

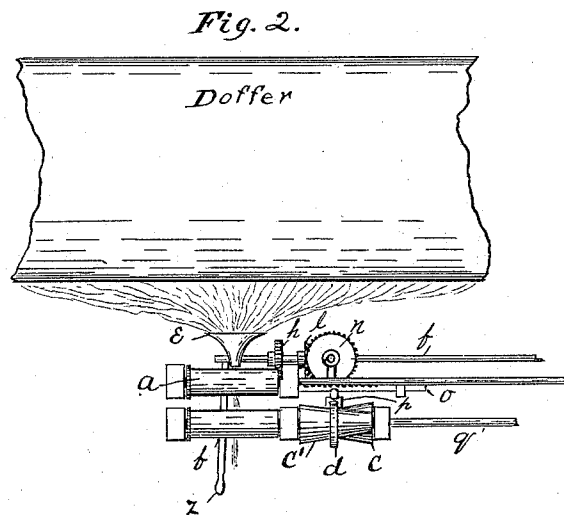
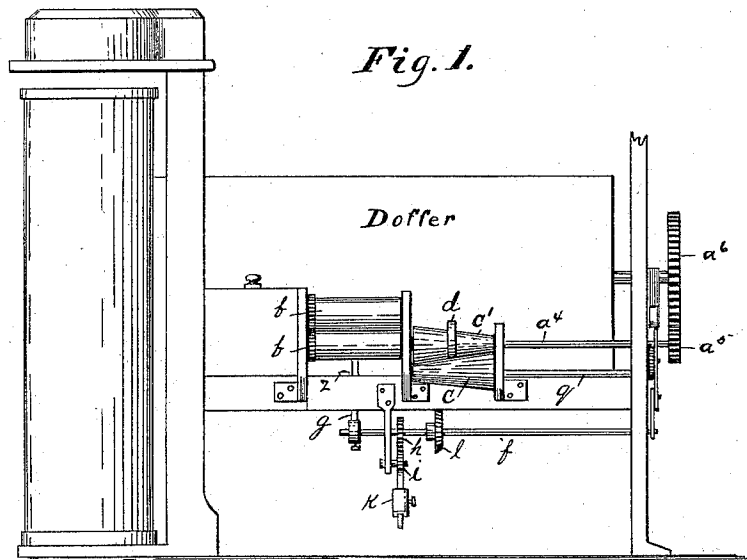
(No Model.)

2 Sheets--Sheet 1.

G. A. AYER.
CARDING ENGINE.

No. 488,177.

Patented Dec. 20, 1892.



Witnesses
Fred A. Mason
C. O. Mason

Inventor
George A. Ayer
by J. W. Mason
att'y.

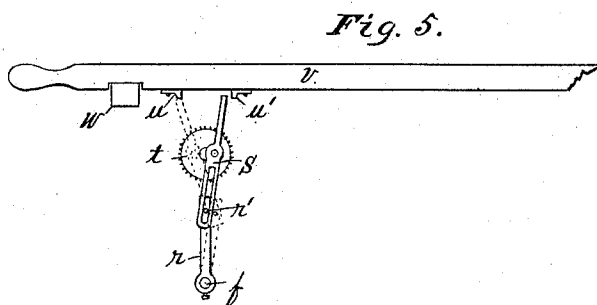
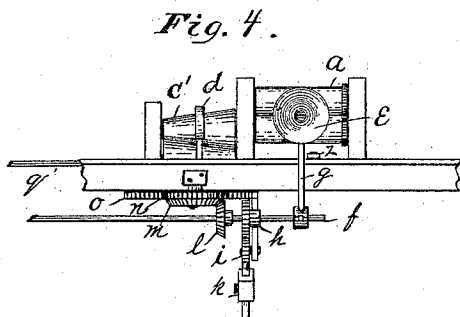
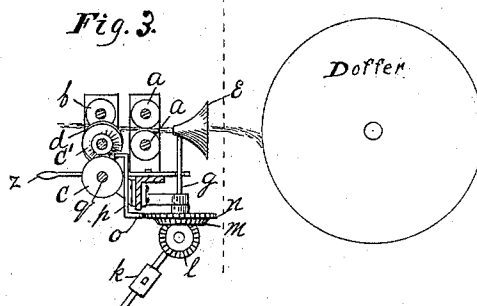
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UNITED STATES PATENT OFFICE.

GEORGE A. AYER, OF NEW BEDFORD, MASSACHUSETTS.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 488,177, dated December 20, 1892.

Application filed August 29, 1892. Serial No. 444,373. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. AYER, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Carding-Engines, of which the following is a specification.

The object of my invention is to provide means whereby the sliver, as it comes from the carding engine, is drawn to a uniform weight or size, so as to obviate the necessity of so many subsequent doublings and drawings, as is now required; and also, means to automatically stop the operation of the carding engine, when too great, or too little an amount of sliver is being delivered from the doffer.

To this end my invention consists in the devices illustrated in the accompanying drawings, in which,

Figure 1. is a front view of a portion of a carding engine, showing my invention attached. Fig. 2. is a top view of my invention, showing its relative position to the doffer of the carding engine. Fig. 3. is a side view of my invention, showing its position with relation to the doffer and front-rolls of a carding engine. Fig. 4. is a rear view of the same, from the dotted line in Fig. 3. Fig. 5. is a side view of the mechanism for automatically stopping the carding engine.

Similar letters refer to similar parts in the several views.

a, a , represent the front-rolls of a carding engine in front of which I arrange a similar pair of rolls b, b , to act as drawing rolls. The lower one of the rolls a, a , is connected by its shaft a^4 and a gear a^5 with the gear a^6 on the doffer, so as to receive motion, in the ordinary manner. The lower one of the rolls b, b , has its shaft extended and provided with a cone c' ; and immediately under said cone, is mounted a similar cone c , whose shaft q extends to, and is connected to the gearing on the doffer, so as to receive a motion about fifty per cent greater than the front rolls a, a , so that when the belt d , which communicates motion from the lower cone by friction, to the upper cone, is in the center, the rolls b, b , shall have about fifty per cent greater motion, than the rolls a, a . In the rear of the rolls a, a , I mount a trumpet e , fixed to the arm g , on the shaft f .

h , is a gear fixed on the shaft f , and taking into the quadrant gear i , provided with an arm on which, is the adjustable weight k , and which gear is mounted on a shaft or stud.

l , is a bevel gear, fixed to the shaft f , and meshing with the bevel gear m , secured to the gear n , meshing with the toothed rack o , provided with the belt shipper p , so that when the trumpet e , is moved backward or forward, the belt d , is shifted on the cone c' , and the speed of the rolls b, b , increased or decreased thereby.

The rolls a, a , and b, b , are provided on their ends with gears meshing with each other, in order that the top rolls may receive positive motion from the under rolls, and not depend on friction for that motion, as ordinarily. The shaft f , extends to the side of the frame of the carding engine, and is there provided with an arm r , having stud r' , which stud engages a slot in an arm s , mounted eccentrically on the face of a gear t , which meshes with the gear on the doffer or an intermediate.

v , is the lever, by means of which the carding engine is put in operation or stopped, by engaging or disengaging its notch with the bar w .

The operation of the device is as follows— When the proper amount of sliver is passing through the trumpet e , it remains in an upright position, and the sliver is drawn, by the drawing rolls, about fifty per cent; but when a greater amount of sliver passes through: the trumpet is carried toward the front rolls; and, through the gears l, m , and n , the belt d , is shifted toward the small end of the upper cone, which increases its speed and also that of the rolls b, b , and thus draws the sliver to a greater degree, and preserves its uniform weight or size. Should less than the proper amount of sliver pass through the trumpet, the weight k , would cause the trumpet to recede from the front rolls, and thus decrease the speed of the drawing rolls, so that the sliver should not be drawn so much, and thus preserve its uniform weight. Should a greater amount of sliver enter the trumpet than could pass through, the trumpet would be carried forward against the front rolls, and the arm r , on the end of its shaft would assume the position shown in dotted lines Fig. 5, thus bringing the upper end of the arm s , in con-

tact with the projection *u*, which would raise the lever *v*, from engagement with the bar *w*, and stop the operation of the carding engine. So also, if too little sliver or none at all, should pass through the trumpet, it would drop back to its limit, and the arm *r*, cause the arm *s*, to engage with the projection *u'*, and raise the lever *v*; thus stopping the operation, as before. The gear *t*, is constantly revolving, carrying the arm *s*, with it, and while the trumpet *e*, vibrates within prescribed limits, the upper end of the arm *s*, vibrates between the projections *u*, and *u'*, but when the trumpet passes beyond said limits, the arm *s*, by means of the arm *r*, is caused to engage with one of the projections *u*, or *u'*, and raise the lever *v*, which stops the operation of the carding engine.

z, represents a lever, having a notch adapted to receive the arm *g*, which lever, is pivoted on the frame of the machine, and is adapted to hold the arm *g*, and consequently the trumpet *e*, in a stationary position, when the sliver is being pieced up.

I claim—

1. In combination with the front rolls of a carding engine; a pair of drawing rolls arranged in front of said front rolls; a pair of conical rolls, the upper one of which is mounted on the extended shaft of the lower drawing roll; an endless belt, gripped between said conical rolls; a rack *o*, sliding in bear-

ings, and having a loop embracing said endless belt; a trumpet mounted on a shaft and behind said front rolls, said shaft being provided with the gear *h*, taking into the pivoted gear *i*, and said gear *i*, having an arm provided with the adjustable weight *k*, the gear *l*, taking into the gear *m*, and said gear *m*, provided with the gear *n*, adapted to take into the rack *o*, whereby, when the trumpet is moved toward the front rolls, or allowed to recede from them, by the sliver, as it passes from the doffer, the speed of the drawing rolls is increased or diminished, as and for the purpose set forth.

2. In combination with the front rolls of a carding engine; a trumpet mounted behind said rolls; a pair of drawing rolls, arranged in front of said front rolls; mechanism intermediate said trumpet and drawing rolls, whereby the speed of said drawing rolls is regulated by the forward or backward movement of said trumpet; and mechanism intermediate said trumpet and the starting and stopping lever of said carding engine, whereby the operation of carding is stopped, when the trumpet has reached its limit of motion forward or backward; as and for the purpose described.

GEORGE A. AYER.

Witnesses:

JAMES C. HITCH,
HENRY W. MASON.