(No Model.)

H. A. DAVIS.

MACHINE FOR OPENING COTTON.

No. 384,826. Patented June 19, 1888.

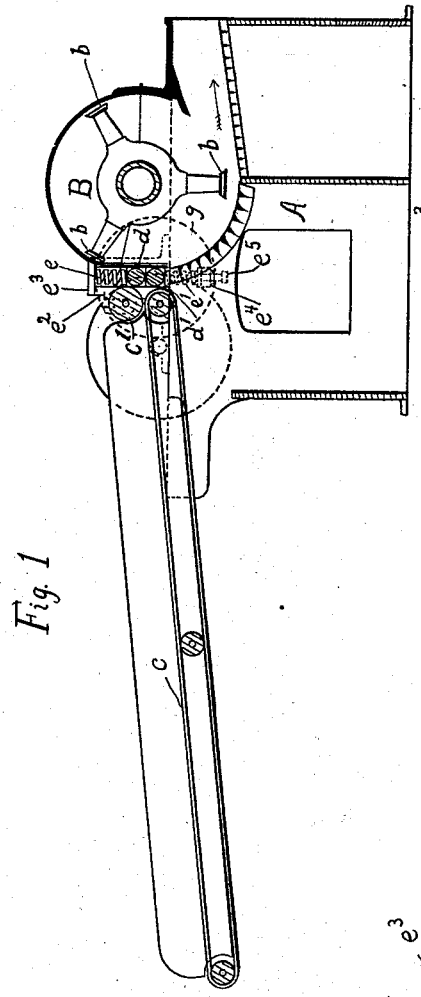

Fig. 1

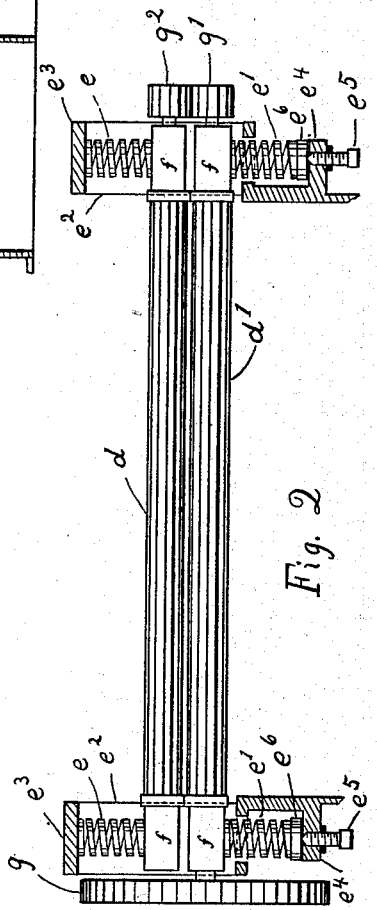

Fig. 2

Witnesses;
John K. Whittier.
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UNITED STATES PATENT OFFICE.

HENRY A. DAVIS, OF LOWELL, MASSACHUSETTS.

MACHINE FOR OPENING COTTON.

SPECIFICATION forming part of Letters Patent No. 384,826, dated June 19, 1888.

Application filed January 31, 1887. Serial No. 226,018. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. DAVIS, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Opening Cotton and other Fibrous Materials, of which the following is a specification.

My invention relates to machines for opening and preparing cotton or other fibrous materials for carding; and the object of my improvement is to adapt the feed-rolls, together with the cotton between them, to yield from their normal position, thereby increasing the space between the lower roll and the beater more or less, according to the thickness of the sheet of cotton and the force with which the cotton is struck by the beater-blades, and thus enabling the machine to operate properly on a light feed of cotton, while it is at the same time capable of opening in a like thorough manner heavier masses of material without injury to the staple.

In the accompanying drawings, Figure 1 represents a vertical section of a cotton-opener embodying my invention. Fig. 2 is a front elevation, partly in section, of the feed-rolls and supporting devices.

A represents the frame of the machine; B, the rotary beater, which may be constructed in any of the usual forms; *b b*, the beater-blades, which strike the cotton as it issues from the feed-rolls.

c' is a press-roller, which slightly compresses the loose cotton before it enters the feed-rolls. *d d'* are the feed-rolls; *e e'*, spiral springs which press the feed-rolls together; e^2, stands in which the feed-roll boxes are free to slide vertically; e^3, cap retaining springs *e* in place; e^4, lugs projecting from the outside of the frame; e^5, a set-screw, and e^6 a disk interposed between the point of said screw and the springs *e'*. The tension of the springs is adjusted by means of the screws e^5, and the adjusting-screws may, if desired, be located in the caps e^3, instead of or in addition to those in the lugs e^4 and arranged to press downward upon the springs *e*. The feed-rolls *d d'* are journaled in the boxes *f f* and driven by suitable gearing engaging with the gear *g*. I have also preferred to gear the upper and lower rolls together by means of the pinions *g'* and g^2.

It will readily be seen from this detailed description that when the machine is in operation the set of feed-rolls and boxes are free to yield downward and recede at a tangent from the path of the beater-blades within the limits of the elasticity of the springs when a heavy or matted quantity of cotton is fed to them. Heretofore the feed-rolls delivering cotton to beaters or toothed cylinders in machines of this class have been so constructed that the upper roll only has movable bearings, while the lower roll is supported by fixed bearings at a fixed distance from the beater, which strikes the cotton with a downward movement.

By my improvement, wherein the lower roll is made movable and supported by elastic devices, the cotton is less liable to be chopped or broken.

I am aware that a patent to Edward Lord, No. 52,008, of January 9, 1866, shows a feed-roller that revolves in stationary bearings, and a feeding trough or plate which is pressed against the under side of the said roller by means of weights, &c., and I hereby disclaim the same as forming no part of my invention. I consider that the said devices shown in Lord's patent, No. 52,008, differ materially from mine by having stationary bearings for the feed-roller, and therefore not adapted to accomplish what I have hereinbefore stated as the objects of my invention.

Beaters have sometimes been constructed with whippers or flail-like arms swinging on pivots and adapted to pass by heavy bunches of cotton held by the fixed roll by yielding back in their pathway. (See patent to Jillson and Palmer, No. 110,368, December 20, 1870; reissue No. 4,312, March 28, 1871.) Such whippers are defective in their operation, as they rebound immediately upon striking a heavy mass of fiber, and, as they do not pass through it, fail to properly open it.

By means of my invention rigid blades or teeth may be used on the beater, and the rolls, when yielding, do not yield so much as to carry the cotton completely away from the action of the beater.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for beating or opening cotton or other fibrous material, the combination,

with a rotary beater, of a pair of feed-rolls and means for pressing each roll of the pair upon the material interposed between the said rolls, said means being elastic retaining devices whereby the feed-rolls are adapted to yield when said material is struck by the beater, substantially as described.

2. In a machine for beating or opening fibrous materials, the combination, with a beater and pair of feed-rolls, of elastic supporting devices for the purpose of enabling the said rolls to yield in the direction of the blows struck by the said beater, as and for the purpose specified.

3. In a picker or opener for fibrous materials, the combination, with the feed-rolls *d d'*, provided with vertically-sliding bearings *f f*, of elastic retaining devices *e e'* above and below the said bearings, substantially as herein set forth, for the purpose specified.

HENRY A. DAVIS.

Witnesses:
CHARLES F. WORCESTER,
GEORGE W. POORE.