

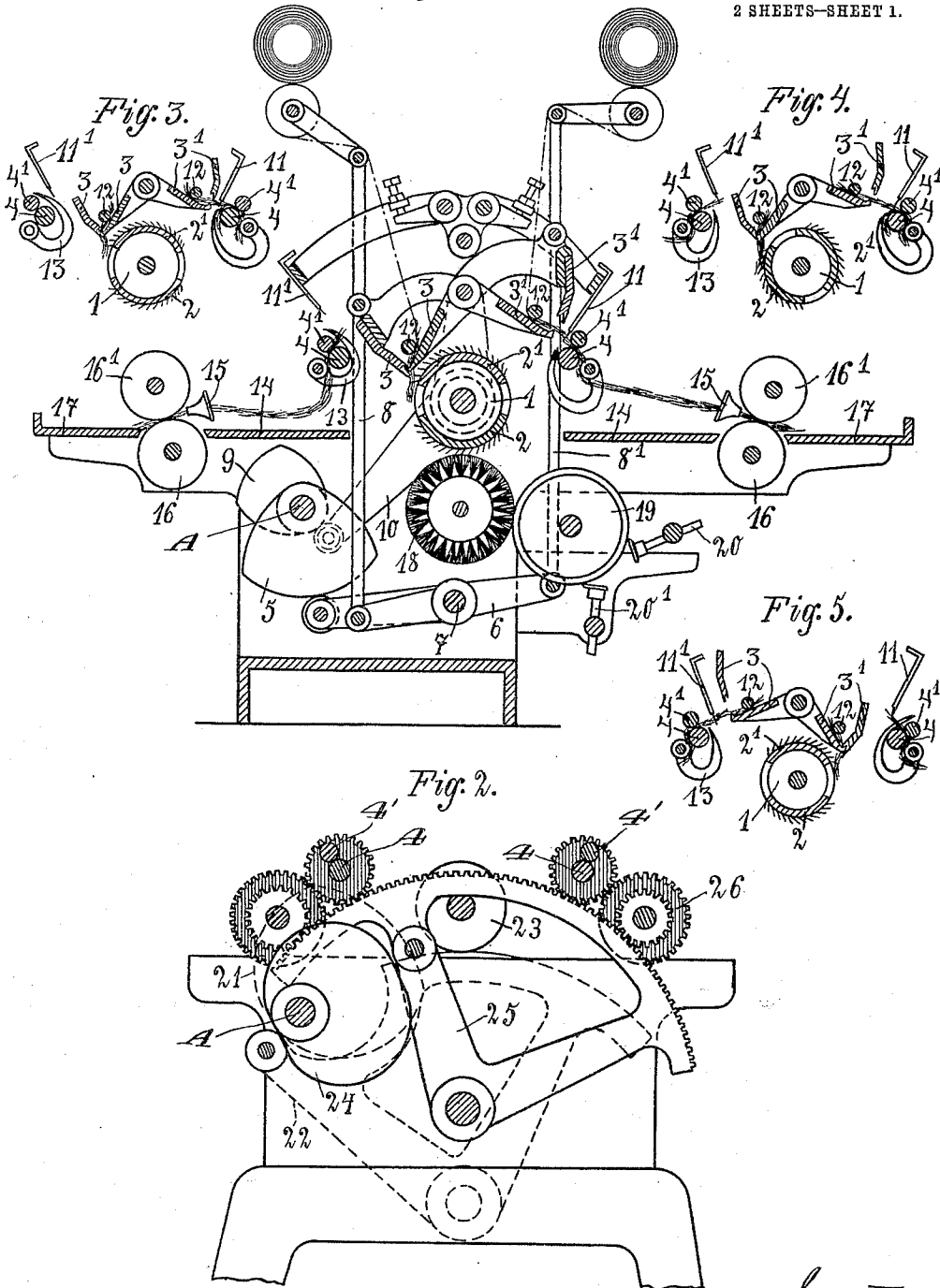
E. ALISY.
HEILMANN COMBING MACHINE.
APPLICATION FILED MAR. 14, 1910.

1,051,362.

Fig. 1.

Patented Jan. 21, 1913.

2 SHEETS—SHEET 1.



Witness: H. J. Koryetany
Wm. Washington Brunswick.

Inventor:
Eugen Alisy

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2 SHEETS—SHEET 2.

Fig. 6.

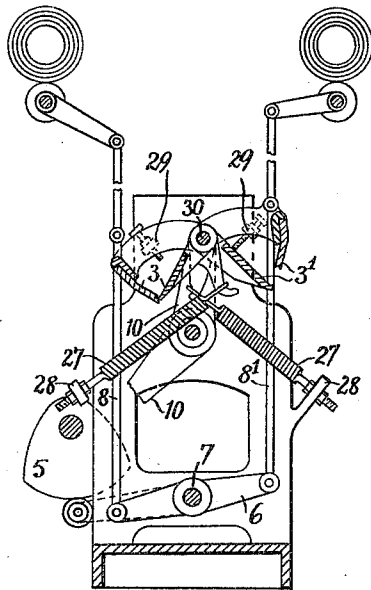


Fig. 8.

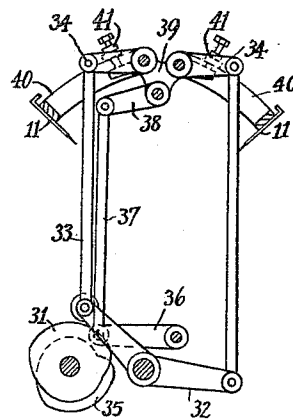


Fig. 7.

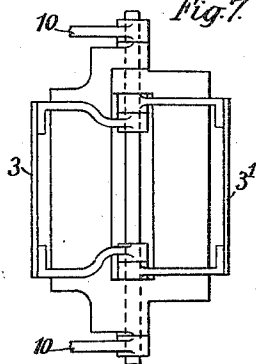
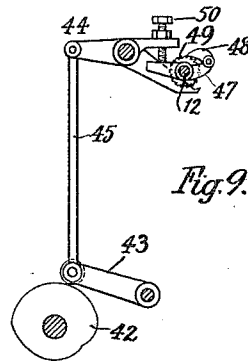


Fig. 9.



Witnesses:

[Handwritten signatures of witnesses]

Inventor:

Eugen Alisy,

By: *[Handwritten signature]*
His Atty.

UNITED STATES PATENT OFFICE.

EUGEN ALISY, OF CHEMNITZ, GERMANY.

HEILMANN COMBING-MACHINE.

1,051,362.

Specification of Letters Patent.

Patented Jan. 21, 1913.

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To all whom it may concern:

Be it known that I, EUGEN ALISY, a subject of the King of Saxony, residing at Chemnitz, Saxony, in the Empire of Germany, have invented new and useful Improvements in the Heilmann Combing-Machines, of which the following is a specification.

In the well known Heilmann combing machine, provided with a swinging needle drum fitted with two needle segments, the real operation is carried out in one direction only, so that with each complete operation only one combing and one separating action takes place.

It is the object of this invention to provide a combing machine of the aforesaid kind which will accomplish double the work at every combing action and have a continuous effect by simultaneously combing at one side and detaching at the opposite side of the drum. To obtain this object the swinging drum is fitted with two needle segments having their needles disposed in opposite directions. Both sides of the needle-drum are furnished with feeding and discharging devices and with nippers which alternately swing from the drum to the detaching or severing device so as to provide for the simultaneous combing and severing operations.

The mechanism for carrying out my object is illustrated in the accompanying drawings, in which:—

Figure 1 is a cross-section of the improved machine; Fig. 2 is a portion of the machine showing the driving gear for the severing rollers and the needle drum; Figs. 3, 4, and 5 illustrate the various positions of the parts at different working-periods. Fig. 6 is an elevation showing the means actuating the nippers; Fig. 7 is a plan of same; Fig. 8 shows the means for actuating the projecting combs while Fig. 9 is an elevation of the means for driving the feeding cylinder.

The operation and description of the parts is best given together.

The needle-drum 1 is furnished with two needle-segments, 2, 2¹, disposed with their teeth in opposite directions so that the drum can work in both directions during each complete oscillation, viz: the forward and backward swing.

The arrangement of nippers 3, 3¹ is duplex so that they alternately approach the drum, that is to say while one lag-end is being combed, the previously combed lag is

moved toward the severing device and detached by a pair of severing rollers 4, 4¹. The nippers are operated by a cam 5 on the main driving shaft A, which actuates a two-armed lever 6 fulcrumed on a shaft 7 and pin-jointed to rods 8, 8¹, which latter impart up and down motion to the two pairs of nippers 3, 3¹ for opening and closing same.

The lower jaws of the nippers are normally pressed against the upper jaws by springs 27 secured to depending arms of said jaws and to lugs 28 on the frame respectively, see Fig. 6. When the upper jaw of a nipper moves upward owing to the upward motion of the rod 8, the lower jaw moves upward owing to the pressure of the spring 27, but the movement of the lower jaw is limited by a stop 29 carried by the frame and remains stationary, while the upper jaw continues its upward movement, and in this way the nippers are opened so as to receive the end of the lag. The shaft 30, on which the nippers 3, 3¹ swing, is revolutely mounted in the two double-armed levers 10 and the swinging motion of the nippers is obtained through the intervention of the cam 9 acting on the said double-armed levers 10.

The rods 8 to which the upper parts of the nippers are pivoted, are divided into two parts so that they can follow the swinging movement of the upper jaws.

The upward and downward movement of the projecting combs 11 is effected by means of a cam 31, the double armed lever 32 actuated by said cam, rods 33 and levers 34. The swinging motion is effected by means of a cam 35, a lever 36 pivoted on the frame, a rod 37 and an arm 38 connected with the plate or block 39 with which the levers 34 and the arms 40 carrying the combs 11 are also connected, see Fig. 8. A suitable limiting device of any known type can be provided to limit the upward movement of the arms 40, only the upper stops 41 being indicated in the drawings.

The needle-drum is driven by the cam 21 which acts on a toothed sector 22 rotating a wheel 23. The feed rollers are operated by a cam 24 which acts on a toothed sector 25 for transmitting through an intermediate gear 26 the motion to the severing cylinders, see Fig. 2.

The feed rollers are driven by a cam 42 actuating a lever 43 connected with a lever

- 44 by means of a rod 45. The free end of the lever 44 carries an adjustable screw or pin 46. Revolvably mounted on the end of the roller 42 is a small lever 47 carrying a pawl 48 adapted to turn the ratchet wheel 49 keyed on the roller 12. The feeding roller 12 is actuated, when the nippers rise, owing to the movement of the lever 48 relative to the stop pin 50.
- 10 To prevent the wheel and cylinder from turning in the reverse direction, suitable means can be provided, such for instance, as a spring controlled pawl (not shown) carried by the corresponding nippers.
- 15 The combing is carried out as follows:—The end of the lag is held in the closed nipper of the needle-drum 1. As soon as the last row of teeth have finished their combing action as shown in Fig. 4, a pair of nippers 3 open and move up as shown in Fig. 5 and thereby approach the severing rollers 4, 4¹. At the same time the pair of nippers 3¹ close and move down so as to comb the tuft of material. Simultaneously the auxiliary comb 11 lifts while the opposite stripping comb 11¹ enters in combed sliver-end, whereon the work begins afresh. The stripping comb 11 and feed roller 12 move in the direction for feeding toward the severing roller. The feed is completed at the moment when the stripping comb has moved close to the severing rollers 4, 4¹ as is shown in Fig. 4. With the termination of the feed, the stripping comb lifts and the beater 13 turns upward as is seen in Fig. 3. The detached tuft is thereby moved slightly backward. At the same time the beater 13 falls back to its lower position as at Fig. 4 and takes the end of the tuft of fibers along and holds same fast. The same operation is repeated at the opposite side of the needle-drum. The fleece then falls on the table 14 and passes through the trumpet 15 and the delivery rollers 16, 16¹ so as to issue in the form of a sliver upon the delivery table 17 and finally into the usual cans. The combings are taken up in the usual manner by the brush 18 which has an oscillatory motion and transfers the combings to a doffer roller 19 formed with saw-teeth in opposite directions, said combings being finally taken off by the hackers 20, 20¹.
- I claim:
- In a Heilmann combing machine the oscillating carding drum, in combination with alternately operating duplex oscillating feed and delivery devices at both sides of said drum, independent card-segments on same with teeth in opposite directions, nippers formed alternately by the members of the feed devices, and means for timing the movements of said feed and delivery devices, substantially as set forth.
- EUGEN ALISY.
- Witnesses:
W. J. KOUJETRUY,
WM. WASHINGTON BRUNSWICK.

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