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2,145,492

COMBING MACHINE

Filed Sept. 20, 1937

2 Sheets-Sheet 1

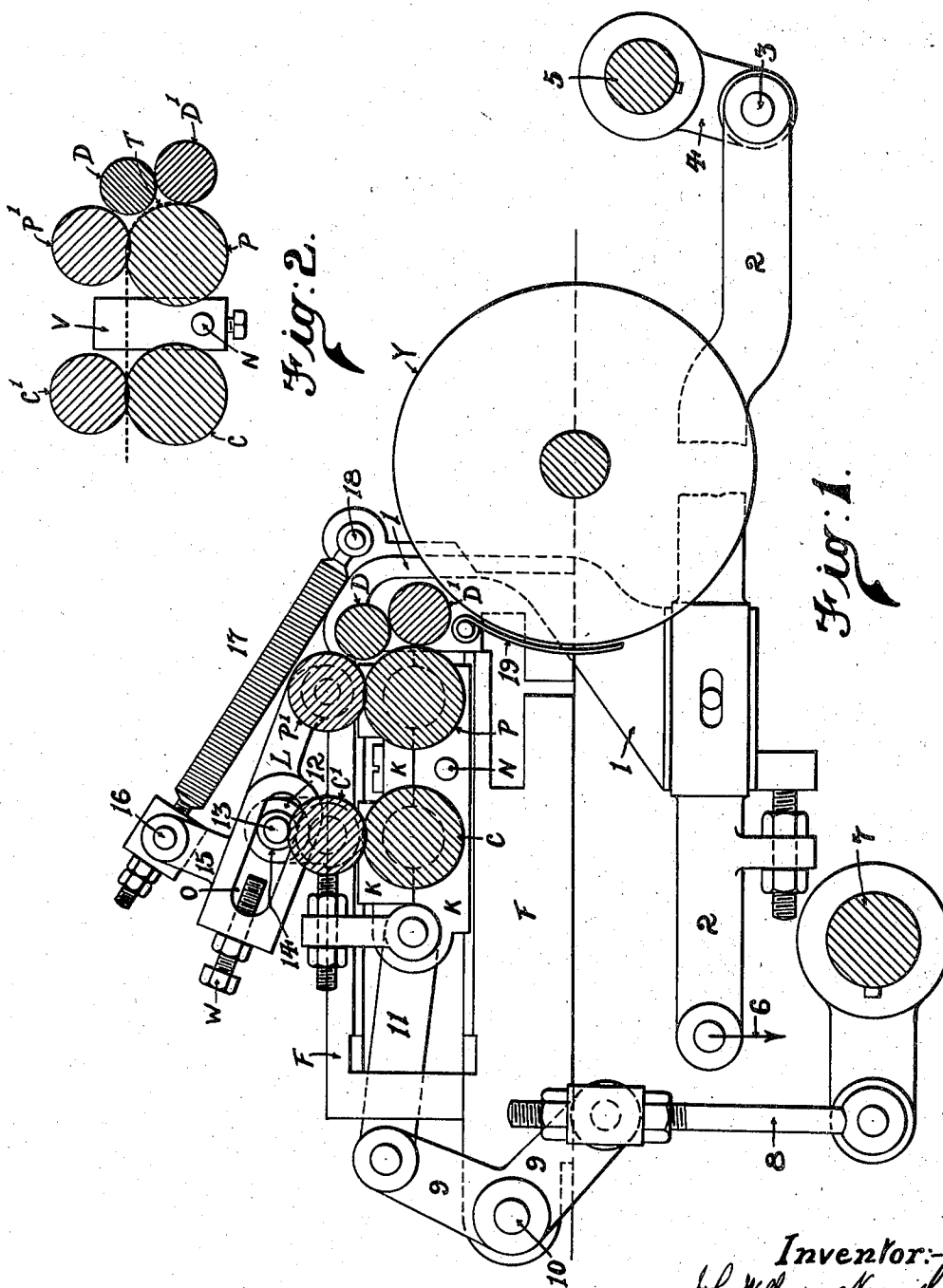


Fig: 1.

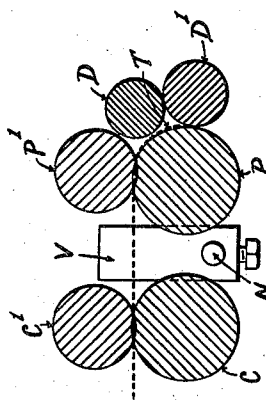


Fig: 2.

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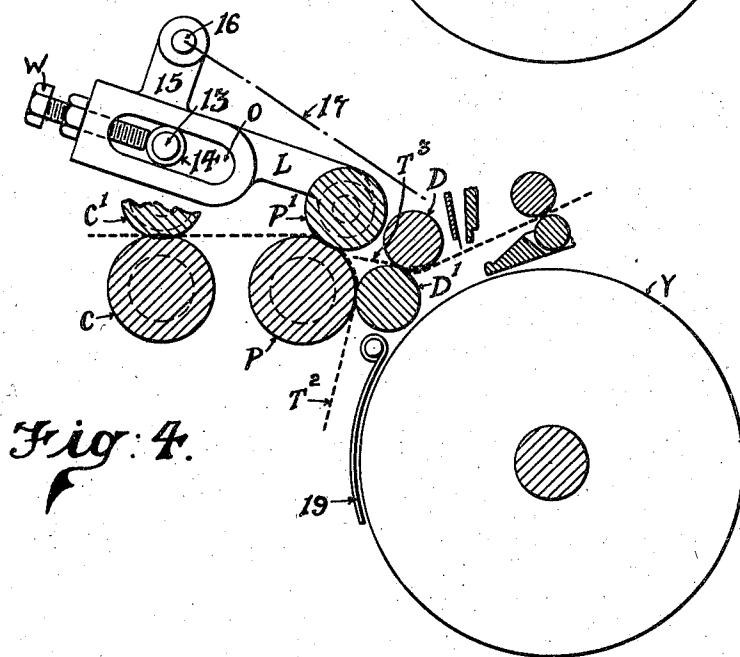
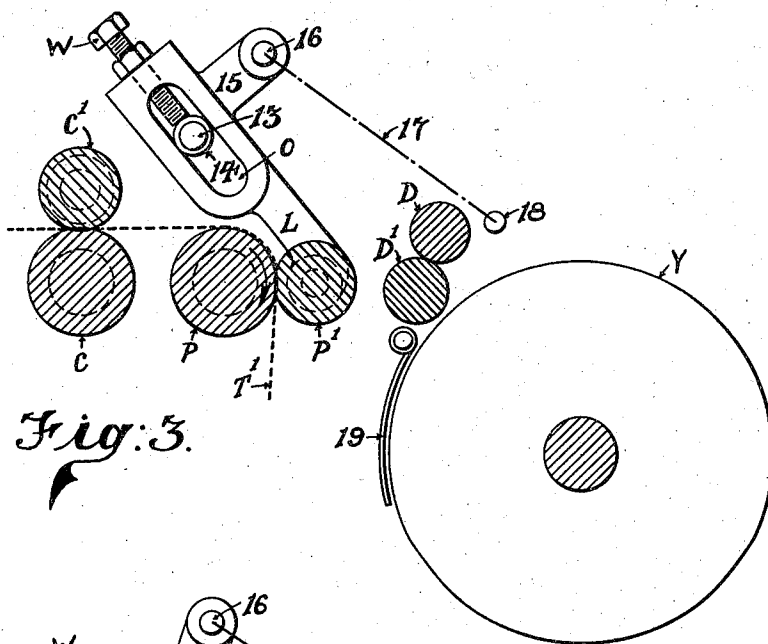
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2 Sheets-Sheet 2



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2,145,492

COMBING MACHINE

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Manchester, EnglandApplication September 20, 1937, Serial No. 164,717
In Great Britain March 8, 1937

4 Claims. (Cl. 19—120)

The invention relates to combing machines for textile fibres.

In the specification of British Letters Patent No. 16,001 of 1901—the now well-known “Nasmith comb” —detaching means for a freshly combed tuft, the detaching rollers serving also as piecing means, are shown. Production in this machine has a definite limit, however, governed by the length of fleece which can be backed off for piecing against the running combing cylinder.

The use of detaching rollers and separate piecing rollers in combing machines has been proposed, but this separation of function of rollers gives rise to new problems. It is the object of the present invention to provide a textile combing machine which, whilst utilizing the detaching means of the British specification No. 16,001 of 1901, will have combined therewith a highly efficient piecing arrangement for the combed tufts.

To this end there is provided according to this invention a textile combing machine having detaching rollers operating substantially as set forth in the specification No. 16,001 of 1901, and, combined therewith, piecing rollers operating in conjunction with the said detaching rollers, the upper piecing roller serving to “clear” the upper detaching roller during substantially the whole operation of detaching and piecing, and the piecing rollers being movable to direct, after such piecing, a backed off end of fleece substantially vertically downwardly, ready for the next piecing.

Not only is the “licking” of loose fibres from the tenuous detached fibre tuft by the upper detaching roller effectually prevented as the operation of the machine proceeds, but the backed off end of fleece, being directed downwardly as defined, is kept effectively clear of all surfaces which would tend to ruffle it.

In a practical construction the upper piecing roller may for the purpose of clearing the upper detaching roller remain in adjustable close proximity thereto as stated, and the piecing takes place whilst the detaching rollers and the piecing rollers are in close adjacency. Piecing being completed or substantially so, the lower piecing roller may be drawn bodily away to permit the upper piecing roller to roll downwardly behind it and, the piecing rollers having a slight dwell in their outward or forward position backing off commences, this latter operation being completed as the piecing rollers return to the piecing point, the upper roller resuming its original position in close proximity to the upper detaching roller for the subsequent piecing.

A machine constructed and operating according to the invention will now be fully described with practical mechanical details. Reference will be had to the drawings annexed hereto, wherein: Figure 1 is a vertical section showing the detaching roller, the piecing rollers, means for bearing the latter rollers, and relevant parts and accessories.

Figure 2 is a diagrammatic view of the roller assembly at the end of the piecing operation; and Figures 3 and 4 show respectively the roller positions at commencement and completion of the movement of backing off an end of fleece for piecing.

In the drawings, the combing cylinder of the machine is indicated by Y.

D' is the fluted steel detaching roller in fixed bearings and rotating intermittently in the forward direction only.

P and P' are the piecing rollers and C and C' a pair of carrier rollers both pairs rotating together at the appropriate time first in one direction and then in the other.

The roller D' is carried in fixed bearings secured on the frame of the machine. The top roller D is rolled to and fro on D' as described in specification of Patent No. 16,001 of 1901, by the movement of the weight hook 1, adjustably mounted on the bar 2, which is hinged at 3 to a lever 4 keyed on the shaft 5 which is given a rocking movement from a suitable cam in the headstock of the machine. At the other end of the bar 2 is attached a spring or weight acting constantly in the direction of the arrow 6.

A slide F is fixed to the framing of the machine and a slide block K in which is formed the bearings of the rollers P and C, is at liberty to slide to and fro therein. The sliding movement of K is derived from the shaft 7, which is rocked at the appropriate time from a cam in the headstock of the machine. This rocking motion is transmitted to the block K through the adjusting rod 8, bell crank lever 9, pivoting on a stud 10 fixed in the slide F, and the link 11.

Cast on the top of the slide F is an arm 12 in which is fixed a stud 13 and loose thereon is the bowl 14.

The bearing of the top piecing roller P' is formed in the lever L in which is cast a slot O engaging the bowl 14 and having in its end the adjusting screw W abutting in due time on the bowl 14. Cast with the lever L is the arm 15 carrying a swivel 16 through which is passed the rod of the spring 17 whose other end swivels on the pin 18 fixed in the frame of the machine.

On the axis of the roller P' is carried the adjusting ring described in British specification No. 377,003 but not shown in this drawing. The ring abuts against the bush on the end of the roller D and serves as stated in the specification to adjust the distance between the roller P' and D. The spring 17 constantly pulls the lever L to the right and keeps, during the appropriate period, the two rollers in close proximity and in due time presses the screw W against the bowl 14. In addition it keeps the roller P' constantly pressed down on the roller P.

The roller C' is carried on the top of C in any suitable manner, moving to and fro with it.

In Figure 1 the parts and the rollers, and in Figure 2 the rollers only for clarity, are shown in their relative positions at the end of the detaching period and the rear end of the detached fleece has reached the point marked T. The roller P remains during the whole or during the greater part of the detaching period in close proximity to the roller D'. When the detaching is completed or nearly completed, as seen in Figure 2, the slide K is drawn away towards the left allowing the roller P' to roll round D but always pressed on P, until the screw W contacts with the bowl 14. Thereupon the roller P', due to the continued withdrawal of roller P, leaves D and falls behind the roller P until its centre is approximately level with, or preferably slightly below, that of the roller P. During its withdrawal the roller P does not rotate, its forward rotation ceasing when the rear end of the detached tuft or fleece has reached the position shown in Figure 2 at T. When K with its rollers P and C reaches the position shown in Figure 3 it dwells there a brief moment and the reverse rotation commences in the direction of the arrow Figure 3. This directs the fleece delivered backwards tangentially downwards well clear of the cylinder cover 19, as shown at T¹. When the backward rotation of roller P is well advanced it begins to move back to its original position close to the roller D' as shown in Figure 4 whilst the reverse rotation is being completed, with the backed-off fleece as shown at T². Arrived in this position the direction of rotation of P is again reversed and the front end of the oncoming detached tuft T³ is pieced on to T². In the meantime the top detaching roller D has rolled over to the right of D' so as to be out of the way of the rising roller P' as it comes up to its position. When P' has reached this position, shown in Figure 4, the roller D rolls back over D' before the advancing nipper and top comb shown diagrammatically in Figure 4. In doing so it pushes the lever L before it against the resistance of the spring 17 until the position shown in Figures 1 and 2 is reached when the whole operation is then repeated.

The rotation of the lower piecing roller P, as also of the lower carrier roller C, may be effected by any suitable means. For example the cam and rack and pinion movements shown in the patent specification of Thomson and Barker's British Patent No. 2109 of 1883 may be adopted.

The rollers CC' have been hereinbefore referred to as carrier rollers; they serve to receive the fleece with the newly pieced tuft from the piecing rollers PP' as shown clearly in all the figures of the drawings. The slide K carries a metal pin N in which is fixed a selvedge guide V. These

parts are not essential to the detaching and piecing operations, but they are useful inasmuch as without the selvedge guide and the controlling carrier rollers the selvages of the fleece tend to become ragged and unsatisfactory, a fault entirely obviated by these additions, the lower carrier roller C moving bodily with the lower piecing roller P.

It will be understood that I have described a general assembly of the parts which lead to the desired results in a practical manner, but the mechanical details may be varied. The arm L carrying the upper piecing roller P' might, for example, be pivoted in a further pivoting arm adjustably controlled by a stop, the downward movement of the said roller being thus permitted and effected.

I claim:—

1. In a textile combing machine a reciprocating machine nipper, a pair of detaching rollers for a combed fibre tuft, a pair of piecing rollers which return an end of fleece for the piecing of such tuft, means for rolling the upper detaching roller bodily upon the lower as the machine nipper in tuft-detaching advances to and then recedes from the upper detaching roller and for pressing the upper piecing roller into clearing contact with the upper detaching roller during detaching and piecing, and operative mechanism causing relative bodily movement of the piecing rollers to direct the roller nip downwardly for the return of an end of fleece for subsequent piecing, and for return of the piecing rollers to their first position with a so returned end of fleece.

2. In a textile combing machine, a reciprocating machine nipper, a pair of detaching rollers for a combed fibre tuft, a pair of piecing rollers which return an end of fleece for the piecing of such tuft, means for rolling the upper detaching roller upon the lower as the machine nipper in tuft-detaching advances to and then recedes from the upper detaching roller, with means for maintaining the upper piecing roller of the pair supported upon and in downward contact with the lower piecing roller and also in clearing contact with the upper detaching roller during detaching and piecing, a slide block carrying bearings of the lower piecing roller shaft, means for moving such slide block away from the detaching rollers, stop means arresting the resultant downward roll of the upper piecing roller when the nip of the piecing roller pair is presented downwardly, and rotating mechanism for the rollers.

3. In a textile combing machine as claimed in claim 2, pivotally mounted lever means, bearings in such means for the shaft of the upper piecing roller, and spring means maintaining such upper piecing roller in nip contact with the lower piecing roller and also in clearing contact with the upper detaching roller during the tuft-detaching and piecing operation.

4. In a textile combing machine as claimed in claim 2, a slotted lever, bearings in such slotted lever for the shaft of the upper piecing roller, a pivot point engaged by the slot, and an adjustable stop member carried by the slotted lever and engaging the fixed pivot point on movement of the said lever, with the roller bearings, to a determined point downwardly.

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