No. 625,967. Patented May 30, 1899.

E. DELETTE.

COMBING MACHINE FOR TEXTILE MATERIALS.

(Application filed Dec. 28, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

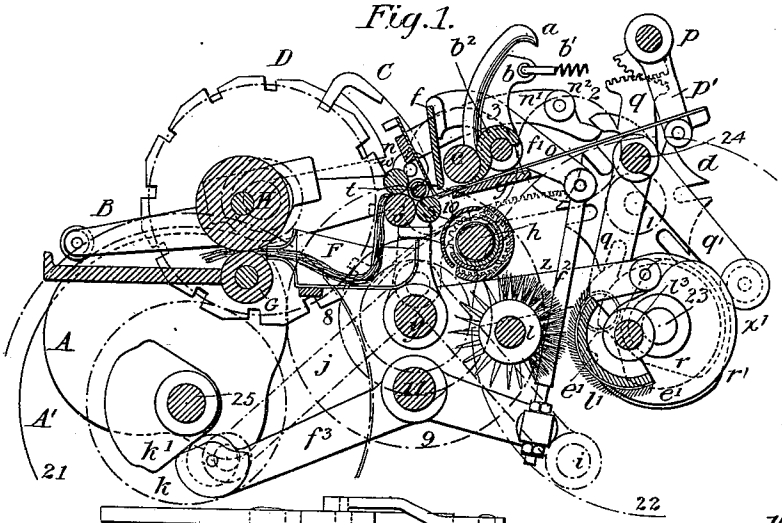


Fig. 3.

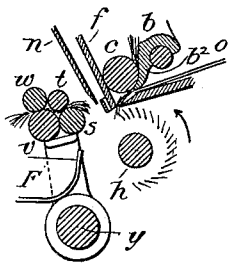


Fig. 4.

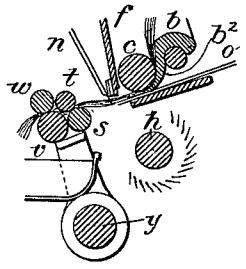


Fig. 2.

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FIG. 5.

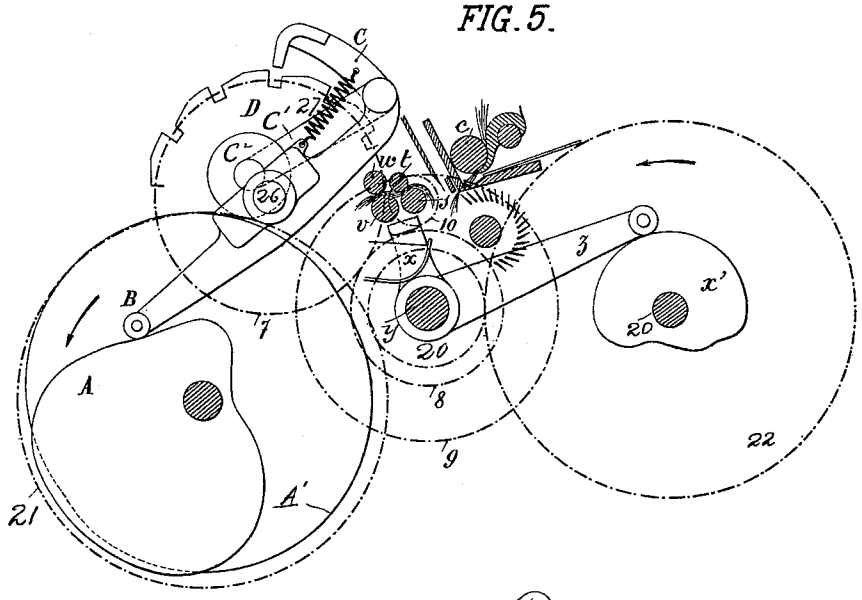
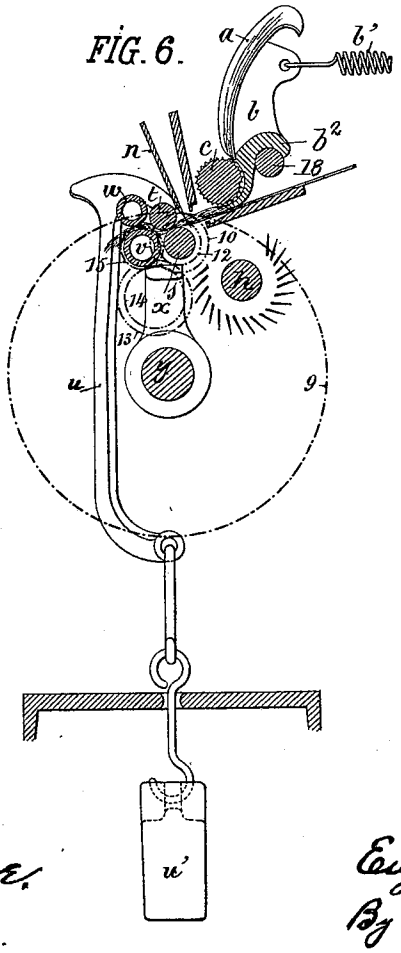


FIG. 6.



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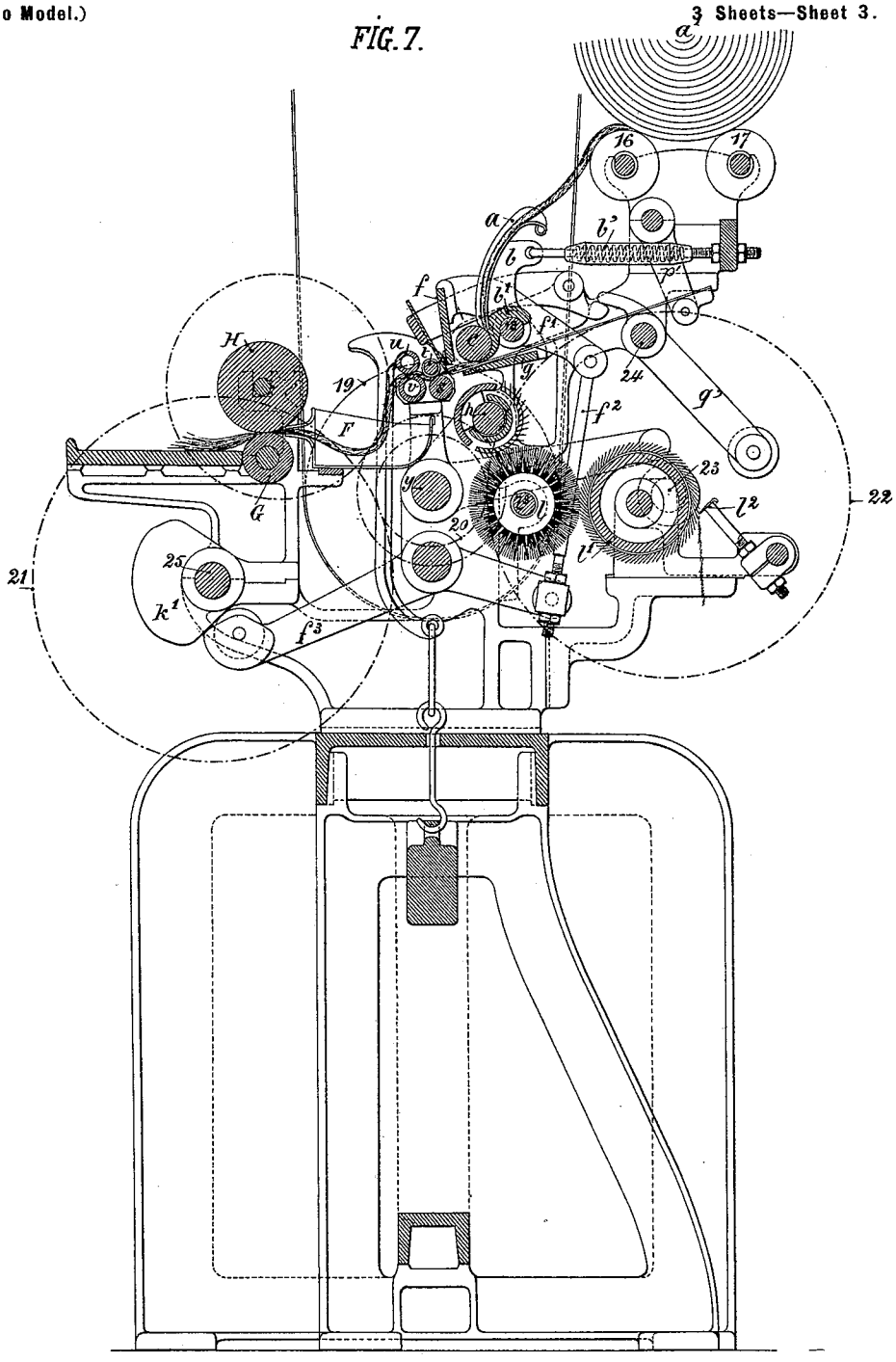
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(No Model.) 3 Sheets—Sheet 3.

FIG. 7.



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UNITED STATES PATENT OFFICE.

EUGÈNE DELETTE, OF LURE, FRANCE.

COMBING-MACHINE FOR TEXTILE MATERIALS.

SPECIFICATION forming part of Letters Patent No. 625,967, dated May 30, 1899.

Application filed December 28, 1897. Serial No. 663,914. (No model.)

To all whom it may concern:

Be it known that I, EUGÈNE DELETTE, engineer, a citizen of the Republic of France, residing at Lure, (Haute Saône,) in the Republic of France, have invented certain new and useful Improvements in Combing-Machines for Textile Materials, of which the following is a specification.

This invention relates to combing-machines for textile materials, and has for its object to obtain a better combing of the material, while reducing waste and increasing the production. The material to be combed is brought by means of a special feed arrangement having an alternating motion and is seized by two jaws or nips, while a cylindrical comb effects the combing of the part which projects. The combed material is then drawn over the teeth of a finishing-comb by means of a series of four rollers mounted on an oscillating carriage and is carried away in the form of a sliver.

The invention will now be described in detail with reference to the accompanying drawings, in which—

Figure 1 is a transverse section; Fig. 2, a plan view, partially in section; Fig. 3, a view showing the relative positions of the various parts at the end of the dragging. Fig. 4 represents the same parts at the commencement of the dragging. Fig. 5 represents the position occupied by the various parts operating the dragging when the machine has turned about half a revolution as compared with Fig. 1. Fig. 6 shows in detail, on an enlarged scale, the dragging and feed devices. Fig. 7 is a transverse section of the whole machine, but with certain parts assumed to be removed.

As may be seen in Fig. 7 of the drawings, the material prepared for combing is arranged at a' on two rollers 16 and 17 and drawn as required onto a feed-guide a by the intermittent movement of a cylinder c, as will be hereinafter explained. This feed-guide has both sides raised in order to prevent the material escaping laterally and has a convex surface over which the material to be combed travels. This material thus reaches in the form of a band or lap a feed device formed of a grooved cylinder c, Fig. 6, which presses against a peculiarly-shaped piece b and which has an intermittent movement, the object of which is to cause the material to advance progressively, said material being gripped between the cylinder c and the piece b. The piece b has a part b^2 in the form of a trough, which constantly bears on the cylinder c. For this purpose the piece b can pivot on a shaft 18, on which it is supported and is drawn on by a spring b', attached to some suitable point of the framework. (See Fig. 7.) The machine receives its movements from a pulley 19, Fig. 7, keyed on a shaft y and which drives two wheels 21 and 22 by means of a common wheel 20. By referring to Figs. 1 and 2 it will be seen that the wheel 22 actuates intermittently a star-wheel d by the intermediary of a pin e', carried on a grooved disk e. This star-wheel operates the grooved roller c by means of pinions 1, 2, and 3, the first of which is keyed on the same shaft as the said star-wheel. During the combing the fibers are maintained between the two jaws f and g, which act as nippers. The jaw f is movable and receives its opening-and-closing movement from a cam k' by means of a roller-lever f^3, pivoted on a spindle 11, which lever is linked by an adjustable rod f^2 to an oscillating lever f', on which this jaw is mounted.

The head of the lap is combed by a cylindrical comb h, having an alternating rotary motion by means of a pinion 4, keyed on the same spindle and which gears with a toothed sector i. This sector receives an oscillating movement on its axis by means of a disk k, keyed on the same shaft as the wheel 21 and having a crank-wrist and connecting-rod j. It may also be operated by means of any suitable system of cams or other suitable arrangement.

In order to clean the teeth of the cylindrical comb h, a cylindrical brush l is mounted near the same and receives a longitudinal reciprocating displacement by means of a cam-wheel m, keyed on the shaft 23, the peripheral projection of which engages in a circular groove on the driving-pinion 5. This brush receives at the same time a rotary movement on its axis by means of a wheel 6 and pinion-gear 5, keyed on the shaft 23, with the object of cleaning the cylindrical comb. It will be seen that as the brush l has a continuous rotary motion and the cylindrical comb, on the other hand, an alternating rotary motion the latter will be brushed during the pe-

riods of backward rotation, the said brush l being itself cleaned by a circular comb l', revolving on its axis l^3. The latter is in turn cleaned by a fixed scraper l^2, mounted on the frame of the machine, and the position of which may be exactly regulated, Fig. 7.

The final comb n is intended to engage the head of the fiber while the latter is dragged through by the rollers s and t, as will be hereinafter explained, and is intended to retain the impurities and to force the fibers of the sliver to be placed parallel to one another. This comb is carried by a lever n', pivoting on the spindle n^2, the extension of said lever n' being acted on by the catch of a roller-arm q', pivoting on a spindle 24 under the action of a cam r'. The blade o, passing between the two jaws f and g, has imparted to it a reciprocating movement by arms p' on the shaft p, which receives its movement by the intermediary of two toothed segments from a roller-arm pivoting on the shaft 24 and operated by a cam r of the shaft 23.

The blade o has for its object to retain all impurities in the material on the jaws of the grip. The blade o is intended to be placed near the final comb n during the dragging through said comb and to thus force the fibers to pass through the teeth of the comb. The dragging through is produced by a group of four cylinders $s\ t\ v\ w$, mounted on an arm or frame oscillating on a shaft y, actuated by means of a cam x', keyed on the shaft 23, and roller-arm z. These four cylinders are operated in the following manner: The cylinder s is grooved and receives an alternating rotary motion forward and backward from a cam A, keyed on the shaft 25 of the wheel 21 and operating a roller-arm B, pivoting on shaft 26, as may be seen in Fig. 5, which arm actuates a ratchet or notched wheel D by means of a pawl C, held by a spring 27 and having an extension C', carrying a roller C^2, which travels on a second cam A', keyed on the shaft 25. The ratchet D is mounted on a shaft E, which transmits its movement to cylinder s by a train of four wheels 7 8 9 10, the last (10) of which is keyed on the shaft of the cylinder s. The shape of the cams A and A' is such that at each dragging of the material the pawl C rises and springs one tooth of the ratchet and drops into the next notch, so that the system has a strong forward rotation changed intermittently to a slight backward rotation, which causes the combed fleece to move forward intermittently to a variable extent, according to the number of teeth on the ratchet employed, each interval of forward movement being followed by a slight backward movement. This action is due to the fact that when the pawl C has sprung over a tooth in pivoting upward under the combined action of the cams A and A' and has dropped into the following notch the lever B does not immediately reverse its direction, but continues to oscillate upward to a certain extent. The effect of this movement is to cause the dragging-cylinders $s\ t\ v\ w$ to revolve in a reverse direction to that which would have the action of drawing in the fibers of the material to be combed, and that with the object of protruding the fleece—*i. e.*, releasing a short length of the combed material which may be attached to the head of the portion which is on the point of being dragged through the combing mechanism.

The cylinder t, Fig. 6, is coated with an elastic or flexible substance and is revolved by the rotation of the grooved cylinder s, on which it is pressed constantly by means of a counterweight u' and suitably-curved piece u of special form. The cylinder v is longitudinally grooved, which is not shown in the drawings, and operated by the cylinder s by means of toothed pinions 12 13 14 15. Finally, the grooved cylinder w is free and may be revolved by the rotary movement of the cylinder v.

The first two cylinders, s and t, are dragging or drawing cylinders and the last two, b and w, are detachers. In addition to the alternating rotary motion forward and backward hereinbefore mentioned the whole of these four cylinders have, further, a simultaneous forward-and-backward movement transmitted to their common support or frame x by the oscillation of arm z, having a roller operated by a cam x', as has been hereinbefore stated.

The various parts of the machine having thus been described, its action on the material to be combed will now be stated.

Fig. 3 shows the position of the essential parts at the end of the combing period. In this position the head of the lap, being gripped and held by the closed jaws f and g of the nippers, is on the point of being combed by the circular comb h, revolving in the direction indicated by the arrow. During this combing period the rollers $s\ t\ v\ w$ of the dragging apparatus are moved away from the jaw f. When the circular comb has ceased to act—that is to say, after all the rows of teeth of said comb have entered the head of the lap—the jaw f rises. The blade o advances under the beak of the jaw in order to lift the head of the lap and force it to penetrate between the teeth of the final comb n, which then falls into the head of the lap. The dragging through is produced in the following manner: At the commencement of the dragging the cylinders $s\ t\ v\ w$ are at the farthest distance from the final comb n, as may be seen in Fig. 4. While they approach the final comb n they receive a rotary forward movement, which has for its object to seize the fibers of the substance to be combed. When they arrive in proximity to the final comb in the position shown in Fig. 1, the rotation ceases. Then the cylinders retire in order to complete the dragging, which is shown in Fig. 3. The pawl C rises, springs a tooth,

falls again immediately into the succeeding notch, and the cylinders then revolve in an inverse direction in order to release the fleece and attach it to the head of the following lap. The fleece thus formed falls into a hopper F and is converted into a band or sliver, which is drawn to the outside by means of delivery-rollers G and H, as may be seen in Figs. 1 and 2.

I declare that what I claim is—

1. In a combing-machine for textile materials a feed device comprising a guide *a*, a trough *b* a grooved cylinder *c* a spring pressing said trough against said cylinder, two jaws *g* and *f* between which the feed device is located, a train of toothed wheels 1, 2, 3, imparting an intermittent movement to said cylinder *c* a star-wheel operating said train and a revoluble disk *e* operating said star-wheel by means of a pin located on said disk, substantially as hereinbefore described.

2. In a feed device for machines for combing textile materials, comprising a guide, a trough *b* and grooved cylinder *c*, a spring pressing said trough against said cylinder, two jaws *g* and *f* between which the foregoing parts are situated, a train of cog-wheels 1, 2, and 3 imparting to said cylinder *c* an intermittent movement, a star-wheel operating said train and a revoluble disk *e* operating by its pin said star-wheel, the combination with the lower jaw *g* of a movable plate or blade *o*, a roller-lever *q* provided with a toothed sector, a shaft *p*, a sector keyed on said shaft and gearing with the sector on the lever *q*, a lever *p'* connecting the shaft *p* with the blade *o* and a cam *r* actuating said roller-lever *q* to impart a reciprocating movement to said blade, substantially as described.

3. In a combing-machine for textile materials, the combination with a dragging device comprising a frame *x* pivoted on a spindle *y* of four cylinders *s*, *t*, *v*, *w* carried by said frame, a roller-lever *z* and cam *x'* operating said frame, a cam A, a lever-arm B operated by said cam, a pawl C, a ratchet-wheel D actuated by said pawl, a train of gear-wheels operatively connecting said ratchet-wheel with the cylinder *s* whereby an intermittent forward-and-backward rotary motion is imparted to said cylinder *s*, the said cylinder *t* coated with a flexible substance and operated by the cylinder *s* on which it bears, through the medium of toothed pinions, the cylinder *w* and the cylinder *v* operating said cylinder *w*, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGÈNE DELETTE.

Witnesses:
ERNEST WAGNER,
JACQUES COMDOMY.