

(No Model.)

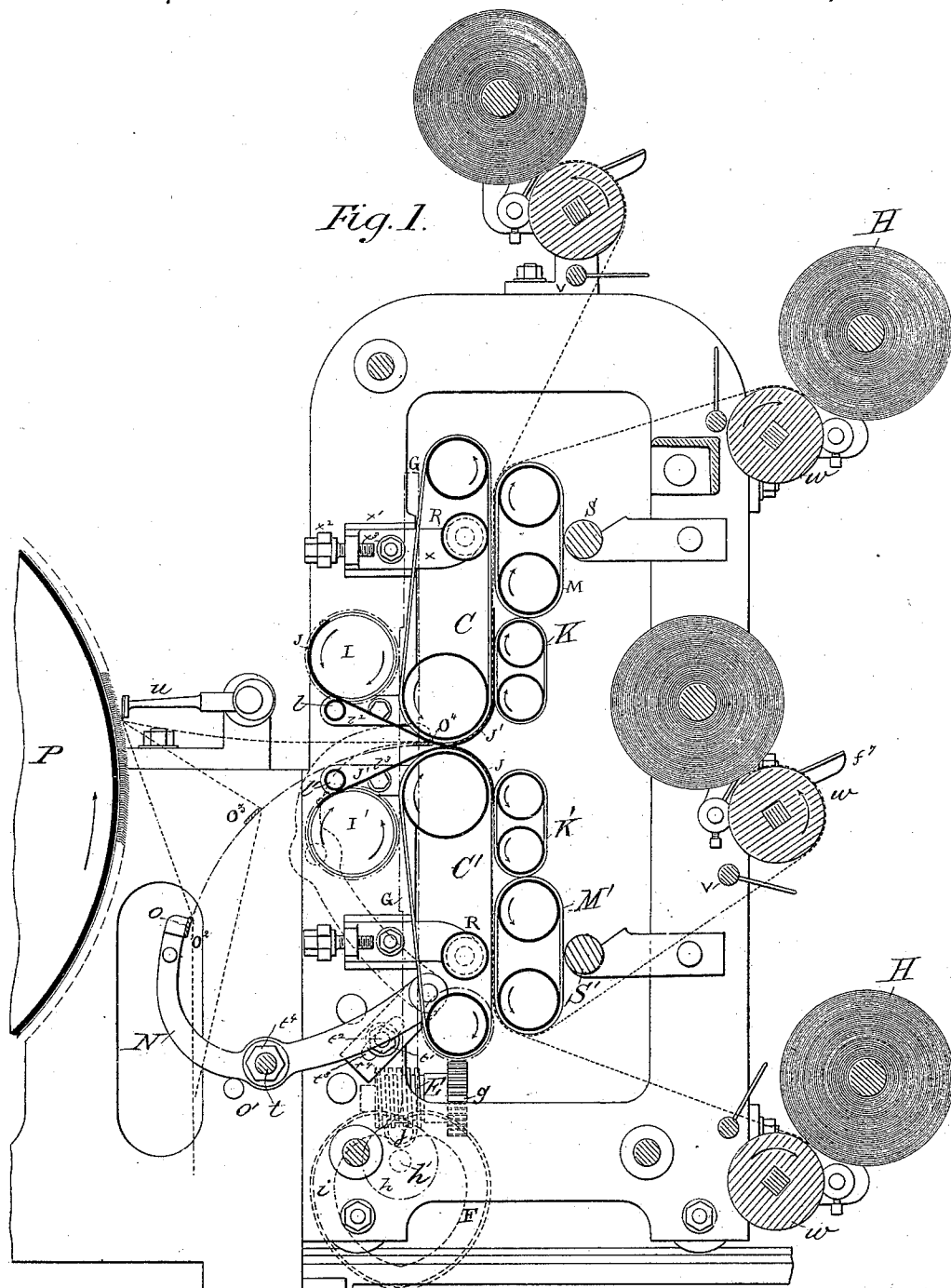
4 Sheets—Sheet 1.

J. S. BOLETTE.

FLEECE DIVIDING ATTACHMENT FOR CARDING MACHINES.

No. 312,424.

Patented Feb. 17, 1885.



Witnesses.

J. Wetter
de Melhuus

Inventor.
J. S. Boette
per W. L. Hadden 1884

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Fig. 2.

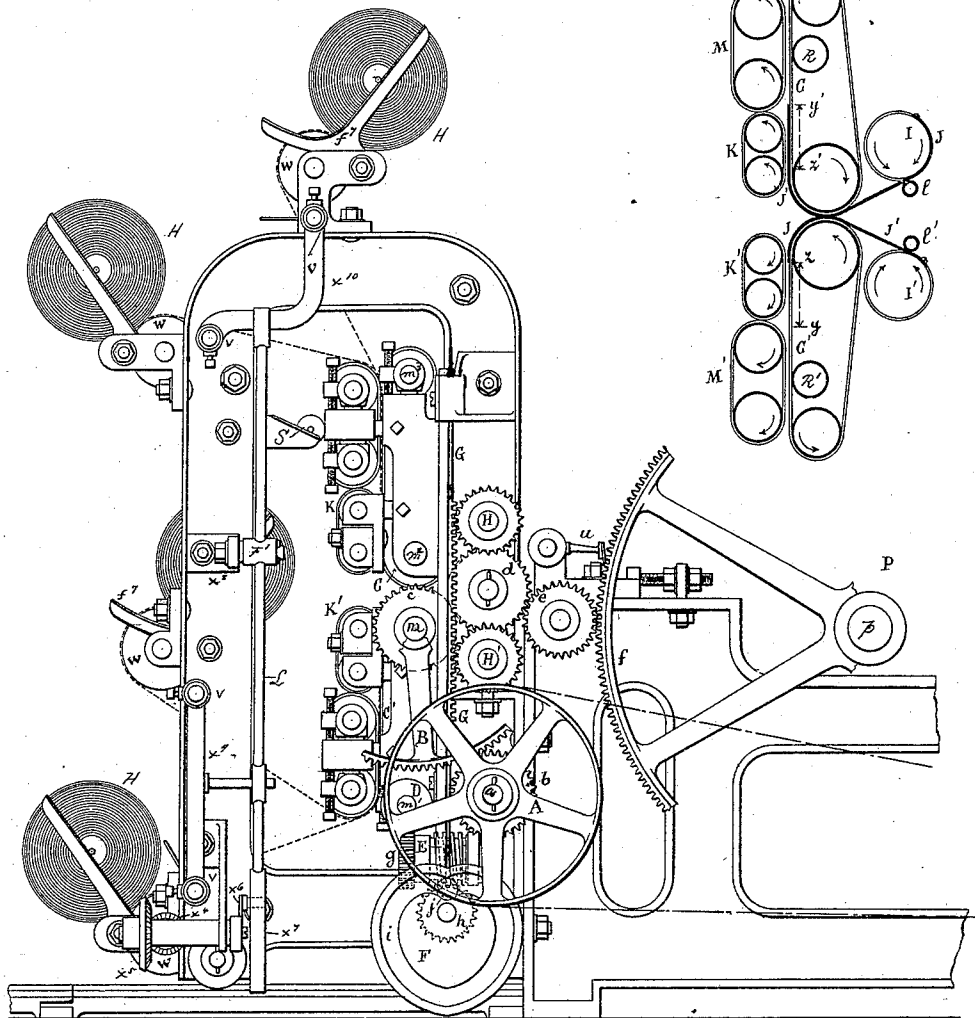
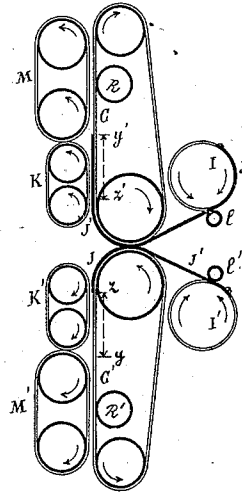


Fig. 3.



Witnesses.

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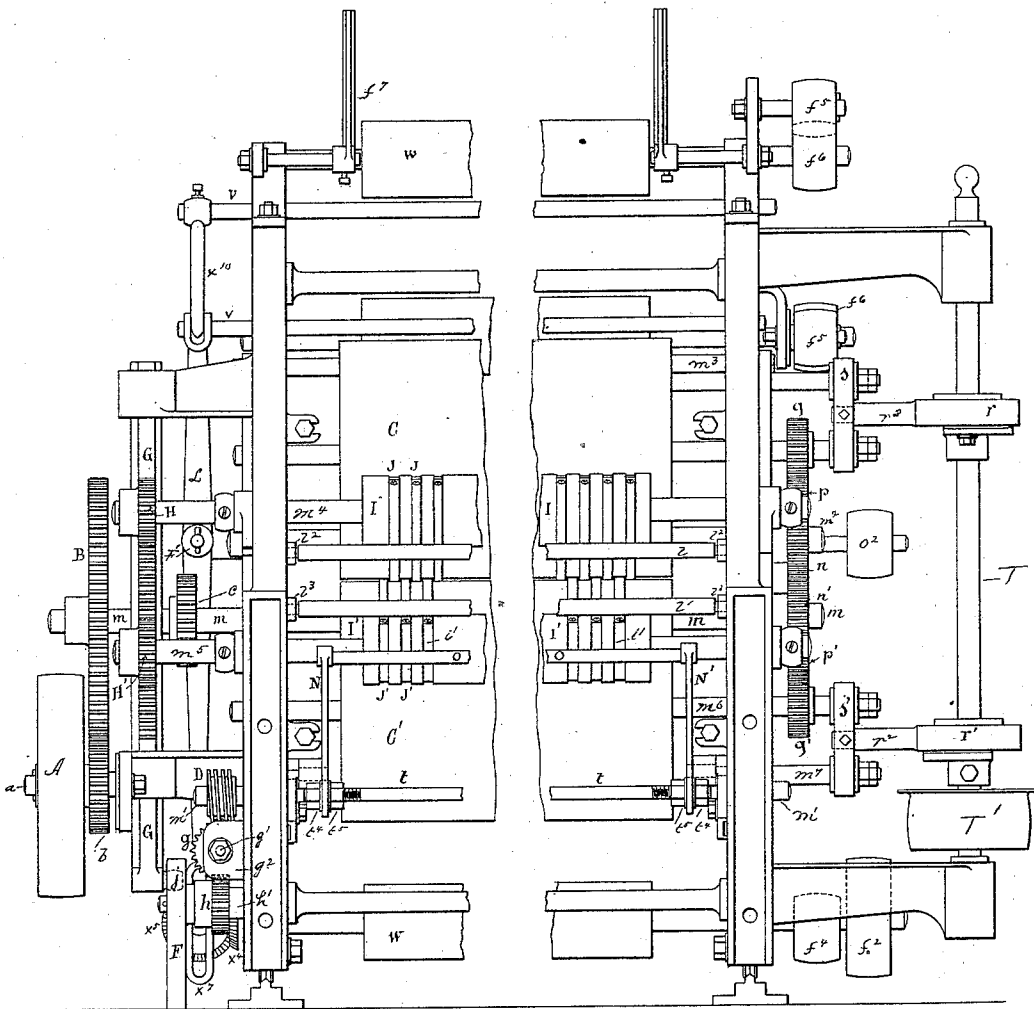
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Fig. 5.



Witnesses

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J. A. Rae

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UNITED STATES PATENT OFFICE.

JEAN SEBASTIEN BOLETTE, OF PEPINSTER, BELGIUM.

FLEECE-DIVIDING ATTACHMENT FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 312,424, dated February 17, 1885.

Application filed August 6, 1883. (No model.) Patented in Belgium September 11, 1882, No. 58,993; in Germany November 28, 1882, No. 22,779; in France December 1, 1882, No. 152,357; in Austria January 31, 1883, No. 48, and in England April 5, 1883, No. 1,711.

To all whom it may concern:

Be it known that I, JEAN SEBASTIEN BOLETTE, residing at Pepinster, in the Kingdom of Belgium, have invented a new and useful
5 Improvement in Fleece-Dividing Attachments for Carding-Machines, (for which I have obtained patents in Belgium, dated September 11, 1882, No. 58,993; in France, December 1, 1882, No. 152,357; in Germany, November 28, 1882, No. 22,779; in Austria, January 31, 1883, and a provisional protection in England, dated April 5, 1883, No. 1,711,) of which the follow-
10 ing is a specification.

The object of my invention is chiefly to
15 provide improved means for operating the fleece-dividing blades, so that the free ends of said blades shall alternately move up and down between a pair of endless dividing-aprons and a pair of small endless blade-holding
20 aprons, the latter keeping said blades against the endless dividing-aprons and directing them toward a pair of endless rubbers, the said blades moving at a slower rate of speed than the endless dividing-aprons, in order to
25 give the ribbons of wool a proper travel.

A further object is to provide improved means for driving the endless dividing-aprons, the blade-holding aprons, and the endless rubbers.

30 A further object is to provide, in connection with the dividing-blades and the endless dividing-aprons, means for introducing between the former the sheet of wool falling from the doffer-comb.

35 My invention consists in details of construction which will be described below, and pointed out in the claims.

In the drawings, Figure 1 is a vertical section of the attachment, the doffer of the carding-engine being partly broken away, showing a pair of dividing-blades, their rollers, and the rods for holding the said blades thereon, the device for introducing the sheet of wool between the dividing-blades, the endless
40 dividing-aprons and their friction-rolls, the blade-holding aprons, the endless rubbers, the grease-rolls, and the devices for winding the rovings into rolls. Fig. 2 is a side elevation of the attachments, some of its parts being broken away, chiefly showing the gearing
50

for imparting motion to the endless dividing-aprons, the dividing-blades, and the gear-wheel on the doffer-shaft. Fig. 3 is a detail view in vertical section, showing a pair of dividing-blades and their rollers, the blade-holding rods, the endless dividing-aprons, the blade-holding aprons, and the endless rubbers. Fig. 4 is an end view of the attachment, chiefly showing the gearing for driving the blade-holding aprons and the endless rubbers, also the device for imparting lateral motion to the latter, and the band-connection with the rollers which wind the rovings, a portion of the frame of the carding-engine being also shown. Fig. 5 is a front view of the attachment broken
55 away through the center, and some of the parts being removed to better show some of the other parts.

A is a pulley, which gives motion to the principal parts of the attachment through
60 suitable gearings and shafts, to be hereinafter described. Said pulley receives its motion from any convenient part of the carding-engine.

Just back of the pulley there is a pinion, *b*,
65 on the pulley-shaft *a*, (see Figs. 2 and 5,) which engages with a large gear-wheel, B. The latter is located at one end of the shaft *m*, which passes between the ends of the frame, and is the shaft of the upper roller of the endless dividing-apron C', the shaft for the lower roller of the same (partly seen at *m'* in Fig. 5) being rotated by the friction of the apron upon said lower roller. As the shaft *m* rotates, a pinion, *n'*, secured on the end opposite to the gear-
75 wheel B, engages with a pinion, *n*, upon one end of the shaft *m'*, rotating the latter and the lower roller of the upper endless dividing-apron, C. The friction of said apron rotates the upper roller fixed upon the shaft *m'*. (See Figs. 2, 4, and 5.) It will now be seen how the endless dividing-aprons are driven, and by means of the pinions *n* and *n'*, in opposite directions. The shaft *m* has also a pinion, *c*, engaging with a pinion, *d*, which turns a pinion, *e*, engaging with the gear-wheel, *f*, secured on one end of the doffer-shaft *p*, said gear-wheel operating to rotate the doffer-shaft
80 *p* and the doffer P. (See Fig. 2.) As the doffer rotates, a comb, *u*, of ordinary construction

tion, and operated by well-known devices deriving motion from any convenient part of the carding-engine, neither of which need be described, removes the fleece in the form of a sheet.

In order to introduce the falling sheet between the dividing-blades $J J'$ otherwise than by hand alone, a pair of curved levers, $N N'$, having a steel blade, o , between their upper ends for lifting the sheet, are employed. These levers are respectively hinged to a slotted bracket, r^1 , fastened to the inside of the ends of the frame by a nut and bolt, $t^1 t^2$, the latter passing through a slot, t^3 , in the bracket. The slotted bracket, the bolt, and nut together form devices for adjusting the levers to varying positions as regards the doffer and the dividing-blades, as use may require from time to time. The levers are moved by hand, and may be provided with handles, if desirable, on the score of convenience. A tension-rod, t , screw-threaded at both ends, passes between the levers, and when it is necessary to stretch the blade o it can be done by turning the nuts t^1 and t^2 inward. (See Fig. 5.)

As the sheet of wool is carried away from the doffer by the blade o , as represented at o^2 , o^3 , and o^4 , Fig. 1, it is introduced along its whole width between the dividing-blades $J J'$ and the endless dividing-aprons $C C'$. These dividing-blades are fastened at one end by a screw in grooves $v^1 v^2$, made in the circumference of the rollers $I I'$, and are so arranged on the rollers that they interlap as they pass between the endless dividing-aprons. As they so pass they also cross each other—that is, the set of blades J' cross the set J and extend in front of the endless dividing-apron C , and the set J cross the set J' and extend down in front of the endless dividing-apron C' . In order to hold the free ends of said blades upon the endless dividing-aprons, a pair of small endless aprons, $K K'$, are arranged just in front of the former and in contact with them. To prevent the dividing-blades from springing out and escaping from the blade holding aprons, the rods $l l'$ are arranged in connection with said blades and their rollers, as shown in Figs. 1 and 5. These rods extend between the ends of the frame, and are supported in horizontal brackets $l^1 l^2$, and while they should bear against the dividing-blades sufficiently to accomplish the above-mentioned purpose they should not appreciably impede them. If preferable, the rods might be journaled in the brackets, so as to be revolved by the friction of said blades.

Motion is given to the dividing-blades as follows: When the endless dividing-apron C' is set in motion, as above, the friction of it rotates the lower roller and its shaft m' . On one end of said shaft is a worm, D , (see Figs. 2 and 5,) which turns a worm-wheel, g , located on one end of a short shaft, g' , supported in the bracket g^2 , attached to the frame. (See Fig. 5.) On the other end of the shaft is a worm, E ,

which turns a worm-wheel, h , located on a shaft, h' , supported at one end in the frame of the machine. On the other end of said shaft is the heart-cam F , having a groove or track, i . The purpose of the track is to engage with a horizontal pin, j , projecting from the lower end of the vertical rack G ; hence as the heart-cam revolves the said track and pin together form devices for causing the rack to alternately ascend and descend. As the rack moves it gears with a pinion, H , on the end of the shaft m^4 , also with a pinion, H' , similarly arranged on the shaft m^5 . These shafts respectively impart to the rollers $I I'$, secured thereon, an alternate slow and oscillating motion first in one direction and then in the other. (See arrows, Figs. 1 and 3.) During this motion the rollers carry with them the said blades in such a manner that, for instance, when the rack G has reached its lowest point, (see Figs. 2 and 5.) the roller I has taken along with it the whole set of blades J from y to z , Fig. 3, while at the same time the roller I' has pushed the set J' to the end of its course, or from z' to y' . The opposite is produced during the ascending of the rack—that is to say, the set J are pushed back from z to y , and the set J' advance from y' to z' . (See Figs. 1 and 3.) As the sheet of wool is introduced between the crossed dividing-blades it follows the traversing motion of the endless dividing-aprons $C C'$ alternately under the set J and J' , and is thus divided into ribbons, one half of which travel upward to the endless rubber M and one half downward to the endless rubber M' , which, in connection with the said endless aprons, reduce the ribbons to rovings.

It is desirable to state here that the slow and alternate motion of the dividing-blades also causes a constant variation of their point of contact with the said aprons, causing the former to wear a long time and preventing accumulation of waste, dust, and grease.

The manner of giving motion to the blade-holding aprons and the endless rubbers will now be described.

As the pinion n' is turned by the shaft m (see Figs. 4 and 5) it engages with a pinion, o' , on the shaft of the upper roller of the blade-holding apron K' , and as the said apron moves the lower roller and its shaft are rotated by the friction of the apron. The pinion o' engages with a pinion, p' , which in turn engages with a pinion, q' . The latter is secured on one end of the shaft m^6 of the upper roller of the endless rubber M' , which in turn rotates the roller on the lower shaft, m^7 , by friction. As to the blade-holding apron K and the endless rubber M , it is only necessary to say that they receive motion in the same way through the pinion n on the shaft m^2 , the pinion o on the lower roller-shaft of said apron, the pinion p , and the pinion q on the lower roller-shaft of the said rubber.

In order to give lateral motion to the endless rubbers $M M'$ while in operation, and so

transform the ribbons of wool fed to them into rovings, between said rubbers and the endless aprons eccentrics r r' are secured upon the vertical shaft T. (See Figs. 4 and 5.) This shaft is set in motion by a pulley, T', which derives motion from any convenient part of the carding-engine. These eccentrics are connected by arms r'' r''' with cross-bars s s' , joining together the two shafts of the endless rubbers; hence as the shaft T and its eccentrics rotate the said rubbers will move laterally to and fro.

In order to sustain the endless dividing-aprons in connection with the endless rubbers and increase friction, rolls R R' are provided. These may be adjustably arranged as to the inner side of said aprons, as shown in Fig. 1, where the rolls are seen journaled in a slide, x , which moves in a guide, x' , on the inside of one end of the frame by means of a screw-bolt, x^2 , bearing against a nut and pin, x^3 , on the slide. In Figs. 2, 4, and 5 these rolls do not appear. Behind each endless rubber there is a grease-roll in contact with it, (see S S', Fig. 1,) and the purpose of it is to catch the broken threads falling from above. Only the upper one is shown in Fig. 2, and in Figs. 4 and 5 they do not appear.

The manner of operating the roving-guides v v and the rolls w and H will be but briefly referred to, as only ordinary devices are employed. When the upper blade-holding apron, K, is set in motion, as described, a pulley, o , on one end of the lower roller-shaft of said apron (see Figs. 4 and 5) drives a band, f' , which rotates a pulley, f^2 , on one end of the shaft of the lower roll w . As this roll and its shaft revolves, a band, f^3 , secured on a pulley, f^4 , back of pulley f^2 , rotates the guide-pulleys f^5 and the pulleys f^6 on the shafts of the other rolls w , and hence the latter rolls. The rolls H H rest on inclined arms f^7 and against the rolls w , and are rotated by the friction of the latter. While the shaft of the lower roll w rotates, a miter-wheel, x^4 , at the other end engages with a miter-wheel, x^5 . (See Figs. 2 and 5.) A crank, x^6 , on the end of the short shaft of the latter engages with a link or slot, x^7 , in the lower end of the vertical bar L, pivoted at F' to a bracket, x^8 , on the frame. As the bar L is oscillated by the crank it will, through the arms x^9 x^{10} , impart a lateral traverse to the guides v v , which causes the rovings passing over them to be evenly wound by the rolls w and H as the operation of the machine proceeds.

The operation of my devices will be understood from the above; but it is important to state that the pitch of the worm D, the diameter of worm-wheel g , the pitch of worm E, the diameter of worm-wheel h , and the throw of the heart-cam F should be such that the motion transmitted to the dividing-blades shall be so slow in proportion to the circumferential speed of the endless dividing-aprons that the travel of the ribbons of wool between the latter and the said blades shall be in no

way prejudiced. In other words, the reciprocating motion of the said blades should not be so fast as to cause the ribbons of wool to travel too rapidly toward the endless rubbers, or the latter will not be able to perform their functions properly. If the dividing-blades J J' advance from two to five millimeters per minute, according to the nature of the wool, while the said aprons move at the usual rate of speed, it will generally be sufficient.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a pair of endless dividing-aprons and means for imparting rotary motion to the same with a pair of blade-holding aprons, two sets of dividing-blades crossing each other between the endless dividing-aprons, and means for imparting a reciprocating to-and-fro motion to said blades at a rate of speed slower than that of the said endless dividing-aprons, as set forth.

2. The combination of the fleece-introducing blade with the two sets of dividing-blades, means for operating them, a pair of endless dividing-aprons, means for operating them, the blade-holding aprons, means for operating them, and the endless rubbers and means for operating the same, as set forth.

3. The combination of two sets of dividing-blades, their rollers, and means for operating them, with the rods for holding said blades thereon, a pair of endless dividing-aprons, means for operating the same, and a pair of blade-holding aprons and means for operating them, as set forth.

4. The combination of two sets of dividing-blades and means for operating them with the endless dividing-aprons and their adjustable friction-rolls, means for operating said aprons, the blade-holding aprons and means for operating the same, the endless rubbers and their grease-rolls, and means for operating said rubbers, as set forth.

5. The combination of the friction-rolls R R' with the slide x , having a nut and pin, x^3 , and screw-bolt x^2 , the guide x' on the end of the frame, the endless dividing-aprons C C', means for operating them, and the endless rubbers M M' and means for operating the same, as set forth.

6. The combination of the curved levers N N', having the tension-rod t , provided with nuts t^1 t^2 , and the blade o , with the end of the frame, provided with brackets r^1 , having slot t^1 , nut t^2 , and bolt t^3 , the two sets of dividing-blades J J', means for operating the same, and a pair of endless dividing-aprons, C C', and means for operating them, as set forth.

7. The combination of the pulley A and its shaft a with the pinion b , the gear-wheel B, the shaft m and its roller, the endless dividing-apron C', the shaft m' and its roller, the pinion n' , pinion n , shaft m^2 and its roller, the endless dividing-apron C, and the shaft m^3 and its roller, as set forth.

8. The combination of the pulley A and its shaft *a* with the gear-wheel B, the shaft *m* and its roller, the endless dividing-apron C', the shaft *m'* and its roller, the worm D, worm-wheel *g* and its shaft, worm E, worm-wheel *h* and its shaft, the heart-cam F, having track *i*, the rack G, having pin *j*, pinions H H', shafts *m'* *m''*, rollers I I', and the two sets of dividing-blades J J', as set forth.
- 10 9. The combination of the pulley A and its shaft *a* with the pinion *b*, the gear-wheel B, the shaft *m*, pinion *n'*, pinion *o'*, the blade-

holding apron K', the pinion *p'*, pinion *q'*, the endless rubber M', the pinion *n* on the shaft *m''*, the pinion *o*, the blade-holding apron K, 15 the pinion *p*, the pinion *q*, and the endless rubber M, as set forth.

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

JEAN SEBASTIEN BOLETTE.

Witnesses:

T. BOUSSE,
FRANZ BECK.