

(No Model.)

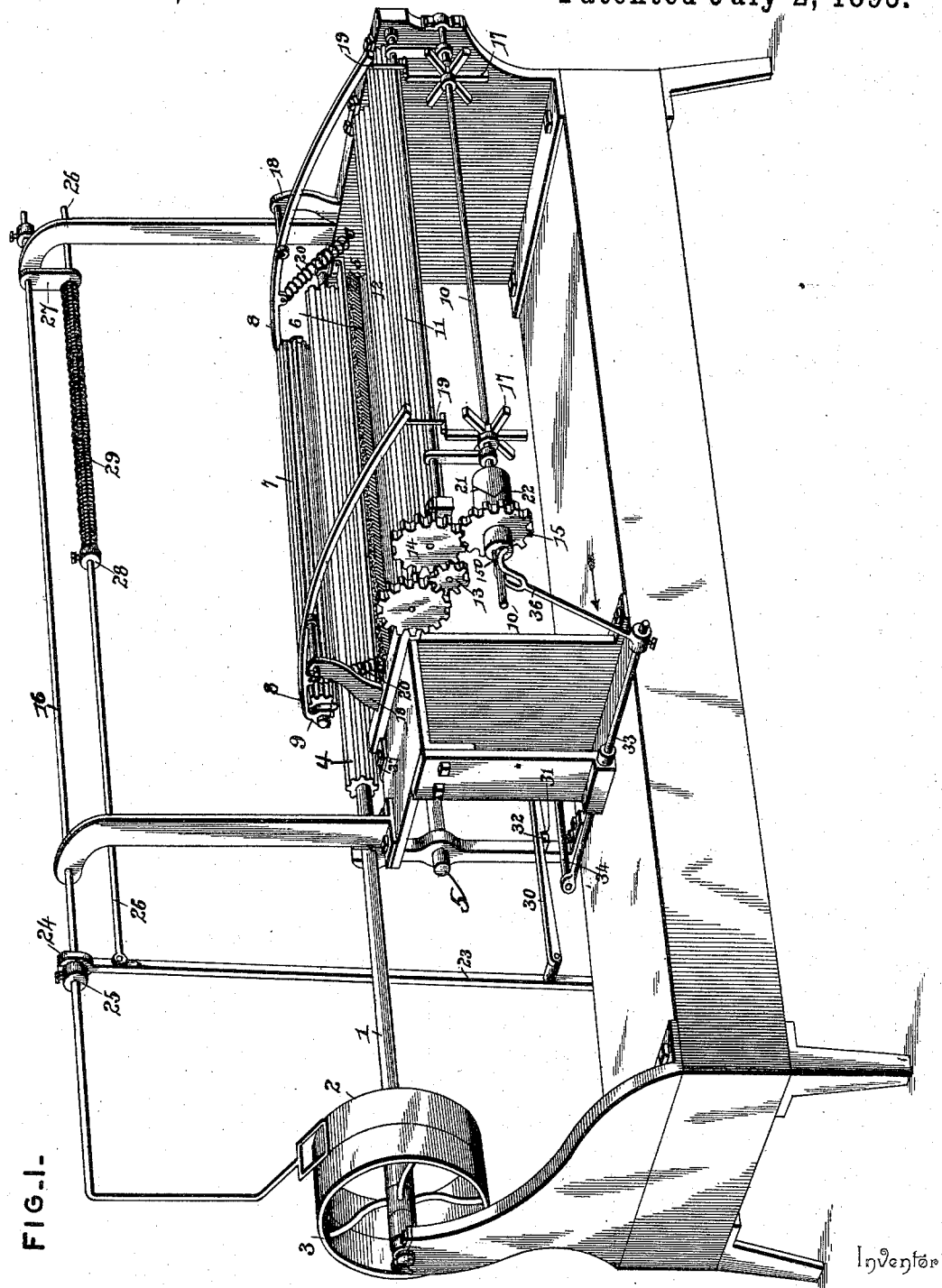
4 Sheets—Sheet 1.

G. TOWNSEND.

STOP MOTION FOR COTTON COMBING MACHINES.

No. 541,903.

Patented July 2, 1895.



Witnesses

Jas. H. McLaughlin
E. J. H. H. H.

By *his* Attorneys.

George Townsend

C. A. Snow & Co.

(No Model.)

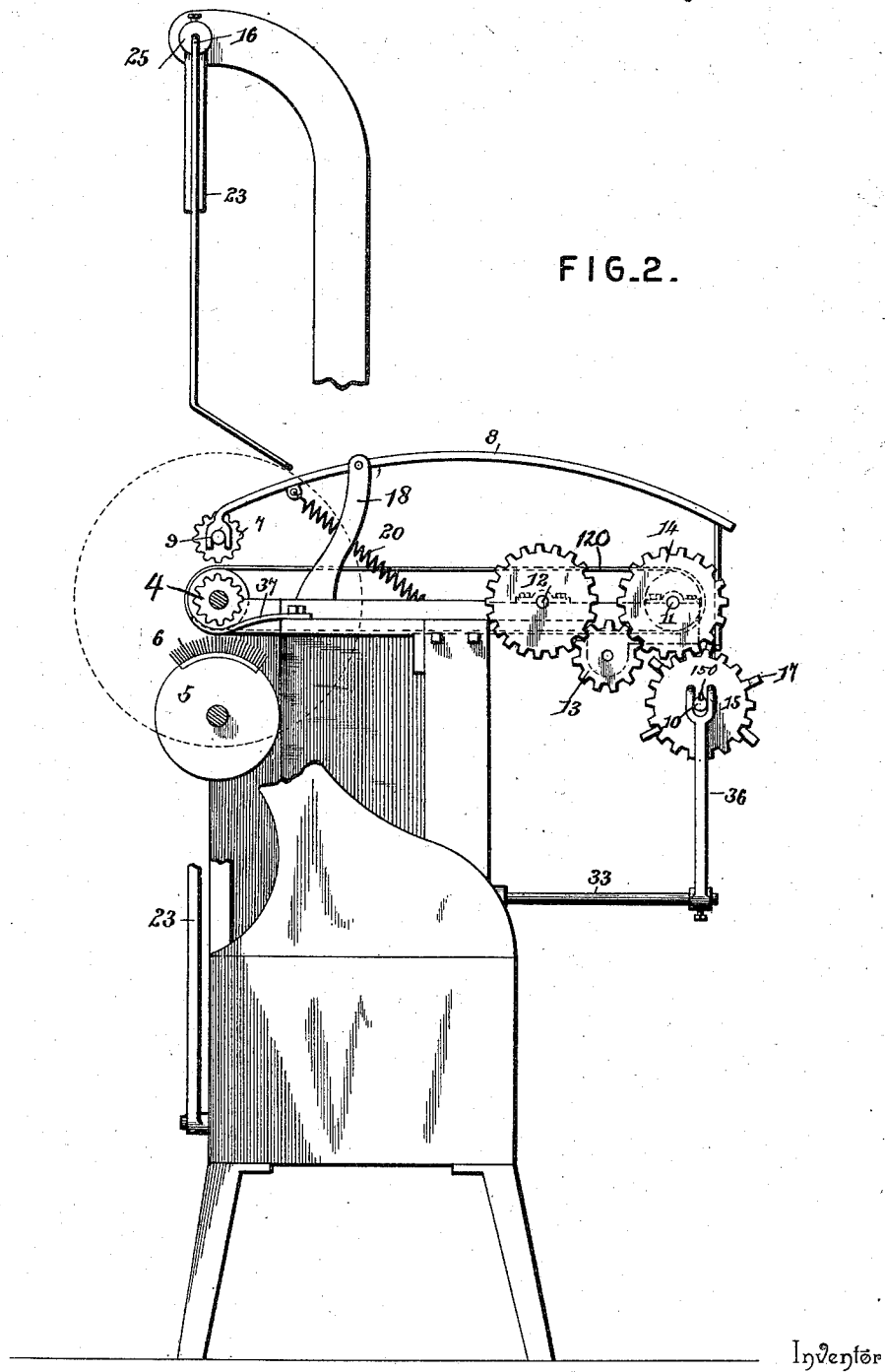
4 Sheets—Sheet 2.

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Witnesses

Jas. K. McLathran
O. D. Hays

By *his* Attorneys.

George Townsend

C. A. Snow & Co.

(No Model.)

4 Sheets—Sheet 3.

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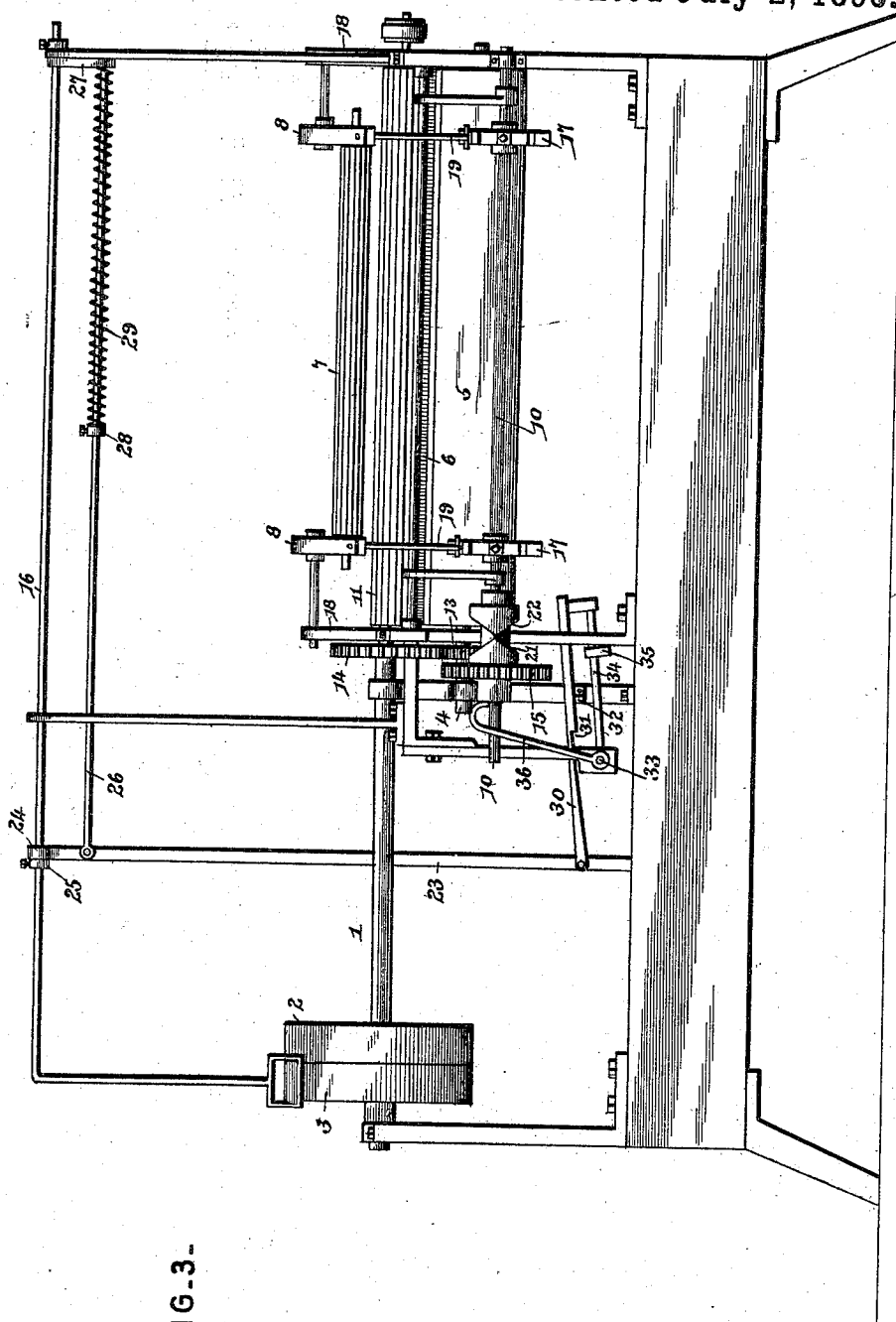


FIG. 3-

Inventor

George Townsend

Witnesses

Jas. H. McLaughlin
J. D. H. H.

By his Attorneys.

C. A. Snow & Co.

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4 Sheets—Sheet 4.

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FIG. 4.

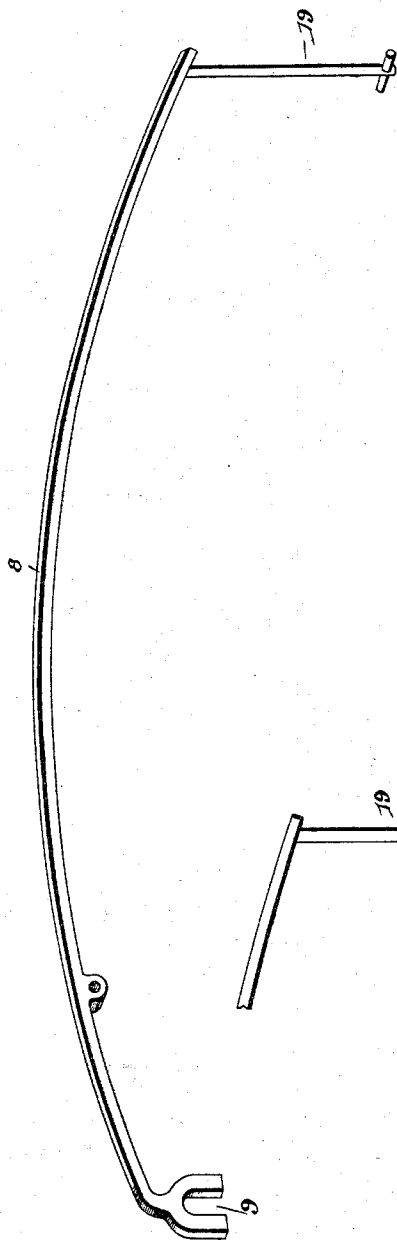


FIG. 6.

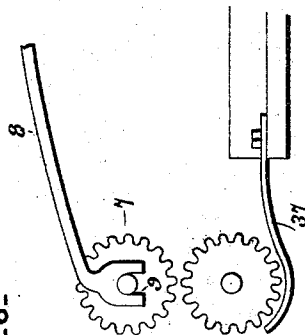
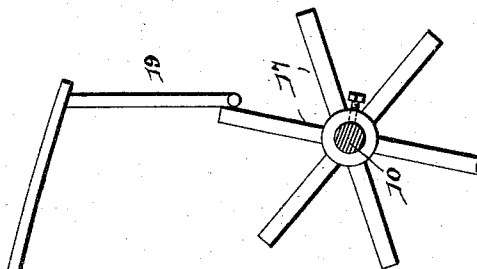


FIG. 5.



Inventor

George Townsend

Witnesses

Jas. H. McLaughlin
O. S. [Signature]

By His Attorneys.

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

GEORGE TOWNSEND, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO SAMUEL HIGHAM AND WILLIAM A. TRASK, JR., OF SAME PLACE.

STOP-MOTION FOR COTTON-COMBING MACHINES.

SPECIFICATION forming part of Letters Patent No. 541,903, dated July 2, 1895.

Application filed June 15, 1894. Serial No. 514,689. (No model.)

To all whom it may concern:

Be it known that I, GEORGE TOWNSEND, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Stop-Motion for Cotton-Combing Machines, of which the following is a specification.

My invention relates to mechanism for stopping the motion of combing machinery for cotton, when the feed-rolls thereof become encumbered by loose fibers wound thereon, which results usually from a broken lap.

The object of the invention is to provide a simple and efficient device for automatically checking the motion of the machine before the needles or teeth on the combing cylinder can be injured, and before the cloth of the cushion-plate can be torn; and with this object in view, the invention consists in a certain novel construction, combination, and arrangement of parts hereinafter fully described, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a portion of a cotton-combing machine, showing the stop-motion embodying my invention applied thereto in the operative position. Fig. 2 is an end view showing the positions of the parts when the upper feed-roll has been elevated by an accumulation of fibers upon the lower feed-roll. Fig. 3 is a side view showing the positions of the parts as in Fig. 2. Fig. 4 is a detail view of one of the upper feed-roll-supporting arms. Fig. 5 is a view of one of the spur-wheels and the coacting upper feed-roll bearing-arm, showing the positions of said parts when the former is engaged by the latter. Fig. 6 is a detail end view of the upper and lower feed-rolls, the cushion-plate, and the adjacent portion of an upper roll-supporting arm, to show the normal relative positions of such parts.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the portion of the combing-machine illustrated in the drawings 1 represents the main or drive-shaft having the fast and loose belt-pulleys 2 and 3. 4 represents the lower feed-roll fixed to and carried by said main shaft.

5 represents the subjacent combing cylinder provided with the needles or teeth 6. 7 represents the upper feed-roll held in place by the arms 8 which are provided at one end with open-sided bearings 9, which form the sole bearings for the trunnions of said upper feed-roll. 10 represents a stop shaft located at one side of and a distance from the shaft 1. 11 and 12 represent lap-supporting rolls, which are connected for simultaneous rotation by an intermediate gear 13 and receive motion from the main or drive-shaft by means of a belt 120 shown in Fig. 2, through suitable gearing and the gear 14 of said roll 11 meshing with a gear 15 on the shaft 10; and 16 represents the shifting-rod, which is adapted for shifting the belt, not shown, from the fast to the loose pulley, or vice versa.

The shaft 10 is provided with one or more spur-wheels 17, and the arms 8 are pivoted to brackets 18 forming parts of the framework of the machine, and are extended beyond the lap supporting-rolls 11 and 12, and terminate at one end in vertical stop-rods 19, which are adapted, when the upper feed-roll 7 is elevated by an accumulation of fiber upon the lower feed-roll, to descend into engagement with the spur-wheels, and thus check rotation of the shaft 10. The arms 8 are held in their normal positions with the feed-roll 7 pressed toward the feed-roll 4 by means of springs 20. The gear 15, which communicates motion from the lap supporting-rolls to the shaft 10, is slidably mounted upon the latter, being connected thereto by means of a feather or other similar device 150, and the hub of this gear 15 is provided with a cam-face 21, which is normally in contact with a similar cam face 22, fixed to the shaft 10, whereby when the rotation of the shaft 10 is checked, the cam faces 21 and 22 cause the gear 15 to be moved longitudinally upon the shaft 10, and out of mesh with the gear 14.

Fulcrumed at its lower end to the stationary part of the framework of the machine is a substantially vertical lever 23, provided at its upper end with a fork 24, which engages the shifting-rod 16 adjacent to an adjustable stop-collar 25. Connected to this lever adjacent to its upper end is a push-rod 26, held in a

position parallel with the shifting-rod by means of a guide or hanger 27, and between this guide or hanger and a collar 28 fixed to the push-rod is coiled an actuating-spring 29. In connection with this lever 23, I employ a latch 30 pivotally connected to an intermediate point thereof and provided with a shoulder 31 to engage a stop-arm 32 fixed to a stationary part of the framework, and when the parts are in the positions shown in Fig. 1, the shifting-rod is located to hold the belt in engagement with the fast pulley, the latch 30 is in engagement with the stop-arm 32, the spring 29 is compressed, and the mechanism is in operation. It will be evident, however, that upon the disengagement of the latch from the stop-arm, the spring 29, acting through the rod 26 and the lever 23, will throw the shifting-rod into the position shown in Fig. 3, and will thus carry the belt to the loose pulley, and thereby allow the mechanism to come to rest. The means whereby this disengagement of the latch 30 from the stop-arm 32 is accomplished automatically forms a trip mechanism, consisting, in the construction illustrated in the drawings, of a rock-shaft 33 having an arm 34, which is connected to the free end of the latch and is weighted, as shown at 35, and a trip-arm 36 also connected to said rock-shaft and provided with a bifurcated extremity which bears against the hub of the gear 15. Therefore, when the accumulation of the lap upon the feed-rolls causes an elevation of the upper feed-roll, the supporting arms 8 are rocked upon their fulcrums, the stop-rods 19 are depressed into engagement with the spur-wheels 17, thus checking the rotation of the shaft 10. This causes the disengagement of the gear 15 from the gear 14 and moves the trip-arm in the direction indicated by the arrow in Fig. 1, thus elevating the free end of the latch 30 and allowing the spring 29 to throw the shifting-rod so as to carry the belt to the loose pulley. The weight 35 normally holds down the arm 34, so that the latch 30, will quickly engage the stop-arm 32 when the shifting-rod is moved by hand in the opposite direction to that above described, in order to throw the belt upon the fast pulley, said latch promptly engaging the stop-arm and holding the parts in their operative positions.

Located between the lower feed-roll 4 and the combing cylinder 5 is a cushion-plate 37, which is usually provided with a clothing or covering of fabric, and when the upper feed-roll is fixed, as in the ordinary construction, the pressure of the accumulation upon the lower feed-roll causes the depression of this cushion-plate until the under surface thereof is brought into contact with the teeth of the combing cylinder. This causes the clothing or covering to be torn from the cushion-plate and usually causes the breakage of the needles or teeth, which are very expensive, thus involving considerable expense for repairs, and besides delaying the operation of the machine, and therefore the advantage of my im-

proved construction, whereby the upper feed-roll is mounted in movable bearings supported by arms which are extended and carry stop-rods for engagement with spur wheels on a cam-shaft, will be readily understood by those skilled in the art.

At this point particular attention is directed to the important function of the arms 8, which not only form bearings for the upper feed roll of the combing machine, but also form a part of the stop mechanism that is actuated by the self adjustment of the said upper feed roll. It will also be apparent in this connection, that the specific arrangement and relation of the several parts of the herein described stop motion or mechanism adapt such motion or mechanism for use in connection with the feed rolls of a cotton combing machine, and that the said feed rolls are therefore essential parts of the mechanism inasmuch as the feeding of the lap, when necessary, is automatically interrupted before being operated upon by the combing cylinder, and consequently the breakage of the needles or teeth of the combing cylinder is obviated, which is not possible in machines employing stop mechanism in connection with the lap after the same has passed the combing cylinder. The herein described stop motion or mechanism is therefore solely adapted for use in connection with combing machines for cotton only.

It will be understood, furthermore, that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having described my invention, what I claim is—

1. In a cotton combing machine, the combination with the intergeared lap-supporting rolls, and the feed rolls, one of which feed rolls is vertically movable; of a stop shaft, a gear wheel connection directly between said stop shaft and one of the lap-supporting rolls, the gear wheel of said gear connection that is on the stop shaft being adapted to be automatically disengaged from the wheel meshing therewith by the stoppage of the stop shaft, a pivotally supported arm connected with the movable feed roll and adapted to suitably engage with the stop shaft when the movable feed roll is elevated to entirely check the rotation of the stop shaft, belt shifting mechanism and a suitable connection between the belt shifting mechanism and the movable gear of said gear connection, substantially as set forth.

2. In a cotton combing machine, the combination with the intergeared lap supporting rolls, and the feed rolls, one of which feed rolls is vertically movable; of a stop shaft carrying a fixed cam, a movable gear wheel loosely mounted on the stop shaft and meshing with the gear wheel of the adjacent lap-supporting roll, said movable gear wheel hav-

ing a cam coacting with the fixed cam on the stop shaft, a pivotally supported arm connected with the movable feed roll and adapted to suitably engage with the stop shaft to entirely check the rotation thereof, belt shifting mechanism and a suitable connection between the belt shifting mechanism and said movable gear wheel, substantially as set forth.

3. In a cotton comber, the combination with
10 a main shaft carrying fast and loose pulleys, a spring actuated belt shifting-rod, a stationary stop arm a latch connected with the belt shifting-rod and adapted to engage the stationary stop-arm to hold said rod in position
15 to maintain the driving-belt in engagement with the fast pulley of the main shaft, and the combing machine feed-rolls, one of which is vertically movable, of a stop shaft, a spur wheel mounted on the stop shaft, an intermediately pivoted arm connected at one end to said movable feed-roll and provided at the other end with a stop-rod to engage the spur wheel upon said stop-shaft, co-acting fixed and loose cams arranged upon said stop shaft,
20 and connections between the loose cam and said latch, substantially as specified.

4. In a cotton comber, the combination with a main shaft carrying fast and loose belt pulleys, a spring actuated belt shifting-rod, a latch
30 for holding said rod in position to maintain the belt in engagement with the fast pulley, and the combing machine feed-rolls, one of which feed rolls is movable, of a stop shaft, carrying a spur wheel an arm connected to said movable feed-roll and provided with a stop-rod to engage the spur wheel upon the stop shaft, a rock-shaft having an arm connected to the said latch, a cam slidably mounted upon the stop shaft, a trip-arm secured to the rock-shaft and arranged in operative relation with said movable cam, and a fixed cam carried by the stop shaft and co-operating with the movable cam, substantially as specified.

5. In a cotton comber, the combination with a main shaft carrying fast and loose belt-pulleys, a spring actuated belt shifting-rod, a lever connected at one end to the belt shifting rod, a stationary stop arm a latch pivotally
50 connected to said lever and arranged to engage the stationary stop-arm to hold the belt shifting rod in position to maintain the belt in engagement with the fast pulley, and the combing machine feed-rolls, one of which is movable transversely, of a stop shaft, pivotal arms provided at one end with bearings for the trunnions for said movable feed-roll, and

provided at the other end with stop-rods to engage with the stop shaft to check its rotation, springs for pressing the movable feed-
60 roll toward the other feed-roll, co-acting cams mounted upon the stop shaft, one of said cams being longitudinally movable thereon, and connections between the movable cam and said latch, substantially as specified.

6. In a cotton comber, the combination with a main shaft carrying fast and loose belt-pulleys, a spring actuated belt shifting rod, a latch to hold the belt shifting-rod in position to maintain the belt in engagement with the fast
70 pulley, the combing machine feed-rolls, one of which is movable transversely, lap supporting rolls, gearing connected to said lap supporting-rolls, a stop shaft, and a movable gear carried by the stop shaft and meshing with a gear on one of the lap supporting-rolls, of a pivotal arm connected at one end to the movable feed-roll and provided at the other end with a stop-rod to suitably engage with the stop shaft to check its rotation, a cam fixed
80 to the stop shaft, a co-acting cam slidably mounted upon the stop shaft and arranged in operative relation with said gear carried thereby, and connections between the loose cam and said latch, whereby when the stop-rod engages and checks the movement of the stop shaft, the latch is released and the gear carried by said stop shaft is disengaged from the gear of one of the lap supporting-rolls, substantially as specified.

7. In a cotton combing machine, the combination with the feed rolls, one of which feed rolls is vertically movable; of a stop shaft, intermediately pivoted arms provided at one end with bearings that form the sole bearings
95 for the trunnions of said movable feed roll, said intermediately pivoted arms being provided at their ends opposite the bearings with stop rods adapted to suitably engage with the stop shaft to check its rotation, springs connected with said pivoted arms to normally press the movable feed roll toward the other feed roll, belt shifting mechanism, and a suitable connection between said belt shifting mechanism and the stop shaft, substantially
100 as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE TOWNSEND.

Witnesses:

LEMUEL D. ADAMS,
WALTER R. SPOONER.