(No Model.)

J. EDGE.

CARDING ENGINE.

No. 592,726. Patented Oct. 26, 1897.

Fig. 1.

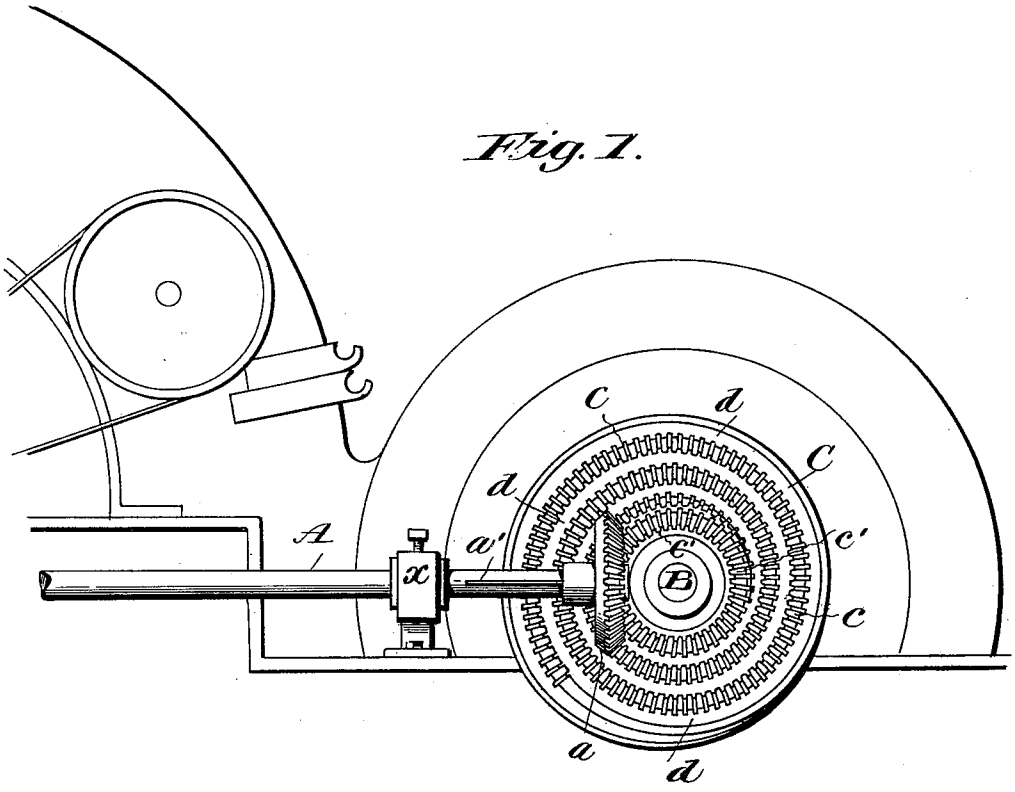
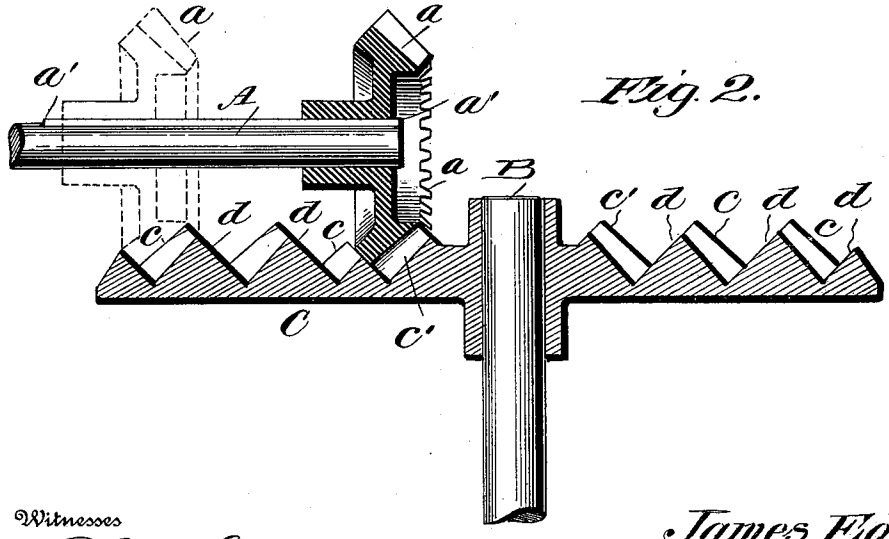


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES EDGE, OF GORTON, ENGLAND.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 592,726, dated October 26, 1897.

Application filed July 13, 1897. Serial No. 644,420. (No model.) Patented in England January 29, 1895, No. 2,014.

To all whom it may concern:

Be it known that I, JAMES EDGE, a subject of the Queen of Great Britain, and a resident of Gorton, in the county of Lancaster, England, have invented a certain new and useful Improvement in Carding-Engines, (for which I have obtained British Letters Patent No. 2,014, dated January 29, 1895,) of which the following is a specification.

In the working of carding-engines both of the revolving flat and roller type the card-wire surface of the main cylinder and doffer become charged to a certain depth of the wire with cotton fiber. After performing the operation known in the trade as "stripping" I find that this depth of fiber is lessened so much that on restarting the engine the sliver for a certain length is thinner or lighter than it should be and continues to be in that condition until the wires are charged to their normal depth again. This defect is of a serious nature, since the yarn subsequently spun from such sliver, after it has passed through the other preparation processes, is of an uneven character.

Now this invention is designed to obviate the above defect; and it consists, essentially, in the combination, with the feed mechanism, of means, substantially as hereinafter described, whereby said mechanism, after the stripping operation has been performed, can be made to run at a higher speed than the normal one for a short period of time, thus feeding the lap of cotton to the main cylinder in greater quantity than normal, this quantity being gradually reduced until the normal rate of speed is reached.

In the accompanying drawings, to which I will now refer for a more complete understanding of my invention, Figure 1 is a side elevation of so much of a carding-machine as needed to illustrate the invention. Fig. 2 is a section through the scroll-tooth bevel-wheel and the feed-shaft gear driven by the same.

In the drawings, A is the feed-shaft, which is driven from the doffer-shaft B. The feed-shaft, as is well known, extends from the point where it is in gear with the doffer-shaft back alongside of the frame of the machine to the feed-roller and drives that roller through the intermediary of a beveled gear with which it is provided, which meshes with a beveled wheel on the shaft of the feed-roller, as shown, for example, in United States Letters Patent No. 403,721, dated May 21, 1889. Upon the doffer end of the feed-shaft is the usual bevel-gear *a*, which ordinarily is fixed to said shaft and meshes with and is driven by a bevel-wheel on the doffer-shaft. Under my invention, however, the gear *a* has longitudinal movement or movement lengthwise of its axis, and for this purpose in the present instance it has a spline-and-groove connection *a'* with its shaft A, so that while revolving therewith it can slide lengthwise thereon.

The means for varying the speed of rotation of the feed-shaft is found, essentially, in the scroll bevel-toothed wheel C for driving said shaft. This wheel in the present instance is on the doffer-shaft and revolves therewith and it meshes with and is designed to drive the feed-shaft gear *a*.

The toothed part of the wheel C consists of a scroll of beveled teeth *c*, which at its inner end merges into a circle *c'* of similar teeth, which latter stand for and serve as the beveled gear usually employed for driving the feed-shaft gear-wheel *a*.

Between the folds of the scroll is a backing *d*, which bears against the like-formed back of the feed-shaft gear *a* and serves to hold said gear up into engagement with the toothed portion of wheel C.

As the scroll *c* nears its inner end it gradually decreases in height and practically vanishes at its point of junction with the circular part *c'*. The same is true of the backing *d*. The scroll *c* and backing *d* in effect form a V-groove which receives and holds the like-shaped rim of the gear-wheel *a* and which gradually decreases in depth as it approaches the central circular part *c'*.

The operation of the mechanism will be readily understood with brief explanation.

When it is desired—as, for instance, after the stripping operation—to run the feed at first at a speed higher than normal, the gear-wheel *a* is slipped back upon its shaft A, so as to engage the outer end of the toothed scroll *c*. For this purpose the journal-box *x*, in which the front end of the feed-shaft has its bearing, is made movable sidewise or to and from the machine in any of the usual or

known ways now employed in order to throw the gear-wheel a into and out of engagement with its driving-gear. When the machine starts, the speed of shaft A is greater than normal at first, because the gear a is driven by the portion of the scroll c of the greatest radius, but as the movement of the machine continues the gear-wheel a, by the backing d, is compelled to follow the convolutions of the scroll by which it is driven until finally it reaches the cylindrical part c', by which it is subsequently driven. During this movement the speed of rotation of feed-shaft A is gradually reduced until, as the gear a reaches the circular part c', it becomes normal. The backing d serves to hold the gear a in positive engagement with the beveled teeth on the scroll as well as the circular part of the wheel C. Practice has demonstrated that no further means of holding and keeping the wheels in working engagement is requisite. The decrease in depth of the V-groove formed by the scroll c and backing d, or, more accurately speaking, the decrease in the height of the walls of that groove, as it approaches the center enables the gear a to pass readily from the scroll to the circle c' and thence forward to follow the circle c' without cramping or jamming at the angle of junction of the scroll and the circle.

Having described my invention and the best way now known to me of carrying the same into practical effect, what I claim herein as new, and desire to secure by Letters Patent, is—

1. In a carding-machine the combination with the feeding mechanism, of means substantially as described, whereby the feed mechanism, when the machine starts, can be driven at a speed greater than normal, and the rate of speed of the same thereafter be automatically and gradually reduced until it reaches the normal rate, substantially as and for the purposes hereinbefore set forth.

2. In a carding-machine and in combination with the feed-shaft, the gear a rotating with said shaft and capable of movement in a direction lengthwise of the axis of the same, and the toothed scroll-wheel C driven by the doffer-shaft or other suitable moving part of the machine, and consisting of the beveled-tooth scroll c and circle c', and backing d, the scroll and backing gradually decreasing in height as they approach the circular part c', substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 25th day of June, 1897.

JAMES EDGE.

Witnesses:

ALFRED HITCHON,

ARTHUR C. HALL.