentric grate Q, the use of which is to retain any bolls which may pass through the screen not wholly deprived of cotton, and thus allow the screen as it revolves to convey them up again to the saws. At the same time the cleanly separated and broken bolls are allowed to pass through said grate out of the machine.

Besides the above-described improvements which are employed for acting on the cotton previous to the act of ginning proper, I employ a screen, E, of peculiar construction for separating motes from the cotton after it is separated from the seeds. It is located beneath and between the saws B B and stripping-brush C, so as to come in contact with the stripping-brush and as near the saws as may be without interfering therewith. It is composed of strips *h h* of any suitable material, arranged in the form of a cylinder, with narrow spaces *i i* between each other. From the outer surfaces of these strips project at scattering distances small teeth or rods *l l* of wire or other material of sufficient strength and stiffness to prevent their being broken or bent.

The whole construction and arrangement of this screen are substantially represented in Figs. 1 and 5. It revolves slowly in the direction indicated by the arrow in Fig. 1. The spaces *i i* are not absolutely essential to the action of the screen, but I prefer to use them. Its operation is as follows: As fast as the strip-

ping-brush C strips the fibers from the saws B B the current of air produced by centrifugal action being in a great measure arrested by the interposition of said screen E, much of the fiber is dashed downward freely upon the screen. Other portions also adhere to the screen when brought against it by the passage of the brush. The motes once separated from the fibers fall between the teeth or wires of the screen, and ultimately through the screen or out from the lower side thereof. At the same time the teeth hold the fibers at their outer ends, and thus subject them to the cleansing action of the stripping-brush, which finally again seizes the fibers and conveys them away. These stiff teeth *l l* with considerable spaces between each other thus act as a screen, and are therefore in this connection entirely different from a mere close brush, which would collect the motes rather than discharge them.

The screens D and E, as well as the stripping-brush C, are driven by means of bands *n*, *p*, and *s* passing from pulleys on the saw-shaft R to pulleys on the respective shafts of said screens and brush.

I am aware that a mote-brush has been used in the same relation to a stripping-brush and saws which my screen-brush occupies; therefore I disclaim such a combination and arrangement irrespective of the kind of screen-brush which I employ.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The ribs I I, constructed, arranged, and operating in connection with the saws B B, substantially as herein described.

2. In combination with the ribs I I and saws B B, the revolving feeding-screen D, located beneath the feed-box G and over the grate Q, substantially in the manner and for the purposes herein specified.

3. The combination of the revolving screen-brush E with the stripping-brush C, when said screen-brush is constructed, operated, and arranged in relation to the brush C and saws B, in the manner described, and for the purpose specified.

The above specification of my improved cotton-gin signed by me this 31st day of August, 1857.

DAVID G. OLMSTEAD.

Witnesses:

R. F. OSGOOD,  
FRANK SMITH.