

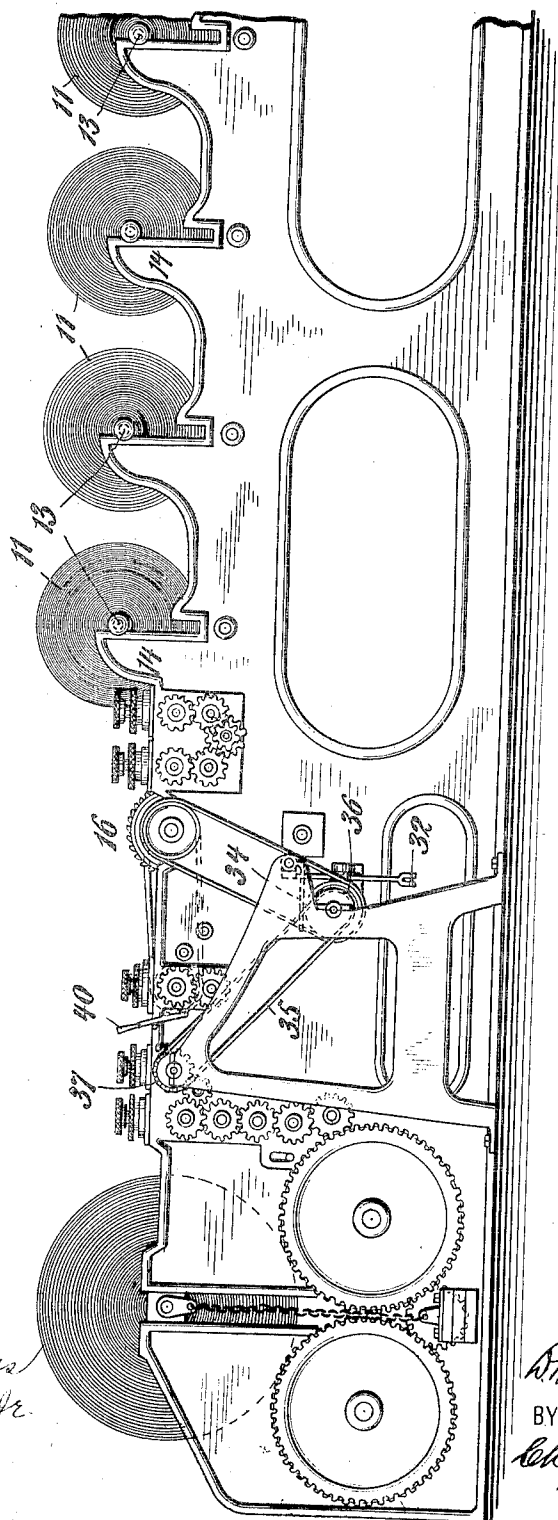
D. H. HAYWOOD.
APPARATUS FOR PREPARING COTTON FIBERS.
APPLICATION FILED JULY 20, 1909.

1,098,438.

Patented June 2, 1914.

3 SHEETS—SHEET 1.

Fig. 1,



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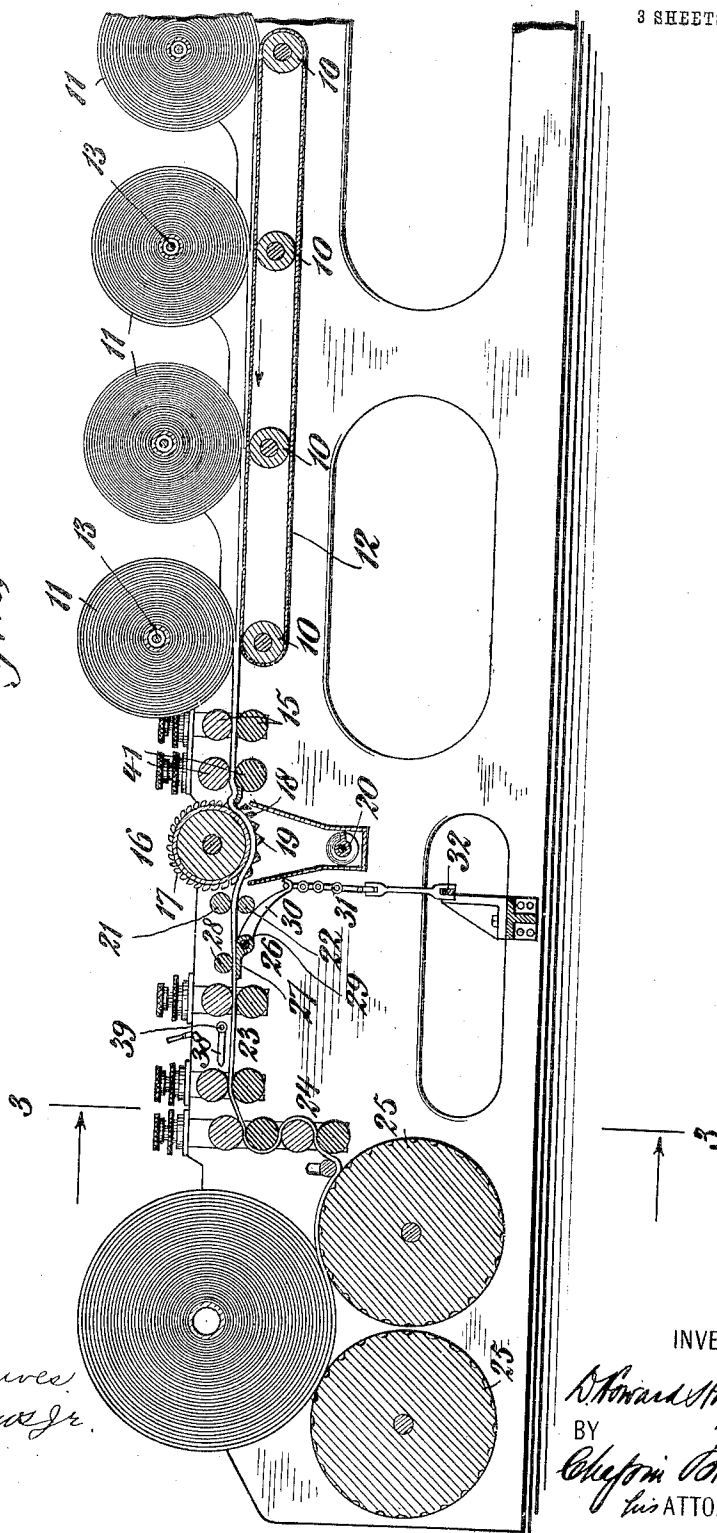
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3 SHEETS—SHEET 2.

Fig. 2.



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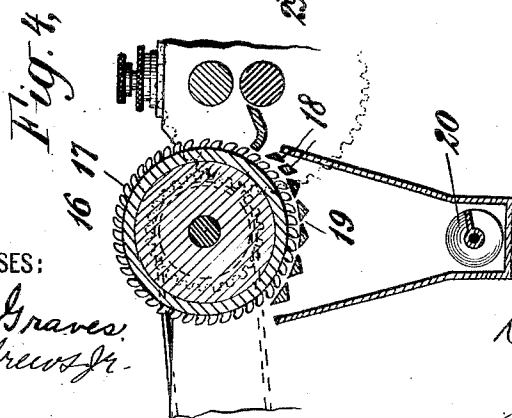
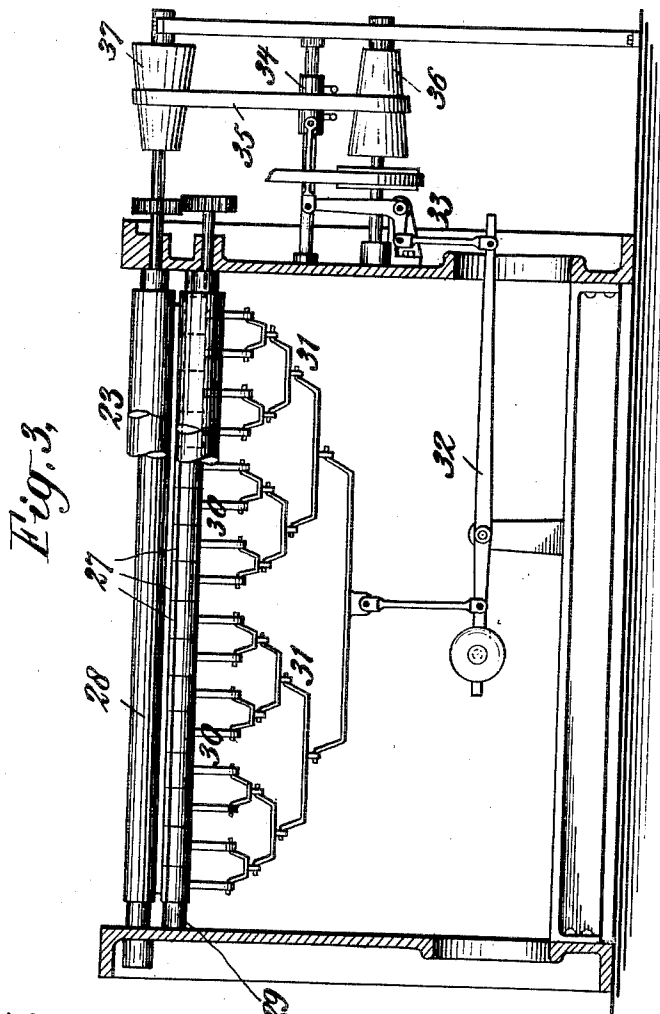
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PREPARING COTTON FIBERS.

1,098,438.

Specification of Letters Patent.

Patented June 2, 1914.

Application filed July 20, 1909. Serial No. 508,594.

To all whom it may concern:

Be it known that I, DANIEL HOWARD HAYWOOD, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Apparatus for Preparing Cotton Fibers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in apparatus for preparing cotton fibers, and particularly to that class of cotton treating machinery included generally in the term "preparatory machinery" in which cotton fibers, from which the seeds have been removed in a ginning operation, are prepared ready to receive the twisting and drawing operation by which they are formed into threads.

It is the object of my invention to overcome the difficulties attendant upon the use of such apparatus as straighten and form a lap of the fibers as they are received directly from the gin and also to operate upon the fibers to further straighten and parallelize them, to the end that a more perfect lap is formed, the thickness thereof being uniform, the fiber straightened and parallelized to a maximum degree, and the material averaged to the required extent. To these ends I provide an apparatus for receiving a plurality of laps, the several laps arranged to be superposed and presented in such condition to a combing and cleaning device by which the fibers are cleaned, straightened, and parallelized. I then preferably pass the delivered product through drawing rolls which act to further straighten and parallelize the fibers, and also to reduce the lap to the required thickness. In connection with the drawing rolls I preferably provide an automatic evener for controlling the relative speed of rotation of the draft rolls, whereby uniform thickness of lap is insured. I then roll the lap up into lap roll form, the finished product being ready for the carding machine.

It will be readily perceived that owing to the thorough combing which the fibers have had prior to their being operated upon in the carding machine, it may be possible to eliminate the licker-in usually employed therein, but such licker-in may be employed as usual, if preferred. It is also possible

to present the product from my improved apparatus directly in a combing machine (as distinguished from a carding machine), and for this purpose I preferably provide an attachment whereby comber laps may be produced.

In order that my invention may be fully understood, I will now proceed to describe an apparatus constituting an embodiment thereof, having reference to the accompanying drawings illustrating the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in side elevation of an apparatus embodying my invention. Fig. 2 is a view in central longitudinal section therethrough. Fig. 3 is a view in transverse vertical section, the plane of section being taken substantially upon the line 3—3 of Fig. 2. Fig. 4 is a detail transverse sectional view upon an enlarged scale of the combing means employed.

The apparatus is provided with a plurality of supporting rollers 10 (in this case four), one for each lap roll to be treated in the machine, and a set of lap rolls 11 are shown as supported thereby. An endless conveyer belt 12 is disposed around the said rollers, the said belt being arranged in its movement to feed the laps forward from the rolls. The lap rods or arbors 13 are guided by portions 14 of the framework, as will be readily understood by reference to Fig. 1 of the drawings. The four superposed laps are fed forward through feeding rolls 15 to a combing device 16, the said combing device being conveniently in the form of a rotary member having a plurality of projecting teeth or pins commonly called by cotton manufacturers a "licker-in." Such licker-in comprises a plurality of toothed disks 17, mote knives 18, a grid 19, and a conveyer 20. Draft rolls 41 may be conveniently employed in connection with the feed rolls 15 for the purpose of drawing the combined laps prior to their being presented to the combing means, such draft rolls having the tendency to reduce the thickness of the combined laps and also to straighten out and parallelize the fibers contained therein. The licker-in acts upon the fibers to comb the same and to further parallelize and straighten them, and also to clean them, the motes and larger refuse being removed by the mote knives 18, and the finer refuse be-

ing discharged through the grid 19. The conveyer 20 is employed for the purpose of carrying away the refuse in a manner well known. A doffer 21 of any desired form is provided for clearing the teeth of the
 5 lick-in, the product therefrom being discharged between the said doffer and a feed roll 22; thence the product is conveyed through differentially driven draft rolls 23; thence through compression rolls 24, to be
 10 finally rolled up unto a lap roll by means of rolling-up rolls 25.

An automatic evener 26 is preferably provided for controlling the relative speed of
 15 operation of the draft rolls 23 and likewise the speed of operation of the compression rolls 24 and the rolling-up rolls 25. This evener comprises a plurality of fingers 27 forming a platen which press the traveling
 20 web of material against a roller 28, the said fingers being pivoted upon a bar 29, and provided with arms 30 which are connected by a series of yokes 31 with a weighted lever 32. The lever 32 is connected by
 25 means of suitable connections 33 with a belt shipper 34, the said belt shipper being arranged for engagement with a belt 35 which connects cone pulleys 36 and 37 in driving
 30 relation. When the web of material passing between the fingers 27 and the roller 28 increases in thickness the fingers 27 are depressed, the yokes 31 are raised, and the lever 32 is rocked upon its support in a direction to move the belt shipper 34 to the
 35 left as viewed in Fig. 3. This will move the belt 35 over the larger portion of the cone pulley 36 and over the smaller portion of the cone pulley 37. Driving movements are transmitted to the forward set of draft rolls
 40 from the pulley 36 to the pulley 37,—hence, when the belt 35 is moved to the left as aforesaid, the said rollers will be driven at a proportionately greater rate of speed with respect to the driving mechanism so as to
 45 place a greater draft upon the web of material and hence to reduce the same in thickness. The rate of speed of the drive will be similarly reduced as the thickness of the web passing between the fingers 27 and the
 50 roll 28 becomes less, whereby the thickness of the product delivered by the draft rolls will tend to be uniform. The compression rolls 24 and the rolling-up rolls 25 are driven at the same rate of speed as are the forward set of draft rolls so that they will automatically take care of all of the material fed thereto.

For the purpose of dividing the product into a plurality of narrow laps so that
 60 comber laps may be produced, I have provided a plurality of fingers 38, the said fingers being mounted upon a bar 39, an operating handle 40 therefor being provided at a suitable point. The fingers are shown in
 65 the drawings as arranged out of the path

of movement of the web of material, but by moving the operating handle 40 to the left as it is viewed in Fig. 1, the said fingers may be moved across the path of the traveling web whereby the web will be divided into a number of strips. The fingers 38, or other means for dividing the web into strips, may be located at any convenient point beyond the combing mechanism; in the drawings I have shown it as located between the set of draft rolls 23, but it may be located elsewhere, if preferred.

While I preferably operate upon a plurality of laps, the fibers of which have been previously straightened and parallelized, I may, in some instances, operate upon the ordinary commercial lap such as is commonly produced in which the fibers are matted together in any order, in which case the apparatus described will comb the fibers to produce a finished lap of straightened and parallelized fibers.

What I claim is:

1. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of rotary combing means for simultaneously cleaning, straightening, and parallelizing the fibers of all of said laps, and means for forming the cleaned, straightened, and parallelized fibers of the combined laps into a single lap.

2. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of a lick-in for receiving and simultaneously operating upon the fiber of all of said laps, and means for forming the product from the lick-in into a single lap.

3. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of a rotary member having teeth arranged to simultaneously act upon the fibers of all of said laps, differentially driven draft rolls, and lap forming means for forming the product into a single lap.

4. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of draft rolls for acting upon the superposed laps, combing means for simultaneously cleaning, straightening, and parallelizing the product from the draft rolls, differentially driven draft rolls for operating upon the product from the combing means, and means for forming the product from the last mentioned draft rolls into a single lap.

5. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of combing means for simultaneously cleaning, straightening, and parallelizing the fibers of all of said laps, differentially driven draft rolls, lap roll forming means, and an automatic evener for controlling the differential speed of drive

of the draft rolls and the speed of drive of the lap roll forming means.

6. In apparatus of the class described the combination with means for feeding a plurality of superposed laps, of means for simultaneously straightening and parallelizing the fibers of all of said laps, means for longitudinally dividing the product into strips, and lap roll forming means for the strips.

7. The combination with means for feeding a plurality of superposed laps, of means

for straightening and parallelizing the fibers thereof, fingers constituting severing means for longitudinally dividing the product into strips, manual controlling means for the fingers for throwing them into and out of the path of movement of the said product, and lap rolling means for the strips.

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