(No Model.) 2 Sheets—Sheet 1.

C. E. SACKETT.

FUR PLUCKING MACHINE.

No. 566,342. Patented Aug. 25, 1896.

Fig 1

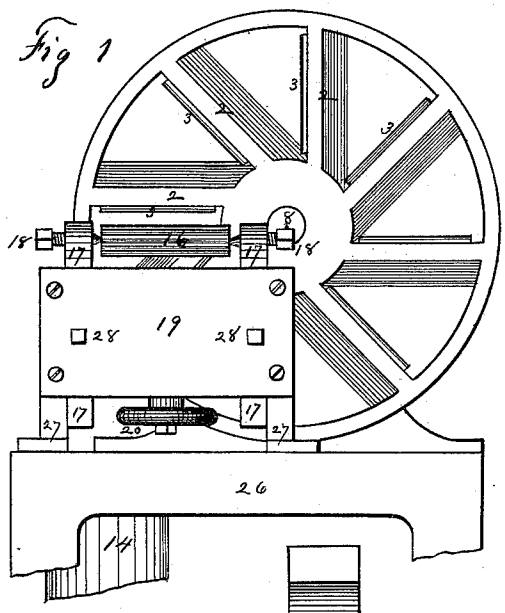


Fig 2

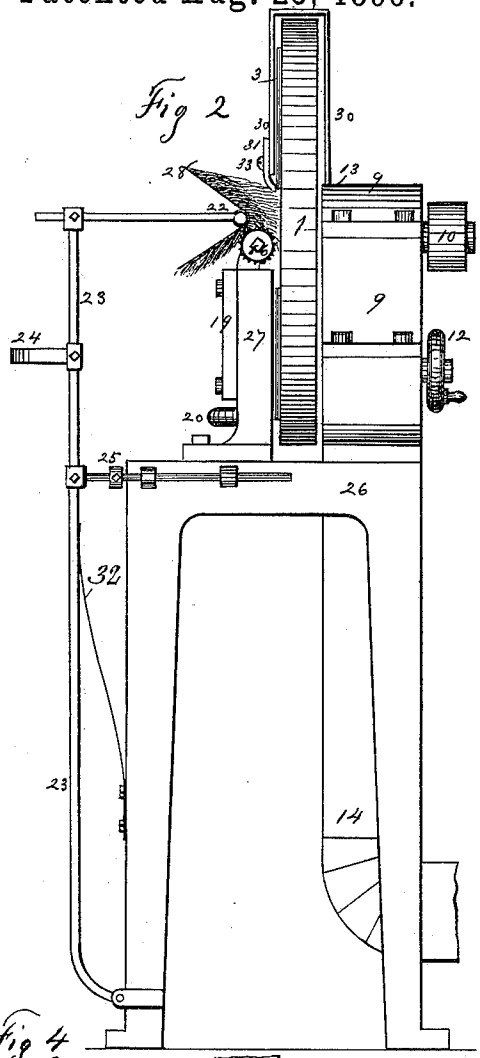


Fig 3

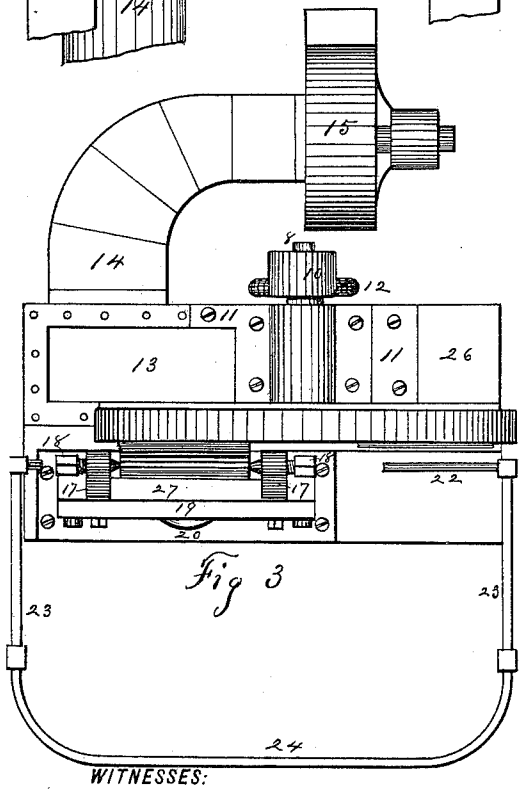


Fig 4

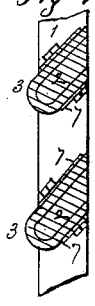


Fig 5

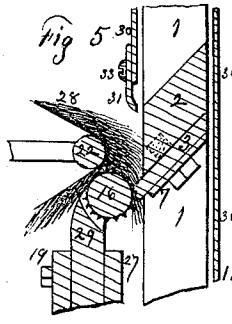
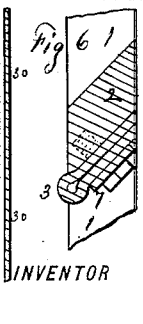


Fig 6



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(No Model.) 2 Sheets—Sheet 2.

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Fig 7

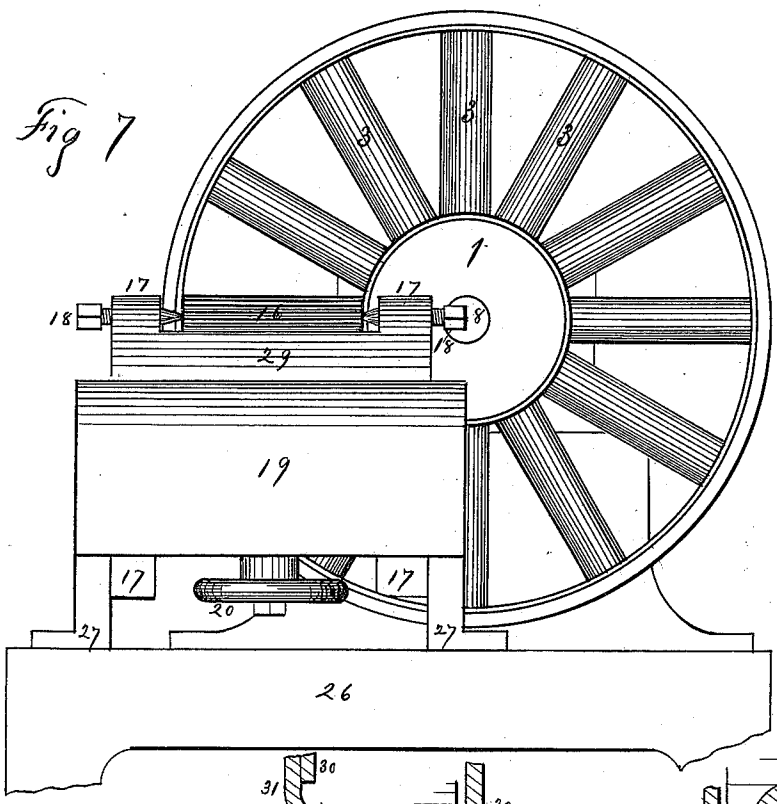


Fig 8

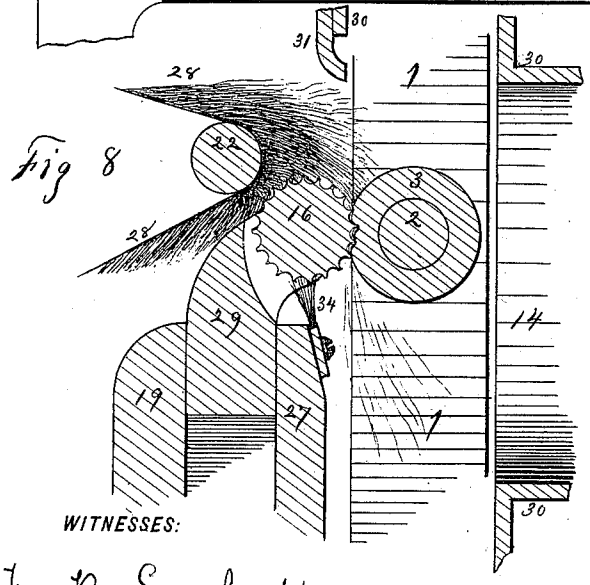
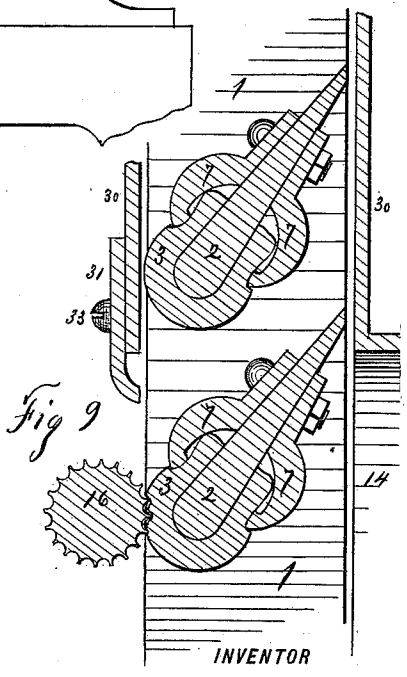


Fig 9



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UNITED STATES PATENT OFFICE.

CHARLES E. SACKETT, OF DANBURY, CONNECTICUT.

FUR-PLUCKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 566,342, dated August 25, 1896.

Application filed January 16, 1895. Serial No. 535,180. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SACKETT, a citizen of the United States, residing in Danbury, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Fur-Plucking Machines; and I do hereby declare that the following specification, in connection with the accompanying drawings, is a full, clear, and exact description of the same.

Numerous machines have been devised for this purpose. Those operating most successfully aim to imitate, mechanically, the process still in general use of plucking skins by hand, wherein the plucker grips the hair between an elastic tube attached to his thumbs and the side or edge of a dull knife manipulated by his fingers, and by constant intermittent gripping and pulling removes the projecting hair from the pelt without injury to the fur. The machines now doing the best practical work combine a rotary elastic roller and a parallel rotary shaft situated below it, to which are attached knife-blades at intermittent distances, between which the hair is gripped and pulled. In some cases the elastic roller has a reciprocatory motion to and from the knife-blades. These machines also combine a blade or comb to lift the hair, which blade hides the pulling action from the operator.

The object of my invention is to furnish a new and improved device in which the gripping and intermittent pulling action can be observed and controlled to better advantage, and which in the simplicity of its construction and action is almost identical with the methods and materials used in hand-labor, though admitting of the highest speed in the machine.

In the accompanying drawings like figures refer to like parts.

Figure 1 is a face view. Fig. 2 is a side view. Fig. 3 is a plan view. Figs. 4, 5, and 6 are detail views. Fig. 7 shows the adoption, mechanically, of the actual implements used in hand-plucking, *i. e.*, a piece of rubber tubing and a dull knife-edge brought consecutively into intermittent parallel gripping and pulling relation. Fig. 8 shows in section the operation of plucking the hair from a pelt, in which I show in action my adaptation of the three simple elements used in hand-plucking, *i. e.*, a rod or beam to support the pelt, a roller whose serrated edges answer to continuous dull knife-edges, and a rubber tube brought rapidly and continuously into pressed parallel juxtaposition with said edges, whereby the hair is gripped and pulled. Fig. 9 shows the elongation of the rubber tube for purposes hereinafter mentioned.

The serrated or grooved roller in my invention, owing to its unique position in combination, answers several purposes. It first brushes up the hair and fur from the pelt, then by its rolling action conveys it over its surface, the hairs being longest always in advance of the fur, and thus presents the hair-tips to the action of the swiftly-revolving rubber tubes, which, as they come into position beside the roll, force the hair into its grooves, whereby a double or treble nip is obtained, and then by the simultaneous continued movement of both roll and tube in the same direction a pulling action is set up which is irresistible and much superior to any single knife-edge, which, if at all irregular in edge, permits slipping of some of the hairs. The use made of the rubber tube in my invention is also unique. Single rubber rolls and rotary knives, both revolving on their own axes, have often been used in plucking-machines combined with various other mechanism to make them effective; but in my invention the rubber tubes, as shown, must be fixed. I obtain my pulling action by bringing a series of stationary tubes into consecutive action. If these tubes revolved on their own axes, the whole effect would be lost, for their function is as they revolve to strike a blow upon the grooved roll, to then exert a pressure against it as they pass it, and thereby to revolve the grooved roll by continually buffing it. I therefore term them "elastic buffers" in the further description of this invention. It will readily be seen that if they turned on their own axes they could exert no power to move the grooved roll, except pressure, in which case their movement would be up and the roll down, and no simultaneous pulling action could be set up.

While the above description explains the simple principles of my invention, there are various contributory devices which add largely

to its efficiency, as well as varying forms of construction having the same mechanical action and end in view, which are fully shown in Figs. 1 to 6 and which are now set forth in detail.

1 is a plate or wheel constructed with radiating spokes or blades 2 2 2, forming open spaces between them.

The blades or spokes are preferably inclined, as shown in Figs. 4, 5, 6, and 9, so as not only to afford better facilities for screwing or fastening on the elastic buffers 3 3 3, but also to act as fan-blades to create in their swift revolution a current of air that shall cause a suction in front to suck in the hairs to be gripped, and, when pulled, free it from the blades and drive it through the wheel to any convenient receptacle in the rear. The elastic buffers may be of any form most desirable, preferably a strip of pure rubber bent around the spokes or blades 2, as in Figs. 4 and 9, or secured below the blade by a plate 7, as in Fig. 5, or looped, as in Fig. 6, to secure greater elasticity, or the spokes may be round, inserted, and rubber tubing used, as aforesaid. In all cases the action and intent is the same. The wheel 1 is attached to a spindle 8, operated by a pulley-wheel 10 from any convenient power, and is hung preferably vertical in a journal-box 9. This box is made, preferably, adjustable in the guides 11 11 by means of the screw and hand-wheel 12. The whole is mounted upon a suitable table 26. The wheel or plate 1 is entirely open between its spokes. Immediately behind its plucking side is placed a wind-box 13, communicating with a wind-pipe 14 and an exhaust-fan 15, which keeps up a constant wind suction through the spaces in the revolving wheel in addition to that created by the blades of the wheel itself, as aforesaid, for the purpose of more securely drawing the hairs into the wheel and sucking them away to any suitable receptacle when plucked. The wheel itself, when in operation, is preferably inclosed by a suitable cover 30, as outlined in Figs. 2, 5, 8, and 9, with an adjustable slide 31, which shuts down as near the pelt as leaves the plucking action unobstructed to the view. This slide is provided with screw-slots 34, as in Fig. 9. At the point where the pelt is operated upon and supported by the table 26 is mounted a roller 16 in suitable bearings, preferably end centers, as 18 18, which are screwed into bearings 17 17, coupled together and sliding vertically in a bed-piece 27 and held in position by the plate 19.

The bearings 17 17 are actuated vertically by the screw and hand-wheel 20 and may also be solidly set in any position by the set-screws 28 28. They are also connected behind the roller 16 by a guard-plate 29, as shown in Figs. 5 and 8, which serves to protect the fingers from contact with the roller 16. A row of brush material may be placed under the roller attached to the plate 27, as shown in Fig. 8, for the purpose of keeping the roller clean. This roller 16 is preferably grooved laterally, so as to form a series of parallel edges, and is so mounted as to have its axis of rotation at right angles to the axis of the plate or wheel, or its circumference parallel with the side face of the wheel. It receives its motion preferably from the wheel 1, which is advanced by the hand-wheel and screw 12, or a worm-wheel if slower motion is desired, until its surface or its elastic buffers exert considerable pressure against the surface of the roller 16 as they swiftly revolve past it. Their impact will of course revolve the roller.

The pelts to be plucked are fed to the machine by a rod or roller 22, over which they are drawn, one end being held by the operator. The rod is thrown back to receive a pelt by the spring 32. It is pressed forward by the body-rod 24. Its forward motion is checked by the stop-collars 25. The whole is supported by the rods 23. This method of supporting the pelt is not new. Any desirable mechanism may be used for that purpose.

By causing the wheel 1 to revolve the roller 16 by its side action not only is the greatest simplicity of construction obtained, but all slip motion between the two surfaces is avoided, as would probably be the case if they were either geared together or revolved by independent action. Freedom to adjust the pressure of contact is also gained by having the wheel revolve the roll by friction only. While claiming this method as preferable, I may, if desired, gear the wheel and roller together or revolve them by independent action.

Another unique feature of my invention is that whereas in all other plucking-machines the pulling action takes place at once across the whole breadth of the machine, and is therefore as violent on a light pelt, which tears easily, as on a heavy one, in my machine the action is adjustable, and a drawing pull from one end to the other of the roller may be obtained to any degree of delicacy.

By reference to Fig. 7 it will be seen the elastic buffers are descending from a vertical to a horizontal position continually. By elevating the roller 16 to cross them at any point action upon a very small portion of the pelt at a time by a traveling pull from one end of the roller to the other is obtained. This inclination of the axis of two plucking rollers or surfaces relatively to each other is unique with my improvement.

It is manifest that a solid circular vertical plate might be used covered with elastic material in combination with a fluted roller or a solid plate fluted radially from its center, in combination with an elastic roller; but I prefer the open wheel and elastic buffers striking intermittent blows upon the roller edges, for the reasons set forth.

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

1. In a hair-plucking machine a series of elastic substances radiating and revolved from a common center in the same plane, in combination with a roller fluted longitudinally whose axis is parallel to the plane of revolution of said elastic substances, the said elastic substances in their revolution contacting with said roller for the purposes set forth and substantially as described and shown.

2. In a hair-plucking machine the combination of a bar 22 over which a pelt is drawn, a series of elastic substances revolving in the same plane about a common center, and a fluted roller 16 interposed between the pelt and the elastic substances whereby the hair of the pelt is raised conveyed over the top of the roller and plucked by the action of the elastic substances and the roller combined substantially as described and shown.

3. In a hair-plucking machine a series of elastic substances revolving in the same plane about a common center in combination with a roller whose axis is parallel to the plane of revolution of said elastic substances the said substances in their revolution contacting with said roller, and means for adjusting said roller to and from said revolving elastic substances for the purposes set forth and substantially as described and shown.

4. In a hair-plucking machine the combination of a rotating hub, blades arranged radially thereto and at an oblique angle to the plane of revolution, elastic substances attached to the forward longitudinal edges of the blades, a fluted roller, with which said elastic substances in their revolution come in contact, and a case inclosing said blades having inlet and outlet passages whereby a wind suction is produced in front of said case to suck in the hairs and enter them between said roller and the elastic substances for the purposes set forth and substantially as described and shown.

5. In a hair-plucking machine the combination of a series of elastic substances revolving in the same plane about a common center, a fluted roller whose axis is parallel to the plane of revolution of said elastic substances, and with which roller said elastic substances come into contact in their revolution, and means for adjusting the vertical height of said roller, substantially as described and shown.

6. In a hair-plucking machine a series of elastic substances revolving about a common center, a case inclosing the same, a roller 16 placed without the case, the axis of said roller being parallel to the plane of revolution of the elastic substances, said elastic substances in their revolution contacting with said roller, combined with a fan 15, and a wind-pipe 14 connecting the fan to the casing, substantially as described and for the purpose set forth.

7. In a hair-plucking machine the combination of a series of elastic substances revolving in the same plane about a common center, and a roller 16 operating in conjunction therewith, having an axis parallel to the plane of revolution of said elastic substances, with a movable bar 22 situated in front of said roller 16 over which bar the pelts to be plucked are drawn, and mechanism for actuating said bar, substantially as described and shown.

8. In a hair-plucking machine the combination of a series of elastic substances arranged radially from a common center, means for revolving the same, a fluted roller arranged with its axis parallel to the plane of revolution of said elastic substances, its surface having intermittent contact therewith, means for adjusting said roller to and from said elastic substances, means for adjusting the height of said roller, a case inclosing said revolving elastic substances, means for creating a wind suction in front of and through said case, whereby the hairs are removed, adjusting the inlet-orifice to said case and a movable bar for supporting the pelts to be plucked in front of said case with mechanism for operating said bar, substantially as described and shown, and for the purposes set forth.

CHAS. E. SACKETT.

Witnesses:
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