

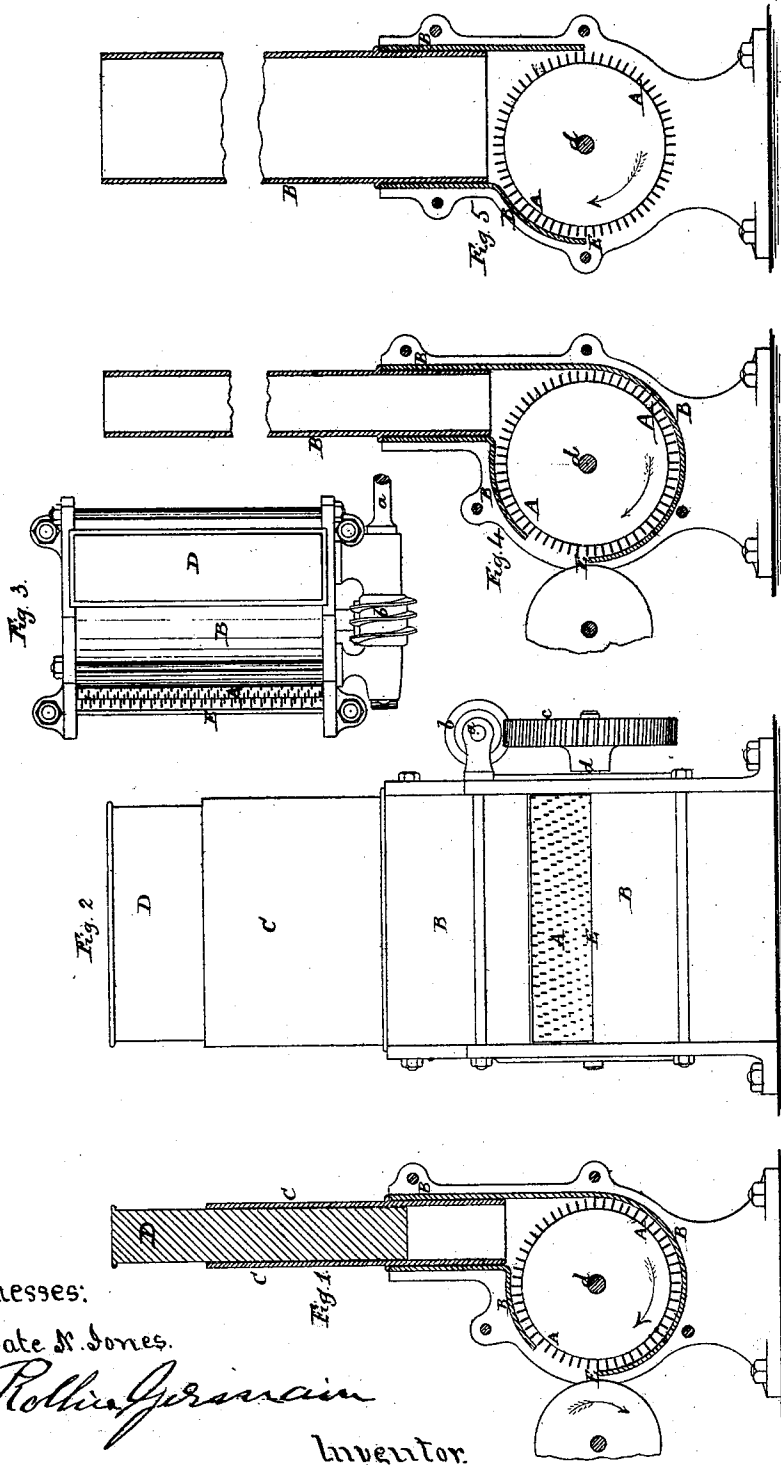
E. Pettitt,

2, Sheets, Sheet 1.

Carding Machine.

No. 111,074.

Patented Feb. 7, 1871.



Witnesses:

Wate M. Jones.

Rollin Germain

Inventor.

Edwin Pettitt
By Burke, Linsler & Osgood, attys

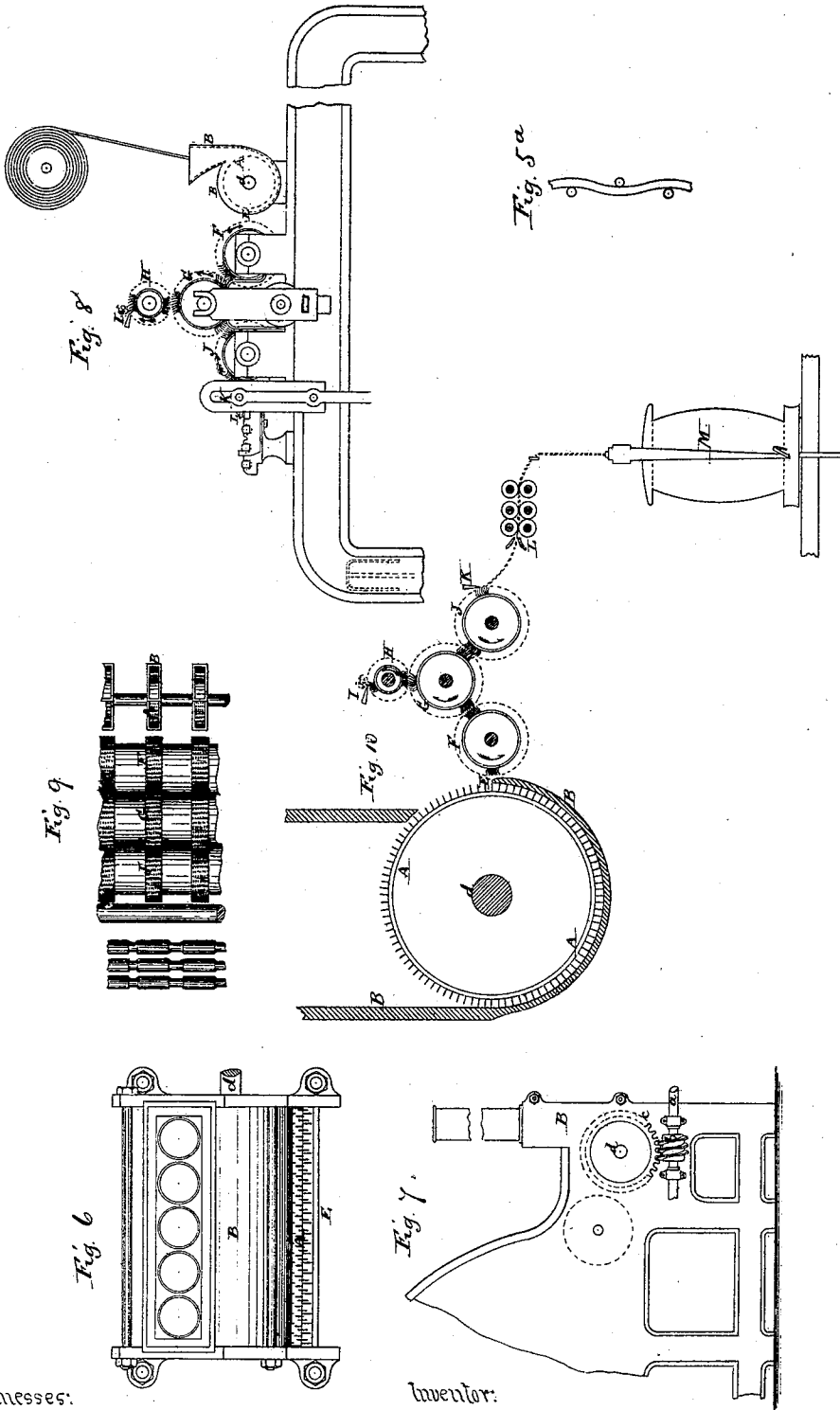
E. Pettitt,

2. Sheets, Sheet 2.

Carding Machine.

No. 111,674.

Patented Feb. 7. 1871.



Witnesses:

Inventor:

United States Patent Office.

EDWIN PETTITT, OF MANCHESTER, ENGLAND.

Letters Patent No. 111,674, dated February 7, 1871

IMPROVEMENT IN FEEDING DEVICES FOR CARDING AND OTHER PREPARING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDWIN PETTITT, of Manchester, England, have invented certain new and useful "Improvements in Machinery for Preparing and Spinning Cotton and other fibrous substances;" and I do hereby declare that the following is a full, true, and exact description thereof, reference being had to the accompanying drawing, that is to say:

The objects of my invention are—

First, the construction of a feeding apparatus capable of supplying a regular and uniform quantity of cotton or other fibrous substance to the machines used for preparing and converting it into slubbings, rovings, or yarns, with the view of obtaining greater evenness, uniformity, and strength in the products of such machines; and

Secondly, the combination with and application to slubbing, roving, and spinning-machines of the before-mentioned feeding apparatus, for the purpose of supplying to such machines a regular and determined quantity of the uniform products of a previous operation, so that the finished yarn shall be even throughout its length.

This feeding apparatus, constructed according to my invention, I designate a "grip-feeder."

Figure 1 is a transverse section;

Figure 2, a front view; and

Figure 3, a top view of one of my grip-feeders.

A is a roller, with iron or other suitable metal teeth or pins, projecting from its periphery.

It is made to revolve in a metal case, B, in the direction shown by the arrow, at any required rate of speed, by means of a shaft, *a*, and worm *b*, in communication with a toothed or worm-wheel, *c*, on its axle *d*, such shaft *a* being driven or actuated in the usual manner of the feed-rollers of carding-engines or scutchers.

The teeth or pins of the roller A approach the interior surface of the case B as nearly as is possible without contact.

C is a part which, when in place, forms a continuation of the case B, but for the convenience of filling it with a fresh supply of material to be operated upon it is made movable.

Into this movable case C the cotton or other fibrous substance is filled by hand or machinery, or by the case being placed upon or in contact with a perforated surface in the opening or scutching-machine, to allow of its being filled by exhaustion of the air from its interior. When so filled, it is placed in the lower case B, and a weight, D, which is somewhat less in area than the interior of the case C, is allowed to rest upon the upper surface of the cotton or other fibrous material to be operated upon for the purpose of consolidating the fibrous mass, and pressing it forward to the roller A, which, revolving at the same time slowly,

draws the fibrous substance from the case and delivers it at a determined speed, over the edge of the case at the point E, to the first carding-roller, or to the beaters of an opener or scutcher.

The downward pressure exerted upon the fibrous substance fills the interstices of the teeth or pins of the roller A with it, and a firm grip or hold of the fibers being effected, a snatching away of irregular and loosely held masses (of cotton, for instance, under process of carding) is prevented, and at the same time a more perfect carding or combing of the fibrous substance takes place at the point E, owing to the grip with which the fibrous substance is held by the aid of the inner surface of the case B while it is gradually fed by the revolution of the roller A.

The weight D may consist of a hollow box, more or less filled with shot or other material, according to the pressure required.

The modification shown in Figure 5 differs from that shown in Figure 4 only in that the roller A delivers the fibrous substance over the upper edge of the case B, the lower half of the case being open.

The dimensions of the case and of the grip-feeder must, of necessity, vary with the kind of fibrous substance under operation and the work to be performed.

In cotton and wool-spinning the diameter of the roller A may be a few inches only, or as much as two feet, or even more, and the case of proportionate capacity, as may be convenient to the user for his particular purpose. So also the teeth or pins in the roller A may be placed at different distances to suit the varying lengths of fibers.

I prefer that the fibers should be drawn over and in contact with three at least of these teeth or pins at the point of delivery, as indicated in Figure 5*, as well as over the edge of the case at E, and it will be evident that long-stapled wool will require fewer teeth over a given area of surface on the roller A than cotton or other shorter fiber.

The length also of the teeth must be governed by the work for which they are required, and the rate of delivery of the grip-feeder.

Figure 6 is a top view of a grip-feeder showing that part of the case B, which is above the roller A, divided into tubes or cylinders, each tube or cylinder being adapted to receive the fibrous substance either in the manner hereinbefore described, or in the shape of the ordinary lap of cotton as produced by the machines now in use. But instead of in the latter case feeding the lap to the first carding-roller in the usual manner, I drop the lap into the tube or cylinder endwise, so that it falls upon the teeth.

I construct each tube or cylinder of sufficient height and capacity to hold two or more laps endwise, one upon another.

It is necessary that the laps so used shall be uniform

in weight, and two or more of these tubes or cylinders may form part of the grip-feeder, according as the width of the carding-engine and the diameter of the laps will allow.

There may be as many deliveries at the front of the engine as there are cylinders, or the fleeces may be gathered at the front into one delivery, and be either coiled into a can or wound upon a reel or bobbin, and receive twist or not, as may be considered desirable.

Figure 7 shows the grip-feeder applied to the back part of a carding-engine;

Figure 8 is an end view, partly in section; and

Figure 9, a plan of a modified form of the grip-feeder applied to a throstle-frame, in combination with two or more carding-rollers.

The same combination of parts and mechanism are equally applicable to slubbing and roving-frames, and also to mules, varying, however, somewhat in dimensions and distances, according to the particular purpose for which the machine is adapted.

In this instance I take the product of a previous operation, that of carding, for example, in which the grip-feeder has been employed; having formed a roll of slivers in the usual way by means of the Derby doubler, I place it in bearings above the machine, and lead one or more card ends through the case B of the grip-feeder to the teeth of the roller A of the same, which roller delivers the fibrous substance over the edge of the case, at the point E, to the first carding-roller F, which revolves in the direction shown by the arrow, and cards or combs the fibers as they are delivered to it.

The card-roller G strips the roller F, and its teeth meeting those of the smaller roller H, the fibers are again carded, and as the roller H retreats and revolves in the direction shown by the arrow, it carries away with it the short fibers, dirt, and neps left in its teeth by the roller G, and the fixed comb I clears it, as it revolves, of the waste which it collects.

The doffing-roller J receives the carded fibers from the roller G in the usual manner; and the vibration or motion of the doffing-knife or comb K removes the fleece or film of fibrous substance from the teeth of the doffing-roller, from whence it passes through a small trumpet or orifice, L, to the drawing-head, and so to the spindle, which converts it into a yarn.

The rollers are by preference driven by suitable

gearing in connection with the main shaft of the machine.

The speed of the card-roller F is sufficient to take the fibrous substance fed to it by the grip-feeder, and that of the card-roller G is more than twice that of F, but less than that of the doffing-roller J.

The hank, number, or grist is regulated by the rate of delivery of the grip-feeder of a known quantity of fibrous material, and the drafts of the card-roller and drawing-head, as is well understood.

Figure 10 shows a section of a grip-feeder in combination with card-rollers and a drawing-head.

A sliver or slubbing may be produced, and by means of the usual mechanism, twist may be put into it, and the twisted sliver wound upon a bobbin, M, for subsequent use and conversion into a slubbing, roving, or yarn, upon any of the existing machines, in the manner described and shown.

Where the fibrous material to be operated upon is silk waste, the grip-feeder may deliver at a given rate direct to the drawing-head without the intervention of any carding process whatever, and the fiber may then be twisted by the spindle and flyer, and wound upon a bobbin preparatory to further manipulation on the usual spinning-machines used for such fibrous material.

The card-rollers may either be wholly covered with cards, or they may be filleted, as seen in fig. 9; but in all cases the width of the card surface should be greater than the width of the delivery of the grip-feeder.

I claim as my invention—

In combination with the toothed cylinder A, the close concentric case B, provided with a vertical extension for supplying the fibrous material to the roller under a constant and equable pressure maintained by a weight, substantially as set forth.

In witness whereof I, the said EDWIN PETTITT, have hereunto set my hand this 4th day of February, A. D. 1870.

EDWIN PETTITT.

Witnesses:

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