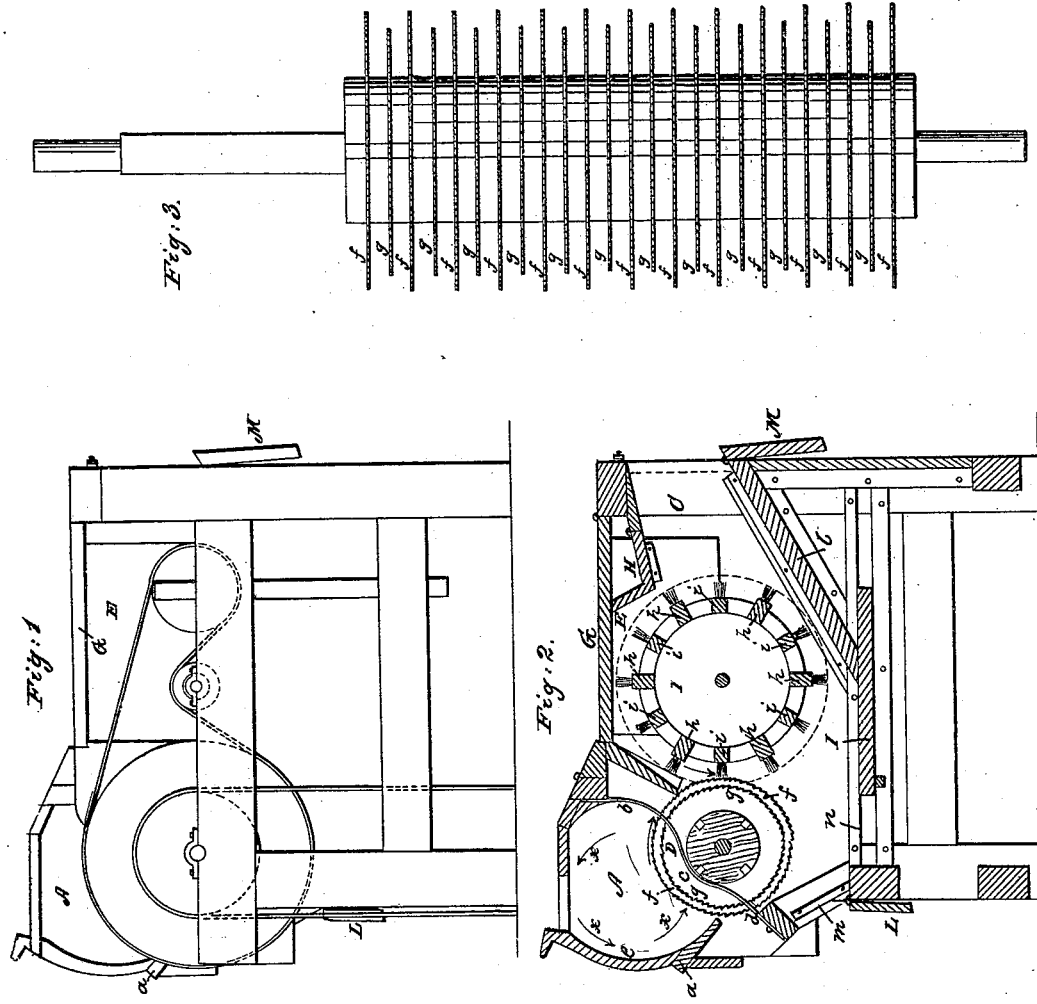


J. SIMPSON.

Cotton Gin.

Patented Aug. 14, 1855.

No. 13,441.



# UNITED STATES PATENT OFFICE.

JOHN SIMPSON, OF LEWISVILLE, SOUTH CAROLINA.

## IMPROVEMENT IN COTTON-GINS.

Specification forming part of Letters Patent No. 13,441, dated August 14, 1855.

*To all whom it may concern:*

Be it known that I, JOHN SIMPSON, of Lewisville, in the district of Chester and State of South Carolina, have invented a new and improved cotton-gin for ginning both long staple and short staple cotton; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a side elevation of the gin; Fig. 2, a longitudinal vertical section through the center thereof, and Fig. 3 a view of the saw-cylinder and saws detached.

Like letters designate corresponding parts in the several figures.

The nature of my invention consists, first, in making the alternate saws of a different diameter from the intermediate saws, so that no two can catch the same fibers, and thereby break them, and in arranging the brush-cylinder so that the brushes shall reach all the saws and still be of equal lengths; secondly, in certain improvements in the arrangement of the machine for the purpose of more effectually discharging the cotton and of excluding vermin. The saws are placed at the usual distance apart—say about three-fourths of an inch—but the alternate ones, *ff*, are of greater diameter than the intermediate saws, *gg*. The difference of diameter need not be very great, all that is necessary being to prevent any two adjacent saws taking hold of the same fibers of cotton. I usually make the larger saws, *f f*, ten inches, and the smaller saws, *g g*, nine inches in diameter, thus causing the former to project half an inch beyond the latter. The distance between the alternate saws *f f* being too great to allow them to seize and break the same fibers of any cotton, consequently the long staple can be ginned as well as the short staple without injury thereto. The smaller saws, *g g*, seize such fibers as fall between the larger saws and carry them through the ribs, thereby preventing any waste. This arrangement of the saws does not in the least diminish the quantity of cotton which the machine is capable of giving. The brush-cylinder B is arranged with alternate wings *h h* projecting radially outward as much beyond the intermediate wings, *i i*, as the larger saws project beyond the smaller. The brushes on the wings *h h* sweep the smaller saws, *g g*, and those

on the wings *i i* sweep the larger saws, *f f*. The difference in the width of the wings causes all the brushes to be of equal length, and consequently of equal stiffness. The two sets of brushes of course alternate in the direction of the axis of the cylinder.

The ribs D and hopper A are constructed with especial reference to giving a proper rolling motion to the cotton therein. The outline of the hopper approaches very nearly a cylindrical shape, the upper portion, *b*, of the ribs, which form a part of its contour, being curved so as to conform thereto, and the side *e* of the hopper being nearly concentric with the opposite side, but forming the arc of a somewhat larger circle, thus rendering that side of the hopper a little deeper than the other in order that the cotton may by gravitation move in a direction opposite to that of the saws, which will consequently give the mass a rolling motion in the direction indicated by arrows *x x x*—Fig. 2. The middle portions, *c*, of the ribs between the saws curve upward to allow room for the saw-cylinder, but the lower portions, *d*, again curve, so as to conform to the cylindrical shape of the hopper. A removable board, *a*, slides into the front and lower side of the hopper for the purpose of affording access thereto to move substances which may have lodged there.

Over the discharging-passage C (which in my gin is longer from the brush-cylinder backward than usual) is inserted a board, H, substantially as shown in Fig. 2, for the purpose of filling the space in the upper part of the machine in which said brush-cylinder would operate to produce a current toward the saws, and also of narrowing the passage C, whereby a much stronger current of air is produced, and consequently the necessity of adding a spout outside of the machine to assist in discharging the cotton is obviated. Said board is hinged so that it can be turned up out of the way when the brush-cylinder is to be removed, which is accomplished by first raising the lid G and lifting the side boards, E, from the vertical grooves into which they slide.

Some cotton-gins have a stationary board corresponding to the mote-board I beneath the saws and brushes, leaving an opening, *n*, through which the motes fall. In my improved gin this mote-board is made wide enough to entirely close said opening *n*, and

is placed in grooves, so that it may be slid forward and backward at will, by which the blast of the fan is regulated in such a manner as to properly separate the cotton and motes. It is also used to entirely close the opening *n* when the gin is not in use. The opening *m* in the front of the machine is provided with a lid, *L*, which is allowed to hang down, as represented in the drawings, when the machine is in operation, but is made to shut said opening when the machine is laid by. A similar lid, *M*, is provided for closing the discharging-passage *C*. The object of thus closing up all the openings to the inside of the machine is to exclude vermin, and especially rats, which are well known to be exceedingly troublesome by eating up the brushes if left within their reach. This annoyance is so common that it is the general practice to take the brushes out of the gins every night after using and put them where the rats cannot reach them. With the device just described the above precaution is unnecessary.

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

1. Making the alternate saws of a greater diameter than the intermediate saws, in order

that no two adjacent ones may seize the same fibers, and thereby break them, but at the same time to gin as completely and rapidly as if the saws were all of the same diameter.

2. Arranging the brushes which sweep the smaller saws upon alternate wings projecting out from the center as much farther than the intermediate wings which bear the brushes for the sweeping larger saws as said saws project beyond the others, for the purpose of rendering the brushes all of a uniform and suitable length.

3. Arranging the mote-board *I* so as to slide backward or forward, for regulating the strength and direction of the blast, and properly separating the motes from the cotton, and also to be used as a lid to entirely close said space when the gin is not in use, substantially in the manner and for the purpose herein set forth.

The above specification of my improved cotton-gin signed by me this 21st day of April, 1855.

JOHN SIMPSON.

Witnesses:

J. S. BROWN,  
CLEM S. STULE.