

No. 706,964.

Patented Aug. 12, 1902.

G. LAFRIQUE.

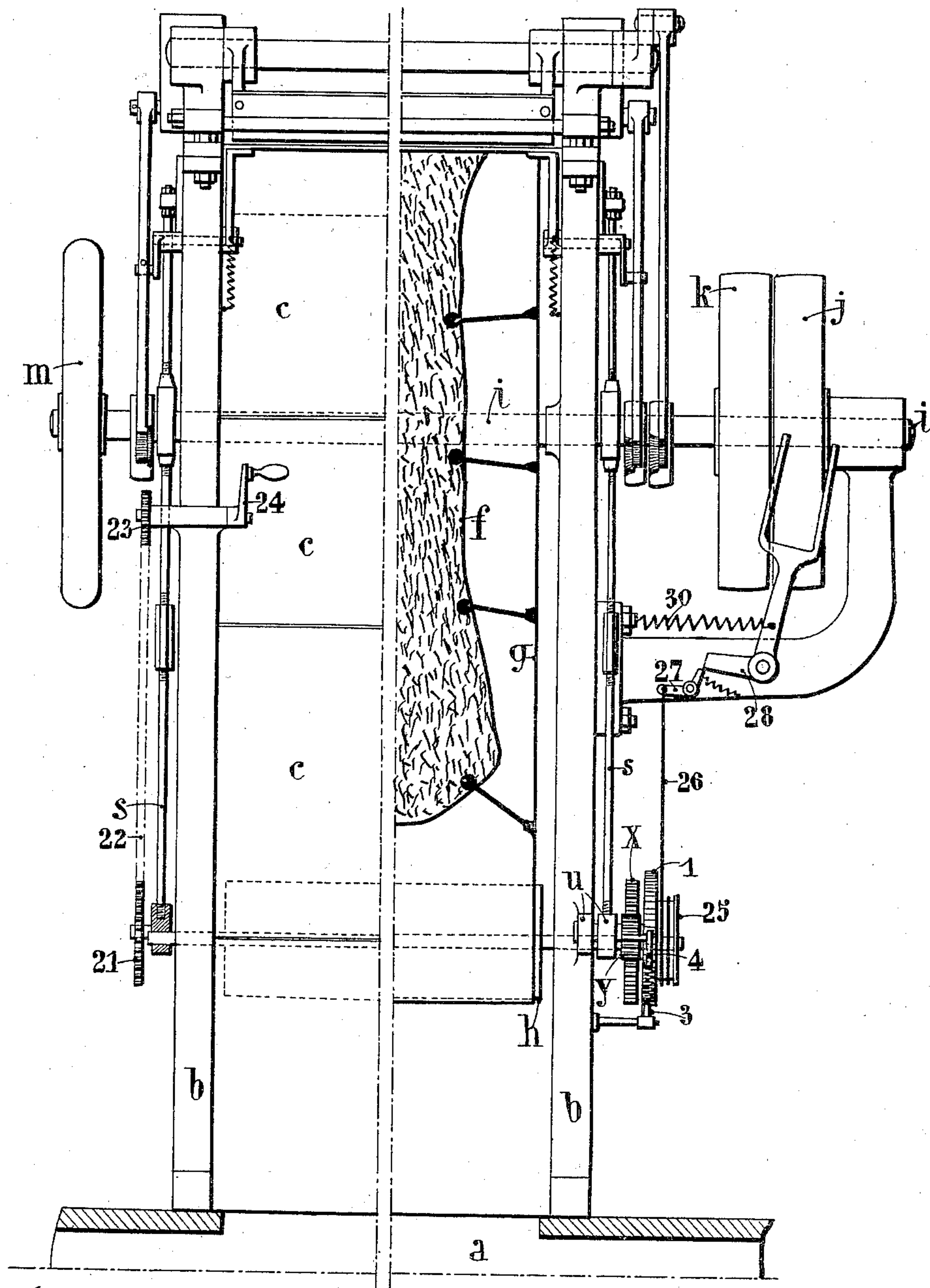
MACHINE FOR REMOVING HARD AND STIFF HAIRS FROM FURS OR SKINS.

(Application filed Apr. 22, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig.1.



Witnesses:

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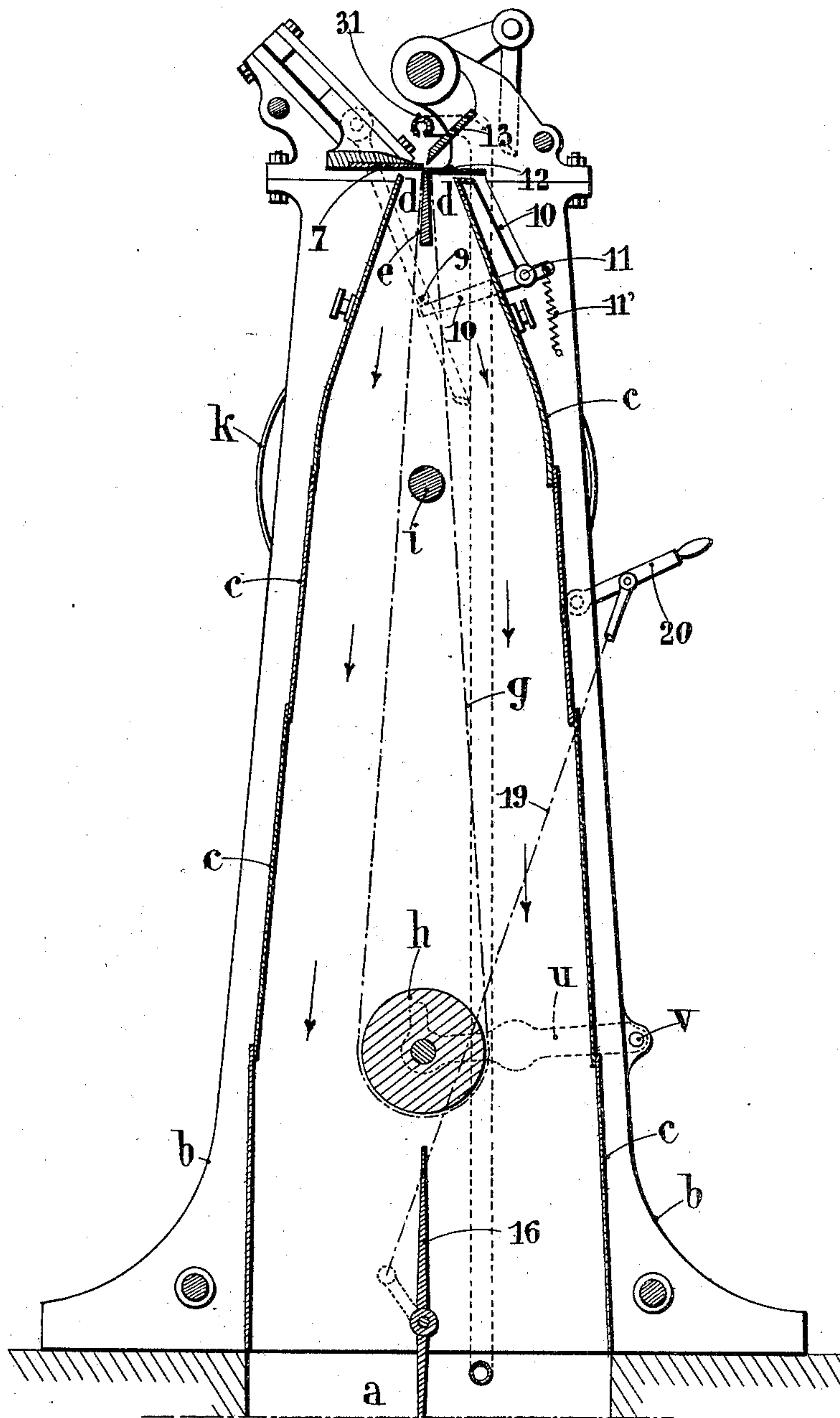
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Fig. 2.



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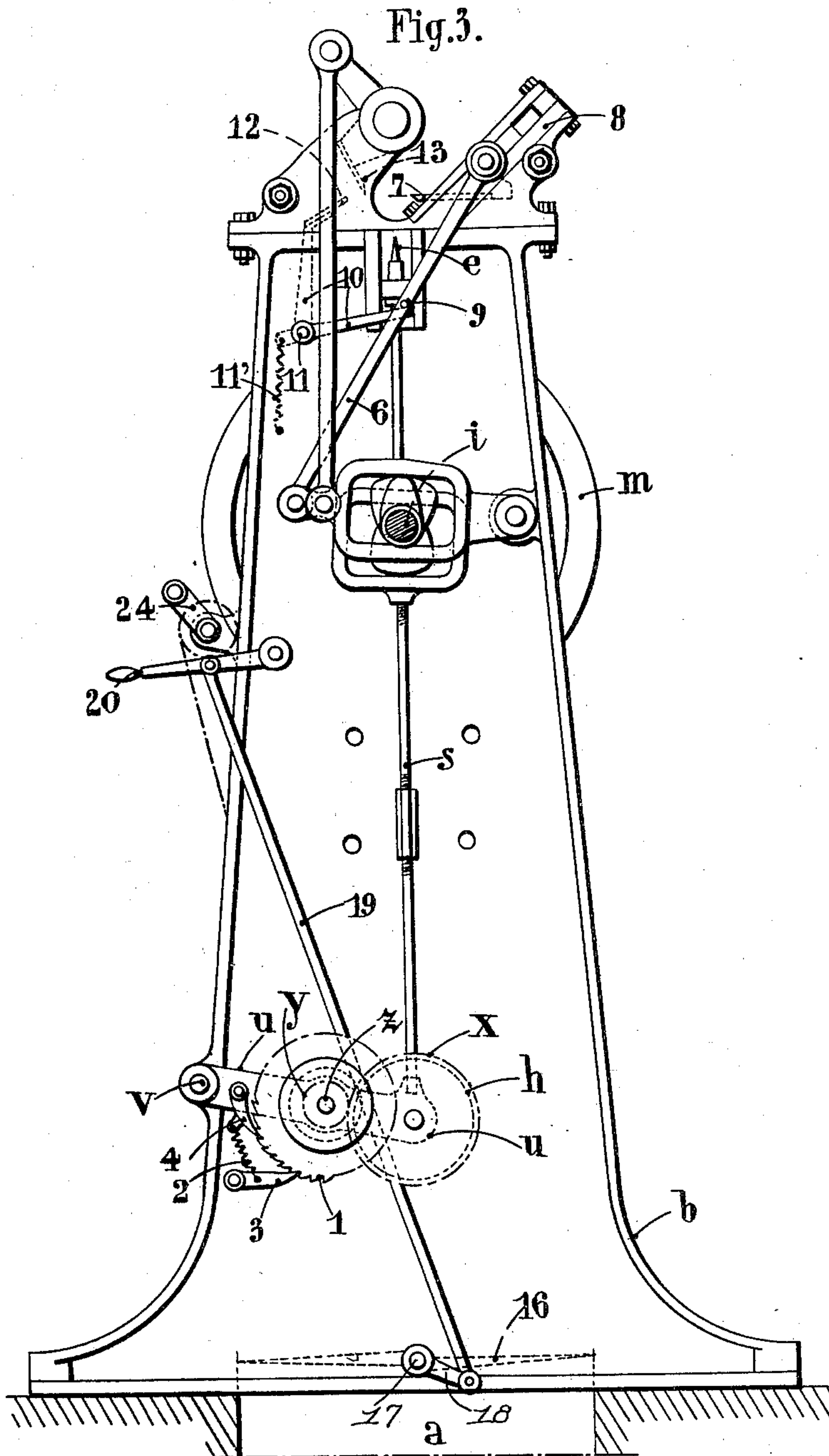
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4 Sheets—Sheet 3.



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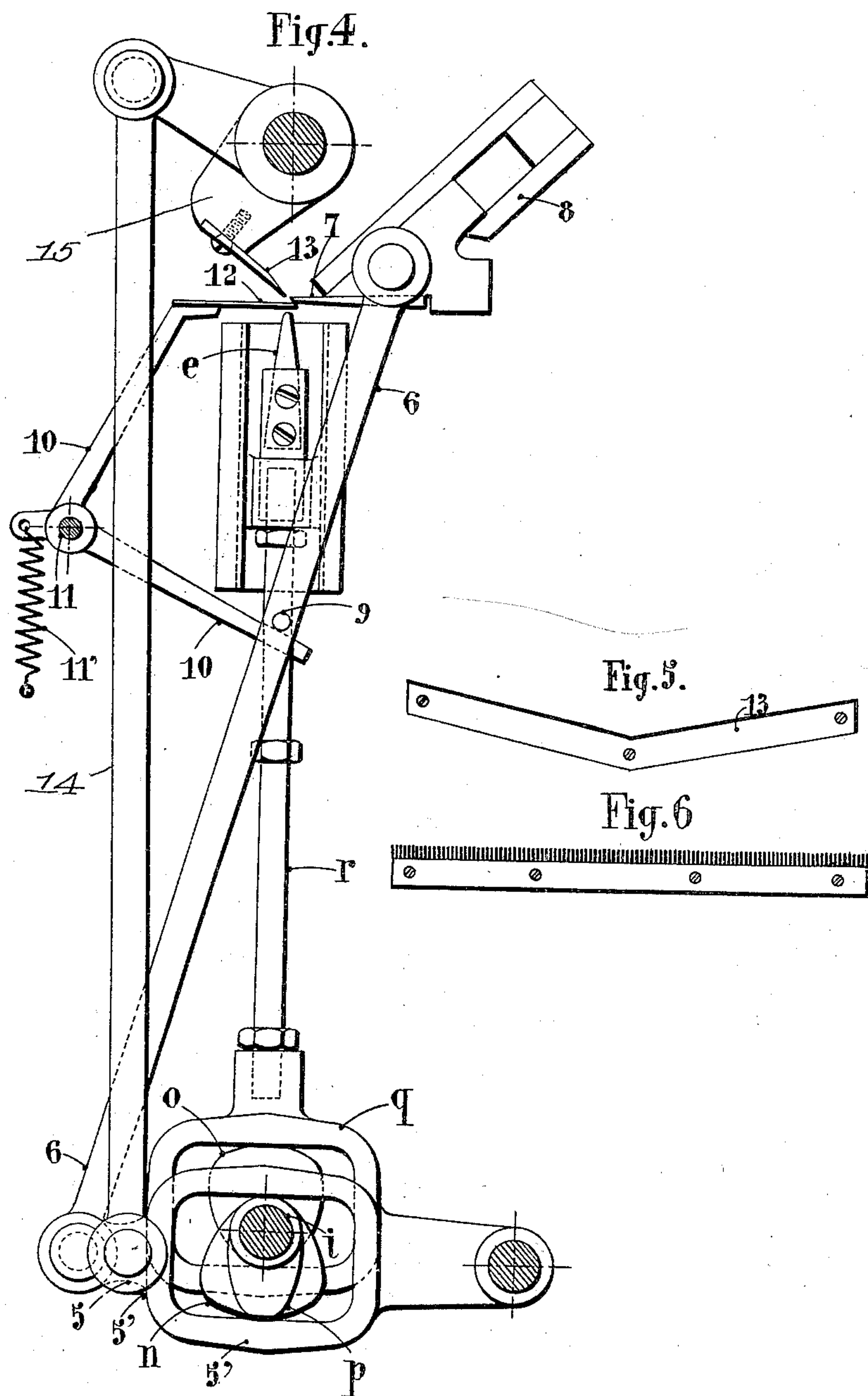
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(Application filed Apr. 22, 1901.)

(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR REMOVING HARD AND STIFF HAIRS FROM FURS OR SKINS.

SPECIFICATION forming part of Letters Patent No. 706,964, dated August 12, 1902.

Application filed April 22, 1901. Serial No. 56,953. (No model.)

To all whom it may concern:

Be it known that I, GABRIEL LAFRIQUE, engineer, a citizen of the French Republic, residing at Paris, France, (having post-office address 84 Avenue Philippe Auguste, in said city,) have invented certain new and useful Improvements in Machines for Removing Hard and Stiff Hairs from Furs or Skins, of which the following is a specification.

10 This invention relates to machines of the Cimiotti type for removing hard or stiff hairs from furs or skins. In these machines the furs or skins are passed over the edge of a beam and are subjected to the action of a strong current of air blown onto the part of the fur or skin at the said edge, so that the flexible hairs lie down, while the hard or stiff hairs remain standing and are seized by suitable cutting or pulling devices.

20 According to the present invention there is substituted for the external air-current generally produced by bellows actuated by reciprocating motion a constant current of air produced by a rotary exhauster connected to a row of machines arranged above an air-channel. The framing of the improved machine is hollow, and the air enters through two adjustable openings provided on each side of the beam which supports the skins or furs. The flexible hairs bent down on each side of the edge of the beam are kept in that position by a comb or combs, while shears effect the cutting of the hard or stiff hairs.

35 Another improvement consists in making the beam vertically movable, so as to subject the skin or fur to the action of the exhaust while it is below the aforesaid openings, this movement being combined with that of a feeding-roll, so that the skin or fur moves forward a certain amount at each oscillation of the beam. An automatic stop-motion or gear device stops the machine at the end of each operation, so that one man can attend to several machines.

45 In order that my invention may be readily understood, I will describe the same fully with reference to the annexed drawings, in which—

50 Figure 1 is a front elevation with sectional parts of the machine. Fig. 2 is a cross-section through the axle, showing the active

parts in their working position. Fig. 3 is a side elevation of the apparatus, the parts being in the inoperative position. Fig. 4 is a detail view, on an enlarged scale, of the driving mechanism of the beam and of the plates of the shears. Figs. 5 and 6 show the detailed form of the comb and of the plates of the shears.

60 In carrying out this invention a series of machines is arranged over a channel *a*, at the end of which a powerful air-exhauster is provided. Each machine comprises two standards *b b*, connected at the top and provided with grooves in which covers *c c*—say of sheet-iron—can slide. When the covers are closed, the machine acts as a vertical chimney, into which the air drawn by the exhauster enters through inlets *d d*, provided at the top of the machine and on each side of the top edge of the beam *e*, over which the skin or fur is passed. The skin or fur *f* is further attached, as shown in Fig. 1, by means of cords with eyes, to an endless gauze *g*, stretched over the beam *e*, and a feeding-roll *h*, journaled at the lower part of the machine-framing. The main driving-shaft *i* carries on one side a fast pulley *j* and a loose pulley *k* and on the other side a fly-wheel *m*. The said main shaft also carries (for producing the various motions) approximately triangular cams *n o* and oval cam *p*. The triangular cam *o* imparts (by means of a frame *q*, embracing it, and of a rod *r*, connected thereto) reciprocating vertical motions to the beam *e*, which is capable of moving in suitable guides. The said triangular cam also by means of a rod *s*, connected to the lower part of its frame, imparts to the aforesaid feed-roll at the lower part of the machine a vertical motion corresponding to that of the beam, while the following arrangement causes at each oscillation of the beam *e* and roller *h* the wire-gauze *g*, carrying the skin or fur *f*, to move forward a certain amount.

95 The aforesaid feed-roll *h* is mounted in arms *u*, fulcrumed at *v* to the standards of the machine. The spindle of the feed-roll *h* has keyed on it a toothed wheel *x*, gearing with a pinion *y*, keyed on a shaft *z*, connecting both of the aforesaid arms *u* and carrying a ratchet-wheel 1, adapted to be engaged

by a pawl 3, pivoted on the framework of the machine and held in its effective position by a spring 2. When the arms *u* are pushed downward by the rod *s*, depending from the frame of the aforesaid triangular cam, the ratchet-wheel 1, carried by it and pressed by the pawl 3, pivoted to the standard, receives movement, which is imparted to the feed-roll *h* through the medium of the aforesaid toothed wheel *x* and pinion *y*. The gauze *g*, carrying the skin or fur, therefore moves a certain amount over the edge of beam *c*. While the arms *u*, carrying the feed-roll, are moving upward neither the roll nor the ratchet-wheel is rotated; but the pawl 3, which is fixed to the machine-framing, slides backward over a few teeth, while a second pawl 4, pivoted on the arm *u*, engages with the teeth of the ratchet, so as to prevent its rotation in the reverse direction. The second triangular cam *n* actuates, through the medium of its frame 5' and rod 6, a supporting-blade 7, arranged horizontally and sliding in a groove 8 at about forty-five degrees to the horizontal. This supporting-blade is in its lowest position level with the beam *e* and comes against the hard or stiff hairs, so as to act as a support while they are being cut. To the rod of the second cam is fixed a pin, on which rests one arm of the comb-carrying lever 10, pivoted to the machine-frame in 11 and having fixed to its upper end a comb 12. When the cam-rod 6 moves downward, the said pin 9 depresses the comb-carrying lever 10 and the comb comes in contact with the flexible or silky hairs and keeps them down while the hard or stiff hairs are being cut. The hard or stiff hairs pass between the teeth of this comb. When the rod 6 moves upward, the comb rises automatically under the action of a spring 11', attached to both the frame of the machine and to the comb-carrying lever 10. The oval cam *p* actuates the shearing-blade 13 through the medium of its rod 14 and a lever 15, to which the said shearing-blade is attached. It comes into action as soon as the comb 12 is in its lowest position.

Inside the machine-frame and level with the air-passage *a* is a flap-valve 16, capable of rotating on a central axis 17, connected in a crank 18 and rod 19 to a lever or handle 20, pivoted to the machine-frame. By pulling down this handle the valve is brought to a horizontal position and the flow of air into the machine is interrupted. The spindle of the feed-roll *h* is connected by a chain and sprockets, as 21 22 23, to a crank 24, pivoted to the machine-frame, by means of which the said feed-roll *h* can be rotated and the position of the endless wire-gauze *g* regulated and the skin or fur brought into the working position. On the side opposite to that on which this chain-gear is arranged is the automatic arrangement for throwing the machine out of action, so that said machine is stopped as soon as the whole of the skin or fur has passed over the edge of the beam *e*. This throwing-out

arrangement comprises a grooved pulley 25, keyed on the spindle of the feed-roll and embraced by a cord 26, the effective length of which is exactly equal to that of the skin or fur to be treated. This cord is attached to a bell-crank lever 27, one arm of which supports the free end 28 of the belt-shifting fork 29 to hold the belt on the fast pulley *j*. The fork is connected to the machine-frame by a spring 30, which tends to shift the fork onto the loose pulley. At the commencement of operation the cord 26 is slack, it being wound on the grooved pulley 25 as the operation progresses. As soon as the cord 26 is wound for a certain length on the said grooved pulley 25 it pulls on the bell-crank 27, so that the free arm 28 of the belt-shifting fork 29 ceases to rest therein and is acted upon by a spring 30 and shifts the belt onto the loose pulley and stops the machine.

The operation of a machine is as follows: When the machine is at rest, the sheet-iron covers are open and the flap-valve 16 closed, so that no air is drawn through the machine by the exhaustor. The operative in charge of the machine fastens the skin or fur onto the movable wire-gauze *g* and then brings the skin or fur into the vicinity of the edge of the beam *e* by turning the lower roll *h* by means of the crank 24. He then closes the sheet-iron sliding covers and opens the flap-valve, and then the machine is set in motion by shifting the driving-belt from the loose pulley *k* onto the fast pulley *j* by means of the belt-shifting fork 29. The hereinbefore-mentioned cams then act. The triangular cam *o* raises the upper edge of the cross-bar level with the air-inlets *d d*, provided on each side of the bar. At the same time the other triangular cam *n* causes, by means of its frame 5 and rod 6, the horizontal supporting-blade 7 to descend to the level of the said air-inlets *d*, while the comb comes opposite the supporting-blade 7, so as to keep down the flexible hair depressed by the current of air. When the cross-bar *e*, comb 12, and supporting-blade 7 are in this position, the oval cam *p* comes into action and lowers suddenly the shearing-blade 13, which cuts all the hard or stiff hairs protruding through the teeth of the comb 12 while it bears against the blade 7. As soon as the shearing has taken place the triangular cam *n* raises the supporting-blade 7 and the comb 12, while the triangular cam *o* causes the cross-beam *e* to move downward. The downward movement of this beam effects the rotation of the feed-roll *h* and the progress of the skin or fur, as hereinbefore explained. At each revolution of the machine the cord 26 is wound up on the aforesaid grooved pulley 25. When this cord, the length of which is adjusted according to the size of the skin or fur, is well stretched, it pulls on the bell-crank 27 and stops the machine.

On reference to Fig. 2 it will be seen that the pipe 31 enters the air-passage *a* and rises therefrom, the upper open end or outlet of

said pipe being located over the inlets *d d*. The lower or inlet end of this pipe is situated upon the blast side of a fan in such air-passage, so that a blast of air can be sent through the pipe, being discharged at the delivery end thereof and against the flexible hairs upon the hide, so as to cause such hairs to lie down, and thereby facilitate the shearing operation. As the fan forms no part of the present invention, I have deemed it unnecessary to illustrate the same.

What I claim is—

1. In a machine of the class described, a hollow column constituting the framework of the machine, the walls of the column being imperforate to permit the direct passage through said column of an air-blast and a beam within the column, the beam being arranged between opposite walls of the column and one of said walls consisting of a plurality of vertically-slidable plates in overlapping relation.

2. In a machine of the class described, a hollow column constituting the framework of the machine, the walls of the column being imperforate to permit the direct passage through said column of an air-blast, and the

front and rear walls consisting of a plurality of overlapping plates supported for vertical sliding movement by the side walls, a beam within the column, the beam being arranged between opposite walls of the column, an air-exhausting channel below and in communication with said hollow column, and a valve for controlling the admission of air into said channel.

3. In a machine of the class described, a beam mechanism for operating the beam including a pulley, a loose pulley, a belt shiftable from one of said pulleys to the other, a belt-shipper, means for positively operating the same in one direction, a holding device for engaging said belt-shipper, a pulley operative with the beam-operating mechanism, and a cord on said last-mentioned pulley connected with and adapted to operate said holding device.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GABRIEL LAFRIQUE.

Witnesses:

EDWARD P. MACLEAN,
EMILE KLOTZ.