No. 724,249. PATENTED MAR. 31, 1903.

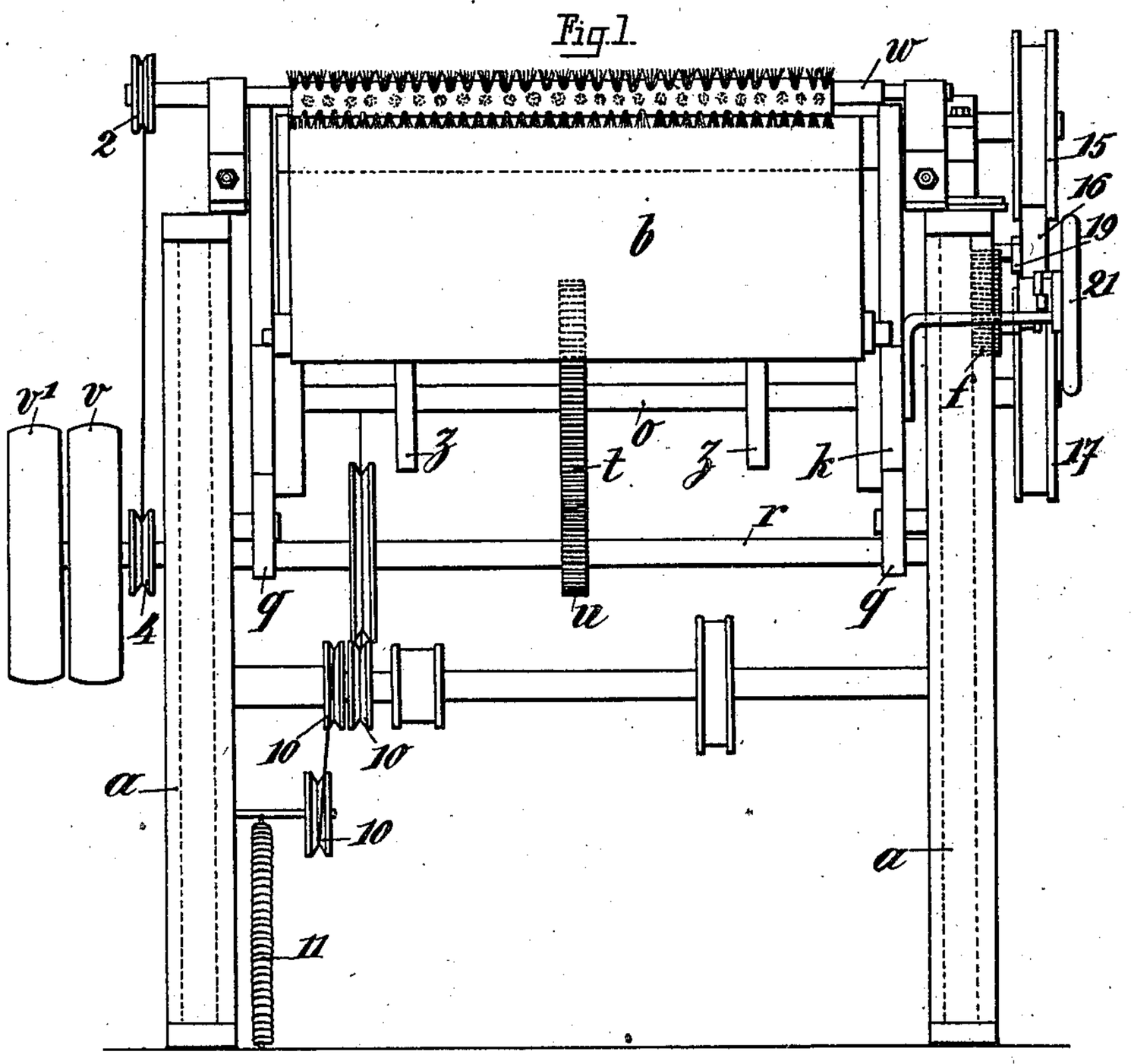
A. BILLAUD.

APPARATUS FOR DEPILATING SKINS AND FURS.

APPLICATION FILED APR. 25, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

W. M. Avery

C. R. Ferguson

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André Billaud

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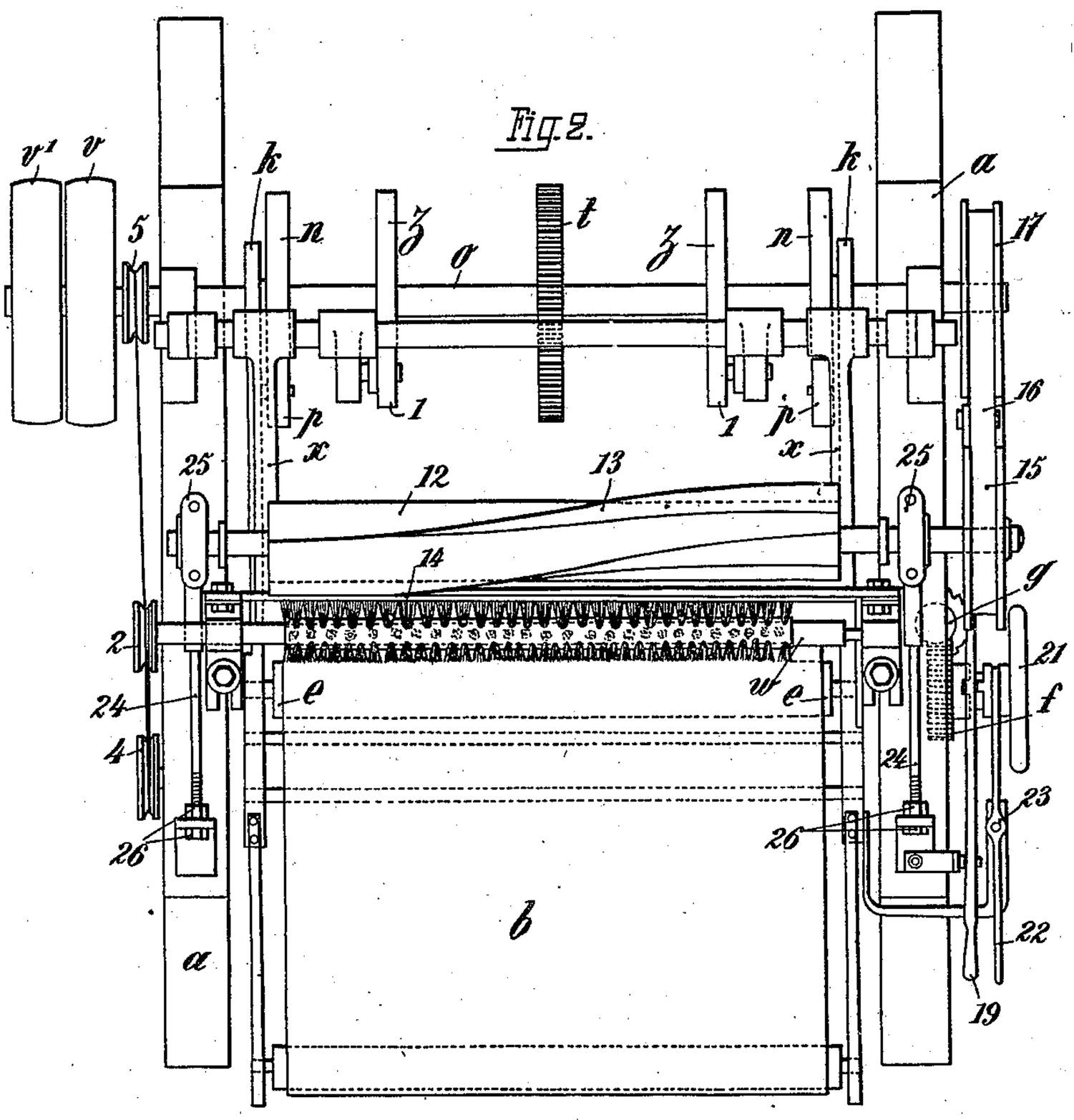
NO MODEL. 4 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 4 SHEETS—SHEET 3.

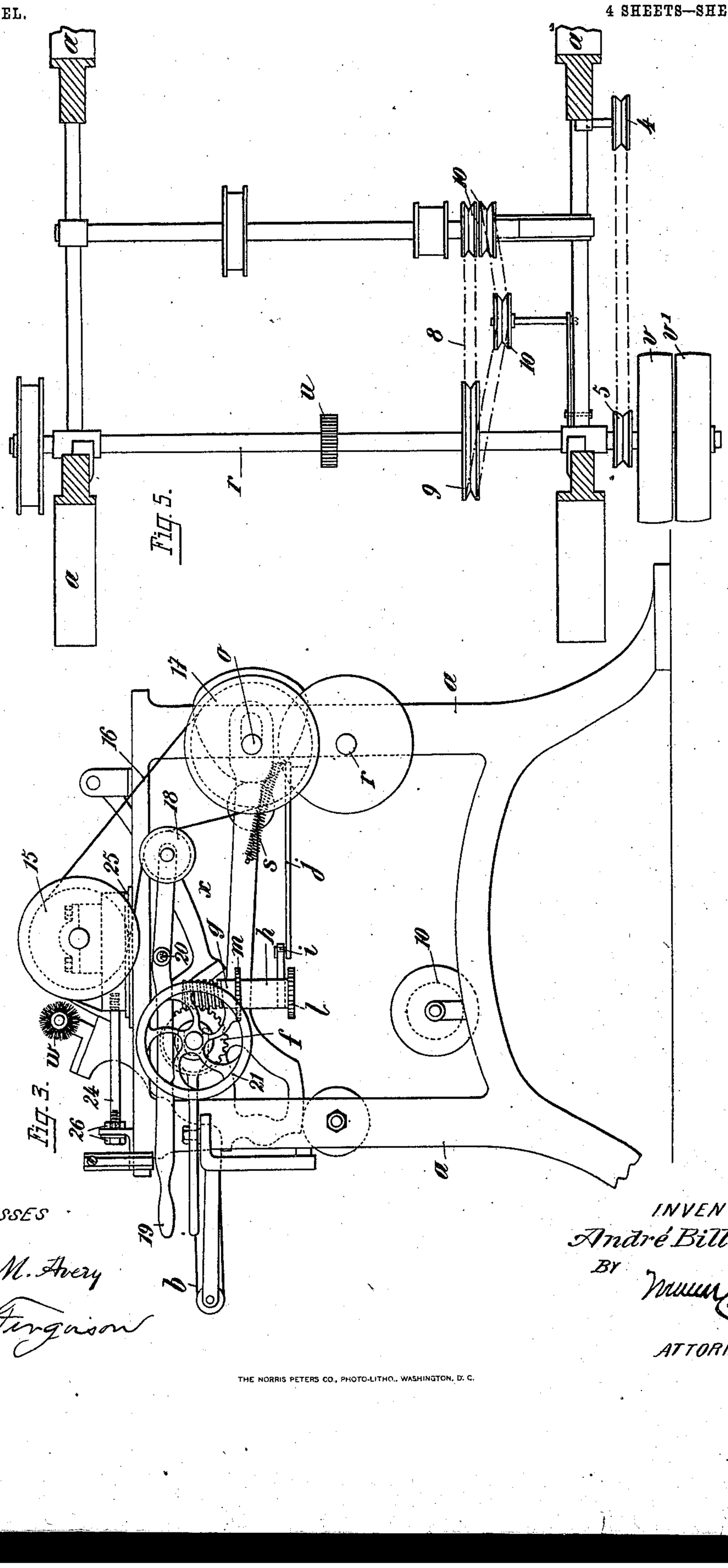

Fig. 3.

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NO MODEL. 4 SHEETS—SHEET 4.

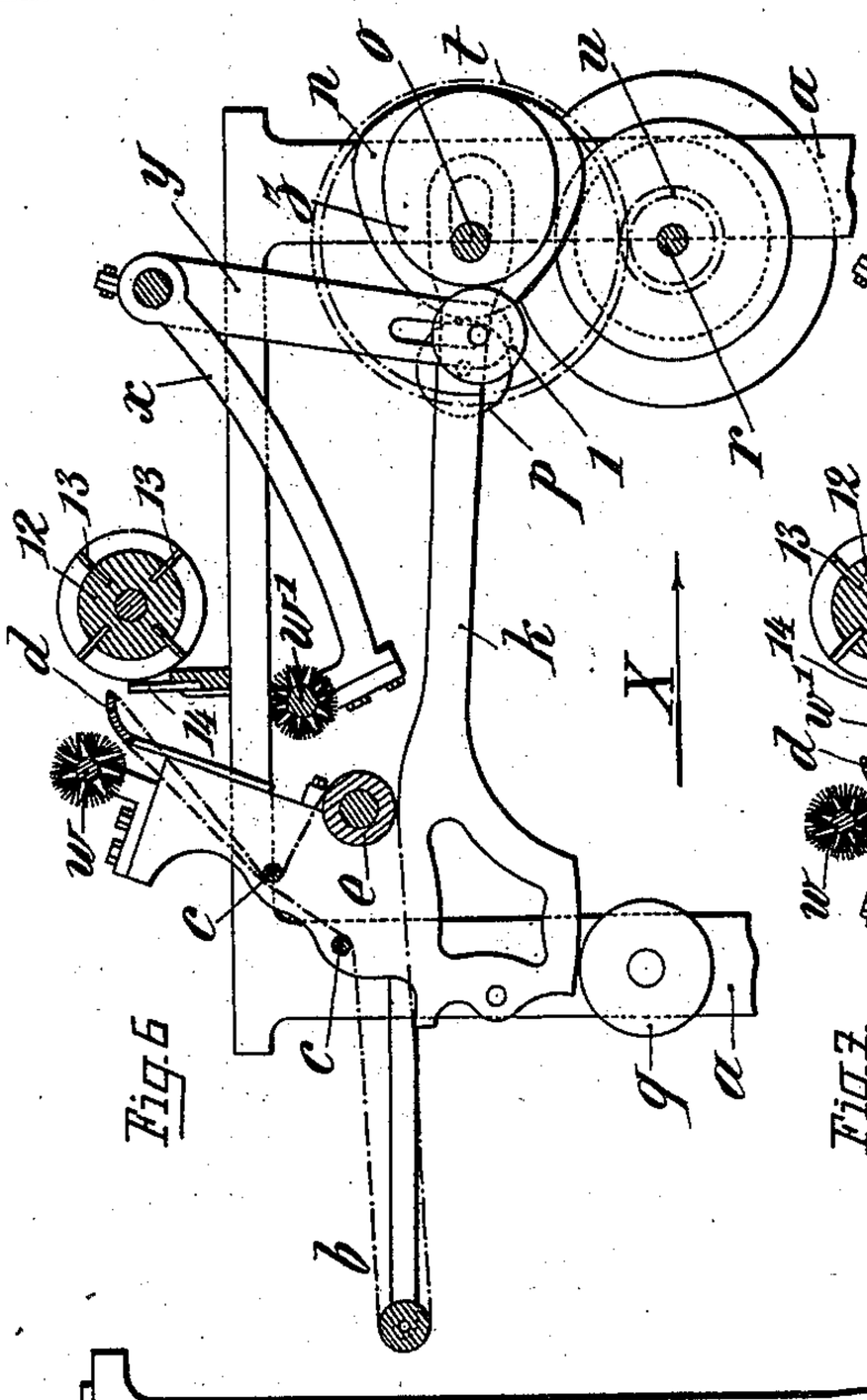

Fig. 6.

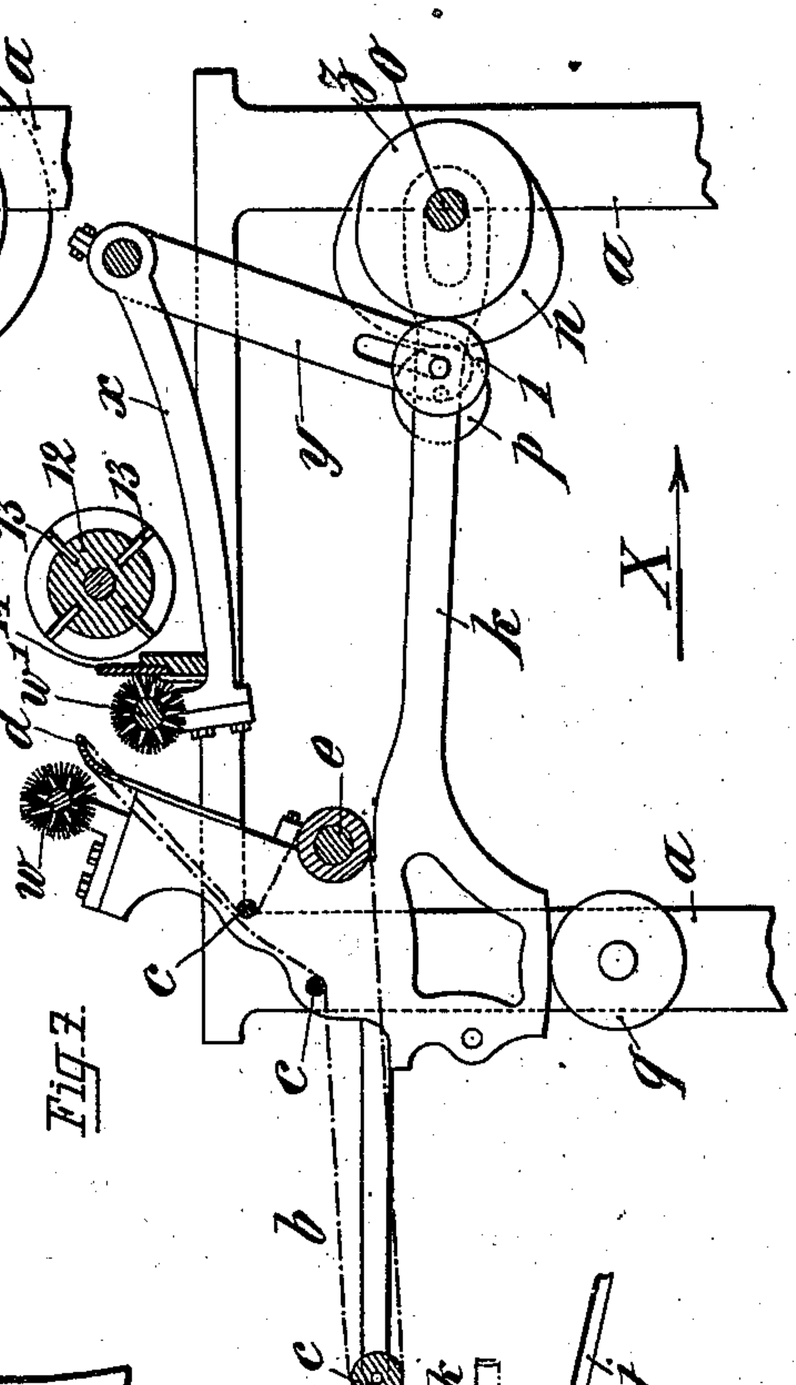

Fig. 7.

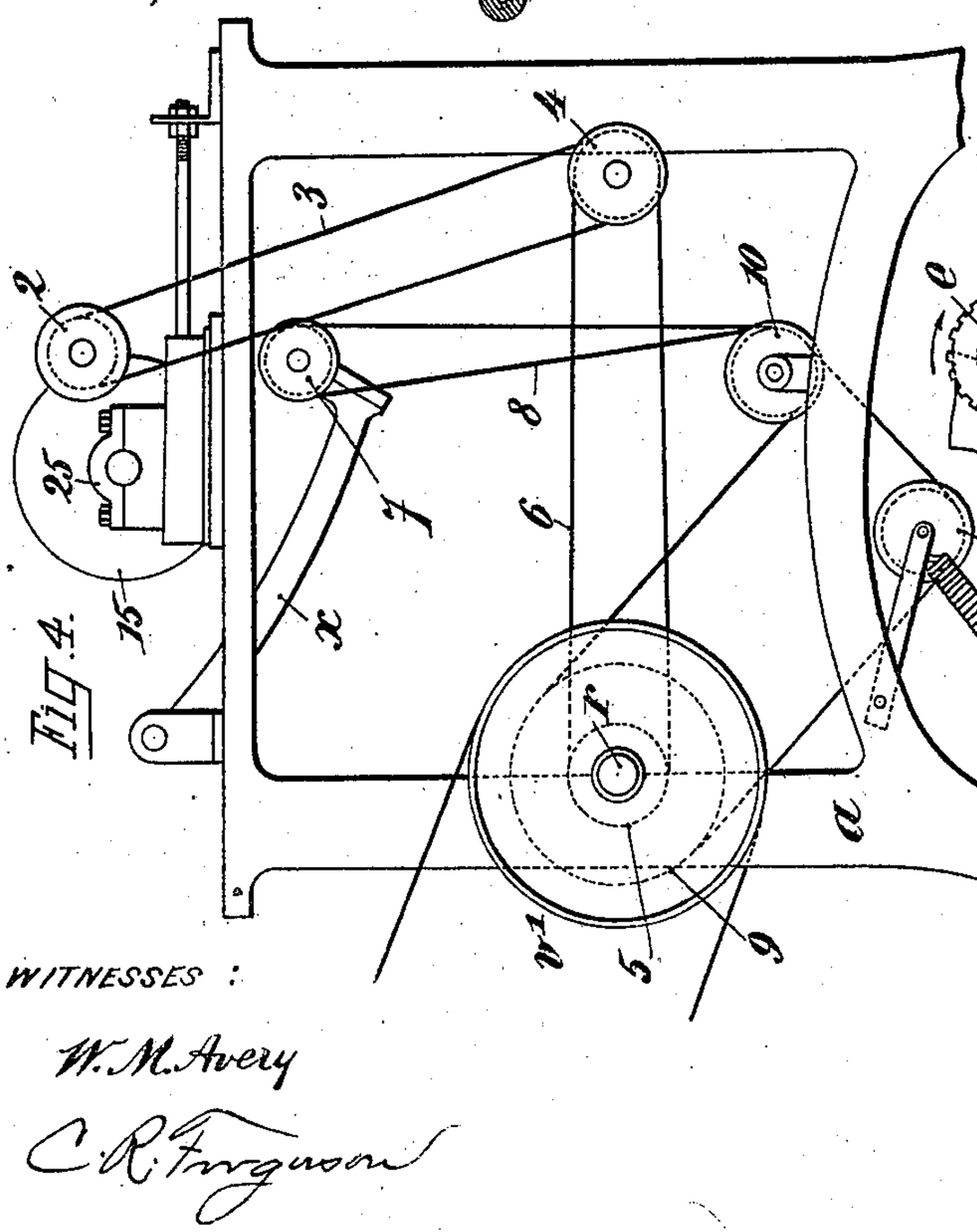

Fig. 4.

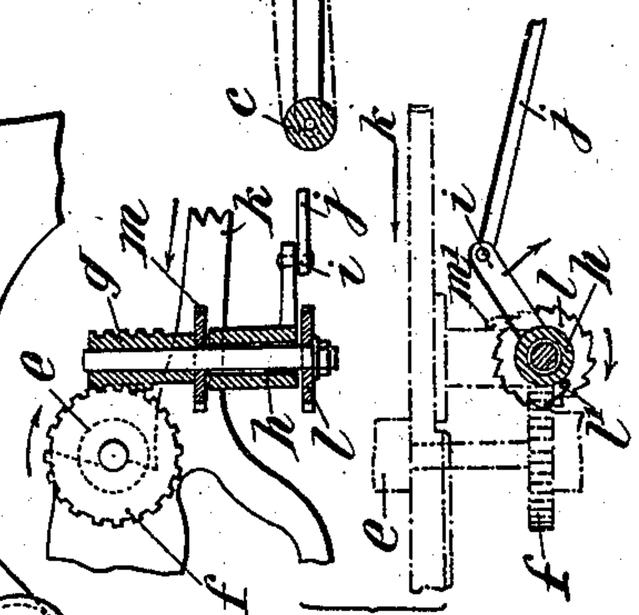

Fig. 8.

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UNITED STATES PATENT OFFICE.

ANDRÉ BILLAUD, OF PARIS, FRANCE.

APPARATUS FOR DEPILATING SKINS AND FURS.

SPECIFICATION forming part of Letters Patent No. 724,249, dated March 31, 1903.

Application filed April 25, 1902. Serial No. 104,625. (No model.)

To all whom it may concern:

Be it known that I, ANDRÉ BILLAUD, manufacturer, of 42 Rue de l'Amiral Mouchez, in the city of Paris, Republic of France, have invented Improvements in Apparatus for Depilating Skins and Furs, of which the following is a full, clear, and exact description.

Furs of various kinds generally comprise two constituent parts, the down or fur proper and the long and more or less stiff hairs, termed "dog-hairs." Numerous attempts have been made to construct a satisfactory machine for removing such dog-hairs without touching the down; and my invention has for its object to provide an improved apparatus for effecting this operation more rapidly and more efficiently than those hitherto employed.

My improved machine comprises, similarly to other apparatus of this class, means for feeding the fur gradually forward and so as to stretch it over the edge of a bar, brushes for depressing the down while the skin is stretched and folded in this manner, so that only the dog-hairs project, and knives for removing the dog-hairs without touching the down.

The characteristic features of my invention consist in the particular combination of these various parts and in their method of action, and in order that these may be readily and clearly understood I have represented a machine in accordance with my invention in the accompanying drawings, in which—

Figure 1 is a front elevation of a machine embodying this invention and seen from the side on which the apron for the reception of the skins is situated. Fig. 2 is a corresponding plan view. Figs. 3 and 4 represent elevations of the two ends of the machine. Fig. 5 is a partial plan view of the operating mechanism. Figs. 6 and 7 are sectional views of the essential parts of the machine in their operative positions. Fig. 8 shows, in vertical section and in horizontal section, respectively, details of the operating mechanism for the apron which carries the skins.

In the various figures similar characters of reference are employed to designate like parts.

a is the framework of the machine, supporting the parts, which are hereinafter described.

In the first place I will describe the mechanism serving to feed the skin into the machine, so that it may be acted upon by the various parts by which it is to be treated. This mechanism comprises a sheet or apron *b*, (represented by dotted lines in Figs. 6 and 7.) This endless apron, guided by the rollers *c*, passes over a bar *d* and is displaced by a roller *e*, to which is imparted a movement of intermittent rotation by means of the mechanism represented in detail in Figs. 3 and 8. This mechanism consists of a toothed wheel *f*, driven by an endless screw *g*, upon the shaft of which is loosely mounted a sleeve *h*, rigidly connected with an arm *i* and a connecting-rod *j*, fixed by its extremity upon the framework *a* of the machine. As hereinafter described, the apron and its operating mechanism are supported by a carriage constituted by two cheeks *k*, to which a reciprocating movement in the horizontal direction is imparted. The extremity of the connecting-rod *j* remains fixed during this movement. It is obvious that the sleeve *h* receives an oscillatory movement owing to the pivoting of the arm *i* upon the rod *j*. This oscillatory movement is transmitted to the shaft of the screw *g* by means of a clutch *l*, the ratchet-wheel of which is mounted upon the shaft of the screw, while the pawl *l'* is carried by the sleeve *h*, Fig. 8. In this period of the movement the screw is operated, the wheel *f* rotates, and the roller *e* is actuated, causing the apron *b* to advance for a predetermined distance. When the sleeve *h* oscillates in the opposite direction, a second ratchet-wheel *m*, upon which acts a pawl *m'*, mounted upon the carriage *k*, retains the screw and prevents it from rotating. This intermittent advance of the apron *b* and of the skin which it carries depends upon the reciprocating movement of the carriage *k*. This is produced by means of a cam *n*, mounted upon the shaft *o* and acting upon a roller *p*, mounted upon each of the cheeks *k* of the carriage. The front of the carriage rests upon rollers *q*, while behind it is guided by slots surrounding the shaft *o*. Finally springs *s*, Fig. 3, cause the carriage to move back by causing the roller *p* to bear constantly against the cam *n*. The shaft *o* is driven from the main shaft *r*, Fig. 6, by the intermediary of a gear-wheel *t* and

a pinion *u*. The driving-shaft *r* carries the fixed and loose pulleys *v v'* necessary for starting it. Owing to this arrangement the skin, which has been fixed upon the apron *b*, comes over the edge of the bar *d*, upon which it is curved, and advances with an intermittent movement. Each time the skin stops, the brushes, serving to flatten the down and to separate it from the dog-hairs, act upon the skin. With this object a fixed brush *w* is mounted upon the carriage and acts above the bar, while a movable brush *w'*, carried by the arm *x*, actuated by the levers *y*, approaches the bar *d* at the proper moment and acts upon that portion of the skin situated beneath this bar. The appropriate movement is communicated to the brush *w'* by means of a cam *z*, mounted upon the shaft *o* and acting upon a roller 1, arranged at the lower part of the lever *y*. These two brushes *w w'* rotate in opposite directions and are driven in the following manner: The fixed brush *w*—that is to say, the brush mounted upon the carriage and which only participates in the movement of this latter—is caused to rotate by means of a pulley 2, from which a belt 3 passes over a second pulley 4, which latter by means of a belt 6 receives movement from a pulley 5, mounted upon the driving-shaft *r*. The second brush *w'*, carried by the arm *x*, is caused to rotate by means of a pulley 7, over which passes a belt 8, coming from a second pulley 9, mounted upon the shaft *r*, the two lengths of which belt are guided by guide-rollers 10 10. A spring 11 maintains this belt stretched whatever may be the position occupied by the brush *w'*.

The parts intended for cutting the dog-hairs consist of a rotary drum 12, carrying helicoidal blades 13, which act in combination with a fixed counter-blade 14, mounted in any suitable manner on the fixed frame *a* of the machine. The position of the drum and of the blades 13 with respect to the fixed blade 14 may be adjusted by means of rods 24, screw-threaded at their free extremity and acting upon the bearings 25 of the drum so as to cause them to slide backward when the nuts 26 are turned. The drum 12 is caused to rotate by means of a pulley 15, over which passes a belt 16, surrounding a pulley 17, keyed upon the shaft *o*. A roller 18, mounted at the extremity of a lever 19, the fulcrum of which is at 20, serves to stretch the belt 16 or to slacken it, as desired, and therefore to rotate the drum 12 or to stop it. Finally a hand-wheel 21, Figs. 2 and 3, carrying an engaging member, slides upon the shaft of the actuating-roller *e* of the apron and by means of a forked lever 22, pivoted at 23, permits of stopping or starting the said apron, as desired. The hand-wheel 21 serves for rotating the shaft of the roller *e* directly by hand when it is desired to cause the apron *b* to move at a high speed.

The operation of the machine is as follows: The skin having been suitably stretched upon the apron *b*, the machine is started and the apron carries the skin over the edge of the bar *d*. In this position and while its movement is arrested the skin is brushed above by the brush *w* and below by the brush *w'*, which in order to effect this operation rises under the influence of the cam *z* and approaches the bar *d*, as shown in Fig. 7. The carriage *k* is then started, while at the same time the brush *w'* descends to the position represented in Fig. 6, and the carriage advancing in the direction indicated by the arrow X, Figs. 6 and 7, brings the bar *d* and the skin upon it in proximity to the counter-blade 14. In this position the rotary drum 12 being in motion the blades 13 cut the dog-hairs without deteriorating the down, which has been flattened by the brushes. When the operation is terminated, the carriage *k* returns and the apron *b* advances for a certain distance under the action of the clutch mechanism *l*, as above described. A fresh portion of the skin is thus brought over the edge of the bar *d*, the brush *w'* is raised, the skin is brushed, and the movements already described are repeated, so as to present the dog-hairs separated from the down to the knives. It will thus be readily understood that the depilating operation as effected by my improved machine is performed very rapidly, uniformly, and practically, owing to the coördination of the movements of the various parts for effecting combined conveyance, brushing, and cutting, as above described.

My invention is independent of the forms, dimensions, and arrangements of detail of the various parts in question, which may vary without altering the character of the combination which has been described.

I claim—

1. In a machine of the character described, a frame, a carriage movable in the frame, an endless apron on the carriage, a feed-roller for the apron, a worm-wheel on said roller, a worm engaging with the wheel, a loose sleeve on the worm-shaft, a swinging arm supporting the sleeve, a pawl carried by the arm, a ratchet-wheel with which the pawl engages and rotating blades arranged adjacent to the discharge portion of the apron, substantially as specified.

2. In a machine of the character described, a frame, a carriage movable in the frame, an endless apron on the carriage, a feed-roller for the apron, a worm-wheel on said roller, a worm engaging with the wheel, a loose sleeve on the worm-shaft, a swinging arm supporting the sleeve, a pawl carried by the arm, a ratchet-wheel on the worm-shaft, which the pawl engages, a rotary brush on the carriage, a brush mounted to rotate and to swing below the first-named brush, and rotary blades, substantially as specified.

3. In a machine of the character described, a frame, a carriage movable in the frame, an

endless apron on the carriage, a feed-roller for the apron, a worm-wheel on the said roller, a worm engaging with the wheel, a loose sleeve on the worm-shaft, a swinging arm supporting the sleeve, a pawl carried by the arm, a ratchet-wheel on the worm-shaft, with which the pawl engages, a pawl and ratchet for holding the roller from reverse rotation, a rotary brush on the carriage, a brush mounted to rotate and to swing below the first-named brush, and rotary blades, substantially as specified.

The foregoing specification of my improvements in apparatus for depilating skins and furs signed by me this 8th day of April, 1902.

ANDRÉ BILLAUD.

Witnesses:
LEON BILLAUD,
MAURICE H. PIGNET.