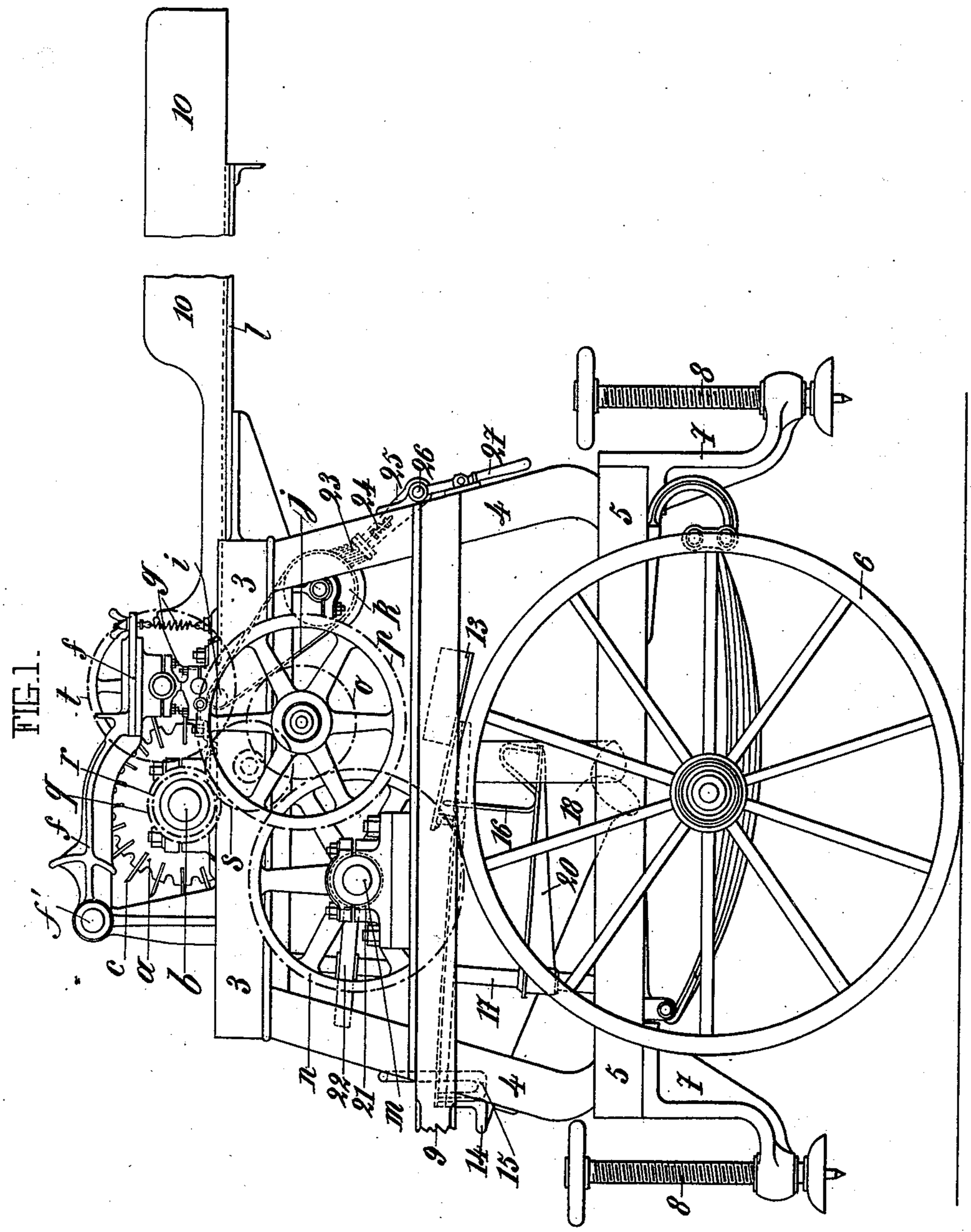
(No Model.) 5 Sheets—Sheet 1.

A. D. ESTIENNE.

MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.

No. 549,116. Patented Nov. 5, 1895.

FIG. 1.



Witnesses:
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(No Model.) 5 Sheets—Sheet 2.

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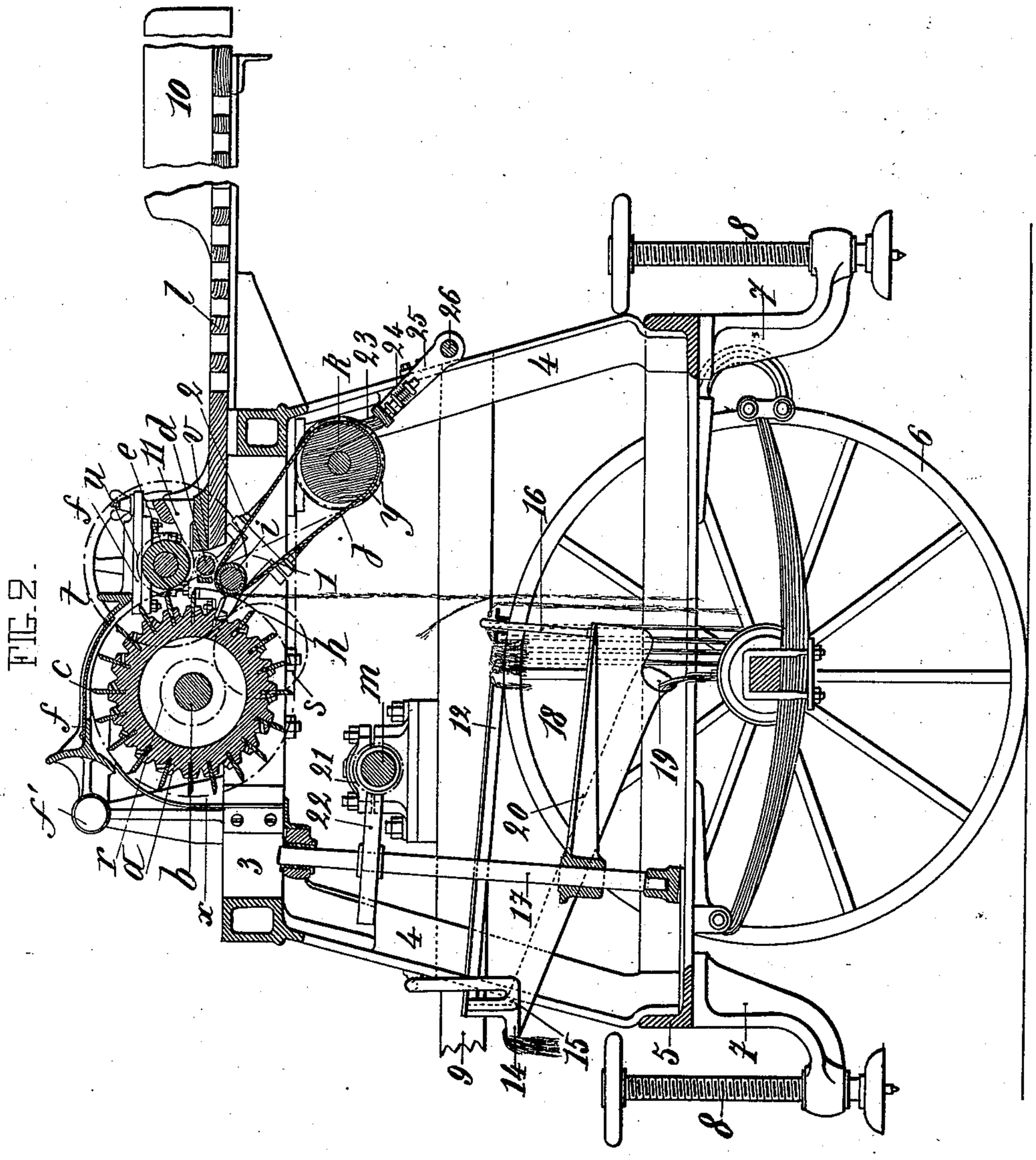

FIG. 2.

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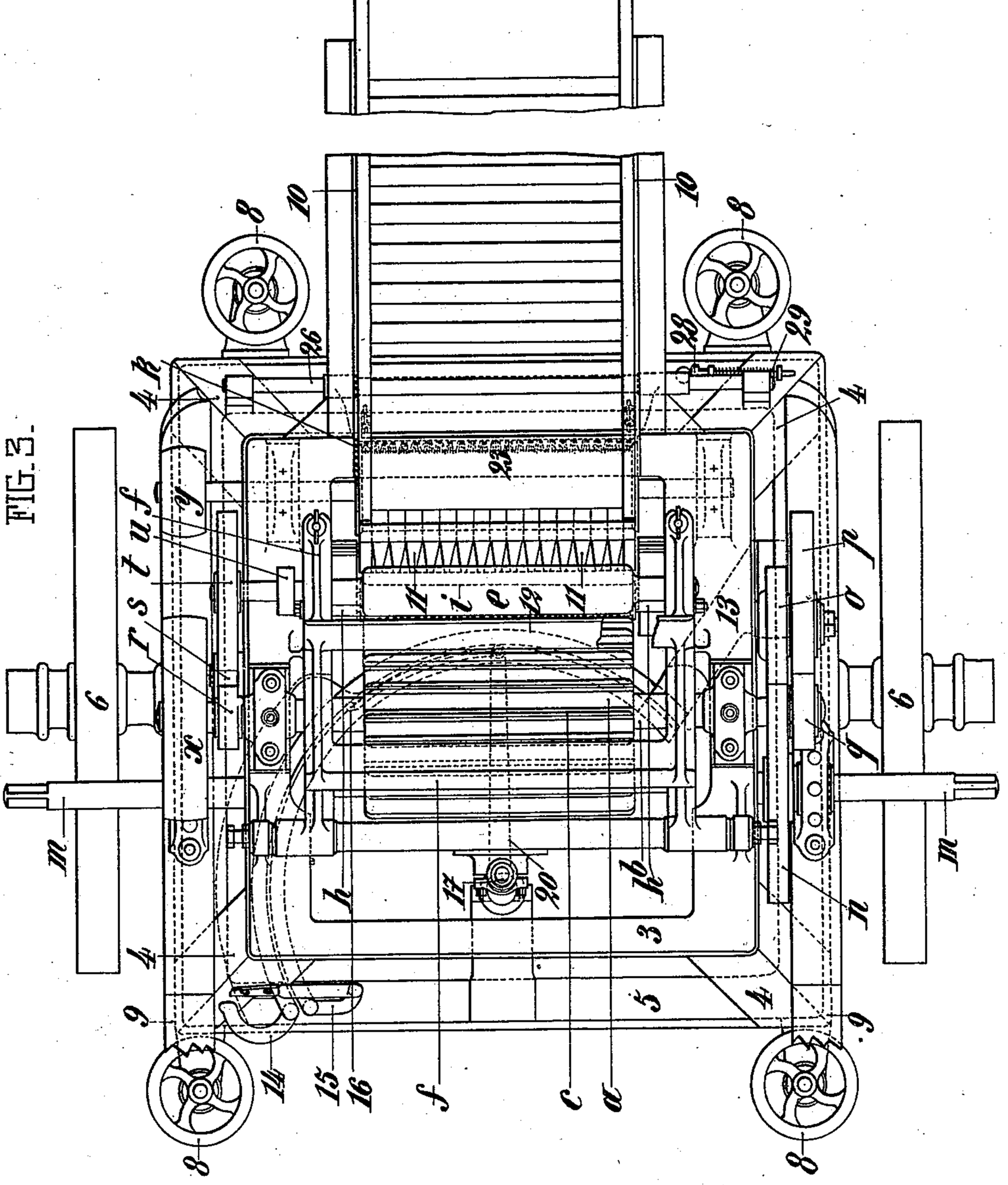
(No Model.) 5 Sheets—Sheet 3.

A. D. ESTIENNE.

MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.

No. 549,116. Patented Nov. 5, 1895.

FIG. 2.



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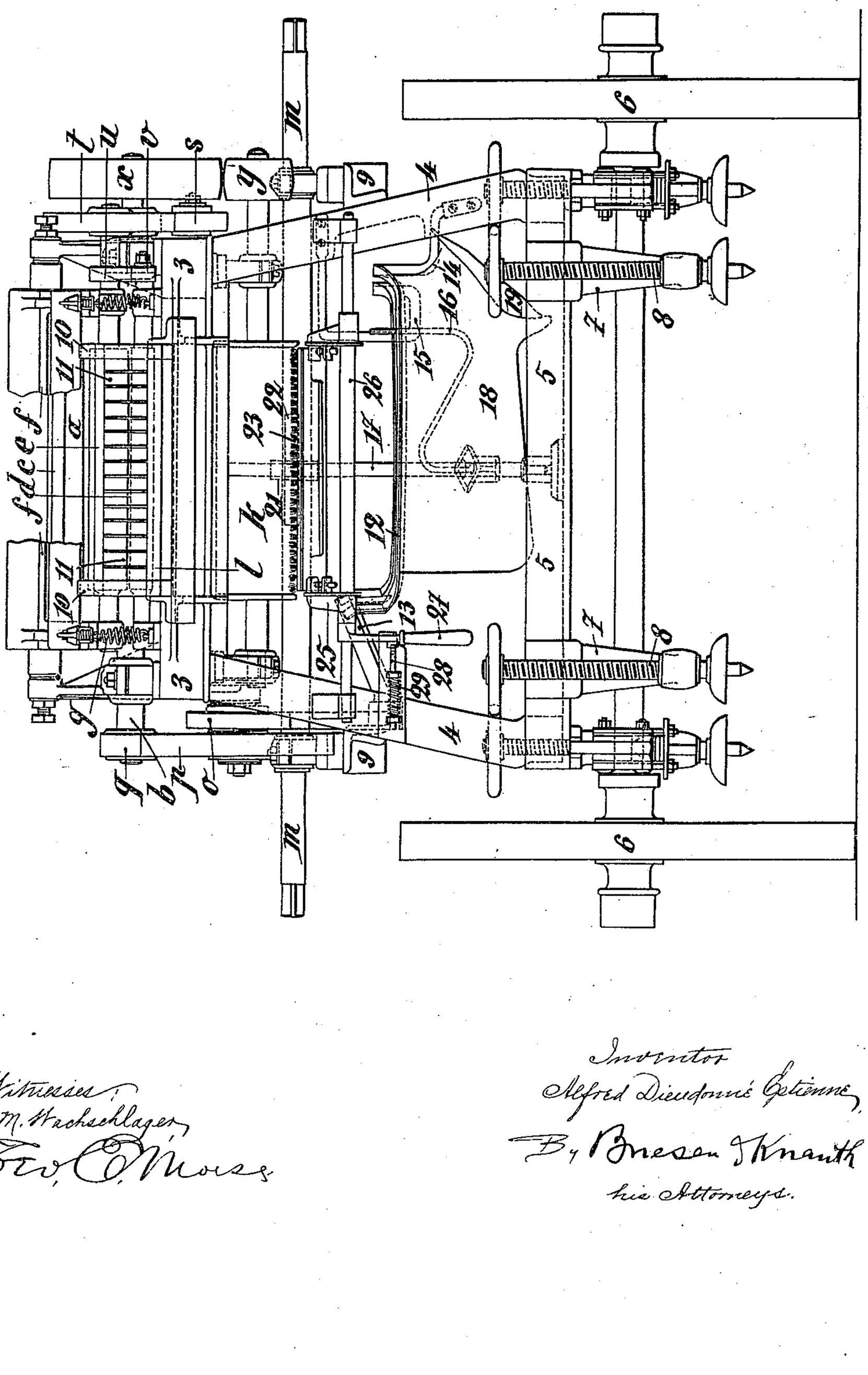
(No Model.) 5 Sheets—Sheet 4.

A. D. ESTIENNE.

MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.

No. 549,116. Patented Nov. 5, 1895.

FIG. 4.



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(No Model.) 5 Sheets—Sheet 5.

A. D. ESTIENNE.

MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.

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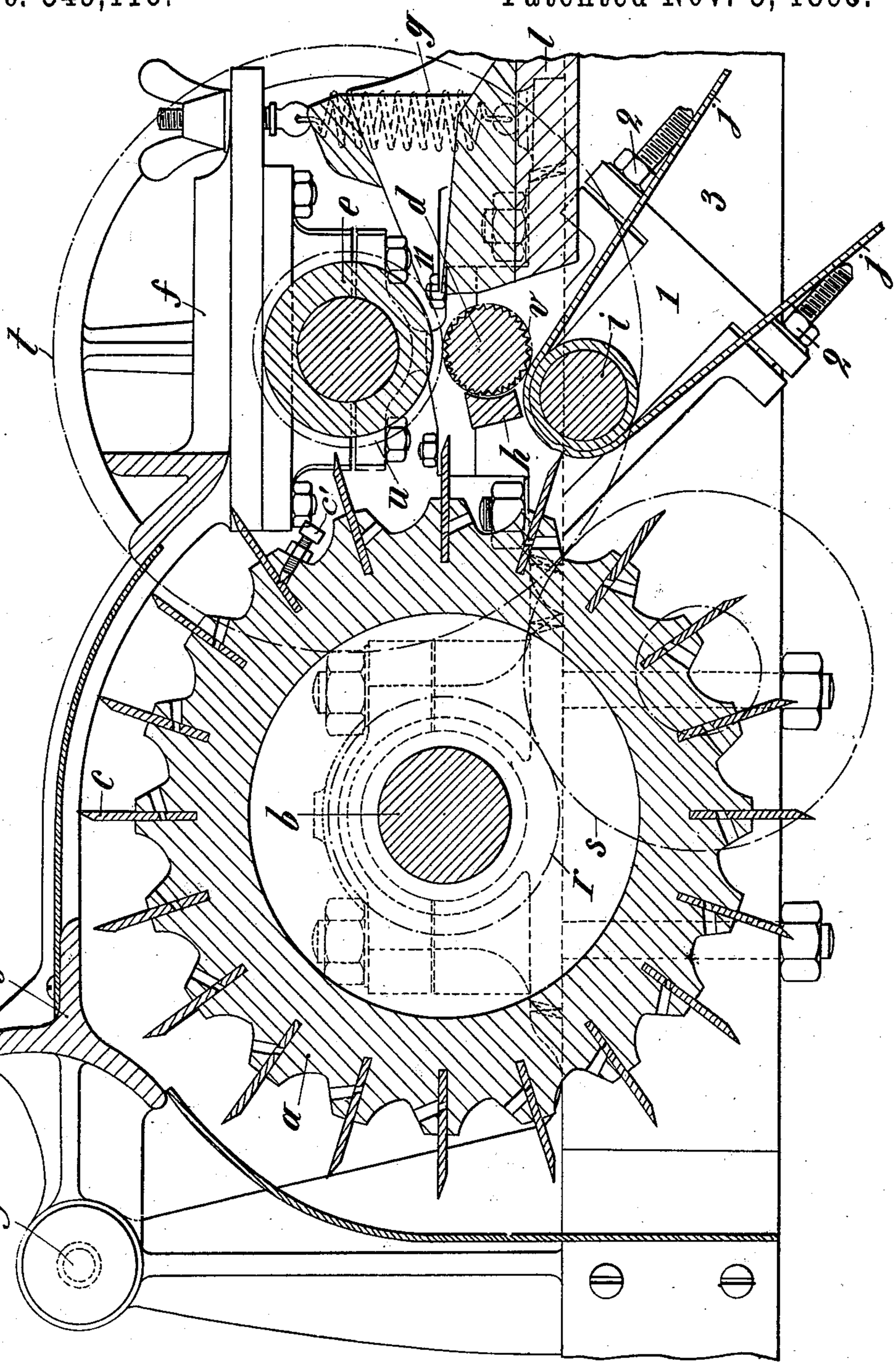

FIG. 5.

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UNITED STATES PATENT OFFICE.

ALFRED DIEUDONNÉ ESTIENNE, OF MARSEILLES, FRANCE.

MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.

SPECIFICATION forming part of Letters Patent No. 549,116, dated November 5, 1895.

Application filed November 20, 1894. Serial No. 529,397. (No model.) Patented in France April 1, 1893, No. 229,095; in Belgium January 8, 1894, No. 108,003; in Spain February 2, 1894, No. 15,323, and in Italy June 30, 1894, LXXI, 413.

To all whom it may concern:

Be it known that I, ALFRED DIEUDONNÉ ESTIENNE, of the city of Marseilles, (Bouches-du-Rhône,) France, have invented an Improved Machine for Decorticating Ramie and other Plants, Leaves, and Textile Materials, (for which I have obtained Letters Patent in France for fifteen years, dated April 1, 1893, No. 229,095; in Belgium for fifteen years, dated January 8, 1894, No. 108,003; in Spain for ten years, dated February 2, 1894, No. 15,323, and in Italy for fifteen years, dated June 30, 1894, LXXI, 413,) of which the following is a full, clear, and exact description.

This invention relates to an improved machine for decorticating ramie and other plants, leaves, and textile materials, wherein the various operative parts are so arranged and combined as to be easily dismounted, and in which the parts moving in contact always receive the same surface speed, so as to reduce the wear. The machine may be driven by hand or power and is carried on wheels for transport by manual or other power, so that it may follow up the cutting of the crop of stalks or leaves and decorticate the same immediately.

My invention consists in the novel arrangement and combination of parts hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation, Fig. 2 a longitudinal section, and Fig. 3 a plan, of the machine. Fig. 4 is an end elevation of my improved decorticating-machine. Fig. 5 is a section, on a larger scale, of the principal operative parts.

The same letters and numerals of reference indicate the same parts in all the figures.

The apparatus essentially comprises, as shown in Fig. 5:

First, a revolving scutching-drum *a*, preferably of metal, provided with removable metal blades *c*, having blunt edges to avoid cutting the textile material and preferably of such thickness and radial length as to be flexible, so as to facilitate the decortication and separation of the filaments, the blades being held in position by set screws *c'*.

Second, a pair of feeding and retaining rollers, of which the lower one *d* is bluntly fluted and the other *e* immediately above it is plain and covered with india-rubber. These rollers revolve in opposite directions to feed the stalks to the beater, the upper roller *e* being journaled in a frame *f*, pivoted at *f'*, so as to allow the roller to approach or recede from roller *d*, toward which it is pressed by springs *g*, so as to enable the rollers to feed and slightly compress stalks of different diameters.

Third, a breaker-bar or anvil *h*, of suitable section, held rigid by two end nuts and supported by the pillow-blocks in which the roller *d* is journaled, so that the bar may be readily dismounted by removing the caps of the bearings.

Fourth, a revolving bed for the edges of the beater-blades to nip the stalks against, the bed having the same speed as the blades, so that the blades and bed conjointly rub and scrape the stalks. This bed is formed by an endless apron *j*, of rubber, passing over a rubber-covered roller *i*, and also passes around a drum *k*, journaled in bearings adjustable upon the frame to enable the apron to be put in proper tension.

Fifth, a feed-table *l*, adapted to allow only a single layer of stalks to pass at a time between the rollers *d* and *e*.

Sixth, a collecting and delivering device for the decorticated stalks.

The beater or scutcher *a* is carried by shaft *b*, mounted on bearings and actuated from shaft *m* through speed-gear—such as a wheel *n*, in gear with pinion *o*, in one with wheel *p*, in gear with pinion *q* on the beater-shaft *b*. A pinion *r*, fast on the other end of shaft *b*, drives, through the gear-wheels *s* and *t*, the roller *e*, which is geared in turn with roller *d*, by wheels *u v*. The roller *k* is also driven from shaft *b* by a belt running on pulleys *x* and *y* for driving the endless apron. The diameters and number of teeth of the gear-wheels are so calculated that the parts in contact shall have the same surface speed. The rollers *d* and *e*, which are both in contact with the stalks to be decorticated, have the same surface speed and revolve in opposite directions, so as to feed the stalks presented

to them and in like manner the beater *a* and endless apron *j*, in which the edges of the blades bed have the same surface speed greater than that of rollers *d* and *e* and revolve in opposite directions, so as to continually scrape the upper and under surfaces of the stalks which have been broken by the blows of the beater-blades. In order that the pressure with which the blades bed themselves upon the endless apron may be regulated, the roller *i* is journaled in bearings 1, which are adjustable by means of keys and nuts 2.

The breaker-bar *h* is placed above cylinder *i* and at the side of roller *d*, with the necessary clearance to avoid all friction, and so that the circle described by the edges of the beater-blades *c* shall pass close to the upper edge of the bar *h*. The frame 3, on which the operative parts are mounted, is supported by a metal frame 4 on the base-frame 5, supported by the axle of wheels 6, and provided with hangers 7, in which work screw-legs 8 for steadying the machine on the ground when at work. 9 are the shafts for draft purposes. *l* is a feed-table upon which the stalks to be decorticated are placed. This table has side cheeks 10 and is divided just in front of the rollers by spring-partitions 11 into a number of narrow channels, each giving passage to only a single stalk at a time.

When the stalks have been subjected to the combined action of the feed-rollers, beater-drum, and endless apron, the filaments are deprived of all pellicle and fall onto a pair of curved angle-iron bars 12, situated directly below the endless apron and supported at one end by a bracket 13, fixed to the side frame, the bars terminating at the opposite end in bent portions 14 15, fixed to the front of the frame. The bars are curved to a semicircle about a shaft 17 and are separated by a space in which moves a finger 16, that projects up between the two bars and is carried by an arm 20, fixed to the rotating shaft 17. This finger collects the decorticated stalks at the front of the machine. For this purpose the outer curved bar 12 carries by a hanger 18 an inclined trough 19, in which the decorticated stalks are laid by the finger 16, which is made of such form (best shown in Fig. 4) as to carry the filaments along before the arm 20 can reach the stalks and become entangled in the filaments. The collecting-finger is operated by a worm-gear 21 on shaft *m*, in gear with a worm-wheel 22 upon the shaft 17. It is indispensable to the efficient action of the machine that the endless apron be kept perfectly clean, for which purpose a brush 23 is placed toward the under side of the roller *k*, and is pressed against the endless apron by spiral springs 24, the brush being supported in a pair of lever-arms 25, carried by a rock-shaft 26, (see Fig. 4,) operated by a hand-lever 27, which is secured by a locking-bolt 28, pressed up by a spring 29 to hold the brush in proper position.

The action of the apparatus is as follows: The stalks to be decorticated, placed on the feed-table *l*, are pushed forward by hand into the channels 11, which only allow a single row of stalks to pass between the rollers *d* and *e*, as each aperture only gives passage to a single stalk. The stalks, being then drawn in by the feed-rollers *d e*, pass over the breaker-bar *h*, and each successive portion as it projects beyond the bar becomes broken by the impact of the beater-blades *c*, the woody portion or pith being thrown out, while the filaments pass uninjured between the blades and the bar. The stalks thus converted into stricks are then nipped between the beaters and the endless apron *j*, by which they are freed from the pellicle. As the beater and endless apron have a greater velocity than the rollers *d* and *e*, by which the stalks are retained, a continuous rubbing or scraping action is produced by which all the pellicle still adhering is removed, while the filaments are thrown by the movement of the endless apron onto the curved bars 12, as shown in Fig. 2. The collector 16 in revolving about the axis 17 and between the two bars 12 pushes the stalks along, accumulates them in bundles and finally discharges them into the gutter 19.

It will be evident that the machine may be constructed of various dimensions and that the details of construction may be varied to suit the work without in any way affecting the principle of the invention.

I claim—

1. In a decorticating machine, the combination of a revolving beater cylinder *a* provided with removable blades, an anvil *h*, an adjustable moving bed formed by a rubber apron *j* and rubber covered roller *i* acting in conjunction with the beater blades, means for driving the roller *i* and the beater cylinder at the same circumferential speed, feed rollers *d* and *e*, and means for driving the same at a common surface speed lower than that of the beater cylinder and roller *i*, as specified.

2. The receiving and collecting device for the decorticated stalks, formed of a pair of concentric curved bars adapted to receive the filaments as they fall, in combination with a finger carried by a revolving shaft and adapted to travel between said curved bars to collect the filaments and conduct them to the front of the machine, as described.

The foregoing specification of my improved machine for decorticating ramie and other plants, leaves, and textile materials signed by me this 13th day of October, 1894.

ALFRED DIEUDONNÉ ESTIENNE.

Witnesses:
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