J. Parker,

Card-Grinding Machine.

No. 16,744. Patented Mar. 3, 1857.

Fig. 3.

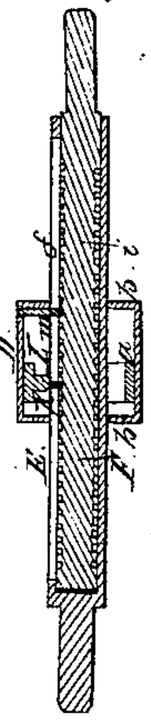


Fig. 4.

Fig. 5.

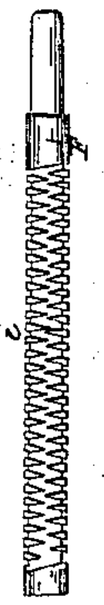


Fig. 6.

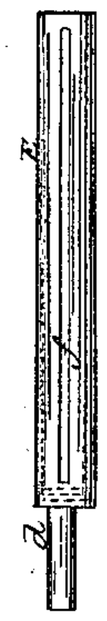


Fig. 7.

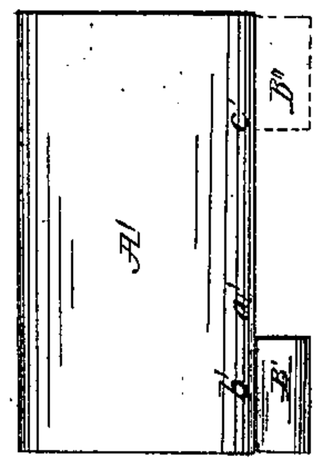


Fig. 2.

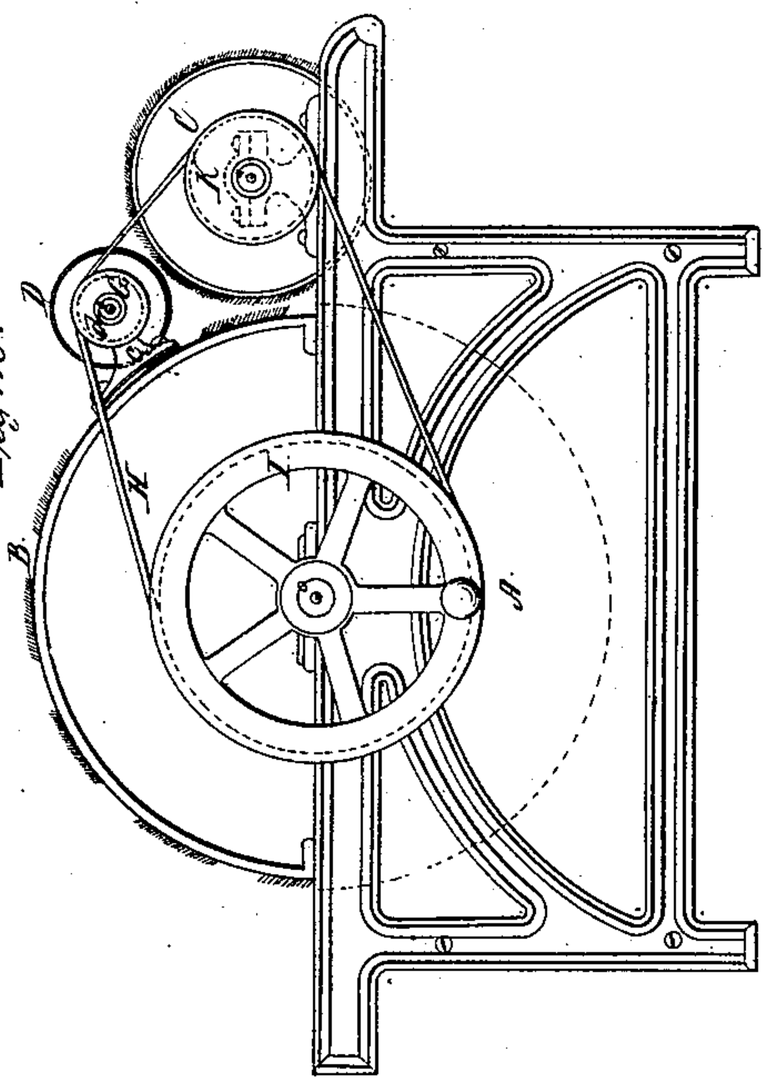
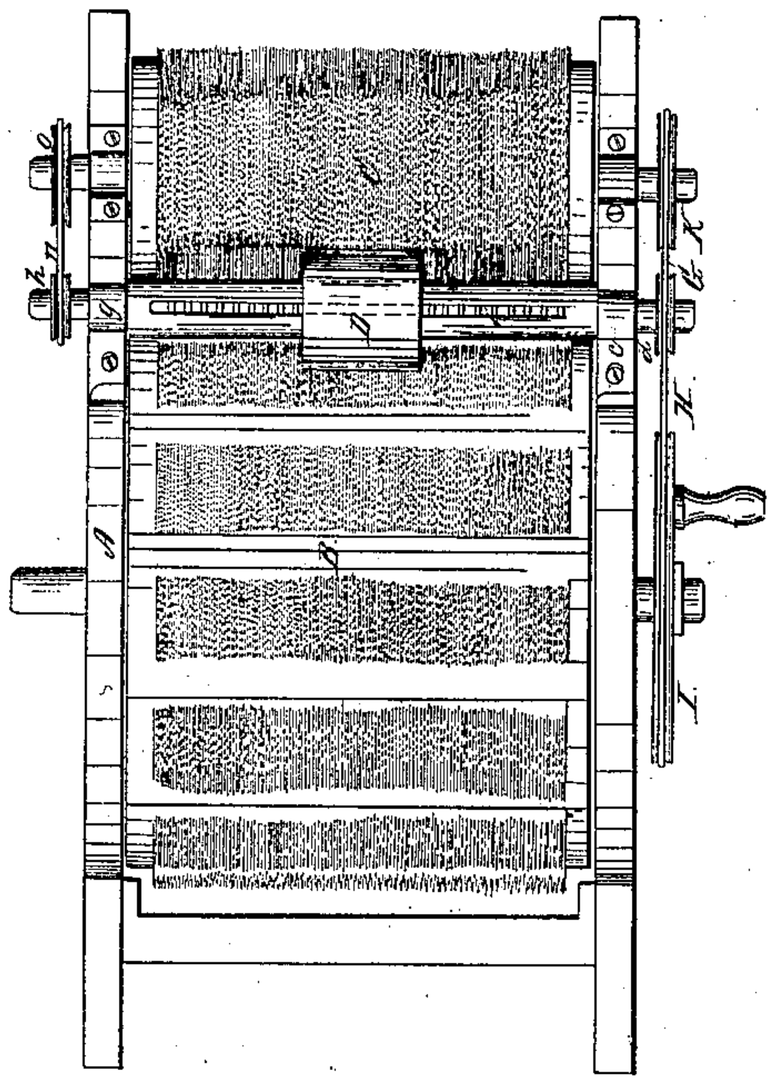


Fig. 1.



UNITED STATES PATENT OFFICE.

JONATHAN PARKER, OF BIDDEFORD, MAINE.

IMPROVEMENT IN MACHINERY FOR GRINDING CARD-CYLINDERS.

Specification forming part of Letters Patent No. **16,744**, dated March 3, 1857.

To all whom it may concern:

Be it known that I, JONATHAN PARKER, of Biddeford, in the county of York and State of Maine, have invented certain new and useful Improvements in Machinery for Grinding Card-Cylinders of Carding-Engines; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 exhibits a plan of my improved grinding apparatus and those parts of a carding-machine to which it is applied. Fig. 2 is a side elevation of the same; Fig. 3, a vertical and longitudinal section of the grinder and the traverse and stop mechanism thereof. Fig. 4 is a transverse section of said grinder and its traverse and stop mechanism. Fig. 5 is a view of the double-threaded screw-shaft of the grinder; Fig. 6, a separate view of the slotted shaft which surrounds the screw-shaft.

In grinding card cylinders it has been customary to make the emery grinder or cylinder longer than the card-cylinder to be ground by it, such emery-grinder, besides a rotary motion, having a reciprocating longitudinal movement given to it. During its operation on the teeth of the card-cylinder it has acted on the entire length of the cylinder at any moment of time. This kind of grinder, in consequence of this and its extending by the ends of the cylinder or the frame of the machine, is objectionable, and does not perform so good work as a grinder made shorter than the cylinder.

In carrying out my invention or improvement I generally employ a grinder of much less length than the width of the card-cylinder or the distance of traverse motion of said grinder.

In Figs. 1 and 2 of the drawings, A exhibits the frame of a carding-engine, B the main card-cylinder thereof, and C the doffer, the same being arranged and operated in the usual way.

Between the cylinder and doffer, or arranged as seen in the drawings, I arrange the grinding-cylinder D, and so that it may operate on the card-cylinder or on it and doffer at one and the same time, and grind the teeth thereof, so that their external surfaces may be properly concentric to their respective axes, and work together and conform in a proper manner to one another. By grinding their teeth together, or at the same time by one grinder or instrument, they are found to operate to better advantage than when ground separately. The said grinder D, I form as a hollow drum or cylindric tube *a*, provided with two annular heads *b b*, the same being made to encompass and slide lengthwise on a hollow tubular shaft E, which has a driving-pulley G fixed upon it for the purpose of putting it in revolution by means of an endless band H, traversing around said pulley and the driving-pulleys I K of the main card-cylinder and the doffer. The said tubular shaft E is furnished with but one journal *d*, which is supported by and revolves in a bracket *e*, projecting from the frame A, as shown in Figs. 1 and 2. And, besides this, the tubular shaft E should be constructed with a slot extending through it, as shown in the drawings. This shaft E revolves on a screw-shaft F, whose journal is supported by another bracket *g*, and has a pulley affixed to it, as shown in Fig. 1. The said screw-shaft is furnished with a screw or helix groove, which after passing from end to end of the shaft, or nearly so, returns back upon itself to the point of starting, the same being exhibited at *i*.

Between the two annular heads of the grinder and arranged on the shaft E so as to slide freely on it, is a cylindrical annulus L, having a stud or projection *k* extending from it and through the slot *f* and into the helix groove of the shaft F. Furthermore, the said annulus L in its width is less than the distance between the two heads of the grinder, the same being as shown in Fig. 3.

From one head of the grinder a stud *m* extends into the slot *f* and prevents the grinder from rotating around the shaft E, while the said stud presents no obstruction to the longitudinal movement of the grinder. From the pulley on the shaft F a band *n* extends to and about a driving-pulley *o*, fixed on the shaft of the doffer. The several pulleys which impart motions to the shafts E and F should be so formed as to cause one of said shafts to rotate a little slower than the other. If we suppose the inner shaft F to make fifty-nine revolutions while the outer shaft E makes sixty, it will readily be seen that the annulus L will be moved or turned laterally. If the rotary motions of the shaft are continued, the

annulus will be forced against one of the heads of the grinder, and will cause the grinder to traverse lengthwise on the tubular shaft and while it is put in revolution by said tubular shaft. The traverse of the grinder is only such as will carry it from end to end of the card-cylinder. When it has reached either end of the card-cylinder, it will not immediately commence a return movement, but will stop its traversing motion until the annulus within it has been moved up to that head of the grinder opposite to the one against which it may have been just previously operated. When the annulus is forced against the said opposite head of the grinder, the said grinder will commence its traversing motion. The object of thus arresting the traverse motion of the grinder at the ends of the cylinder is to enable it to grind the card-teeth near the ends of the cylinder uniformly with those that are intermediate. This will be better understood by the diagram Fig. 7, and the following explanation: In this figure A′ may be supposed to represent a card-cylinder, and B′ the grinder, and that such grinder is to be moved from end to end of the cylinder, or from the position B′ to that of B″, and vice versa. During the passage of the grinder B′ over the point a', or any point of the cylinder between a' and c', the entire length of the grinder rubs twice on the point a'; but this is not the case with any point whatever between the point a' and the adjacent end of the cylinder. For instance, if we take the point b', situated midway between the said end and the point a', we shall find that during the traverse motion of the roller B′ such point b' will be rubbed or abraded but half the extent of surface by which the point a' is abraded, the amount of abrading action on any point diminishing in proportion to the distance from the point a', such distance being measured in the direction of the adjacent end of the cylinder. The reason for arresting the traverse motion of the grinder for a short time after it has reached the end of the card-cylinder will thus be obvious.

The annular ring L, formed with a projection k and arranged in a space so that the said ring or annulus may play from head to head of the grinder, as described, I term the "stop-motion."

By means of a grinder of less length than that of the card-cylinder and made to operate or traverse from end to end of said cylinder, as described, the usual process of facing and dressing up the teeth with emery-boards or strickles is rendered unnecessary. Consequently much labor usually employed when the long grinder is used is saved.

Having thus described my invention, I would remark that I claim—

The combination of the stop-motion or mechanism with the feed mechanism, or that which produces the reciprocating traverse motion of the grinder, as specified.

In testimony whereof I have hereunto set my signature.

JONA. PARKER.

Witnesses:
ELIAS HANNON,
L. T. MASON.