

A. W. & W. A. BELL.
 COMBINED EVENER AND STOP MOTION FOR COMBING MACHINES.
 APPLICATION FILED APR. 10, 1911.

1,018,029.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

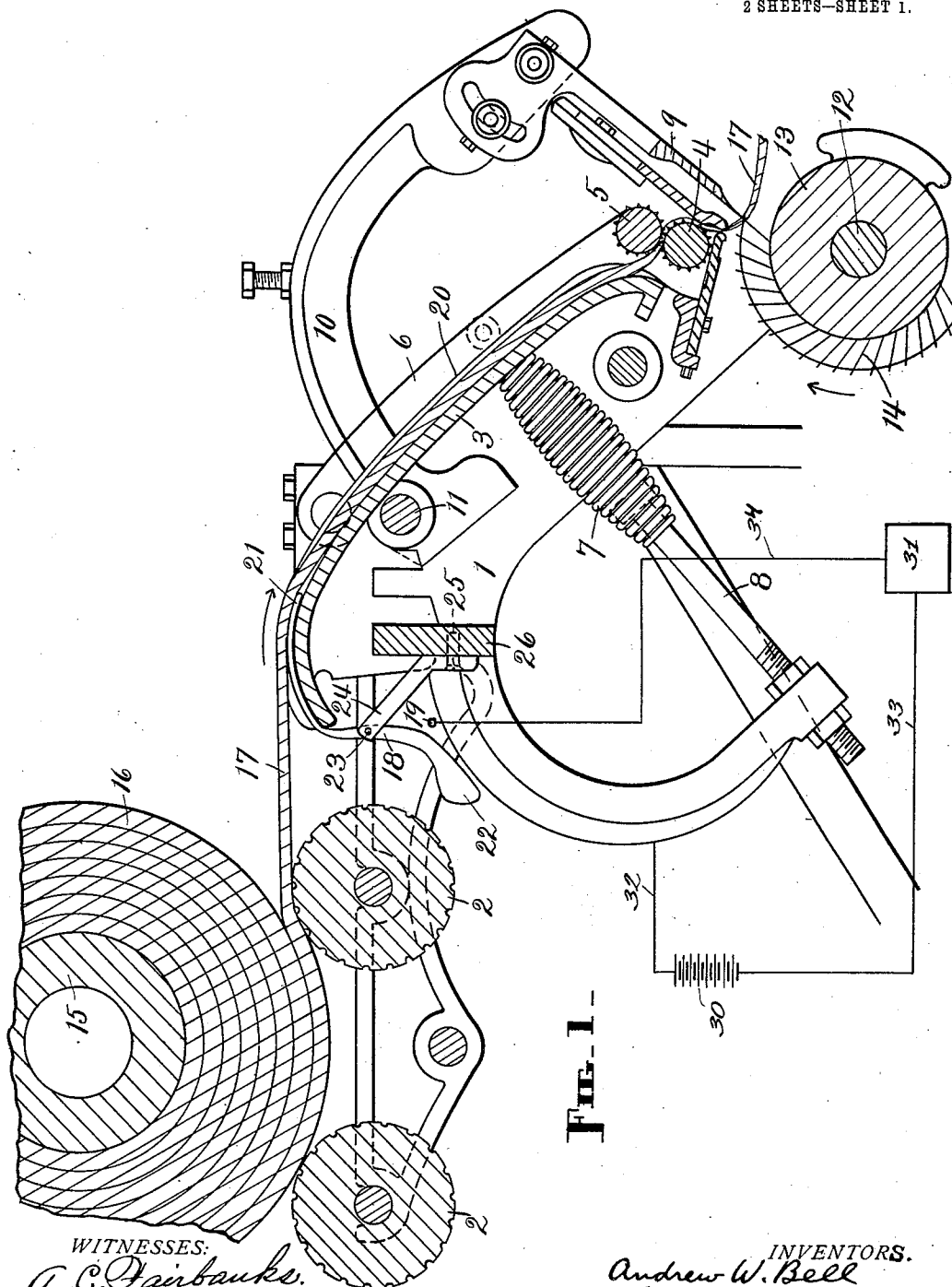


Fig. 1—

WITNESSES:
A. C. Fairbanks.
J. M. Davenport.

INVENTORS.
Andrew W. Bell
William A. Bell,
 BY
Webster & Co.,
 ATTORNEYS.

A. W. & W. A. BELL.
 COMBINED EVENER AND STOP MOTION FOR COMBING MACHINES.
 APPLICATION FILED APR. 10, 1911.

1,018,029.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 2.

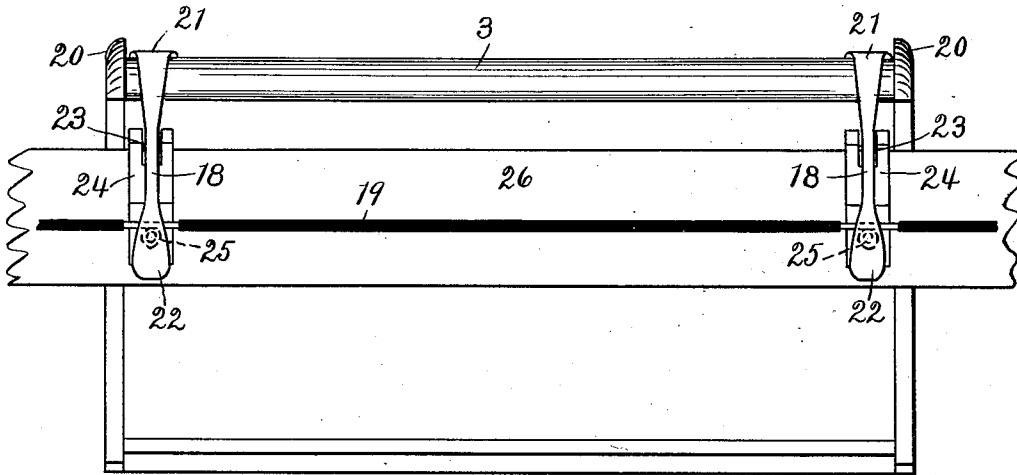


FIG. 2.

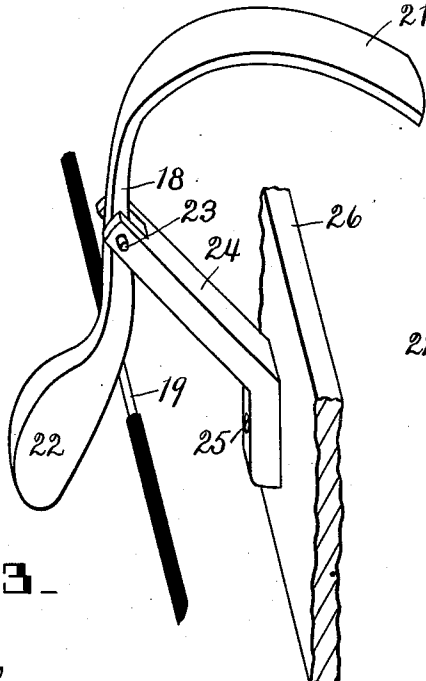


FIG. 3.

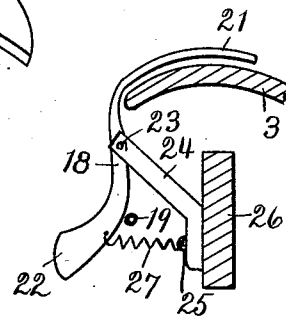


FIG. 4.

WITNESSES:

A. C. Fairbanks.
 J. M. Davenport.

INVENTORS.

Andrew W. Bell
 William A. Bell,
 BY
 Webster & Co.,
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW W. BELL AND WILLIAM A. BELL, OF HOLYOKE, MASSACHUSETTS.

COMBINED EVENER AND STOP-MOTION FOR COMBING-MACHINES.

1,018,029.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed April 10, 1911. Serial No. 619,926.

To all whom it may concern:

Be it known that we, ANDREW W. BELL and WILLIAM A. BELL, both citizens of the United States of America, and residents of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Combined Evener and Stop-Motion for Combing-Machines, of which the following is a specification.

Our invention relates to improvements in machines of the Heilmann type for combing cotton, and more especially to stop-motions of such machines, and consists essentially of a certain peculiar rocking member under the control or influence of a lap and employed in connection with a wire in the electric stop-motion circuit with which such a machine is equipped, all as hereinafter set forth.

In a combing-machine of the above-mentioned class the unrolled portions of the laps frequently split and the portions thus severed wind back on to the rolled portions, whereby the product of the machine is rendered uneven. If the operator is unusually prompt to observe that a split has occurred and to stop the machine, the trouble may be remedied, but as a rule the split is not discovered soon enough to prevent the rewinding or the back-wind of the split portion on to its roll. Then, again, the bunches formed at the ends of the laps which are first wound onto the spools or rollers in the ribbon-lapper, pass into the machine when the laps are unwound, and unless the operator notices in time when a lap is exhausted and stops the machine, and very often said operator fails so to do, the thick end of the exhausted lap is drawn into the half-lap which is acting upon the particular lap in question and injures said half-lap to such an extent that the repair of this half-lap and of the other half-laps injured in the same way is an expense item of considerable importance. Although these machines are provided with stop-motions which act when the sliver breaks, or a roller lap occurs, no provision has heretofore been made to insure the stopping of the machine at the instant a lap splits or runs out.

The object of our invention, therefore, is to remove the disadvantages just pointed out by providing a combing-machine with simple and inexpensive but practicable and efficient means for automatically stopping the machine whenever a lap splits or runs

out, to the end that an even sliver is produced by the machine, the half-laps of said machine are protected, the amount of waste from said machine is very materially reduced, and said machine has an increased production.

Other objects will appear in the course of the following description.

We attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section through a portion of a combing-machine having our invention in a practical form embodied therein, only so much of such machine being shown as is necessary to make clear the application of said invention; Fig. 2, a rear elevation of certain parts and members which appear in the preceding view, a pair of the combined evener and stop-motion devices being included, however; Fig. 3, an enlarged perspective of one of said devices, and, Fig. 4, a side elevation of one of the devices, illustrating the application of a spring thereto.

Similar figures refer to similar parts throughout the several views.

We will first briefly explain the old parts of the combing-machine which it has been deemed desirable to show in order to disclose fully the application and operation of our new feature.

At 1 is represented a portion of the frame of the machine, from which project the several arms, brackets and other members required to afford supports, bearings, etc., for the other elements of the machine. At the rear are two corrugated lap-rolls 2, one behind the other and both on the same horizontal plane. In advance of the forward lap-roll 2 is a flanged lap-plate 3 curved and having a downward direction from back to front in the usual manner. In front of the lower forward edge of the lap-plate 3 is a corrugated feed-roll 4, and above this feed-roll is a similar feed-roll 5, the latter being mounted between pivotally-mounted arms, one of which appears at 6. The top feed-roll 5 is urged toward the bottom feed-roll 4 by means of a spring 7 which encircles a rod 8 for each arm 6. A top comb 9 is supported at each end from an arm 10 mounted on a shaft 11, and has its bottom edge below and a little in advance of the feed-roll 4. Mounted on a shaft 12 below the feed-roll 4 and the top comb 9 is a cylinder 13

which is provided with a half-lap 14, the latter being in operative relation to said comb.

The parts and members mentioned above form a portion of what may be termed one section of a combing-machine, such machine usually comprising eight of such sections and consequently handling that number of laps and preparing the same for the drawing-frame, or the machine which takes the sliver from the combing-machine.

A spool and a lap wound thereon are represented at 15 and 16, respectively, on the lap-rolls 2, and a strip from the roll 16 is shown at 17 passing from between said roll and the forward lap-roll, over the lap-plate 3 to and between the feed-rolls 4 and 5, and between the top comb 9 and the half-lap 14, from which point such strip passes to other parts of the combing-machine which are not herein illustrated.

The lap strip 17 is about twelve inches wide, and it is the edges of this strip that are liable to split off from the main body of the same and, unless the machine is stopped at once, to become rewound on the roll 16, in consequence of which an uneven sliver results. Furthermore, it is the inner end of the aforesaid strip, that is to say, the inner end when said strip is in the roll 16, that is thick or bunched and damages the half-lap 14 if permitted to reach it.

The direction of travel of the lap strip 17 and of rotation of the half-lap 14 are indicated, in Fig. 1, by the associated arrows.

The new device may be said to consist of a movable member mounted so as to extend into the path of travel of the lap strip 17, which member in the present case is in the form of a rocker 18. In connection with the aforesaid member, a circuit-forming member, preferably a wire 19, is employed and located in the path of the movable member when free. There should be a pair of the rockers 18 for each lap strip 17, one such rocker being located at or adjacent to each edge of said strip, and the most convenient and effectual place for said rockers is at the back end of and behind the lap-plate 3, with their upper terminals just inside of the edge flanges or side pieces 20—20 of such plate.

By preference, each rocker 18 has its upper terminal curved forward to conform to the upper curved surface of the lap-plate 3 at the rear end, and is so mounted that such curved terminal can be swung down onto such surface, as clearly shown in the first view. The upper curved terminal or beak of the rocker, represented at 21, is usually flattened after the manner shown so as to provide a wider bearing surface for the lap.

The base or tail of each rocker 18 is preferably given a backward sweep and made

heavy, as at 22, to the end that such tail normally gravitates forward and raises the upper terminal or beak 21 from the lap-plate 3. The action just described takes place because the rocker is pivoted intermediate of its terminals, at 23, to a rearwardly-extending bracket 24, and is supported by said bracket in a way that leaves said rocker free to swing. The gravity movement of the rocker 18 is limited by the wire 19, as will presently be explained. The bracket 24, for each rocker 18, is securely fastened to the machine in any suitable manner, and by any suitable means. In the present embodiment, the base of each bracket 24 is secured by means of a screw 25 to the back side of a longitudinally-extending vertical bar 26 of the frame 1.

The wire 19, which is connected with the electric stop-motion of the machine and forms a part of the circuit of said stop-motion, extends along in front of the several rockers 18, below their pivotal points 23, and, if insulated as is usually the case, should be denuded of insulation at points adjacent to said rockers, so as to enable the latter to form good electrical contacts with said wire. The wire thus prepared is plainly shown in Figs. 2 and 3.

The above-mentioned stop-motion includes an electrical apparatus which, being of usual construction, together with the circuit, is only diagrammatically represented, in Fig. 1. Said stop-motion comprises a suitable source 30 of electric energy or current, a suitable electrical stopping device 31, a wire 32 connecting one pole of said source of electric energy or current with the frame 1, a wire 33 connecting the other pole of the aforesaid source with one of the poles of said stopping device, and a wire 34 connecting the other pole of said stopping device with the wire 19, the latter also constituting a part of the circuit, as previously stated.

As already stated, the rockers 18 when free come to rest against the wire 19, the latter being situated with this end in view, and when any rocker thus contacts with said wire the circuit is closed through the wire and the frame of the machine and the electric stop-motion operates to stop the machine. Upon swinging any rocker clear of the wire 19, the circuit is broken at that point between wire and frame, and if broken at all of the other switch points the electric stop-motion permits the machine to be restarted and to continue in operation until said circuit is closed again.

The practical operation of the invention is as follows:—The lap strip 17, which has been introduced into the machine, on its way over the lap-plate 3 to the feed-rolls 4 and 5, passes over the beaks 21 of the two rockers 18 which are at the back end of said plate, and bears such beaks down onto said

plate, at the same time swinging said rockers out of contact with the wire 19, as shown in Fig. 1, and so opening the circuit of the electric stop-motion of the machine. Now, assuming that said circuit is not closed at some other point, the machine after being started in the usual manner continues to run, because the lap strip holds the beaks 21 down on the lap-plate and the rockers away from the wire 19, as such strip moves forward, but in the event that a split occurs at either edge of said strip the machine stops, since the rocker which was held out of contact with said wire by the portion of the strip that has just split off is at once released and instantly swings against said wire and closes the stop-motion circuit. The operator repairs the split strip and starts the machine once more, being able to do the latter because the strip is again in condition to retain the rocker, that brought about the stopping of the machine, out of contact with the wire. Thus it is seen how practically impossible it is for the machine, when in charge of a competent operator, to produce uneven sliver. Then, again, when the last of the roll 16 and of the strip 17 passes onto the lap-plate 3 and over and away from the beaks 21, the rockers 18 swing into contact with the wire 19 and cause the machine to stop before the thick end of said strip reaches the half-lap 14, so that no injury is done to said half-lap. This thick part is then removed and a fresh lap is placed in position on the lap-rolls 2 and led into the machine as before.

Either or both rockers may be instrumental in stopping the machine in any case, accordingly as it happens that one is released before the other or both are released simultaneously. The weighted tails 22 of the rockers 18 are responsible, of course, for the action of said rockers, when their beaks 21 are released, whereby said rockers swing against the wire 19. The other sections of the machine should be equipped with the new devices, when they will be similar in all respects to the section herein shown and described.

Either in lieu of or as an assistant to gravity a suitable spring may be employed to urge the rocker 18 into contact with the wire 19. In Fig. 4 a spring for this purpose is represented at 27. The tail 22 in this case may or may not be of the weighted variety.

Necessarily the action of these stop devices must be very delicate, since the lap-strip material is light and delicate, and on this account the weighted rockers without springs have been found as well if not better adapted for our purpose than rockers with springs.

We are aware that various stop devices have been used of the drop-wire and other

types, which are subject to threads and the like, but know of no device constructed like ours, or capable of doing the work that our device is capable of, no device, in short, that can be made subject to the control of moving material in strip formation and especially material such as is comprised in a lap strip.

Various modifications and changes in the shape, size, construction, arrangement and position of some or all of the parts of our device may be made without departing from the nature of our invention, hence we do not desire or intend to be limited to what is herein shown and described in detail, but seek to include in said invention all that justly falls within the scope of our claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, in a combing-machine, with the supporting and actuating members for the lap, of a stop motion, and two suitably supported movable members, one located under each edge of the lap and held out of engagement with the stop mechanism by the lap while it is intact, but free to move into engagement with the stop mechanism whenever the engaging edge of the lap becomes torn or is ruptured, whereby the stop motion operates to stop the machine before there is a complete rupture of the lap.

2. The combination, in a combing-machine, with the supporting and actuating members for the lap, including the lap-rolls and the half-lap, of an electric stop-motion-circuit member, and two suitably supported movable members having lap-receiving and contacting parts arranged, between said rolls and said half-lap, to be held by the edges of the lap out of contact with said stop-motion-circuit member, and to contact with said circuit member when released by said edges.

3. The combination, in a combing-machine, with the frame, lap-rolls and lap-plate of the machine, of an electric stop-motion-circuit member, and a pair of rockers, one located at each side of the lap-plate, pivotally supported from said frame and having their upper terminals or beaks extending over the rear edge of said lap-plate into the course of the lap adjacent to the side edges thereof, such rockers being provided with means to retain them in contact with said stop-motion-circuit member when there is no lap in said course to contact with said beaks from above.

4. The combination, in a combing-machine, with the frame, lap-rolls and lap-plate of the machine, of an electric stop-motion-circuit member, and a pair of rockers pivotally supported from said frame and having their upper terminals or beaks flattened transversely and extended over the

rear end of said lap-plate into the course of the lap adjacent to the side edges thereof, said rockers also having their lower terminals or tails weighted so that the rockers
5 swing into contact with said stop-motion-circuit member when not subject to the influence of the lap above said beaks.

5. The combination, in a combing-machine, with the supporting and actuating
10 members for the lap, and an electric stop-motion-circuit member, of two suitably supported movable members, between said circuit member and the lap, having lap-receiving and contacting parts arranged to be held

by the edges of the lap out of contact with
said stop-motion-circuit member, and to
contact with said circuit member when
released by said edges, each of said lap-
receiving and contacting parts being nar-
row relative to the width of the lap so that
a slight tear or rupture in either edge of the
lap releases the member held by such edge. 15 20

ANDREW W. BELL.
WILLIAM A. BELL.

Witnesses:

F. A. CUTTER,
A. C. FAIRBANKS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents
Washington, D. C."
