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J. MOSS

1,941,104

COTTON OPENER OR PICKER

Filed March 25, 1929

3 Sheets-Sheet 1

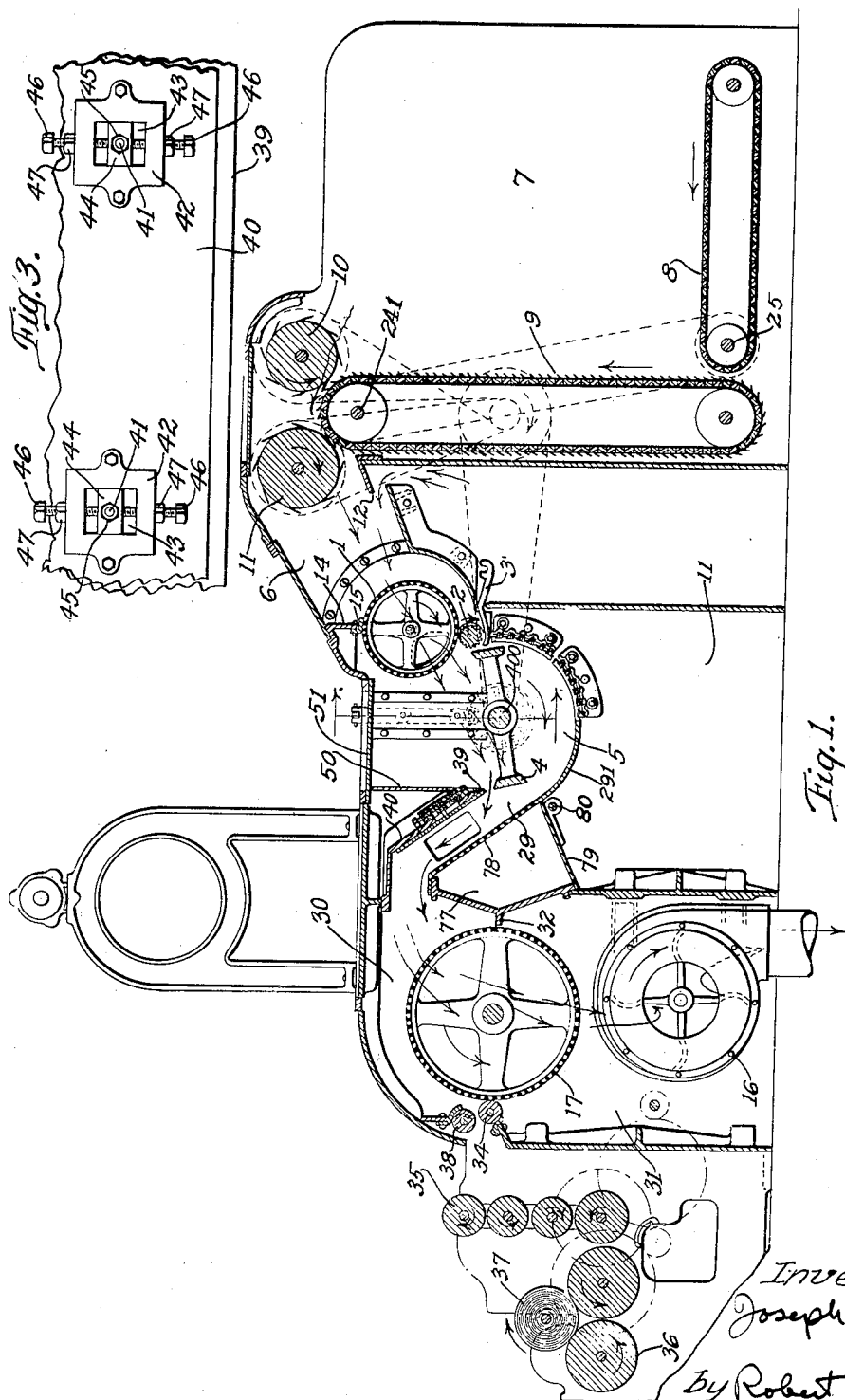


Fig. 1.

Inventor
Joseph Moss,
By Robert K. Randall
Attorney

Dec. 26, 1933.

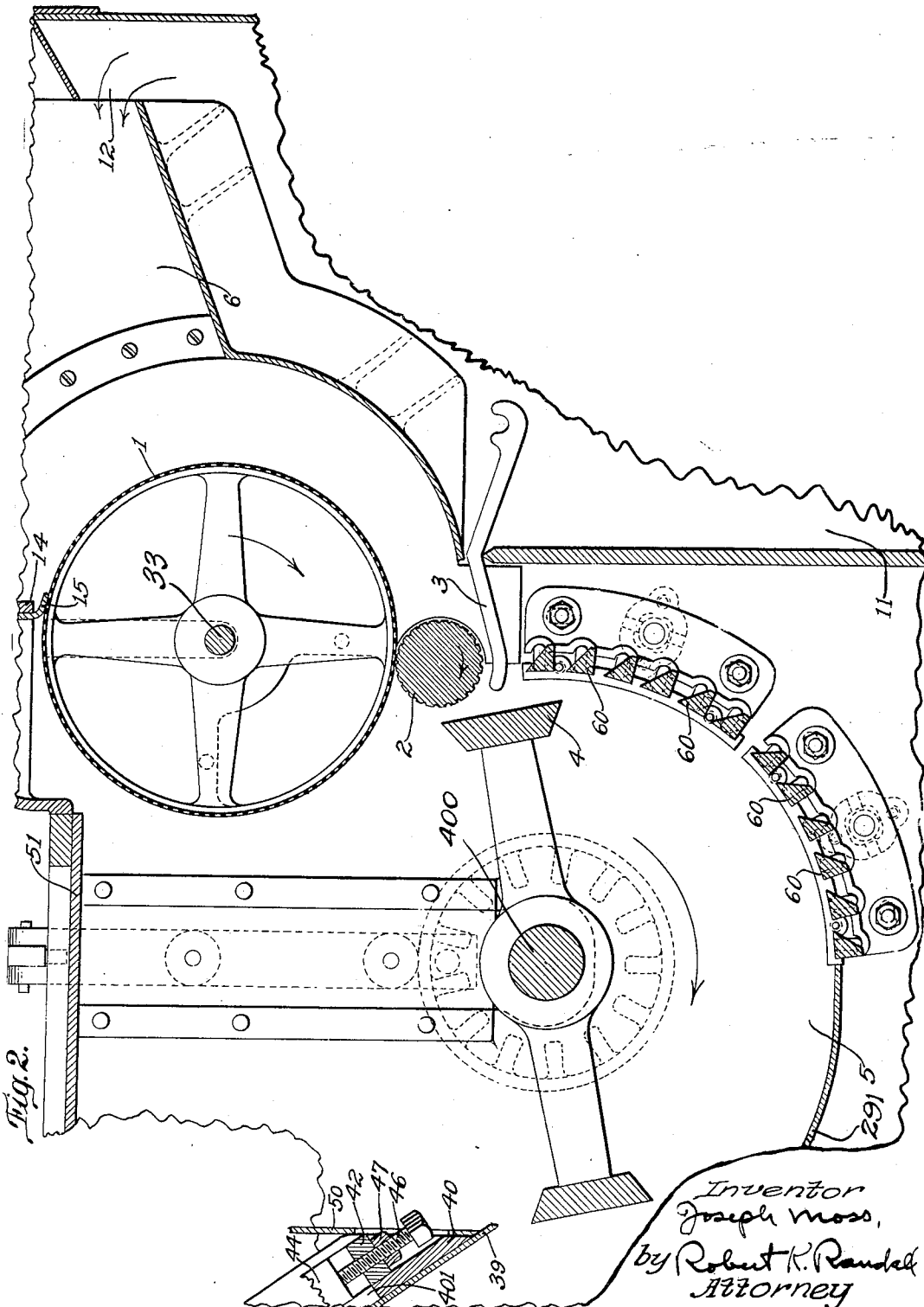
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Inventor
Joseph Moss,
by Robert K. Randall
Attorney

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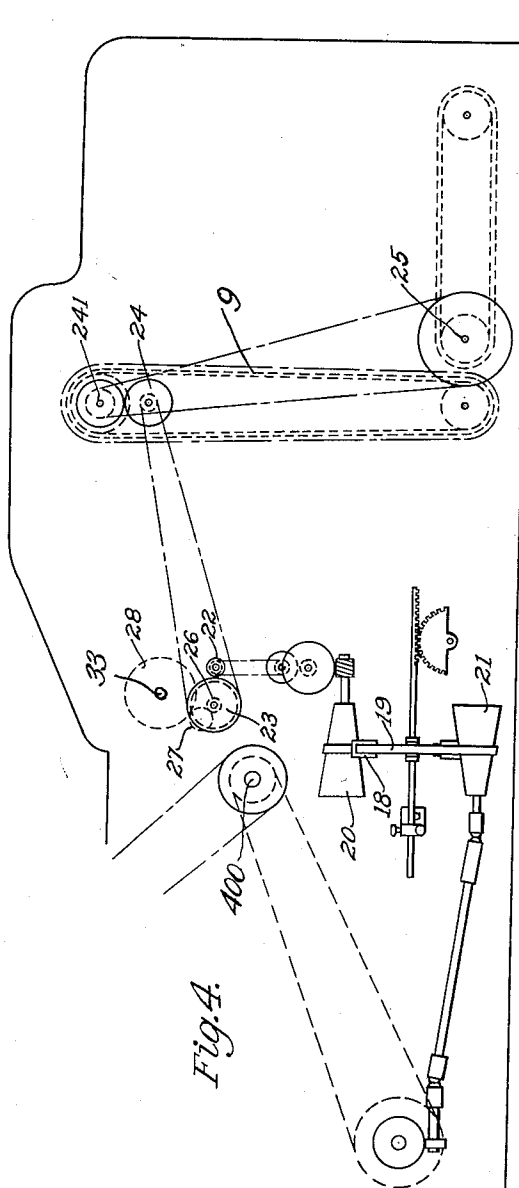
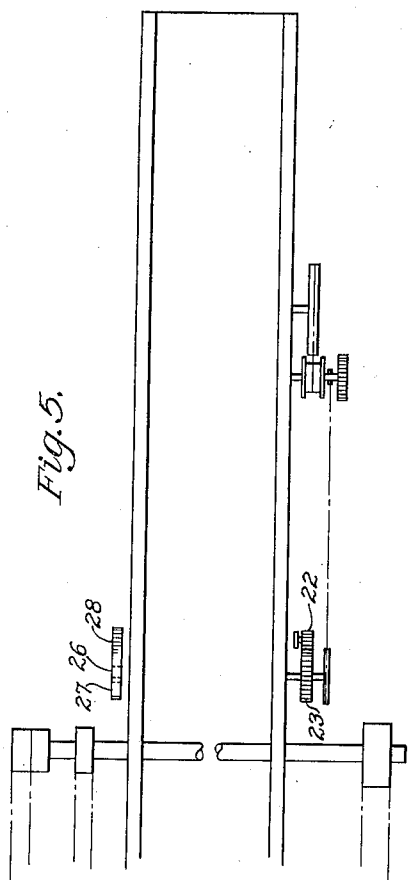
J. MOSS

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Filed March 25, 1929

3 Sheets-Sheet 3



Inventor:

Joseph Moss
by Chas. F. Randall,
Atty.

UNITED STATES PATENT OFFICE

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COTTON OPENER OR PICKER

Joseph Moss, Woonsocket, R. I., assignor, by
mesne assignments, to Whitin Machine Works,
Whitinsville, Mass., a corporation of Massa-
chusetts

Application March 25, 1929. Serial No. 349,697

17 Claims. (Cl. 19—89)

The invention has relation to the cotton pre-
paring machines which are known as openers or
pickers.

The main object of the invention is the pro-
duction of as perfect a lap as possible, namely
one in the case of which the sheet of fibrous ma-
terial shall be of a strength ample to stand han-
dling, and shall be uniform in weight at all points
in its whole width, and also of equal weight, yard
for yard, in the direction of its length, so that
the total weight of the lap shall be proportioned
to the yardage. It is understood in the art that
the nearer the approach to uniformity in weight
throughout all portions of a lap the better the
lap for the carding process, while the greater the
strength the less the trouble through breakdown
and splitting of the laps in subsequent treatment.

Other objects are indicated hereinafter.

Characteristic features of the invention com-
prise a preliminary condenser-cage constituting
an element of feeding and evening mechanism,
a final condenser-cage mechanism securing cer-
tain important results and advantages, a method
of drawing the air through the condenser-cages
which produces stronger and more uniform laps,
and novel adjustment-means for the cut-off plate
which is employed in connection with the beater-
chamber and the passage leading therefrom to the
condenser-cage chamber.

Other features are set forth hereinafter.

An illustrative embodiment of the features of
the invention is shown in the accompanying draw-
ings, in which latter,—

Fig. 1 is a view in longitudinal vertical section
of a cotton-picker or opener constituting the said
illustrative embodiment.

Fig. 2 is a view of the same character as Fig.
1, but on a considerably larger scale than Fig. 1,
showing more particularly the beater and the
preliminary condenser-cage and other parts
which are closely associated with the beater and
with such cage.

Fig. 3 is a face view, on larger scale than Fig.
1, of the intermediate portion of the length of
the cut-off plate which is employed adjacent the
beater, and the support for the said plate, and
the adjustment-means for the said cut-off plate.

Fig. 4 is a diagrammatic view on the order of a
side elevation of a portion of the general machine,
showing mainly certain driving arrangements.

Fig. 5 is a similar diagrammatic plan view of
the machine, also showing certain driving means.

The preliminary condenser-cage 1 is combined
and related so that loose cotton supplied thereto,
for example by primary feed mechanism such as

that shown in Fig. 1, is collected upon its exterior
in the form of a lap; and also so that the lap in
sheet form leaving said exterior passes between a
feed-roll 2 and eveners-pedals 3 by which it is pre-
sented to the action of the revolving beater 4
driven by its shaft 400 in the beater-chamber 5;
the said feed-roll and eveners-pedals coacting to
feed the lap in usual manner to the said revolving
beater.

This preliminary condenser cage is preferably
of small diameter, as for example of about 12
inches in diameter, with only one-half of its
surface exposed to the cotton from the primary
feed devices, in order that the cotton will en-
tirely cover this surface without leaving any
exposed portions of the screen for the air to rush
through, with accompanying diminution of the
pressure elsewhere on the cage, and consequent
loss of the desired action of the air in aerating
and removing dust from the cotton and felting
it into a compact and uniform lap. The action
of this condenser provides a preliminary evening
of the stock before the cotton reaches the eveners
pedals.

The preliminary condenser-cage 1 and feed-
roll 2 are located at the inner end of a feed-
passage 6, the primary feed mechanism being at
the outer end of such passage. The said primary
feed mechanism comprises in this instance the
well-known organization consisting of a hopper 7,
a horizontally-extending traveling fiber-support-
ing and advancing apron 8 at the bottom of the
hopper, an upright traveling spiked lifter-apron
9 at the forward side of the hopper, a saw-
toothed stripper roll 10 operating to remove ex-
cess material from the spikes of lifter-apron 9,
and a doffer-roll 11 by which the fibrous material
is discharged from the spiked lifter-apron and
thrown into the feed-passage 6.

The fibrous material which is supplied by the
said primary feed-mechanism at the outer end
of feed-passage 6 is floated through such passage,
toward the cage 1 and against the openwork ex-
terior of such cage, by air supplied chiefly by
inflow through an opening at 12 extending across
the bottom of the passage, and partly by leakage
inward past the top of the lifter-apron and the
rolls 10, 11.

In operation, the fibrous material moving in-
ward through feed-passage 6 is drawn by suction
against the exterior of the cage 1 at the side of
the latter which is presented to the feed-passage,
so as to cause a layer of fiber to form upon such
side. By reason of successive portions of the
periphery of the cage 1 being presented, by the

continuous revolution of the said cage in a clockwise direction, as indicated by the arrow in Fig. 2, in position for fibrous material to be deposited in a layer thereon, and by reason, further, of the leading portion of the said layer being continuously wiped and thus stripped from the said periphery by the oppositely-travelling opposed surface of the feed-roll 2 as the cage revolves, the incoming fibrous material is formed into a uniform and continuous sheet or lap, which is delivered progressively from the exterior of the cage to the feed-roll 2, by which latter in coaction with eveners-pedals 3 it is fed to the action of the blades of beater 4, which rotates clockwise, as indicated in Fig. 2.

The preferred relation of the cage 1 and feed-roll 2 with respect to each other and to the feed-passage 6 is as shown, namely with the said cage mounted on its shaft 33 and above the said feed-roll and in contact therewith, and with such feed-roll and the coating eveners-pedals 3 practically closing below the cage the lower part of the inner end of the feed-passage. With this arrangement, the feed-roll operates to strip the preliminary lap from the exterior of the cage, and to maintain control of the said lap to the nip between the feed-roll and eveners-pedals. Thereby the lap is kept intact and under control from the point at which it leaves the cage to the point at which it is engaged in the said nip.

The space between the casing at the top of feed-passage 6, and the top portion of the periphery of the cage 1, is closed against flow of air inward over the top of the cage, by means of a plate 14 depending from the top of the passage, and a flexible flap 15 carried by said plate and lying upon the periphery of the cage.

The usual practice heretofore in the case of condenser-cages has been to cause movement of air inward through the openwork shell of a cage, to occasion the deposition of fibrous material upon the exterior of such shell, through the action of air-withdrawing devices in connection with a flue or flues at one or both ends of such cage. Such plan of withdrawal however, has a drawback to which reference is made later herein, which interferes with the production of a preliminary lap having all portions of its width of equal weight.

In the case of the illustrative embodiment the flue or flues and air-withdrawing devices just referred to are dispensed with. The preliminary condenser-cage 1, it being at one side exposed to the feed-passage 6 and entered into the same, is exposed at the other side thereof to beater-chamber 5 and entered into the same, so that as air is withdrawn from the beater-chamber 5, by means of the air-withdrawing device 16 in connection with the main condenser-cage 17 at the end of the machine at which the final lap is formed and wound up or disposed of otherwise, flow of air takes place through the opening 12 extending across the machine and directly through the openwork shell of the preliminary condenser-cage, from one side thereof to the other, namely from the side thereof which is exposed to the feed-passage to the side which is entered into the beater-chamber 5 the air travelling across the diameter of the cage and in parallel directions above and below the diameter, in a manner which is apparent from the drawings and which may be called substantially diametrical flow. This flow of air produces the action, already described herein, by which the fibrous material arriving through the feed-pas-

sage 6 is deposited upon the exterior of the openwork shell at the receiving side of cage 1, and inasmuch as the flow is equal in force in all portions of the length of the cage, and as the reasons for unequal depositing which exist in the case of cages having flues at the ends thereof do not exist in that of the illustrative organization, I secure the formation upon the preliminary cage 1 of a sheet of lap having equal weight in all portions of its width.

The drawback to which reference has been made in the foregoing, in the case of condenser-cage organizations in which the depositing action is brought about through the withdrawal of air from one or both ends of a condenser-cage consists in this, that the resulting suction acting inwardly through the openings in the shell of the cage is less forceful at those points in the length of the cage which are the more remote from the end or ends where the flue or flues is or are located, than it is at such end or ends, and this difference in force becomes more pronounced as the attempt is made to increase the draft. Consequently, the thickness of material collected upon the exterior of the condenser-cage is not uniform throughout all portions between one edge and the other of the accumulated lap, it being less where the suction is weakest and greater where the suction is strongest and the cotton is not uniformly aerated and conditioned. This lack of uniformity persists even in the final lap produced after the passage of the material past the beater to the main condenser-mechanism. Further, a strong draft cannot be used in the attempt to attain more complete conditioning, or to knit the stock into a strong lap, because it produces unevenness.

Therefore, preferably, in the more complete embodiment of the features of the invention, and for the attainment of my aim to produce a perfect final lap, and with the aim of securing more perfect conditioning and uniform weight in all portions of the width of the preliminary lap, I provide in the manner which has been disclosed for causing the air-withdrawal to take place directly through the body of the openwork shell of the preliminary cage 1, substantially diametrically from one side of said shell to the other, and throughout all portions of the length of the said body.

An advantage associated with the combination providing for effecting the withdrawal of air from the preliminary cage 1 by means of the air-exhausting means in connection with the main condenser-cage 17 on which the final lap is formed is the simplification of the machine secured through dispensing with a separate fan or the like for the preliminary condenser-cage, and effecting the withdrawal of air through such cage as well as the main condenser-cage 17 by a single air-exhausting fan or the like.

As a characteristic feature of the invention, the preliminary condenser-cage 1 is included in the combined feeding and evening mechanism, as well as the feed-roll 2, the spiked lifter-apron 9, and the horizontal advancing apron 8, so that in unison with the feed-roll and the aprons 9 and 8 the said preliminary cage shall be varied in speed for the purpose of compensating for variations in the thickness of the material passing between the said feed-roll 2 and the eveners-pedals 3. Through such provision for varying the speed of the preliminary condenser-cage 1, the rate of the turning movement of such cage is regulated to render it commensurate with uniform-

ity of feed to the beater. I term cage 1 an evenner-cage. The cones and other motion-transmitting elements of the said combined feeding and evening mechanism are indicated diagrammatically in Figs. 4 and 5. Evenner-mechanisms being old and well-known, and also the mode of operation thereof, I have omitted from Fig. 1 the scale-lever system through which the evenner-pedals control the shifter 18, Fig. 4, of the cone-belt 19, and the details of the connections are not shown in Fig. 4, inasmuch as the action involved in shifting the cone-belt along the cones 20, 21, is well understood. I have merely indicated in Fig. 4 the existence of the usual driving connections between the top cone 20 and the feed-roll 2, including spur-gearing at 22, 23, the gear at 23 being fixed on the shaft of the feed-roll 2, and the existence of driving connections extending from said feed-roll to the stud-supported pulley 24 geared to the shaft 241 of the upper supporting roll of the spiked lifter-apron 9, and from the said shaft 241 to the shaft 25 of one of the supporting rolls of the horizontally extended supporting and advancing apron 8. In Figs. 4 and 5 I have indicated the existence, at the opposite side of the machine, of motion-transmitting gear-connections at 26, 27, 28, between feed-roll 2 and the preliminary condenser-cage 1, serving for the actuation of said cage from said feed-roll, the gear 28 being fixed on the shaft 33 of the cage 1.

In operation, variations in the thickness of the preliminary lap passing between the feed-roll 2 and the evenner-pedals 3 operate, through the said evenner-pedals, and the cone-belt-shifting instrumentalities controlled and operated thereby, to bring about properly proportioned compensating variations in the rate of movement of the preliminary (evenner) cage 1, in addition to the customary variations in the rates of movement of the feed-roll 2, of the spiked lifter-apron 9, and of the advancing apron 8. Thereby through participation of the preliminary cage 1 in the evening action, uniformity lengthwise is attained in the preliminary or evenner lap which is supplied to the feed-roll 2.

The feed-roll 2 and the evenner-pedals 3 are associated with each other in the usual relations, and in so far as their joint action in feeding the preliminary lap to the beater 4 is concerned such action, in the main, is as usual in the case of feeding organizations composed of the like elements. That is to say: The preliminary lap, after having been stripped from the cage 1, passes between the feed-roll 2 and the evenner-pedals 3, being advanced between the said feed-roll and the said pedals by the revolution of the feed-roll so as to be fed progressively to receive the blows of the blades of the beater 4. Such blades, as will be apparent, act close to the nip between the feed-roll and evenner-pedals, upon the portion of fibrous material thus exposed to the said blows.

The sub-organization comprising the preliminary evenner-cage 1 and the described feed-devices embracing the evenner-pedals 3 has the advantage that the even and uniform supply of fibrous material which is accumulated upon cage 1 in sheet-lap form for the full length of the cage is maintained under control until it is subjected to the blows of the beater-blades. Again, by reason of the cotton being in a sheet of even and uniform thickness as presented to the beater, the cotton does not require to be, and in practice is not, held

as tightly between the feed-roll and the evenner-pedals as it ordinarily has to be when the sheet supplied to the feed-roll is uneven and bunched; consequently, the fibers are not torn or injured by the beating treatment.

From beater-chamber 5 the cotton passes through a passage 29, extending tangentially with respect to the circle in which the beater-blades revolve, to a collecting chamber 30 wherein the fibers are received upon the periphery of the openwork shell of main condenser-cage 17. The illustrative embodiment comprises a single condenser-cage 17, partly exposed to collecting chamber 30 and partly exposed to the suction-chamber 31 in connection with air-exhausting fan 16. The space at one side, horizontally, of condenser-cage 17 is closed against flow of air from chamber 30 to chamber 31 at such side by a flange 32 in connection with a partition of the machine-casing; and that at the delivery-side of the said cage is closed to the like effect by means of a delivery-roll 34. By means of said roll 34 the lap is stripped from the periphery of the cage and delivered to the calendar-rolls 35, from which it passes to the winding apparatus comprising winding-rolls 36 by means of which the final lap is formed into a wound lap 37. At 38 is a top feed-roll which co-operates with stripping and feed-roll 34 in advancing the lap from main condenser-cage 17 to the calendar-rolls 35.

As in the case of preliminary evenner-cage 1, the fiber-carrying air which is withdrawn from collecting-chamber 30 through the main condenser-cage 17 by means of fan 16 is drawn directly substantially diametrically through the openwork shell of such cage, from the collecting-chamber 30 to the suction-chamber 31, and throughout all portions of the length of the said shell. The important reason therefor is the object of attaining uniformity of weight in all portions of the width of the final lap.

Controlling considerations in the case of the preliminary evenner-cage and main condenser-cage having the air drawn directly through each of them are these: The feed through is started at the feed-roll 2, with the cotton freshly aerated and conditioned, and with uniformity of weight of lap throughout the full width. In virtue of starting the feed with such uniformity, the stock will be deposited with corresponding uniformity upon the main condenser-cage, producing a uniform final lap. Common experience establishes that particular portions of the stock will not deviate materially from passage along in straight lines through an opener or picker. Therefore the condition as to weight of the respective portions of the width of the deposit upon the main condenser-cage will be in close correspondence with the conditions at the feed end of the machine. Hence the effect secured through a transversely uniform feed lap is the production of a corresponding perfect final lap. Further, because the intensity of the suction throughout the length of the evenner and main cages remains uniform regardless of the strength of the draft when the air is passed through diametrically, the invention makes it possible to employ a large-capacity fan at 16 with intakes at opposite sides of its housing, and a very strong draft, knitting the final lap into a compact, adherent, sheet having a strength hitherto unattainable.

The employment of a single main condenser-cage 17 eliminates the production of what are known as split laps. It produces a lap which is advantageous for carding, by reason of the fact

that such dirt as arrives at the said condenser-cage and does not pass through the openwork whereof lies upon the exterior of such cage and becoming covered up by the cotton and carried off thereby is at the bottom of the sheet of lap when the latter is fed to the licker-in of a carding engine, and therefore is very readily separated from the cotton at such point in the carding engine, because the licker-in is enabled to knock out the dirt without having to comb it through the whole thickness of the lap. This same segregation of the dirt occurs at the preliminary cage 1, enabling the beater to perform its work of cleaning by more of a fanning action as distinct from actual blows than heretofore, thus avoiding breaking the staple and injuring the cotton.

The picker of the invention thus is characterized by a double airing and conditioning of the cotton, i. e., before and after the beating, the same air being passed through the cotton on the evenercage and again on the main condenser. In this manner the double error inherent in handling improperly conditioned cotton in the pickers is done away with, such error being that damp cotton feeds past the evenner-pedals in greater volume of fiber than dry, though both register the same thickness on the pedals, making it impossible to control uniformity in the wound lap either lengthwise or widthwise, while the excess or deficiency of moisture makes the wound lap either too heavy or too light in actual measured weight. The extent of the advance is apparent from the fact that finished laps ready for carding for finer yarns can be produced by only two pickings, and in certain grades of cotton by only one picking, in machines embodying the invention, and with the total omission of the established practice of combining a number of laps to average the inequalities.

The dead-air chamber 11 below the beater-chamber 5 is completely closed by vertical walls and the curved bottom-casing 291 of the beater-chamber, except that just below and adjacent the feed-roll and evenner-pedals a grid is employed as usual, with the openings between its bars 60, 60, in communication with the dead-air chamber so that dirt, motes, &c., loosened from the cotton by the action of the beater may pass through such openings into the dead-air chamber. The admission of air into the beater-chamber at a level above the feed-roll 2, through preliminary evenner-cage 1, provides for ample air-supply to float the cotton within the beater-chamber while being moved by the revolving beater-blades, and onward through the tangential passage 29 toward main condenser-cage 17; which avoids flow of air inward through the openings of the grid into the beater-chamber, such as to prevent lighter particles of refuse material from dropping out between the grid-bars into the dead-air chamber even though the draft is much stronger than heretofore. This affords better provision for the discharge of dust, and the like, between the grid-bars into what is truly a dead-air chamber. The free admission of air above the feed-roll provides amply for underflow of air at the descending side of the beater so as to overcome any tendency to withdrawal of air from the dead-air chamber. The same general results in this connection would be attained in case the preliminary evenner-cage 1 should be omitted and a simple opening or openings for admission of air above the feed-roll be utilized.

The provisions for adjustment of the cut-off plate 39 are shown in Fig. 3. This cut-off plate,

applied to the top of the casing of passage 29 so as to project somewhat into the beater-chamber over the outlet into such passage, is made adjustable so as to enable its working edge to be disposed in desired proximity to the path in which the beater-blades revolve, for example to compensate for shifting of the beater toward or from the feed-roll. The cut-off plate fits against the under side of the edgewise inclined plane 40 constituting the main cross-girth of the machine frame. Screw-threaded studs 41 project from the top side of the cut-off plate. These studs extend through slots 401 in girth 40 having the length thereof at right angles with the lower edge of the girth. The girth has attached to its top side at each slot a block 42 having therein a parallel-sided opening 43. The opening of each block 42 is occupied by a smaller block 44 of a length suitable for enabling it to make contact by its ends with the lateral sides of opening 43 in block 42, but sufficiently small in its other dimension to give it capability for being shifted upward or downward therein. The said small block 44 has a hole extending vertically therethrough, through which extends one of the studs 41. The upper extremity of the stud, projecting above block 44, has applied thereto a nut 45. Adjustment-screws 46, 46, are fitted to threaded openings in the upper and lower transversely extending portions of each block 42, and make contact by their inner ends with the upper and lower sides of the inner block 44. The said adjustment-screws are provided with lock-nuts 47, 47. After lock-nuts 47, 47, and the nuts 45, 45, have been loosened, manipulation of adjustment-screws 46, 46, will effect the required adjustment of the cut-off plate, either upward or downward as may be required in order to place the working edge of the cut-off plate in the required relation to the path in which the beater-blades revolve. This adjustment may then be rendered fixed by tightening the nuts 45 and 47.

As is well known, the function of the cut-off plate is primarily to divert through passage 29 leading to the collecting chamber 30 and main condenser-cage 17 the air and cotton which are set in motion by the revolving beater. The vertical baffle-plate 50, Fig. 1, extending above the cut-off plate from girth 40 to the top of the casing of the beater-chamber, serves to deflect downward a portion of the air entering through evenner-cage 1, in a manner to divert from the path of the beater-blades the fibers revolving with such blades, and also to strip from the forward edges of such blades the fibers which tend to cling thereto. This diversion of the airflow downward serves to occasion movement of the air and fibers toward and through passage 29. In actual practice, and especially in working upon long staple cotton, a serious disadvantage is the tendency of the beater-blades to load up with fiber, and this is avoided in the manner indicated.

A removable cover-plate 51 closes the top of the beater-chamber.

The grid-bars 60, of the grid that is located above the dead-air chamber 11 intermediate the feed-roll 2 and evenner-pedals 3 and one end of the under-casing 291 of the beater-chamber 5, are assembled in two groups, each group having its own means for effecting rocking adjustment of the grid-bars whereby to give such bars the required working relations with respect to the blades of beater 4.

The grid-bars 60 are substantially triangular in cross-section, this shape providing a flat face, for presentation toward the beater, a sharp working edge at the advance side of said face for presentation in the direction of the feed-roll and evener-pedals, and a square heel at the other side of the face.

The illustrated provisions for mounting the said grid-bars in working position in the machine, effecting rocking adjustment thereof, &c., are described, as well as claimed, in the divisional application filed Oct. 23, 1931, Serial No. 570,579.

At 77, Fig. 1, is shown a dust-box adjacent a portion 78 of the casing of the intermediate passage or flue 29, such portion 78 being of openwork construction to permit dust to pass through the openings thereof into the said dust-box. The said dust-box is furnished with a door 79 which is hinged at 80 in connection with the under-casing 291 of the beater-chamber. The normal closed position of the said door 79 is as indicated in Fig. 1. The position of the pivot or hinge 80 of the door is such that when the door 79 is opened or allowed to fall open it hangs nearly vertically within the dust-chamber 11, which ensures descent of the dust from the dust-box into the dead-air chamber upon the opening of the said door without obstruction by the door.

What is claimed as the invention is:

1. An opener or picker comprising, in combination the revolving beater thereof, a feed-roll delivering to the action of the said beater, primary feed mechanism, and evener-mechanism operating to vary the action of the said primary feed mechanism and feed-roll, and an evener condenser-cage receiving the material from the said primary feed mechanism, forming it into a preliminary evener-lap, and delivering it to the feed-roll, said condenser-cage controlled as to the rate of its turning movement by the said evener-mechanism to compensate for departures of the lap supplied to the feed-roll from the predetermined thickness.

2. An opener or picker comprising a revolving beater, a feed-roll delivering to the action of the said beater, primary feed mechanism, and evener-mechanism including and governed by evener-pedals cooperating with said feed-roll and in accordance with such governance operating to vary the action of the said primary feed-mechanism and feed-roll, and having combined with the said elements an evener condenser-cage receiving the material from the primary feed mechanism, forming it into a preliminary evener lap, and delivering it to the feed-roll, said condenser-cage controlled as to the rate of its turning movement by the said evener-mechanism under the governance of the evener-pedals, to compensate for departure of the lap supplied by such cage to the feed-roll from the predetermined thickness.

3. An opener or picker comprising, in combination with primary feed mechanism, an evener condenser-cage receiving the material in a loose state from the primary feed mechanism and forming it into a preliminary evener-lap, a feed-roll which strips such lap from the said evener condenser-cage, a revolving beater to which the lap is fed by said feed-roll, and evener-mechanism combined with said evener-cage, feed-roll, and primary feed-mechanism and operating to compensate for departure of the lap supplied by such cage to the said feed-roll from the predetermined thickness by varying the action of said evener condenser-

cage in addition to that of the feed-roll and primary feed-mechanism.

4. An opener or picker comprising, in combination with primary feed mechanism, an evener-cage receiving the material in a loose state from the primary feed mechanism and forming it into a preliminary evener-lap, a feed-roll receiving such lap from the said evener-cage, a beater to which the said lap is delivered by the said feed-roll, evener-mechanism controlling said evener-cage, feed-roll, and primary feed mechanism and operating to compensate for departure of the lap supplied by such cage to the said feed-roll from the predetermined thickness by varying the action of said evener-cage in addition to that of the feed-roll and primary feed mechanism, a single main condenser-cage receiving the cotton which has been acted upon by the beater and forming it into a unified non-split lap, and lap-winding mechanism receiving the said lap after being formed by the said main condenser-cage.

5. In an opener or picker comprising a revolving beater, a beater-chamber, means for causing an air flow through such chamber, a feed-roll delivering to the action of the said beater, and a primary feed mechanism, the combination therewith of a condenser-cage above the feed-roll having an openwork shell through which air flows directly across the cage into the beater-chamber, said direct substantially diametrical flow of air serving the double purpose of collecting the feed-material into a preliminary lap upon the exterior of the cage, and of supplying air to the beater-chamber above the feed-roll.

6. An opener or picker comprising a revolving beater, a feed-roll delivering to the action of said beater, a dead-air chamber and grid below the beater-chamber, means for creating an air-flow propelling fiber toward the feed-roll, and an inlet admitting this air to the beater-chamber above the feed-roll.

7. An opener or picker comprising, in combination, a preliminary condenser-cage upon which the feed-supply forms into a preliminary lap, a feed-roll by which the said lap is fed to the action of a revolving beater, the said beater, a beater-chamber, a collecting chamber, a main condenser-cage, and a single air exhausting means combined to exhaust air from the preliminary condenser-cage, pass such air through the beater-chamber, and then through the main condenser-cage.

8. An opener or picker comprising, in combination, a beater-chamber, a revolving beater, a feed-roll delivering to the action of the said beater, a preliminary condenser-cage above the feed-roll, upon which the feed-supply is formed into a preliminary lap, the said condenser-cage having an openwork shell through which air flows directly across the cage into the beater-chamber, said direct substantially diametrical flow of air serving the double purpose of collecting the feed-material upon the exterior of the cage and of supplying air to the beater-chamber, a main condenser-cage to which air and fibrous material pass from the beater-chamber, and means for exhausting air substantially diametrically through the main condenser-cage.

9. In an opener or picker, having in combination a beater-chamber, a beater therein having blades, a lap-forming condenser cage, and a passage conducting fibers from the beater-chamber to the condenser-cage, a cross-girth at the mouth of the passage leading from the beater-chamber to the condenser, the said girth having slots extending at right angles with its length,

- and a cut-off plate mounted at the under side of the girth and having studs extending up through the said slots, blocks upon the said studs above the girth, block-guides upon the girth, and
- 5 opposite adjustment screws engaging with the studs at opposite sides of the latter for shifting the cut-off plate inward and outward with relation to the path in which the beater-blades revolve.
- 10 10. An opener or picker having in combination a feed-roll, a beater-chamber, a revolving beater having blades, a lap-forming condenser, and a passage connecting the beater-chamber and the condenser, and having at the feed-receiving
- 15 side of the beater-chamber an air-supply inlet above the feed-roll, and having at the outlet side of said chamber an upright baffle-plate extending down to the upper side of the mouth of the passage leading to the lap-forming condenser, said baffle-plate operating to deflect
- 20 downward a portion of the air entering through the said inlet in a manner to divert from the path of the beater-blades fibers revolving with such blades and also to strip from the forward edges
- 25 of the blades the fibers which tend to cling thereto, as well as occasion movement of air and fibers toward and through the outlet.
11. An opener or picker comprising, in combinations, a preliminary condenser-cage upon
- 30 which the unbeaten feed-supply forms into a preliminary lap, a feed-roll by which the said lap is fed to the action of a revolving beater, the said beater, a beater-chamber, a main condenser-cage, and a single air exhausting means combined
- 35 to exhaust air substantially diametrically from both of said condenser-cages and from the beater-chamber.
12. An opener or picker comprising, in combination, a preliminary condenser-cage upon
- 40 which the unbeaten feed-supply forms into a preliminary lap, a feed-roll by which the said lap is fed to the action of a revolving beater, the said
- beater, a beater-chamber, a main condenser-cage, and a single air exhausting means combined to draw air into the machine ahead of the preliminary condenser-cage and lengthwise
- 80 through the machine through both of said condenser-cages and the beater-chamber.
13. A picker having in combination a beater-chamber, a revolving beater, primary feed mechanism, air-exhausting means, and a condenser-cage preceding the beater on which the material
- 85 received from the primary feed mechanism is formed into a lap through the action of an air-flow induced by exhausting air from the beater-chamber.
14. A picker having in combination fiber-feeding and beating devices, a condenser-cage on
- 90 which the fibers are formed into a lap by air-currents passing through the cage and across its interior at right angles to its axis, and means beyond the cage inducing air-flow therethrough.
- 95 15. A picker having in combination fiber-feeding and beating devices, air-propelling means, and a condenser-cage on which alone and unaided the fibers are formed into a lap by air-currents which enter at the surface of the cage,
- 100 traverse its interior, and emerge again through the surface of the cage.
16. A picker having in combination fiber-feeding and beating devices, air-propelling means, and a condenser cage following the beating devices, on which the fibers are gathered into
- 105 an integral completed lap of sufficient uniformity to feed a card by air currents which enter at the surface of the cage, traverse its interior, and emerge again through the surface of the cage.
- 110 17. In a cotton opener or picker, in combination, a beater, a condenser before and a condenser beyond the beater, and means for passing a single fiber-conveying air-stream in series through the plurality of condensers.
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JOSEPH MOSS.

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