P. E. WILLIS & J. JOLLY.

COMBING MACHINE FOR COTTON FIBERS.

APPLICATION FILED FEB. 8, 1909.

947,070. Patented Jan. 18, 1910.

3 SHEETS—SHEET 1.

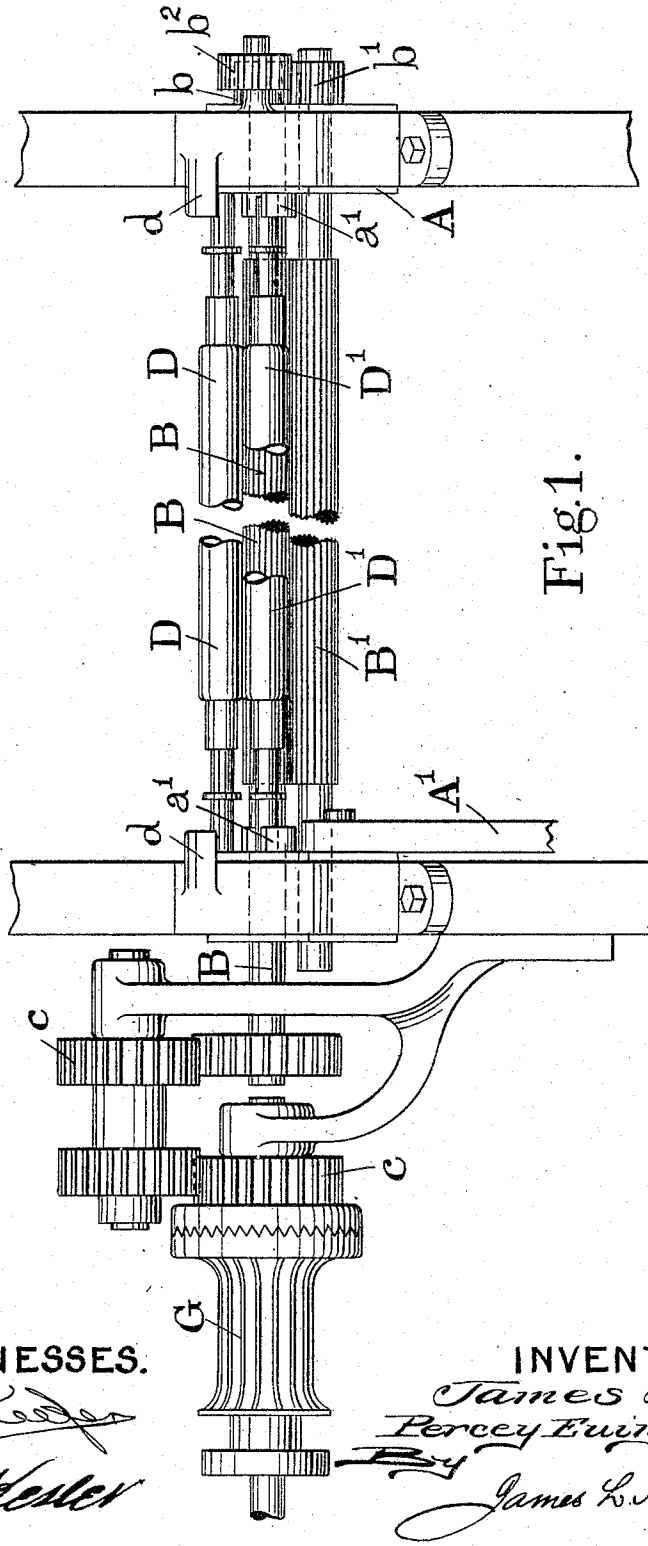

Fig. 1.

WITNESSES.

INVENTORS

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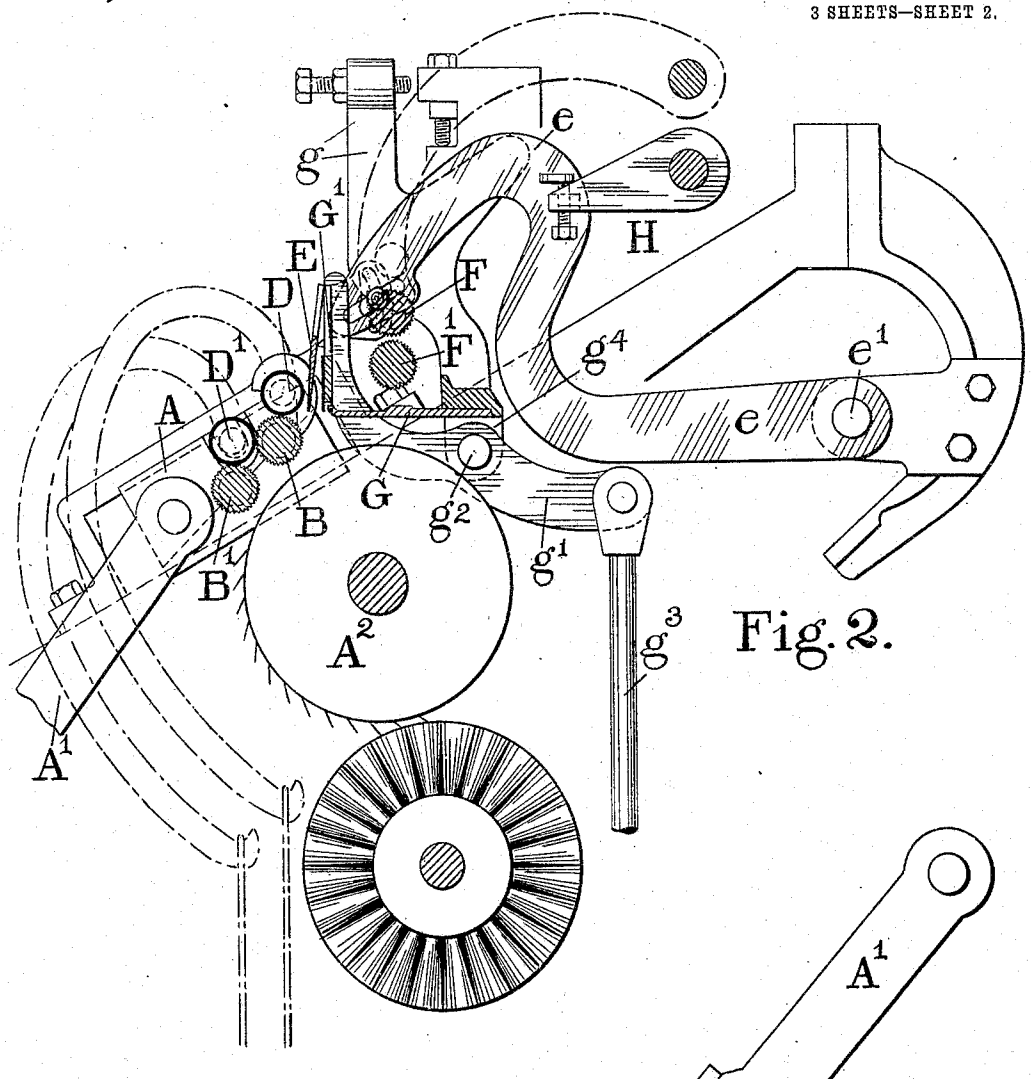

Fig. 2.

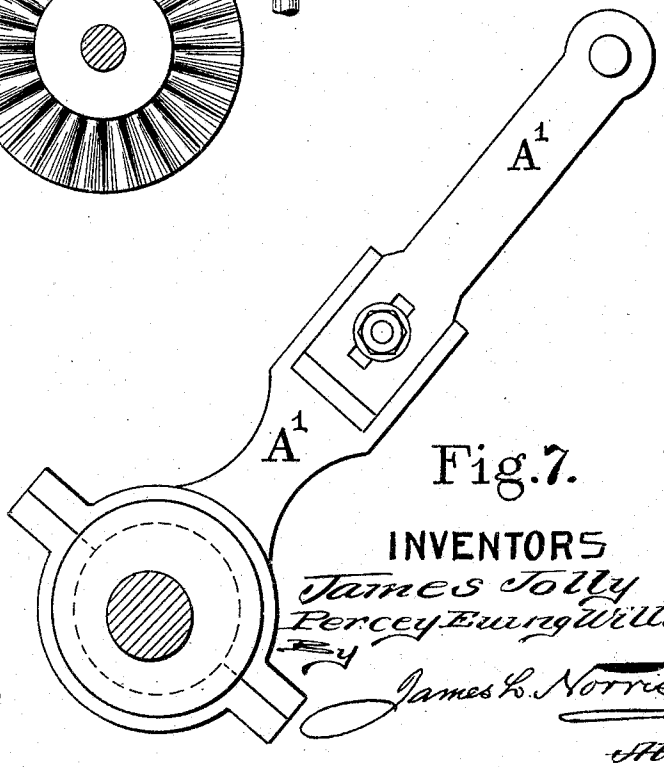

Fig. 7.

WITNESSES.

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3 SHEETS—SHEET 3.

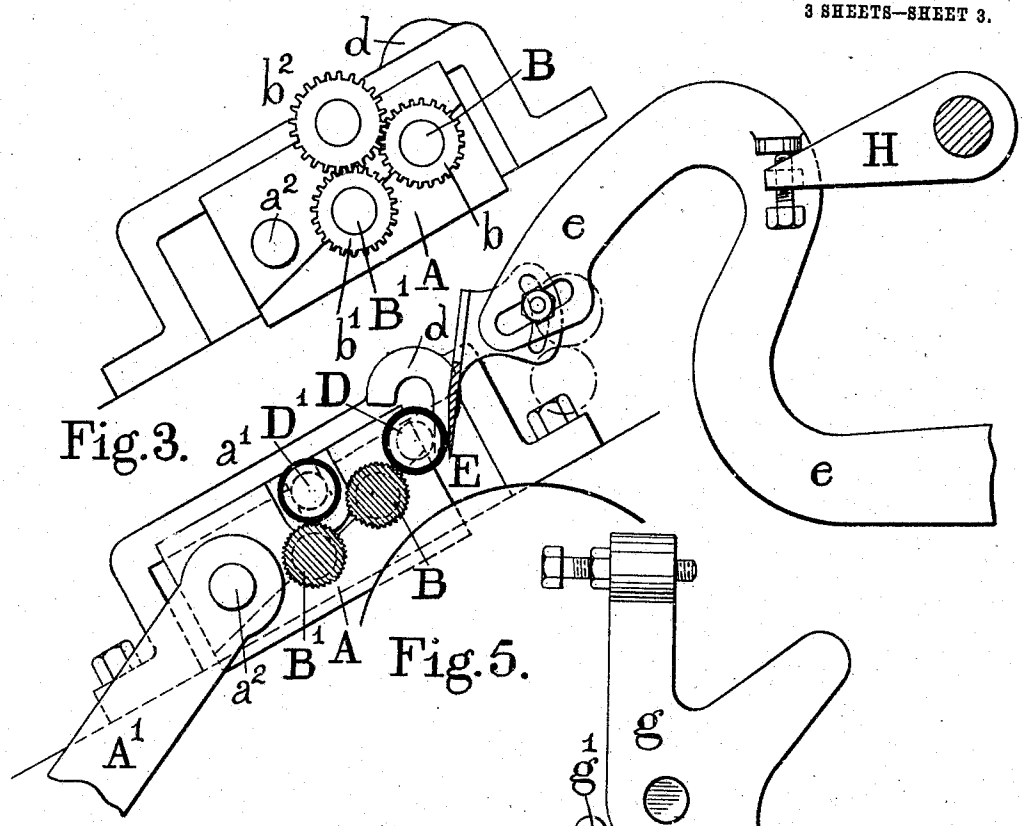

Fig.3.

Fig.5.

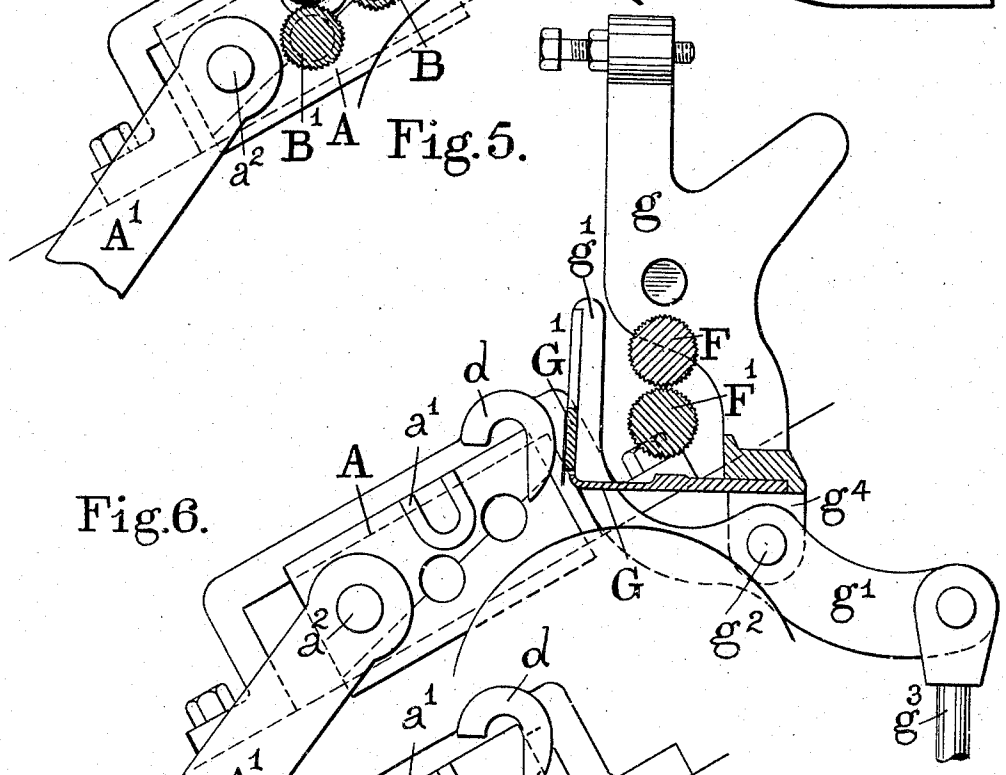

Fig.6.

Fig.4.

WITNESSES

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UNITED STATES PATENT OFFICE.

PERCY E. WILLIS, OF SOUTHPORT, AND JAMES JOLLY, OF BOLTON, ENGLAND.

COMBING-MACHINE FOR COTTON FIBERS.

947,070. Specification of Letters Patent. **Patented Jan. 18, 1910.**

Application filed February 8, 1909. Serial No. 476,682.

To all whom it may concern:

Be it known that we, PERCY EWING WILLIS and JAMES JOLLY, British subjects, residing respectively at Southport, county of Lancaster, England, and Bolton, county of Lancaster, England, have invented certain new and useful Improvements in Combing-Machines for Cotton Fibers, of which the following is a specification.

This invention relates to improvements in Heilman combing machines for combing cotton and other fibers preparatory to spinning.

It consists essentially in the following improvements: (*a*) Mounting the bearing of the detaching rollers in a slide capable of moving to and fro upon the fixed frame to cause them to approach to and recede from the top comb and nipper. (*b*) Placing the two leather detaching rollers upon two steel detaching rollers journaled in the said bearing, the steel detaching rollers moving to and from the nipper. (*c*) Causing the top leather detaching roller to rise and fall approximately vertically in front of the top comb as the steel rollers move to and from it and the nipper. (*d*) Pivoting the top jaw of the nipper below the feed roller and below the center about which the lower jaw oscillates, and carrying the bracket below the feed rollers, and (*e*) pivoting the top comb on a center below its blade so that it may recede from the top detaching roller as it rises.

The invention will be fully described with reference to the accompanying drawings, in which sufficient of one head of a comber is shown to illustrate the invention.

Figure 1 is a front elevation of the detaching rollers. Fig. 2 is a transverse section. Fig. 3 is an end elevation of the gearing by which the second steel roller B′ is driven from the steel roller B. Fig. 4 is a side elevation of the sliding bearing A with the rollers removed. Fig. 5 is a transverse section through the rollers and top comb showing the position of the sliding bearing and rollers when drawn back from the top comb. Fig. 6 is a transverse section of the nippers with the rollers and top comb removed. Fig. 7 is a detail of eccentric rod A′.

The detaching rollers are carried in a sliding bearing A moved to and fro by an eccentric rod A′ operated by an eccentric on the cam shaft.

We employ two steel detaching rollers carried by the sliding bearings A the roller B driven by the gearing *c* from the quadrant clutch C and the roller B′ is driven by a pinion *b* on the opposite end of the roller B through the carrier wheel b^2 and pinion *b*′ on the end of the roller B′. The eccentric rod A′ is connected to the sliding bearing A by a stud a^2 in the side of the bearing.

On the steel detaching rollers B B′ and in rolling contact therewith are placed two leather covered detaching rollers D and D′. The roller D′ is held in position in contact with the steel roller B′ by the bearing *a*′ and the top roller D which is always in contact with the steel roller B is caused to move in an approximately vertical path, as the other rollers and the sliding bearing advance and recede, by a stationary bearing bracket *d* fixed to a stationary part of the frame against which the journal of the roller abuts. The distance therefore of the roller D from the top comb E remains constant while the other rollers advance and recede. By this construction the two detaching rollers B and D take hold of the fibers from the nipper after such have been combed by the cylinder and during the advance of the roller B toward the nipper. The roller B thus takes the place of a segment upon the cylinder to detach the fiber and draw it through the top comb. We are thus enabled to commence "detaching" while the rollers B and D are moving toward the nippers, the rotation of the rollers detaching and drawing the fibers through the top comb during their forward movement.

The feed rollers F F′ remain in their usual position and are actuated as heretofore. The jaws G G′ of the nippers are also operated as heretofore the lower jaw G being carried by the usual bracket *g* at each end pivoted to the frame.

The bracket *g*′ which carries the upper jaw G′ is pivoted upon a center g^2 below the feed rollers F F′ and below the center upon which the lower jaw is pivoted and the bracket *g*′ is consequently altered in form to connect with the operating rod g^3. The pivot or center g^2 about which the upper jaw oscillates is preferably carried in lugs g^4 one at each end forming part of the lower jaw bracket *g*.

The bracket *e* of the top comb E is pivoted at *e*′ so that the center about which the comb E oscillates is below the center or pivot of the bottom jaw G of the nippers and below

the blade of the comb itself so that as the comb rises the blade recedes from the top roller D and does not impede its rise and fall.

The comb bracket *e* is made of suitable shape to move between the other parts of the machine and is operated in the usual way by the arm or lever H.

The ordinary detaching or lifting lever is dispensed with and as the detaching rollers work without reference to the "segment" of the cylinder A^2 it may also be dispensed with if desired.

What we claim as our invention and desire to protect by Letters Patent is:—

1. In a Heilman combing machine, the combination, with the top comb and nipper, of a pair of slides movable toward and from the same, detaching rollers journaled in the slides, a rotating member, and a member connecting said rotating member and one of said slides, for operating the latter.

2. In a Heilman combing machine, the combination, with the top comb and nipper, of a pair of slides, steel detaching rollers journaled therein, and mechanism for moving the slides toward and from the comb and nipper.

3. In a Heilman combing machine the combination with the nipper and two steel detaching rollers of a sliding bearing in which the rollers are journaled, a leather roller in rolling contact with each of the steel rollers, a bearing *d* fixed to the stationary frame for the top leather roller by which it is caused to reciprocate in an approximately vertical plane substantially as described.

4. In a Heilman combing machine, the combination with a sliding bearing and a pair of steel detaching rollers journaled therein, of a leather roller arranged for cooperation with each steel roller, a pair of feed rollers, a lower nipper jaw, brackets by which said jaw is carried, and a top nipper jaw pivotally connected with said brackets below the feed rollers.

5. In a Heilman combing machine the combination with the feed rollers the nipper and the detaching rollers, of a sliding bearing in which the detaching rollers are journaled, a cam to reciprocate the sliding bearing, two leather rollers in rolling contact with the steel rollers and a top comb provided with pivots below the feed rollers and below the blade of the comb so that the comb blade recedes from the detaching rollers as it rises and approaches them as it falls substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

PERCY E. WILLIS.
JAMES JOLLY.

Witnesses:
J. OWDEN O'BRIEN.
HARRY BARNFATHER.