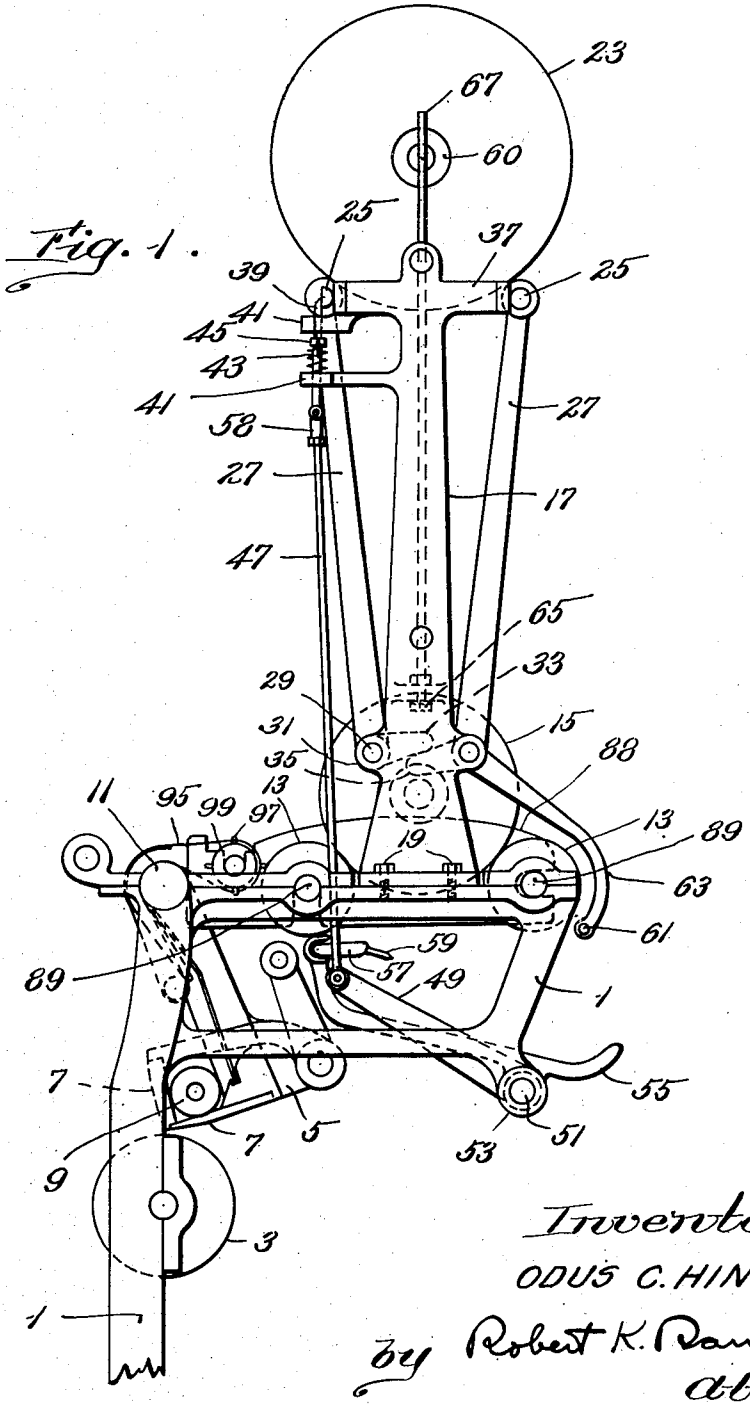
July 3, 1951 O. C. HINSON 2,559,074

LAP CHANGER FOR COMBING MACHINES

Filed May 17, 1945 3 Sheets-Sheet 1

Fig. 1.



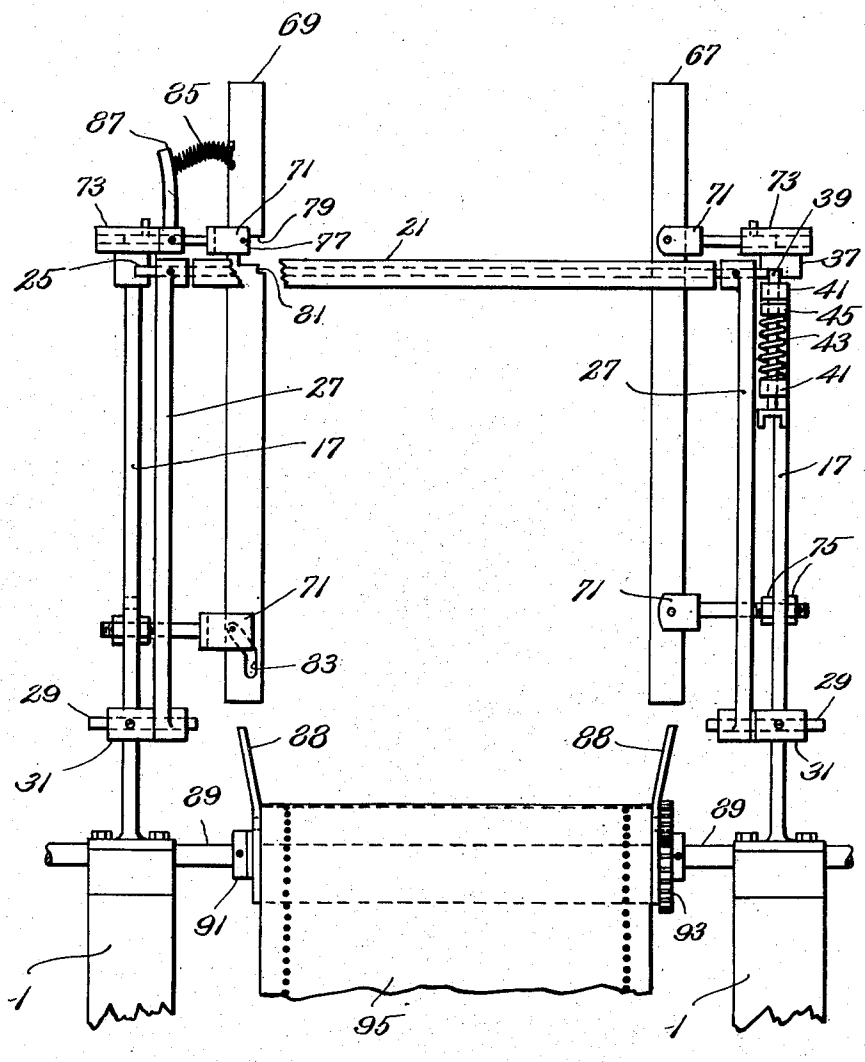
Inventor.
ODUS C. HINSON
by Robert K. Randall,
Abby.

July 3, 1951 O. C. HINSON 2,559,074

LAP CHANGER FOR COMBING MACHINES

Filed May 17, 1945 3 Sheets-Sheet 2

Fig. 2.



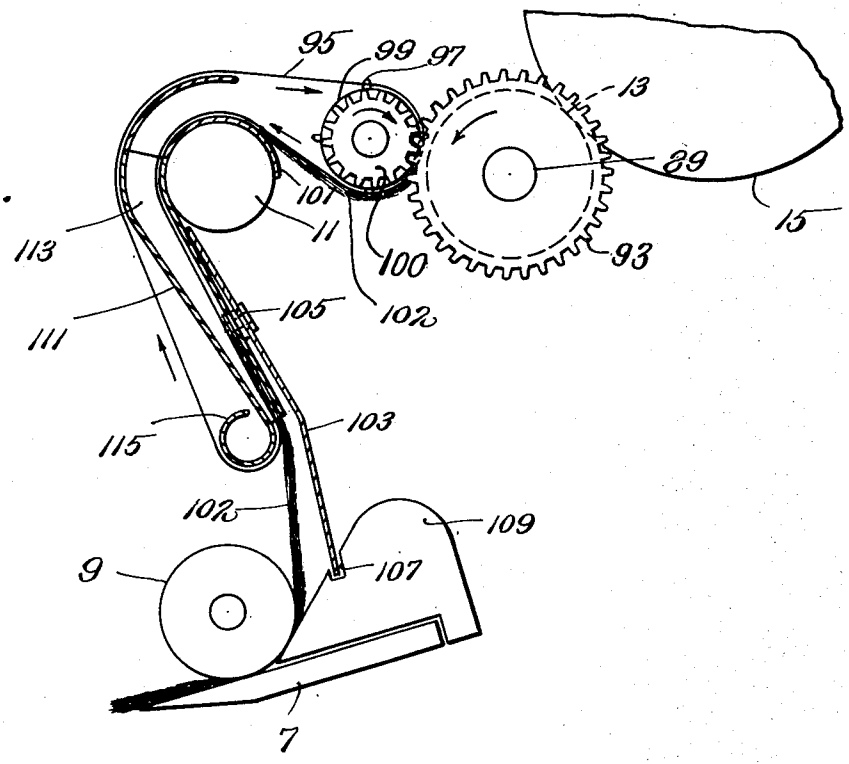
Inventor.
ODUS C. HINSON
By Robert K. Randall
Atty.

July 3, 1951 O. C. HINSON 2,559,074

LAP CHANGER FOR COMBING MACHINES

Filed May 17, 1945 3 Sheets-Sheet 3

Fig. 3.



Inventor.
ODUS C. HINSON
Robert K. Randall,
by
Atty.

Patented July 3, 1951

2,559,074

UNITED STATES PATENT OFFICE

2,559,074

LAP CHANGER FOR COMBING MACHINES

Odus C. Hinson, Cramerton, N. C., assignor, by mesne assignments, to The Terrell Machine Company, Charlotte, N. C., a corporation of North Carolina

Application May 17, 1945, Serial No. 594,304

31 Claims. (Cl. 19—115)

1

This invention relates to combing machines for textile fibers, and has as its object the provision of novel and improved mechanism for automatically replenishing the working supply of fiber being fed into the machine to be combed thereby. The principles of the machine are capable of use in connection with ribbon lap machines, and in fact with many or all other textile machines employing a supply in the form of a rolled-up sheet or lap of fibers. For purposes of illustration only, the invention is shown applied to a cotton combing machine employing the principles of the well known Heilmann type of cotton comber.

In such latter machines, the supply is typically in the form of a roll of tightly wound lap of about the same diameter as its length, supported upon and between a pair of spaced fluted lap rolls in connection with each comber head of the machine, both lap rolls being positively driven at slow speed in the same direction of rotation to revolve the lap roll in order to pay off lap from the bottom thereof at a rate matching the speed of its advance by the feed roll into the nipper jaws for combing.

Heretofore the replenishment of the working supply of lap to each of the several comber heads of a combing machine has always had to be done by hand, so far as I am aware. When the supply to any one of the comber heads, numbering from 6 to 12, in such machines runs out, the stop motion in connection with such head stops the entire machine, which thereafter remains idle until the attendant notices the stoppage and finds opportunity to replace the exhausted lap supply with a fresh roll of lap, manually introducing the leading end of the new lap into running position. For convenience, a rack to hold spare rolls of lap usually extends above the machine, whence the attendant lifts down a roll and puts it in place upon the lap rolls after removing from the latter the empty bobbin or core of the exhausted roll, taking care that the lap unwinds from the bottom of the fresh roll.

To save the loss of machine time while the comber stands at rest awaiting such manual replenishment, as well as to relieve the attendant of the immediate pressure of this necessity, whereby he will be able to attend a larger number of machines, with obvious economy in each regard, I have provided a novel mechanism whereby the approaching exhaustion of the roll of lap in any one of the comber heads of a combing machine causes a fresh roll of lap to descend into working position upon the lap rolls, expelling the nearly spent lap, parting the lap from the expelled roll, piecing up the end of the new lap thereupon, and causing the joined ends of the two laps to proceed through the feeding and working parts of the comber head, all without interruption of any sort in the operation of the comber.

2

The manner of attainment of this method of operation, and of other objects and features of the invention, is as set forth hereinafter.

An illustrative embodiment of the invention as applied to a cotton combing machine is shown in the accompanying drawings, in which—

Fig. 1 is an end elevation showing the means for holding and releasing the replacement lap roll.

Fig. 2 is a front elevation of certain of the parts of Fig. 1, showing the means guiding the fresh lap roll into working position.

Fig. 3 is a fragmentary end view giving details of the piecing apron.

In the drawings, only so much of the combing machine as is needed for an understanding of the invention is illustrated. Thus, the frame members which support the various working parts of a single head of a multiple head combing machine are indicated at 1, with the combing cylinder indicated at 3, the swing frame 5 carrying the nipper jaws 7 and feed roll 9 swinging back and forth about the center of rockshaft 11, the drawings showing also the two driven lap rollers 13 which support the working lap 15 and rotate it slowly to feed forward from the bottom thereof the sheet of lap being unwound and fed over rockshaft 11, whence it passes down and under feed roll 9 and is delivered between the nipper jaws 7 for combing by cylinder 3, all forming no part of the present invention.

The novel means for automatically replenishing working lap 15 upon lap rollers 13 as such lap approaches exhaustion, comprises brackets 17 mounted by their feet upon the top of the horizontal rearward extensions of frames 1, being bolted to the flanges of such frames by cap screws 19, and one of such uprights being installed between each two combing heads, as well as outside the endmost head at each end of the combing machine. A pair of movable supports 21 is provided for each comber head, on and between which supports rests a fresh or full roll of lap 23, thus held in reserve as a replacement for the working lap 15 when it shall become substantially exhausted. The supports 21 of each pair preferably comprise rollers rotating freely on shafts 25 each fixed in the upper ends of a

pair of arms 27 swinging on pivots 29 fixed in hubs 31 near the foot of brackets 17, each front arm 27 having a rearwardly extending integral toe 33 which overlaps a corresponding integral toe 35 on its associated rear arm 27, located directly behind the front arm in the same vertical transverse plane of the machine. The upper ends of arms 27 and thus the supporting rollers 21 are limited in their approach toward each other by the engagement of the extended ends of shafts 25 with the ends of projections 37 on brackets 17, so that the supporting rollers 21 are arrested when swung towards each other before attaining positions directly over the pivots 29 of arms 27, and hence tend always to swing apart and downward under gravity, aided by the weight of the spare roll 23 resting upon them.

To prevent this spreading action and maintain the fresh roll 23 in its elevated reserve position until needed, a detent is provided in the form of a latch 39 slidably mounted in guides formed by lugs 41 on the front of each bracket 17 at the right of the comber head with which each pair of rollers 21 is associated. This latch 39 normally stands in upwardly extended position intercepting and preventing the forward swinging movement of shaft 25 of the front roller 21, the right-hand end of such shaft being slabbed off in the present instance for this purpose, and the latch being held in such locking position by a spring 43 confined between the lower lug 41 and a collar 45 fixed on the latch.

As is obvious, when latch 39 is retracted downward to clear the end of shaft 25, the front roller 21 is free to swing forward, and by this movement the toes 33 release their pressure on the toes 35 of arms 27 carrying the rear roller 21, permitting it to move simultaneously rearward at the same rate of movement as that at which the front roller moves forward, thus releasing the fresh roll 23 to fall by gravity between the rollers 21 and upon the nearly spent roll 15 in working position.

To effect this release and descent of the fresh roll automatically in properly timed relation to the stage of exhaustion of the working roll 15, the latch 39 is connected by a link 47 with the end of an arm 49 fixed on a rockshaft 51 mounted in bearings 53 on the frame uprights 1, each comber head having its own rockshaft 51 extending across the span of such head. A pair of cradles 55 is fixed upon rockshaft 51 by means of hubs formed upon their under sides intermediate their length, to catch and hold the spent lap roll 15 when it falls through between the lap rollers 13. The forward ends of each pair of cradles 55 jointly support a cross member 57 which is a trip to be engaged and depressed by a spent lap roll 15 as the latter sags between lap rollers 13 because of reduction of its diameter through use, this engagement tilting the cradles 55 forwardly enough to rotate rockshaft 51 and thus to swing arm 49 downwardly to retract latch 39 and drop the fresh roll 23 into working position upon lap rollers 13.

To assure uniformity and certainty in the piecing up of the fresh lap onto the spent lap in order to thread up the fresh lap, the end of the spent lap is not allowed to unwind fully, but the change is arranged to occur prior to this stage and as the spent lap becomes reduced to the last few turns thereon. The exact stage of substantial exhaustion of the working lap at which the change occurs is determined by the difference between the spaced relation of the lap rollers 13 and the diameter of the core 60 on which the lap rolls 15, 23, are wound, as well as the distance to which the trip 57 must be depressed below the lap rollers 13 in order to free the latch 39. That is, the wider the space between rollers 13, or the smaller the core 60, the earlier the spent roll sags between the rollers far enough to depress trip 57 and tilt down the frontward ends of cradles 55 against the resistance of latch spring 43 which tends to hold the parts in the position illustrated in Fig. 1. Adjustment of clevis 58 up and down on link 47 is used to govern the exact stage of depression of spent roll 15 at which the change occurs. During the action of calling the change, the trip member 57 acts the same as if it were rigidly fastened to the forward ends of cradles 55 at the angle shown in Fig. 1. Actually, the trip 57 is pivoted to cradles 55 in a manner allowing its free edge to move upwardly some 30°, and this free edge is provided with a row of long, coarse comb teeth 59 engaged by the lap extending from the bottom of the expelled spent lap roll 15 upward over the front lap roller 13 as the spent roll rests in the depressed cradles. Since the comber does not stop work while the change is being made, the continued operation of the machine and resultant rotation of lap rollers 13 keeps on unwinding the lap from the expelled roll 15, the lap engaging and swinging the trip member 57 upwardly on its pivots to the limit of its scope of movement, causing the comb teeth 59 to penetrate clear through the old lap and then arrest its further progress so that it parts between the comb teeth and the line where it is nipped between the front lap roller 13 and the fresh lap roll 23 which now rests upon the two lap rollers 13. It is the fall of the fresh lap roll upon the spent roll 15 after the latter has settled far enough between the two rollers 13 to depress the trip and cradles and withdraw latch 39, which drives the spent roll clear through between the lap rollers 13 and on to the crades 55.

To make sure that the lap extending forward from the spent roll 15 will be engaged and parted by the comb teeth 59, the spent roll 15 is prevented from rolling backward on cradle 55 by a bar 61 mounted by its ends in hubs in two rearwardly and downwardly extending arms 63 respectively formed integral with each of the rear arms 27. When the supporting rollers 21 are allowed to spread apart to drop the fresh lap 23, rod 61 assumes a position approximately below the front surface of rear lap roller 13, where it engages spent roll 15 resting upon cradles 55 and clamps it against comb 59 to insure engagement and parting of the lap thereby. The extent of divergent movement of arms 27 is limited by engagement of toes 33 of the front pair of arms with the heads of stop screws 65 threaded through lugs formed on the inward faces of uprights 17. When arms 27 are restored to supporting position to receive another reserve roll as shown in Fig. 1, by manually pressing front arms 27 back so that the extended end of shaft 25 snaps over the forwardly beveled end of latch 39, the accompanying rearward and upward movement of rod 61 lets the spent roll 15 roll backward against the upturned rearward ends of cradles 55, where this roll rests idly until the attendant has occasion to remove it by hand.

To maintain the fresh supply roll 23 in correct position above the lap rollers 13 and to guide it accurately into working position on the latter as it descends under gravity to make the change, two vertical guides 67, 69, are provided to engage the

ends of the fresh roll and of its core 60 in the vertical axial plane of the roll. Guide 67 is fixed, being pinned in slots in holders 71 having reduced shanks of which the upper one is held by a set screw in the bore of a hub 73 on the top of each bracket 17, while the lower one has its shank threaded and secured in a hole in each bracket 17 by lock nuts 75.

The other vertical guide 69 is mounted with capacity for both vertical movement and movement axially of the supply roll. Each guide 69 is slidably mounted in slots in members 71 made and mounted substantially as described with regard to the fixed guides 67, except that these members 71 have deeper slots. Guide 69 is retanied in one of these deeper slots by a pin 77 fixed across the mouth of the slot and standing in a deep rectangular notch 79 in guides 69, there being a smaller notch 81 running into the lower corner of the said notch. Guide 69 is retained in lower member 71 by a pin which passes through a slot 83 cut through guide 69, such slot having a vertical lower portion and an upwardly and outwardly inclined upper portion. An expanding coil spring 85 is attached to guide 69 by cutting two grooves in the edge thereof to leave an intervening tongue which is wedged within the coil of the spring, the other end being similarly stretched over a stud on the upper end of an arm 87 fixed by means of its hub upon the shank of the upper slotted member 71. The upper end of this arm 87 is bent away from guide 69, so that it tends to throw an upward hump into the intermediate portions of the length of spring 85, and to exert a slight upward lift to guide 69 in addition to its main force in urging guide 69 inwardly toward opposing guide 67. When the fresh lap roll 23 is to be put in place on supporting rollers 21, the movable guide 69 is manually lifted upward and downward, so that pin 77 catches in notch 81, the guiding action of slot 83 similarly moving the lower end outward, i. e. to the left in Fig. 2. In this relation, the space between the two guides 67 and 69 of a comber head slightly exceeds the overall length of the lap rolls 23 supplied to the machine, and a fresh roll is inserted between the guides to rest upon rolls 21, with the leading end of the lap, which has been torn off to a feather edge, standing free from the roll and hanging down an inch or so just forward of the front supporting roller 21. Guide 69 is then pulled down slightly by hand until pin 77 leaves small notch 81 and stands in large notch 79, so that spring 85 then presses guide 69 inwardly to confine the fresh lap roll 23 between the two guides and hold it against rotation due to vibration of the machine. This manual movement of guide 69 is not sufficient to carry the pin in lower member 71 out of the vertical portion of slot 83, and hence the lower end of guide 69 exerts no inward pressure upon the end of the working lap roll resting on lap rollers 13.

When the change is called, and supporting rollers 21 swing out from under the fresh lap 23 simultaneously in opposite directions, the friction between the movable guide 69 and the end of this descending lap roll produced by spring 85 causes the guide to move downward with accompanying inward movement of its lower end caused by the pasage of the pin in lower member 71 into the oblique upper portion of slot 83. This causes the other end of the fresh lap roll 23 to follow the surface of fixed guide 67 accurately, and also gives rise to a substantial axial pressure on the ends of the descending roll which acts as a brake reducing the speed of its fall and preventing rotation about its axis. When the fresh lap roll strikes the lap rollers after driving the spent roll down between the latter, it rebounds slightly, in doing which it carries movable guide 69 upward, aided in this action by the upward component of force exerted by spring 85, so that the pin in lower member 71 again stands in the vertical lower portion of groove 83, in which relation guide 69 is spaced farther from its opposing guide 67 than the length of the supply lap 23, thus leaving the latter free to rotate without frictional interference by either of the guides 67, 69. Additional guiding means in the form of upwardly and outwardly flaring plates 88 are provided to receive the descending fresh lap roll between them and give it its proper position lengthwise of the lap rollers 13. These plates merely rest upon the respective shafts 89 of the lap rollers, notches being formed on their under edges near the front ends thereof to hook over the front lap roller shaft 89 and notches opening inwardly from the rear receiving the rear lap roller shaft 89. They are held up to the ends of the lap rollers by collars 91, and in one instance by a gear 93, fixed on shafts 89.

To effect the piecing up of the leading end of the fresh lap roll onto the trailing end of the lap from the spent roll after the parting of the lap by the teeth 59, and also to support the lap in normal operation, an apron 95 is provided. This apron, preferably made of soft leather, is perforated along each edge so as to be positively driven at the same surface speed as front lap roller 13 by points 97 passing therethrough and which project radially at the ends of a roller 99 fixed on a shaft resting in notches in guides 88 and driven by pinion 100 from a spur gear 93 fixed on the front lap roller shaft 89, which latter is constantly driven in customary manner when the combing machine is in operation. From the bottom of roller 99 the apron travels through a guide in the form of a sheet metal duct hung on the rockshaft 11, the rear wall 101 of which is wrapped ⅔ of the way around rockshaft 11 and provided with a continuation 103 fastened to the back thereof by bolts 105 and having its lower edge fitted into a notch 107 in the inclined forward lap-guiding surface of the heavy cross-bar 109 of the swing frame 5 on which the lower nipper jaw 7 and feed roll 9 are mounted. The front wall 111 of the duct is held in spaced relation from the rear wall thereof by lateral walls 113, the nearer of which has been broken away in Fig. 3 the better to show the construction. After passing forward and downward around the part of rear wall 101 which is wrapped partway around rockshaft 11, the apron 95 passes around the rolled lower end 115 of the front wall and thence upward and rearward over the upper portion of front wall 111 which is curved concentric to the portion of rear wall 101 bent around rockshaft 11, the apron thus returning to spiked roller 99. The unwinding lap 102 thus passes over front lap roller 13, thence under apron 95 below roller 99, thence between the apron and the rear wall 101 of the duct, and down through the duct, issuing therefrom between the rear wall and the apron as the latter makes its reverse bend around the rolled portion 115 of the front wall, the lap continuing down in front of the extension 103 and passing between the inclined front guide surface of cross-member 109 and feed roll 9 to be gripped by the feed roll and pressed against the top surface of

lower nipper jaw 7, whence it is fed forward in usual manner a fraction of an inch at a time to the nipper jaws for combing by the needles on the combing cylinder 3.

When the reserve roll of lap 23 is released and falls upon the spent roll 15 and the lap rollers 13, the leading end of the new lap is shaken free from the fresh roll to lie upon the upper surface of the old lap usually at the point where the latter passes over front lap roller 13. The continuing feed of the old lap by the front lap roller and the apron 95 with the accompanying rotation of the fresh lap roll by the lap rollers causes the leading end of the fresh lap to feed along with the old lap at the same speed as the latter and resting on top thereof, so that it is first gripped between front lap roller 13 and apron 95, then between the apron and the back wall 101 of the chute, and eventually between the feed roll 9 and the lower nipper jaw 7, being thus fully threaded up by the joint action of the old lap and apron 95. As already noted, the old lap is parted by the action of the comb teeth 59 on member 57 a few inches rearward of front lap roller 13, shortly after the fresh roll has descended into working position. Ordinarily the length of overlap is substantially the same as the distance from the top of front lap roller 13 to the point of perforation and parting of the old lap by the teeth 59. If the leading end of the fresh lap falls forward of front lap roller 13, the rearwardly moving top course of apron 95 merely feeds it back to enter between the old lap and the descending rearward bend of the apron as the latter passes around its spiked roll 99; while if the new end falls to the rear of front lap roller 13 it is carried up and over such roller by the trailing end of the old lap, and threaded up just the same.

The new apron 95 additionally performs a novel function through maintaining the rate of feed of lap from the working supply constant regardless of the diameter thereof. A full lap roll by reason of its weight exerts more pressure on the lap rollers 13 than a roll which is approaching exhaustion, and in combing machines of prior type this variation in pressure and hence in friction causes a variation in the degree of slip between the surface of the lap and its supporting lap rollers. The action of the apron in bending the lap into a zigzag or undulant course and thus making a close and uniform contact with the entire width of the lap throughout the whole of the forward run of the apron, and in nipping the lap between itself and the front lap roller 13 and again between itself and the rear wall 101 of the chute in passing around rockshaft 11, supports and carries forward the lap at a continuously uniform rate regardless of the weight or size of the working lap roll, entirely eliminating the slip referred to and thus producing a uniform combed sliver through achieving a uniform rate of feed of the lap to the nipper jaws.

While I have illustrated and described a certain form in which the invention may be embodied, I am aware that many modifications may be made therein by any person skilled in the art, without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to the particular form shown, or to the details of construction thereof, but what I do claim is:

1. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, rotatable supporting means supporting a working lap roll in feeding position, means holding a fresh lap roll above the working lap roll, and means automatically putting the fresh lap roll in place with its periphery resting upon the rotatable supporting means as the working roll approaches exhaustion.

2. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, rotatable supporting means supporting a working lap roll in feeding position, means holding a fresh lap roll above the working lap roll, and means put in action by reduction in diameter of the working lap roll putting the fresh lap roll in place upon the rotatable supporting means.

3. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, rollers supporting a working lap roll in feeding position, means supporting a fresh lap roll above the working lap roll, and means automatically releasing the fresh roll from the supporting means to take the place of such working roll upon the rollers as the working roll approaches exhaustion.

4. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, means holding a fresh lap roll above the working lap roll, and means putting the fresh lap roll in place upon the rollers as the working roll descends between the rollers because of its reduction in diameter through unwinding.

5. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, rollers supporting a working lap roll in feeding position, means holding a fresh lap roll at an elevation above the working lap roll, means automatically releasing the fresh lap roll to descend as the working lap roll approaches exhaustion, and means engaging the surface of the fresh lap roll and thus guiding it onto the rollers as it descends under the force of gravity.

6. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, means holding a fresh lap roll at an elevation above the working roll, and means actuated by the descent of the working roll down between the spaced rollers causing the fresh lap roll to take the place of the working roll upon the spaced rollers.

7. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, means holding a fresh lap roll at an elevation abovet the working roll, and a member actuated by a substantially exhausted working lap roll in descending between the spaced rollers, such actuation releasing the fresh lap roll from its holding means to descend onto the spaced rollers.

8. In a textile machine operating upon fiber supplied thereto in the form of lap wound upon cores into rolls, in combination, spaced rollers supporting a working lap roll for unwinding rotation, the rollers being spaced apart a distance exceeding the greatest diameter of the cores, and automatic means placing a fresh lap roll uopn the spaced rollers and called into action by the descent of the working lap roll and its core between the spaced rollers.

9. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll,

spaced supports holding a fresh lap roll at an elevation above the working roll, and relatively movable to let the fresh lap roll descend between them, means holding the spaced supports from relative movement, and means actuated by the working lap roll as it approaches exhaustion releasing the holding means to permit relative movement of the spaced supports and descent of the fresh lap roll onto the spaced rollers.

10. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll, spaced supports holding a fresh lap roll at an elevation above the working roll, and means mounting the spaced supports for simultaneous movement in opposite directions out from under the fresh lap roll to let the latter descend onto the spaced rollers.

11. In a machine operating upon material supplied thereto in roll form, in combination, rotatable supporting means supporting a working roll in feeding position, and means automatically bringing a fresh roll into contact with the working roll to expel the latter from feeding position and take its place upon the rotatable supporting means.

12. In a machine operating upon material supplied thereto in roll form, in combination, spaced rollers supporting a working roll in feeding position, and means causing a fresh roll to strike radially against the working roll to expel the latter from feeding position upon the spaced rollers and to take the place of the working roll thereon.

13. In a machine operating upon material supplied thereto in roll form, in combination, spaced rollers supporting a working roll in feeding position, means supporting a fresh roll in readiness for replacing the working roll upon the spaced rollers, and means actuated by the sagging of the working roll between the supporting rollers as a result of its diminishing diameter bringing the fresh roll into contact with the working roll to force the latter down between the supporting rollers and take the latter's place upon the supporting rollers.

14. In a machine operating upon material supplied thereto in roll form, in combination, spaced rollers supporting a working roll in feeding position, spaced supports holding a fresh roll at an elevation above the working roll and mounted for simultaneous movement in opposite directions out from under the fresh roll, means effecting such movement when engaged by a substantially exhausted working roll sagging between the spaced rollers, and means guiding the fresh roll onto the working roll and into working position upon the spaced rollers during its descent after the spaced supports have been withdrawn from under it.

15. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, a pair of rollers supporting a fresh lap roll above the said spaced rollers and respectively equidistant from the vertical plane through the axis of the fresh roll supported by them, and means connecting the two rollers of the pair to move apart simultaneously for equal distances.

16. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, a pair of rollers supporting a fresh lap roll above the said spaced rollers and respectively equidistant from the vertical plane through the axis of the fresh roll supported by them, and means connecting the two rollers of the pair to move apart simultaneously for equal distances, means normally holding the pair of rollers from moving apart, and means releasing such holding means and actuated by the descent of the working roll between the spaced rollers as its diameter decreases.

17. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll rotatably in feeding position, means causing the working roll to be expelled from such position as it approaches exhaustion, and means parting the lap adjacent the expelled roll.

18. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, rotating means supporting a working lap roll in feeding position, means feeding forward the lap unwound from such roll, and means engaging the unwound lap at a point in the length thereof in advance of the feeding means and arresting the forward travel of the lap between the feeding means and the roll to part the lap in such interval.

19. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means feeding forward the lap unwound from such roll, and a plurality of points piercing the lap between the feeding means and the roll to part the lap.

20. In a textile machine operating on fiber supplied thereto in rolled lap form, in combination, spaced rollers supporting a working lap roll in feeding position, mechanical means automatically replacing the working lap roll by a fresh lap roll, and a member engaged and actuated by the working lap roll, as such roll sags between the spaced rollers as a result of its diminishing diameter, to actuate the automatic replacement means, such member having a plurality of points piercing the lap to part the lap.

21. In a combing machine operating on fiber supplied thereto in rolled lap form, in combination, nipper jaws, rotatable means supporting a working lap roll in feeding position, a feed roll projecting the lap in continuous form from such roll through the nipper jaws, and an apron propelling the lap from the rotatable supporting means to the feed roll.

22. In a combing machine operating on fiber supplied thereto in rolled lap form, in combination, nipper jaws, rotatable means supporting a working lap roll in feeding position, a feed roll projecting the lap from such roll through the nipper jaws, a stationary guide intervening between the rotatable supporting means and the feed roll, and a traveling apron propelling the lap along the surface of the guide.

23. In a combing machine operating on fiber supplied thereto in rolled lap form, in combination, nipper jaws, rotatable means supporting a working lap roll in feeding position, a feed roll projecting the continuous lap from such roll through the nipper jaws, and a travelling apron overlying and contacting the lap between the rotatable supporting means and the feed roll and aiding in carrying forward the lap.

24. In a combing machine operating on fiber supplied thereto in the form of rolled lap having an end, in combination, nipper jaws, rotatable means supporting a working lap roll in feeding position, a feed roll projecting the continuous

lap from such roll through the nipper jaws, and a travelling apron superposing the end of a fresh lap onto the working lap and carrying such end along with the working lap to the feed roll.

25. In a combing machine operating on fiber supplied thereto in rolled lap form, a combination, means supporting a working lap roll in feeding position, means replacing such lap roll by a fresh lap roll as the first roll approaches exhaustion, and means applying an end of the fresh lap standing free from the fresh lap roll to the surface of the working lap.

26. In a combing machine operating on fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means replacing such lap roll by a fresh lap roll as the first roll approaches exhaustion, and a traveling surface pressing an end of the fresh lap standing free from the fresh lap into adherence with the working lap.

27. In a combing machine operating on fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means replacing such lap roll by a fresh lap roll as the first roll approaches exhaustion, and an apron traveling above the working lap guiding an end of the fresh lap onto the surface of the working lap and into adherence therewith.

28. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means holding a fresh lap roll above the working lap roll, means putting the fresh lap roll into feeding position in place of the working lap roll, and means preventing rotation of the fresh lap roll while moving into feeding position.

29. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means holding a fresh lap roll at an elevation above the working lap roll, means releasing the fresh lap roll to descend as the working lap roll approaches exhaustion, and means frictionally engaging the ends of the roll during its descent to retard its fall.

30. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lap roll in feeding position, means holding a fresh lap roll at an elevation above the working lap roll, means releasing the fresh lap roll to descend as the working lap roll approaches exhaustion, and means engaging the roll during its descent to frictionally retard its descent and guide it onto the supporting means to replace the working lap roll.

31. In a textile machine operating upon fiber supplied thereto in rolled lap form, in combination, means supporting a working lop roll in feeding position, means holding a fresh lap roll at an elevation above the working lap roll, and means effecting the dropping of the fresh lap roll in such manner as to replace the working lap roll on the supporting means thereby, and also to shake loose the leading end of the fresh lap roll.

ODUS C. HINSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
739,370	Williams	Sept, 22, 1903
1,144,161	Turner	June 22, 1915
1,243,071	Jopson	Oct. 16, 1917
1,299,349	Janes	Apr. 1, 1919
1,367,076	Nasmith	Feb. 1, 1921
1,510,098	Nasmith	Sept. 30, 1924
1,747,289	Cornell	Feb. 18, 1930
1,828,898	Ball et al.	Oct. 27, 1931
1,829,719	Horton	Oct. 27, 1931
1,886,702	Litty	Nov. 8, 1932
1,917,641	Fairchild	July 11, 1933
2,037,348	Stein	Apr. 14, 1936
2,154,281	Nasmith	Apr. 11, 1939
2,226,290	Turner	Dec. 24, 1940
2,258,298	Miller	Oct. 7, 1941

FOREIGN PATENTS

Number	Country	Date
5,110	Great Britain	of 1884
10,494	Great Britain	of 1910
18,130	Great Britain	of 1909
321,991	France	Sept. 24, 1902
750,978	France	Aug. 24, 1933

Certificate of Correction

Patent No. 2,559,074 July 3, 1951

ODUS C. HINSON

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 5, line 40, for the word "downward" read *outward*; column 8, line 57, for "abovet" read *above*; line 69, for "uopn" read *upon*; column 11, line 6, for "a" read *in*; column 12, line 11, for "lop" read *lap*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of September, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.