

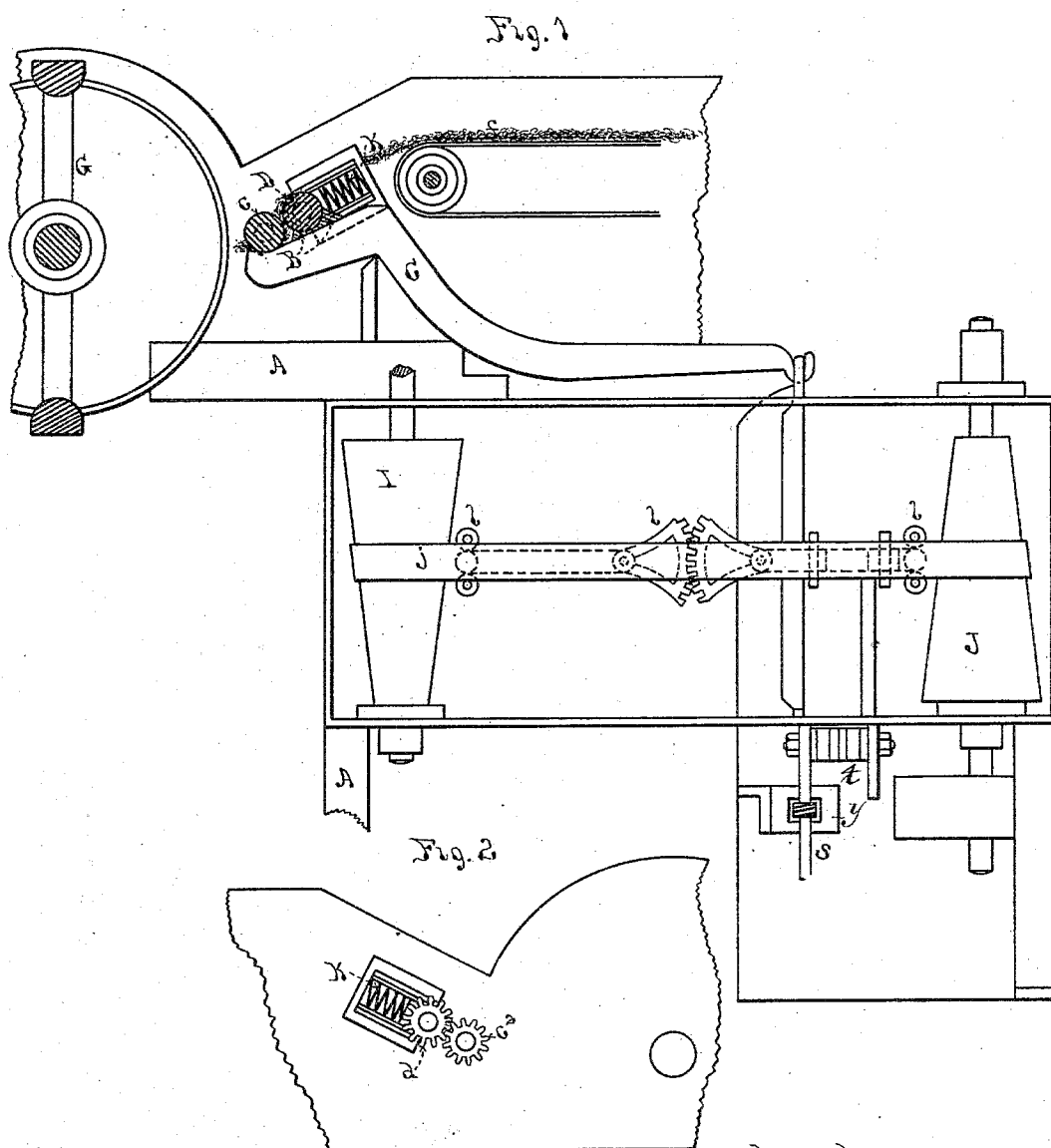
(No Model.)

2 Sheets—Sheet 1.

R. KITSON.
COTTON OPENER.

No. 289,004.

Patented Nov. 27, 1883.



Witnesses
Jm. S. Brown.
A. P. Dickinson.

Inventor
Richard Kitson.
by his Atty.
Lepine & Co.

(No Model.)

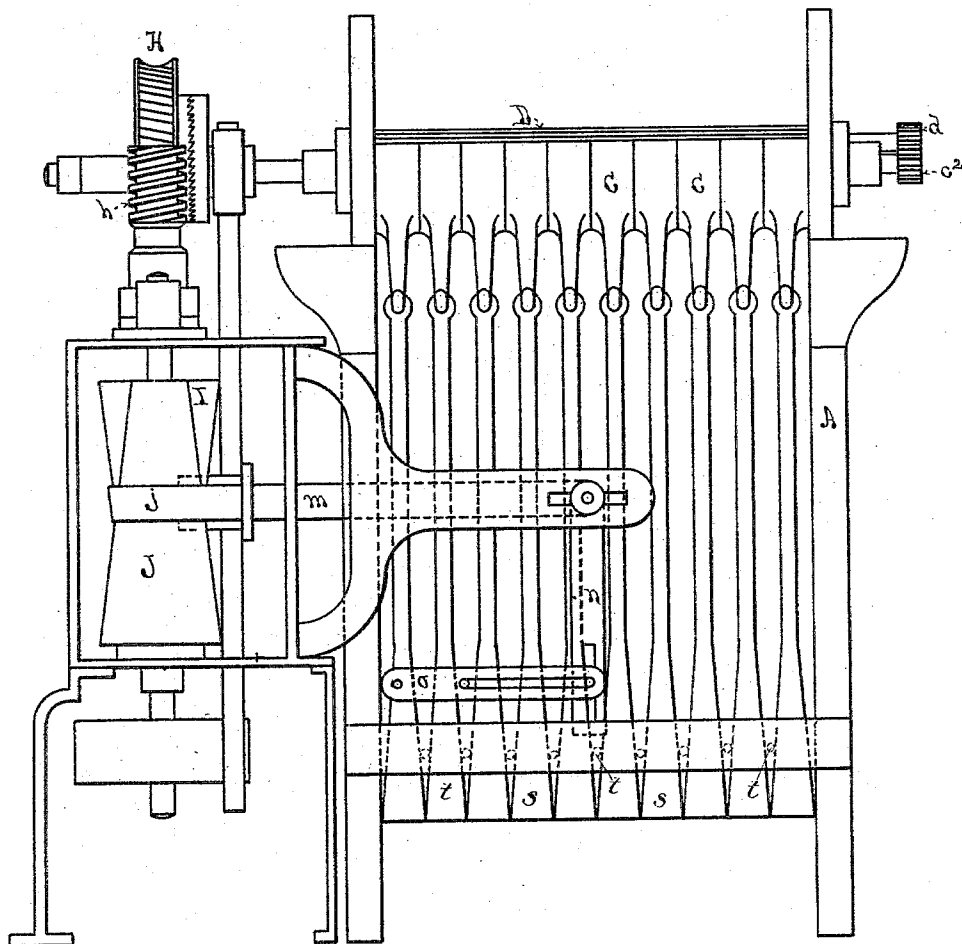
2 Sheets—Sheet 2.

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Fig. 3



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UNITED STATES PATENT OFFICE.

RICHARD KITSON, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE KITSON MACHINE COMPANY, OF SAME PLACE.

COTTON-OPENER.

SPECIFICATION forming part of Letters Patent No. 289,004, dated November 27, 1883.

Application filed February 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, RICHARD KITSON, of Lowell, county of Middlesex, and State of Massachusetts, have invented a new and useful Improvement in Cotton-Openers, of which the following is a specification.

My invention relates to machines designed to receive the cotton in an irregular and uneven sheet and open it out to form a regular and even sheet or lap therefrom.

The object of my improvement is to hold the sheet of fiber, as it is fed to the feed-roll of a Lord evener, or evener of the kind described in Patent No. 52,008, so that it will be prevented from getting between the levers of the evening mechanism, and so that it cannot be snatched or quickly drawn through between the levers and roll by the beater. I accomplish this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a portion of a machine for opening cotton containing my invention. Fig. 2 is a detail showing the gears coupling the rolls *c* and *D*. Fig. 3 is a front view of the machine with the feed-apron removed.

A is the frame of the machine. *C* *C* are eveners; *c*, the feed-roll; *H*, a worm-wheel placed upon the shaft of roll *c*; *h*, a worm engaging with the wheel *H*, and attached to the top of the shaft of the cone *I*. *j* is a belt through which motion is communicated to the cone *I* from cone *J*. *J* is a cone driven with a regular rotary movement from any convenient mill-shaft by a belt, (not shown,) which passes over the pulley upon the lower end of its shaft. *l l* are belt-shippers, whose belt-forks raise or lower the belt upon the cones with each movement given them. These belt-shippers are made to move together by having upon their shorter arms toothed arc-pieces, which engage the one with the other. *m n* is a bell-crank lever, the arm *m* of which is connected to one of the belt-shippers, and the arm *n* is connected by the bar *o* to one of the wedge-ended connecting-rods *s s*, lifted by the levers *C*. All these rods bear against the one to which the bar *o* is connected through one another and small spreader-pieces *t t*, placed between

them. These spreader-pieces are short cylinders loosely placed in a channel in the cross-girt *y*, in which they are free to move with and between the connecting-rods *s s* in the usual and well-known manner. The wedge ends of the connecting-rods pass through the girt in a slot of less width than such channel, as shown in Fig. 1. All these parts are constructed, connected, and operated substantially in the manner described in Patent No. 52,008, issued January 9, 1866.

When any sheet of cotton is fed between the feed-roll *c* and the levers *C*, the sheet will be firmly pressed against the roll *c*, and any irregularities in the sheet will cause a movement of one or more of the levers, and a corresponding movement through the connecting parts is communicated to the belt-shippers, by which the belt is moved up or down upon the cones, and a corresponding change made in the speed with which the cone *I*, worm *h*, wheel *H*, and feed-roll *c* are driven, in the same manner as described in said patent.

D is a pressure-roll geared with the feed-roll *c* by gears *c'* and *d'*, placed upon the roll-shafts, the gear *c'* having less teeth than the gear *d'*.

K is one of the spiral springs which bear upon the boxes in which the shaft of roller *D* rests, and by which it is firmly pressed against the roll *c* at a point above the eveners. *f* is an apron on which the cotton is placed, in as even a sheet as may be, either by hand or by the action of some preceding machinery.

B is a doctor resting upon the eveners *C*, in the concave side of which the roll *D* moves. This doctor prevents the cotton from adhering to roll *D* and leaving its proper line of movement forward through the machine. *G* is the beater to which the cotton is being fed.

The operation of my device may be thus described: When the sheet of fiber is fed forward by the apron, it passes over the roll *D* and between it and the feed-roll *c*, and by them is firmly compressed. As it moves forward, it passes between the eveners *C* and the feed-roll *c*, and as the roll *D* moves somewhat slower than the roll *c*, there will be just draft enough on the sheet of cotton to keep it tightly pressed against the roll *c*, between the point

where the roll *c* contacts with the roll D and the part where it is borne against the roll *c* by the levers C, so that the fibers will be prevented from falling down upon the levers loosely when, from the passage of any lump or uneven portion, one of the levers is depressed below the one adjacent to it, and none of the fibers will therefore be caught between the levers as they come back to place. In machines as heretofore constructed, as any thicker portion of the sheet passed between the levers and the roll *c*, it depressed a lever, so it could pass through, and as the lumps passed into the beater the same would sometimes pull through a portion of the sheet immediately following the lumps before the levers got back to place, so as to firmly bear upon the thinner part of the sheet. In my device I prevent this action of the beater by holding the sheet by the roll D bearing against the roll *c*, so that if at any time the levers loosen their hold on the sheet of fiber it will be firmly held close in the rear of the contact-point of the levers by the pressure-roll D and prevented from being drawn through or snatched by the beater.

With my device, the beater, working against the ends of the levers, permits the cotton to be nipped as close to the beater as may be necessary to work even the shortest of fibers. This is not possible where feed-rolls are used, as the

nip of the rolls is in all cases half their diameter from the path of the beater. Another advantage which is obtained by my device is that as the sheet of cotton is fed over the eveners-levers it is held firmly as a solid sheet instead of a loose one, and the loose sand or dirt which may be contained among the fibers of cotton is prevented from shaking out and falling between the levers, where it interferes with the freedom of action of the machine, but it is kept in the sheet until the cotton gets into the beater.

What I claim as new and of my invention is—

1. The combination of the beater G, feed-roll *c*, and evener-levers C with the pressure-roll D, which presses the cotton against the feed-roll, the feed-roll being placed intermediate the pressure-roll and the beater, substantially as described.

2. The combination of a beater, evener-levers, and a feed-roll with a pressure-roll which holds the cotton against the feed-roll before it comes into contact with the evener-levers, substantially as described.

RICHARD KITSON.

Witnesses:

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