No. 668,907.

Patented Feb. 26, 1901.

C. DELERUE.

APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIALS.

(No Model.)

(Application filed June 14, 1899.)

3 Sheets—Sheet 1.

FIG. 2.

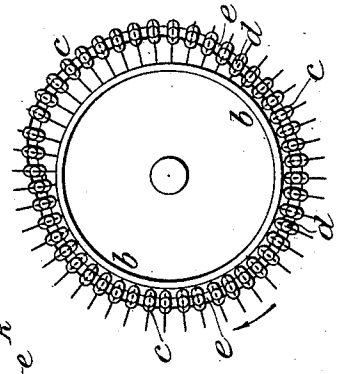


FIG. 1.

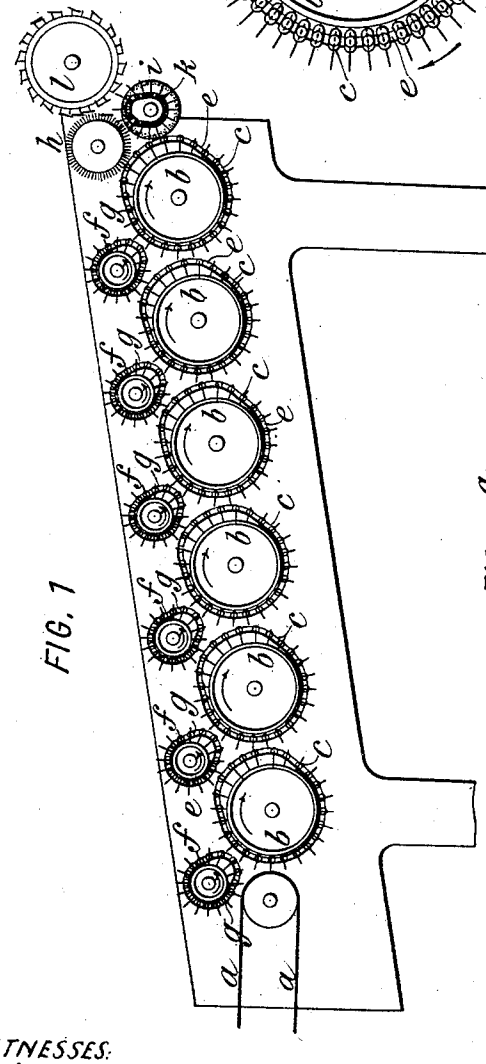
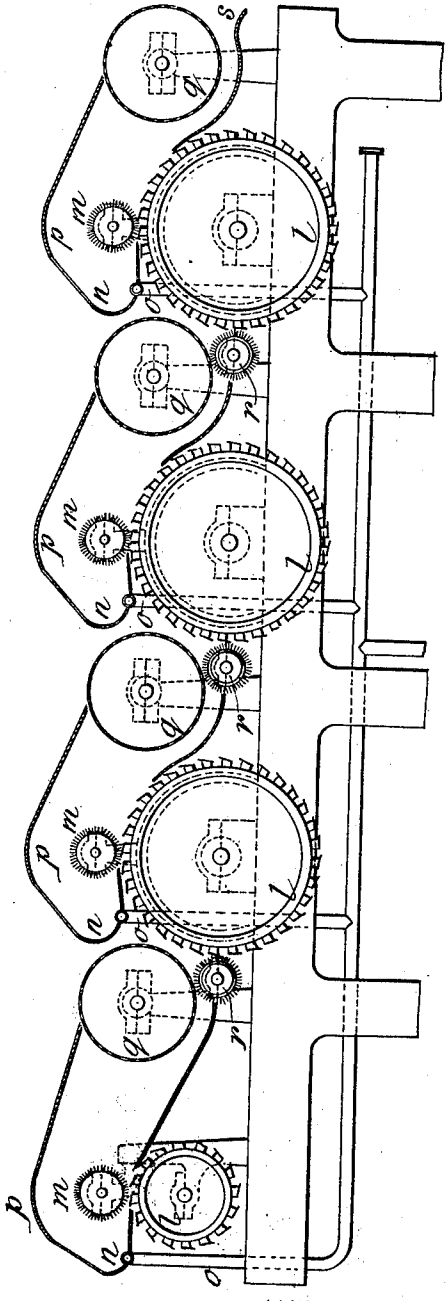


FIG. 1a.



WITNESSES:

Fred White

Thomas F. Wallace

INVENTOR.

Charles Delerue,

By his Attorneys

Wilkinson & Fraser & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 668,907. Patented Feb. 26, 1901.

C. DELERUE.

APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIALS.

(No Model.) (Application filed June 14, 1899.)

3 Sheets—Sheet 2

FIG. 3.

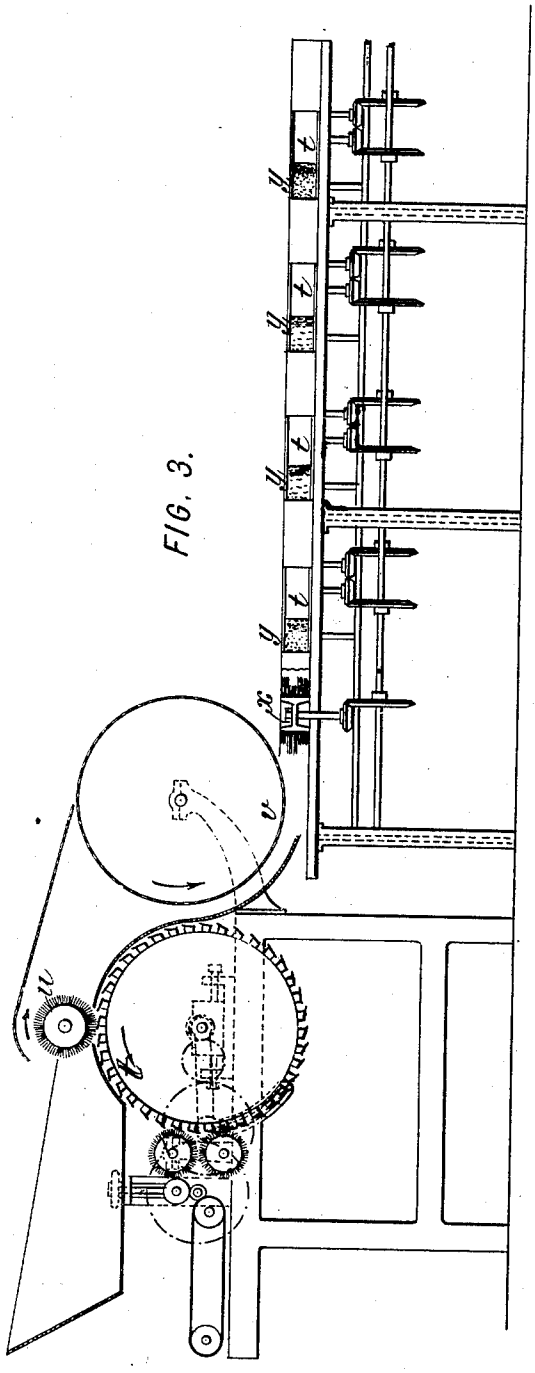
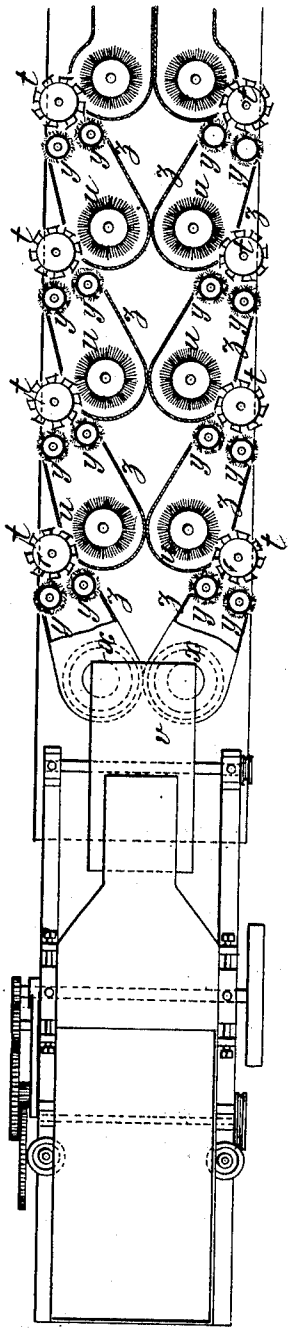


FIG. 4.



WITNESSES:
Fred Whitty
Thomas F. Wallace

INVENTOR:
Charles Delerue,
By his Attorneys:
Arthur L. Fraser & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 668,907. Patented Feb. 26, 1901.

C. DELERUE.

APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIALS.

(No Model.) (Application filed June 14, 1899.)

3 Sheets—Sheet 3.

FIG. 5.

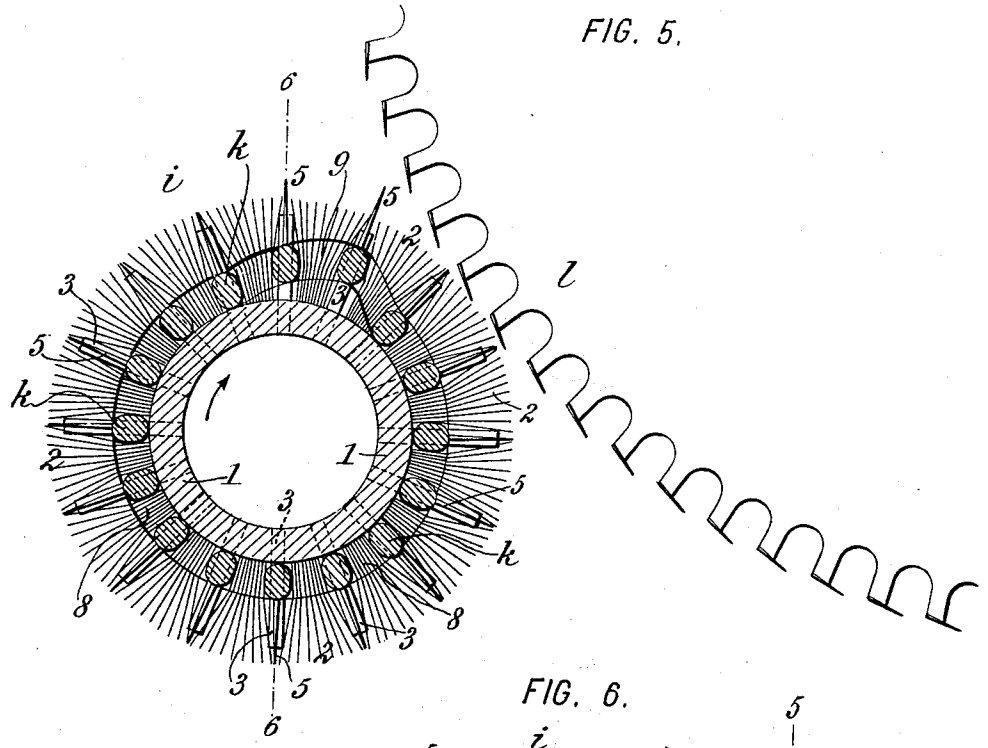
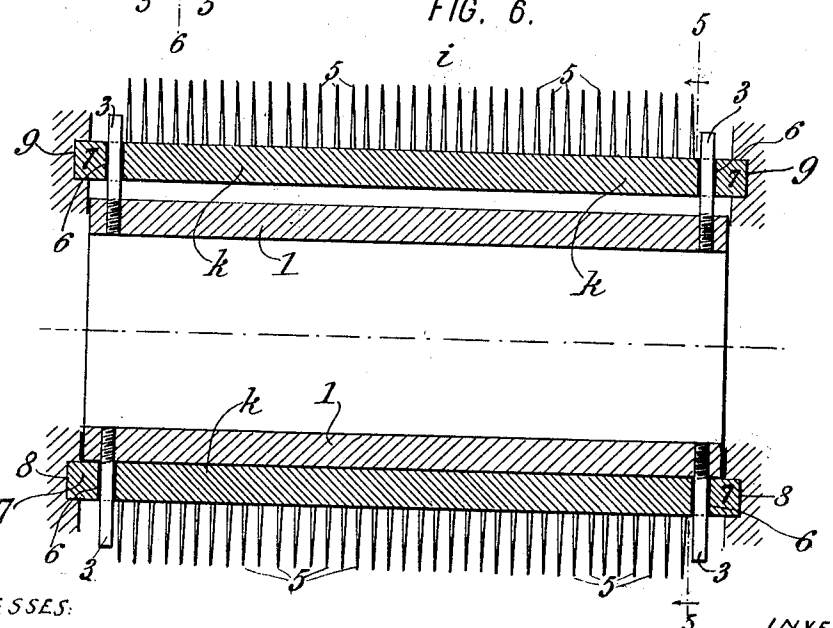


FIG. 6.



WITNESSES:

Ivor Whitty

Thomas F. Wallace

INVENTOR

Charles Delerue,

By his Attorneys:

Arthur C. Fraser & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES DELERUE, OF ROUBAIX, FRANCE.

APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIALS.

SPECIFICATION forming part of Letters Patent No. 668,907, dated February 26, 1901.

Application filed June 14, 1899. Serial No. 720,461. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DELERUE, manufacturer, a citizen of the Republic of France, residing at 5 Rue Fosse aux Chênes, Roubaix, Nord, France, have invented certain new and useful Improvements in Apparatus for Combing or Opening and Removing Impurities from Fibrous Materials, of which the following is a specification.

This invention relates to an apparatus for treating the separate fibers of filamentous materials—such as wool, mohair, alpaca, cashmere, camel-hair, and the like—for removing therefrom impurities, such as short and foreign hairs, noil, burs, and the like.

An important feature of the apparatus may consist in the use of a brush revolving at a very high speed in contact with a cylindrical comb revolving at a lower speed, the points of whose teeth are sloped forward and so arranged as to be readily deprived of the fibrous or other material carried thereby. Thus all the material is carried away by the brush, which in its turn throws the same off by centrifugal action. The heavy particles of such materials are at once projected to a distance, while the remaining fiber suspended in the surrounding air is deposited at a less distance. The brush is inclosed in a casing so constructed that at one side thereof there is provided a recipient for the heavy material—burs, coarse hairs, noil, or felted portions, &c.—while on the opposite side is a large hollow revolving cylinder having a wire-gauze surface forming a sieve through which the air propelled by the brush passes in an inward direction, while the matter carried along thereby is intercepted by and adheres to the surface, forming a continuous fleece. The cylindrical comb being charged in a continuous manner is made by a special device to push the material to the points of the teeth, whence it is delivered onto the brush.

I shall describe my invention, referring to the accompanying drawings.

Figure 1 is a longitudinal mid-section, and Fig. 1ª its continuation. Fig. 2 is a transverse section drawn to an enlarged scale of one of the combs. Fig. 3 is a side view, partly sectional, and Fig. 4 is a plan of a modified form, of machine. Fig. 5 is an enlarged cross-section on the line 5 5, Fig. 6, showing the brush and a fragmentary end elevation of the cylindrical comb. Fig. 6 is a fragmentary longitudinal section cut on the axis of the brush on line 6 6 of Fig. 5.

Referring first to Figs. 1, 1ª, 2, 5, and 6, The material to be treated is fed by a traveling aron *a* to the combs *b*, passing from one to another, and which carry the material only on their upper sides. On each comb are bars *c*, one fitted to slide radially along each longitudinal row of needles. The rounded ends *d* of each bar travel in quasi-elliptic paths on each side of the comb, these paths being such that the bars are at the base of the needles when they receive the fibers and move out beyond the points, pushing off the fibers. The combs are driven at such speeds as to draw the fibers into parallel positions, so as to constitute a sliver. Between and above the combs *b* are other similar combs *f*, provided with needle-bars, these serving to transfer the fibers from one comb *b* to the next. On the last comb acts a cylindrical brush *h*, which delivers the material onto a second brush *i*, provided with needle-bars *k*, which deposits the material onto the first clearing-comb *l*.

The construction of the brush *i* is shown in detail in Figs. 5 and 6. The brush consists of a cylindrical hub 1, which is provided with rows of bristles 2, which may be of any suitable material. At the ends of the hub and between each two adjacent rows of bristles are fixed the radial pins 3. Upon each pair of pins slides a bar *k*, which is formed with holes 6, slidingly engaging said pins. The bars *k* are each provided with a series of needles or other projecting points 5, which extend radially of the hub 1. The ends 7 of the bars *k* extend beyond the ends of the hub 1 and engage a fixed cam-track 8, which has a rise 9 near the point of closest proximity with the extracting-comb *l*. The last comb *b* delivers the material to the brush *i* at a point below the rise 9 when the bristles and needles have the same degree of projection. The material is carried by the brush until it reaches the rise 9 when the needles project beyond the bristles, carrying with them the material which is thus presented to the extracting-comb *l* and removed by it. By this means the brush *i* is thoroughly cleared.

The rapidly-revolving comb *l* is a fluted cyl-

inder, on the ridges of which are fixed almost tangential small needles projecting three or four millimeters. This comb clears the fibers of impurities, such as burs and noil, and is cleared by a brush *m*, having at least twice the surface speed of *l*, so that it clears itself by centrifugal force from the material which it takes from *l*. The heavy impurities are projected into the receptacle *n* and are blown out and conveyed to a box at the side of the machine by a current of air brought by a pipe *o* and propelled along the bottom of *n*. This current is produced by any suitable fan or blower. A casing *p* retains the air-current produced by the brush *m* and directs it with the fibers suspended in it on the wire-gauze periphery of a hollow cylinder *q*, which revolves at a speed suited to the thickness of the layer deposited on it. A brush *r* receives the fibers pressed by the air off the cylinder *q* and delivers them to the next comb *l*. The arrangement of combs and brushes with air-currents is repeated several times until the cleared fiber is delivered at *s* into a receptacle or removed as roving.

During the passage of the material through that part of the machine shown in Fig. 1 it is combed, straightened, and slivered and a part of the foreign matter is removed. During its passage through the part of the machine shown in Fig. 1ª it is rapidly combed and brushed, while subjected to the action of an air-blast and is sifted at intervals and finally discharged thoroughly cleaned.

By dispensing with the last cylinder *q* the fibers can be graded, the fine light fibers being projected to a greater distance than the heavier and coarser fibers.

The modified machine shown at Figs. 3 and 4 may have in its first part brushes with radially-sliding bars, as indicated in Fig. 2, for example, or merely two feed-rollers, Fig. 3, followed by a pair of brushes to lay the fibers lengthwise before they are caught by the comb *t*, which separates the burs and noil before it is stripped by the brush *u*. This brush projects the material onto the wire-gauze periphery of a hollow cylinder *v*, which as it turns carries the sliver to two aspirators *x*, and these propel the material onto the feed-roller *y* of each of the two trains of mechanism, which consist of repetition of brushes *t* and *u* in casings *z*. The material is carried by the air-current to the cylinders *y* at the mouth of each casing and deposited on bristles arranged in bands on these cylinders, the air passing through the intervals between the bands, and from the cylinder *y* the material is delivered onto the combs *t*, and so on, until it is finally delivered cleared from impurities.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. In machines for cleaning fibers, a series of combs located in proximity to one another, a series of clearing-combs, a rapidly-revolving brush for each clearing-comb, a foraminous cylinder receiving the fiber from each brush, and brushes transferring the fiber from such cylinders to the next clearing-comb.

2. In machines for cleaning fibers, a series of combs, located in proximity to one another, a series of clearing-combs, a rapidly-revolving brush for each clearing-comb, a foraminous cylinder receiving the fiber from each brush, brushes transferring the fiber from such cylinders to the next clearing-comb, and casings preventing escape of the fiber and directing it to said cylinders.

3. In machines for cleaning fibers, a series of combs located in proximity to one another, a series of clearing-combs, a rapidly-revolving brush for each clearing-comb, a foraminous cylinder receiving the fiber from each brush, brushes transferring the fiber from such cylinders to the next clearing-comb, casings preventing escape of the fiber and directing it to said cylinders, and air-blasts forcing the impurities from said casings.

4. In machines for cleaning fibers, a series of combs located in proximity to one another, a series of clearing-combs, brushes transferring the fibers from said combs to said clearing-combs, a rapidly-revolving brush for each clearing-comb, a foraminous cylinder receiving the fiber from each brush, and brushes transferring the fiber from such cylinders to the next clearing-comb.

In witness whereof I have hereunto signed my name, this 2d day of June, 1899, in the presence of two subscribing witnesses.

CHARLES DELERUE.

Witnesses:
ALFRED C. HARRISON,
L. L. ALEXANDRE.