

COTTON-GIN. The improvements in cotton-gins during the past decade include novel forms of condensers and feeders, and the extended use of these attachments, and the invention of a new type of gin, in which a peculiarly formed working cylinder is substituted for the saws. It may not be generally known to cotton-planters that not only is all the dirt and dust taken from the cotton before spinning, but the exact amount of dirt in every bale is known and recorded, so that it is impossible at the present time to sell dirt for cotton. A first-class condenser will not only raise the grade of cotton, but will add greatly to the convenience of running the gins, and decrease dangers from fire. As the output of a gin depends materially upon the maintenance of the integrity of the roll, and this in turn upon the skill of the person feeding, it will be evident that an automatic feeding contrivance which substitutes regular machine-work for hand-labor should possess important economical advantages. In the following illustrations are represented the newest forms of standard gins.

The Eagle Gin is represented in perspective in Fig. 1, with the condenser and feeder

attached. Its interior construction is shown in the sectional view (Fig. 2). Among the new features is an adjustable grate-fall hollow, and an arrangement of the breast, which it is claimed prevents breaking of the roll. The object sought also was a perfectly smooth seed-board, presenting no angles to interfere with the easy turning of the roll. The bottom is formed of an iron plate sufficiently strong to hold the weight of the roll. This plate is attached to the body of the seed-board with hinges at its top edge, so that the bottom edge, which is notched to correspond with the saws, may swing in or out. The feeder is arranged on top of the gin. The feed-cylinder has the same speed as the gin-saws, and has strong, blunt pins to bring up the cotton. Behind this, and parallel with it, is another cylinder, moving slowly in the same direction, having wires in it bent backward. Between these two cylinders the cotton is completely opened, and

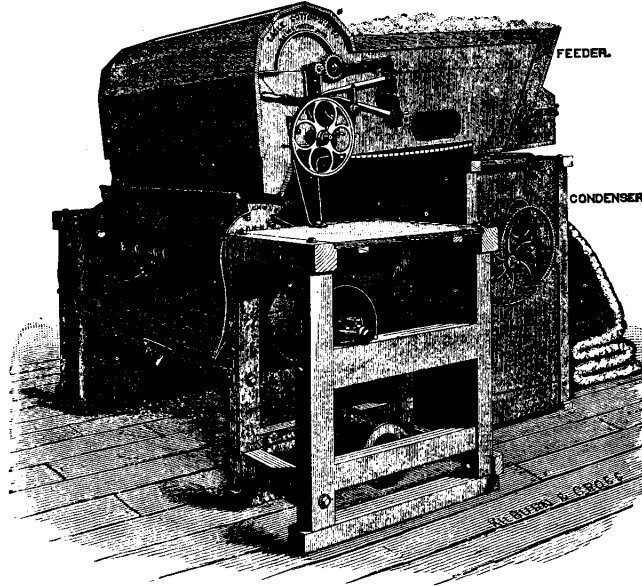


FIG. 1.—Eagle gin.

the whole bolls broken apart, putting them in such condition that the gin will easily discharge them, at the same time knocking out a large amount of leaf and dirt. The condenser is simply a large drum, covered with cloth, and having a pressure-roller over it. These are inclosed in a case, reaching to the floor, leaving a few inches of the drum uncovered, from which the cotton is blown off in a continuous sheet by the brush. A hole is to be cut through the floor under the condenser, through which the air made by the brush is blown, carrying the dust with it.

The Brown Gin is represented in section in Fig. 3. The feeder has an endless apron, *N*, by which the cotton is delivered to the roll-box, and is arranged to tilt back. The brush cylinder-shaft is made of large iron pipe with journals of cast steel running in adjustable boxes, allowing the cylinder to be moved up to the saws, to compensate for the wear of the bristles. It is driven by two belts, one at each end. This gives the cylinder the strong steady speed necessary to clean the teeth of the saws well, and cause the gin to mote properly.

The Mason Cotton-Gin is an entirely new departure in cotton-ginning machinery. Its principle is defined as follows: to construct a ginning-cylinder having teeth, which shall seize only the cotton-fibers, and not the seeds or other relatively hard foreign substances contained in the mass presented to its action, and shall strip or remove the cotton-fiber wholly or in great degree from said seeds. By "ginning-cylinder" is meant a cylindrical body for drawing out the cotton-lint from the seed-cotton, to be substituted in place of the aggregation of saws now used in an ordinary gin. This, the inventor says, can be accomplished by means of a cylinder having a hard periphery, in which periphery are numerous openings, and in each of which openings is secured a tooth fixed at one end and extending in said opening in a circumferential direction with reference to the cylinder, provided that the position of the free points or ends of said teeth shall approximate to the circumjacent level or surface of the periphery of cylinder, the said cylinder being rotated so that the teeth shall be presented points forward to the cotton. It is requisite, also, that there shall exist in front of and on each side of the end or point of

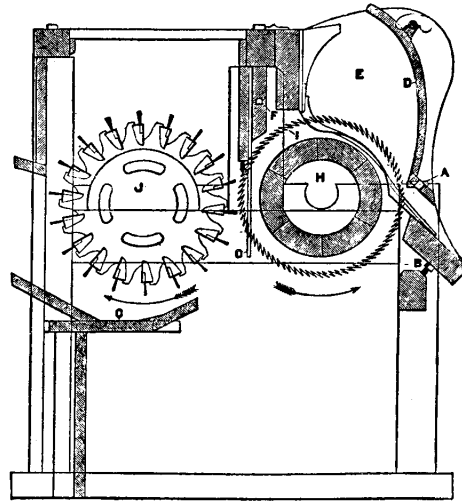


FIG. 2.—Section Eagle gin.

each tooth a space or opening into which the lint, by reason of its softness and elasticity, may enter when the cotton is placed in contact with the surface of the cylinder, and into which space the seeds or hard foreign material, not being soft and elastic, can not enter, and into which the seeds are also prevented from entering by reason of their size. By simply causing the cotton to lie in contact with said cylinder when rotating, with the points of the teeth forward, the lint will by its own elasticity enter the openings around the teeth in a radial direction, toward the axis of cylinder, and will be engaged and drawn out by said teeth, while the hard bodies—such as the seed and foreign matters—will not be so engaged. The point of the tooth is also arranged to protrude beyond the circumjacent parts to such a degree only as that by the rotation of the cylinder it may be thrust for a minute distance into the outer adherent coating of the seed.

On referring to Fig. 4 it will be seen that this gin uses no ribs or grating. *A* is the grate-fall or breast hinged to the main frame at *a*. *B* is the back-board; *C*, the seed-board; and *D* the brush for removing the lint from the cylinder. *E* is the ginning-cylinder, which in the machine occupies substantially the same position as the saw-gin cylinder in common use, the grate, grid, or ribs being removed, and a bar, *F*, secured in the concave *c*.

The cylinder *E*, shown in detail (Fig. 5), consists of a sheet or thin plate of metal, *G*, preferably steel, which is bent in a cylindrical shape, having its meeting edges secured together around heads or disks, preferably of wood. Said cylinder may consist of a number of smaller cylinders or sections, *M*. The advantage of making the cylinder *E* of a number of sections is, that in case one section becomes injured it can easily be removed and another substituted. The several sections should be placed closely together side by side, and so fastened by any convenient means. Before the sheet *G* is secured upon its support there is formed therein a number of slots *o*, disposed longitudinally across the surface, or in direction of the axis of the cylinder. In each slot is produced a pointed tooth, *g*, lying lengthwise the slot. By reason of the tooth being tapered and pointed and arranged in the slot, there is an open space extending directly in front of the point of the tooth and around the same on both sides. This is the opening already referred to, in which the cotton can enter by its elasticity

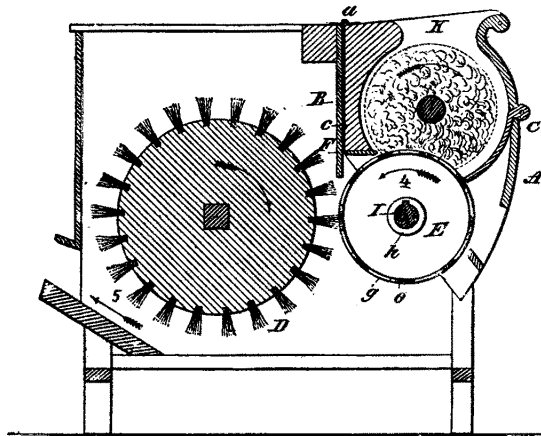


FIG. 4.—Mason cotton-gin.

and softness when pressed against the periphery of the cylinder.

The openings and teeth in the sheet *G* are made with the sheet flat. When the sheet is bent in cylindrical form, the teeth being attached only on one end will not naturally partake of the curved shape of the bent sheet, but will remain straight, or, in other words, will remain tangential to the circumference. The elevation of the point is, however, so slight as not to enable it to engage with hard foreign substances in the cotton, while on the other hand it is sufficient to allow it to penetrate, as already stated, through the soft covering of the seed before drawing out the fiber, as the rotation of the cylinder continues. Returning now to Fig. 4, the operation of the machine is as follows: The seed-cotton is placed in the receptacle *K* and meets the toothed surface of the cylinder *E*, which rotates in the direction of the arrow 4. The teeth upon said cylinder engage only with

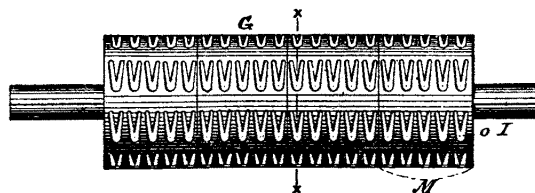


FIG. 5.—Ginning cylinder.

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the cotton-lint, as already described, and carry the same past and under the bar *F*, which prevents seeds and other foreign substances being drawn around the cylinder with the lint. As the cylinder continues its revolution, the lint is removed from its teeth by the brush-wheel *D*, from which the cleansed material passes out of the machine in the direction of the arrow *5*.