June 21, 1932. R. H. PLASS 1,863,727

FUR BREAKING MACHINE

Filed June 17, 1931 3 Sheets-Sheet 1

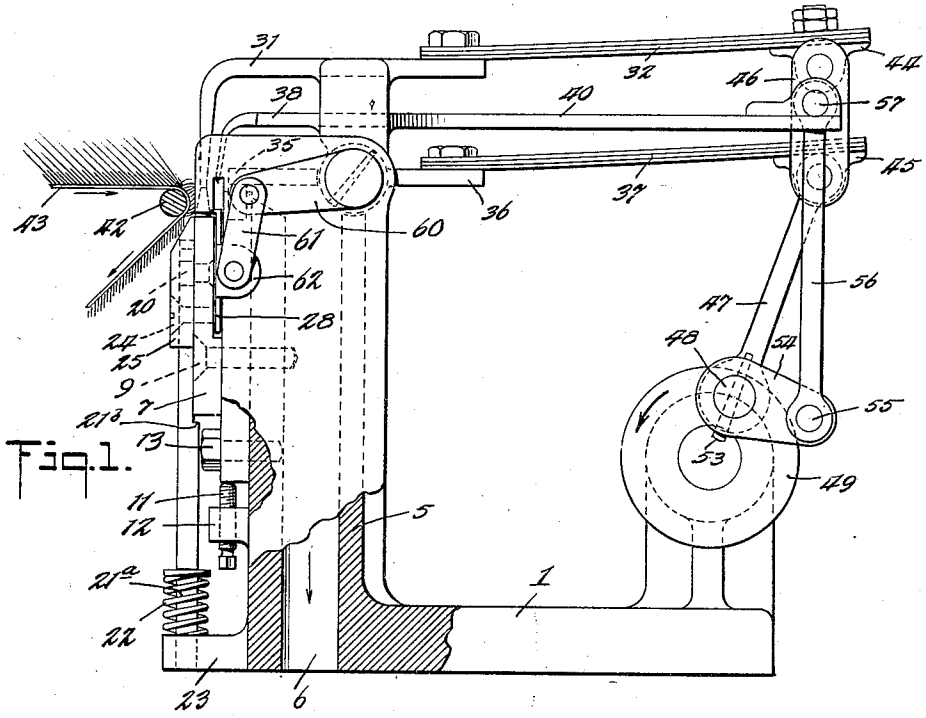


Fig. 1.

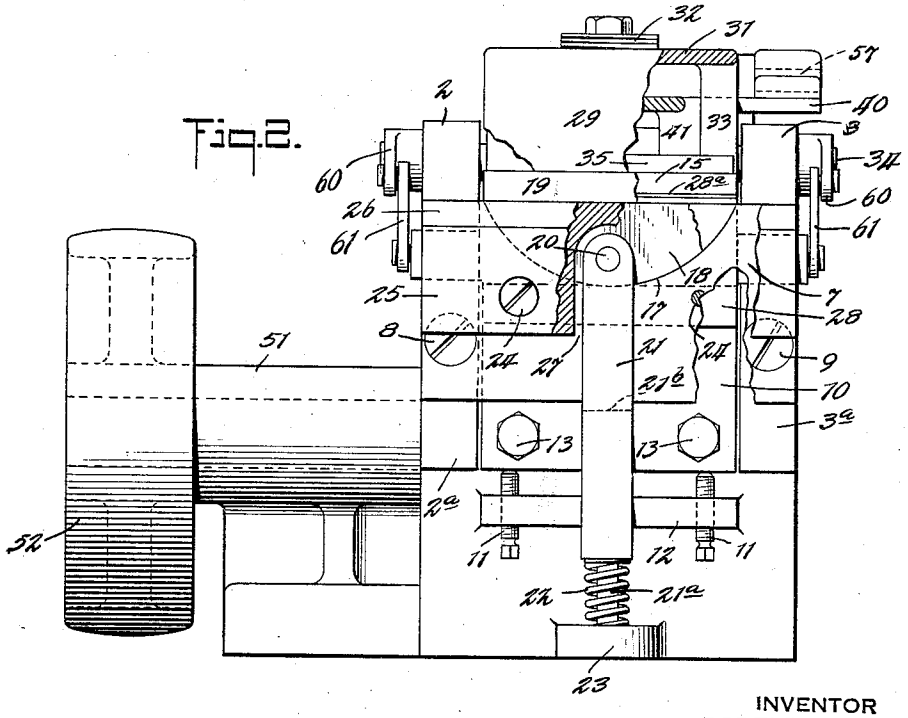


Fig. 2.

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June 21, 1932. R. H. PLASS 1,863,727

FUR BREAKING MACHINE

Filed June 17, 1931 3 Sheets-Sheet 2

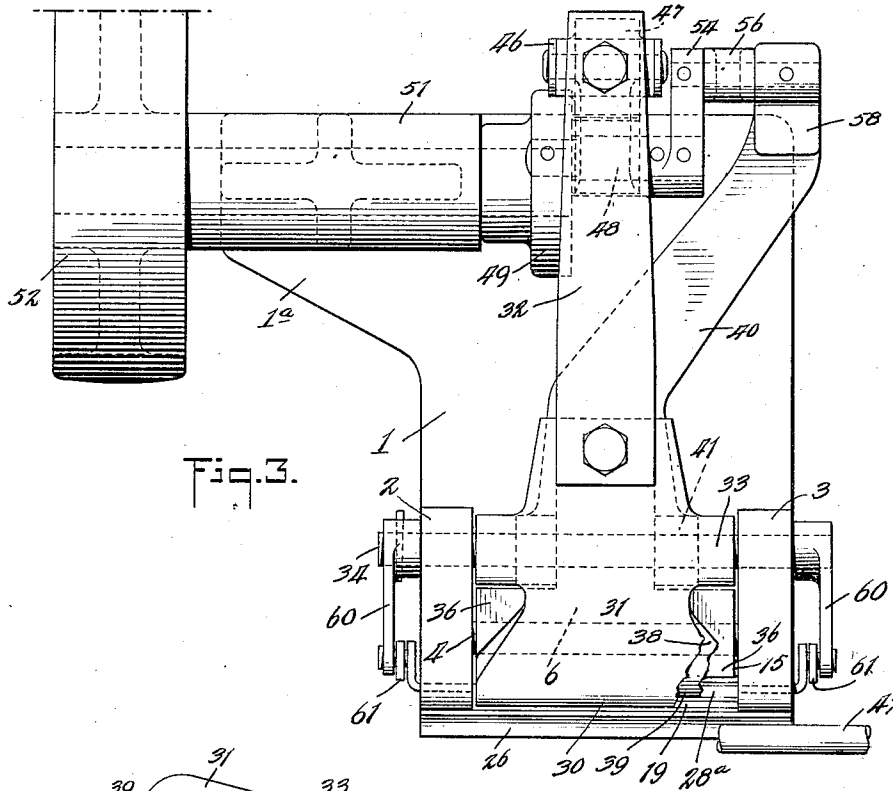


Fig. 3.

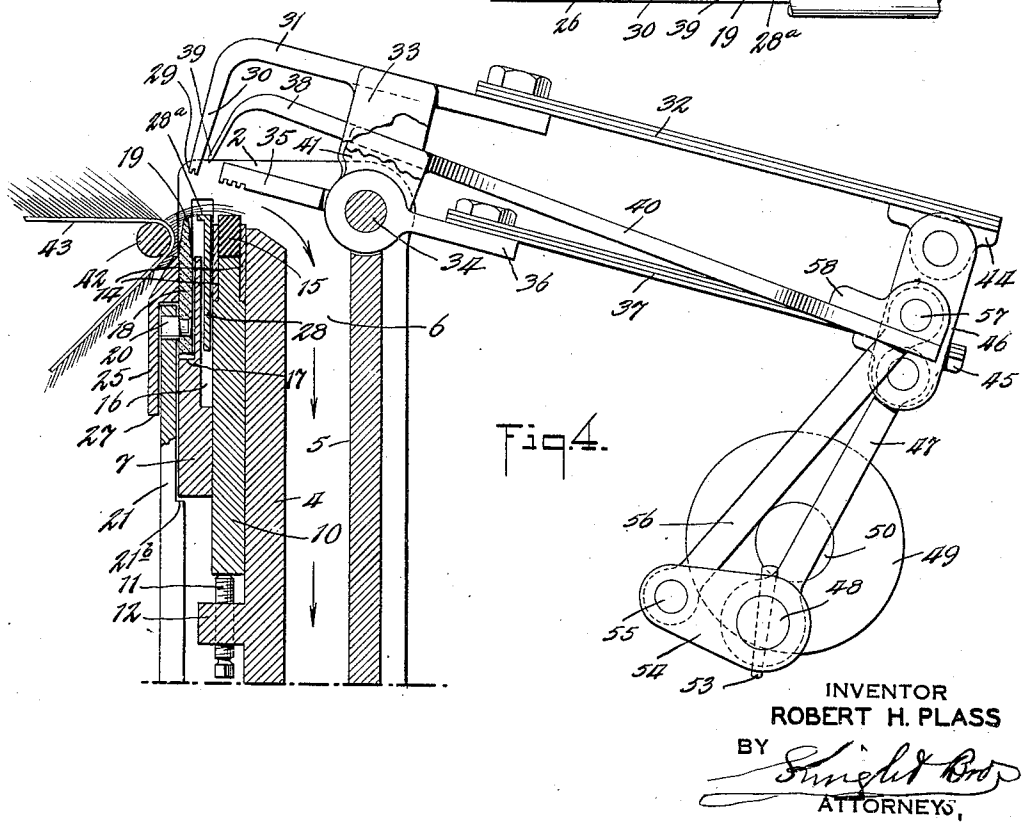


Fig. 4.

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June 21, 1932. R. H. PLASS 1,863,727

FUR BREAKING MACHINE

Filed June 17, 1931 3 Sheets-Sheet 3

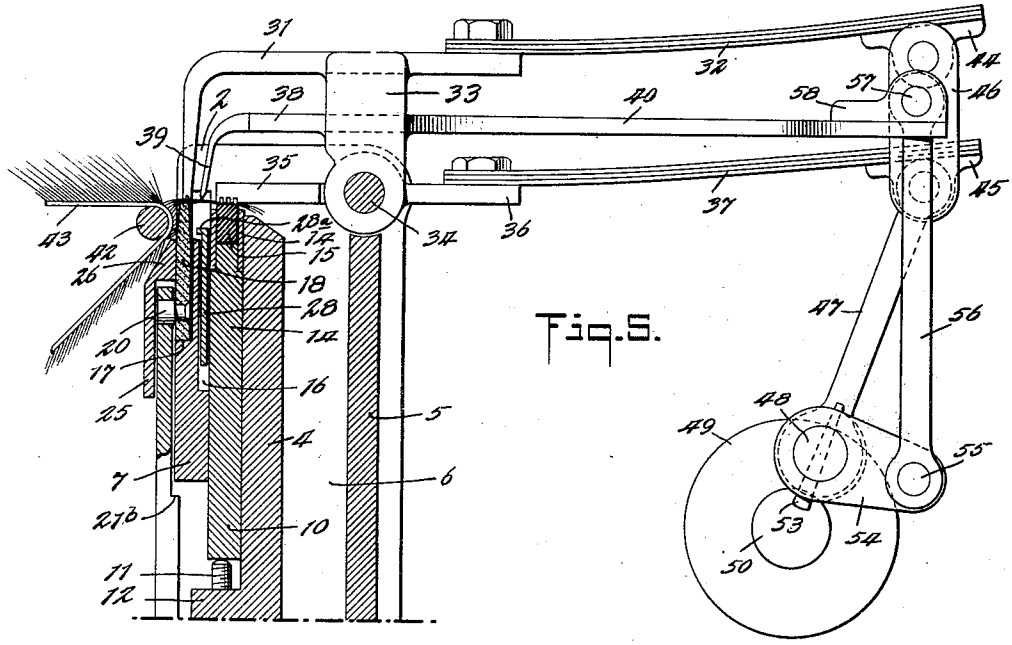


Fig. 5.

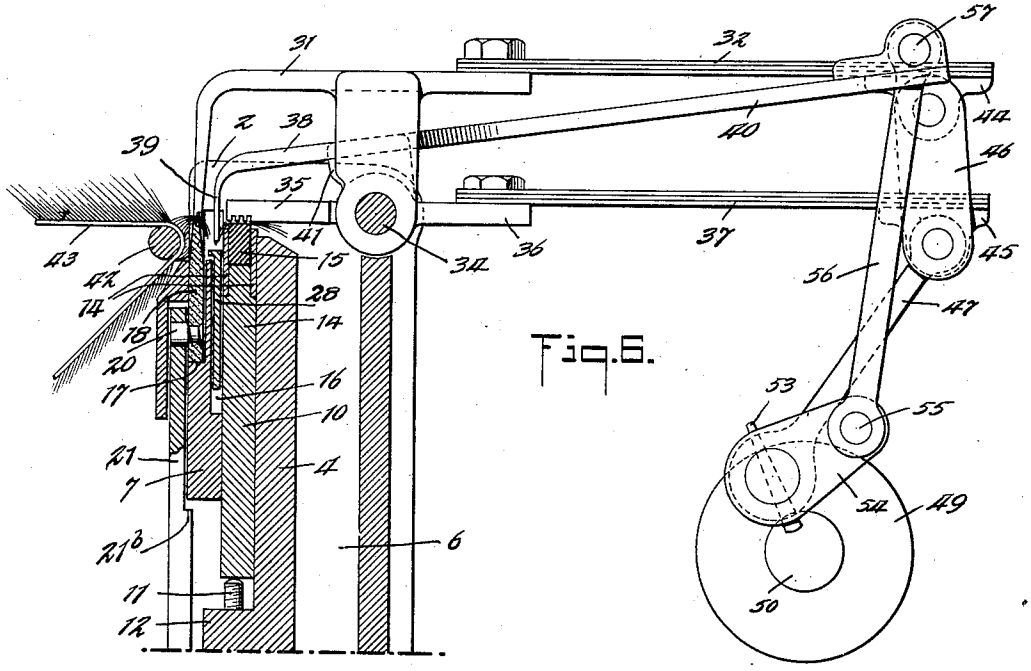


Fig. 6.

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UNITED STATES PATENT OFFICE

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FUR BREAKING MACHINE

Application filed June 17, 1931. Serial No. 544,982.

This invention relates to fur breaking machines in which the outer or coarser hair on a skin or fell is parted from the inner or finer hair by means of a hair-breaking action as distinguished from a hair-shearing or a hair-pulling action.

The object of my invention is to provide a fur breaking machine having an improved construction, combination, and arrangement of parts for removing the coarser outer hair of a skin or fell without loosening or pulling out any of the inner finer under hair. For this purpose, I employ means of suitable construction for applying a breaking pressure at or near the juncture between the coarser outer hair and the finer inner hair while said outer and inner portions of the fur are securely clamped. For this purpose, spaced hair-clamping devices may be employed for momentarily clamping the outer coarser portions and the inner finer portions while the breaking pressure is applied at the weakest point, namely, at the junction between said outer and inner hair portions.

One of the objects of my invention is to provide an improved machine of this character which can be simply and economically constructed; which can be operated at high speeds without interruption or clogging of the parts; and by means of which the coarse outer hair can be removed without losing any of the finer inner fur. In this way a higher class product may be secured due in large measure to the fact that none of the inner fur will be sheared off or lost as is the case in older methods. Furthermore, the finer inner hair will be uniform in length.

Other and further objects of my invention reside in the particular constuction and relative arrangement of the several parts as recited in the appended claims and described in the specification in connection with the attached drawings which show a preferred form of my improved machine.

In the drawings,

Figure 1 is a side elevation of a machine constructed in accordance with the underlying principle of my present invention, portions being broken away and parts being shown in section;

Figure 2 is a front elevation of the same, parts being broken away and parts shown in section;

Figure 3 is a top plan view of the same;

Figure 4 is a combined side elevation and vertical section of the upper portion of the machine on an enlarged scale, parts being broken away;

Figure 5 is a view similar to Figure 4, showing an advanced stage in the operation;

Figure 6 is a view similar to Figures 4 and 5, showing a later stage in the operation.

In the embodiment of my invention shown on the drawings, a bedplate 1 carries oppositely-arranged uprights or side plates 2 and 3 as shown best in Figure 3. As shown in Figures 4, 5 and 6, a forward transverse wall 4 and a rear transverse wall 5 extending between the side plates 2 and 3, form a vertical shaft 6 in which a suitable suction is maintained during the operation of the machine. Secured to the front faces 2*a* and 3*a* of the side plates 2 and 3 by means of countersunk screws 8 and 9, is a combined platen supporting and guide bracket 7. Interposed between the lower portion of the guide bracket 7 and the forward wall 4 of the hollow pedestal, is a transverse plate 10 which may be adjusted vertically by laterally-spaced screws 11 threaded into a forwardly-presented flange 12 before it is secured in position by screws 13 which are threaded into the front wall 4 of the hollow pedestal. Mounted in angular recesses in the upper edge of the transverse plate 10 are laterally-spaced plates 14 between which is mounted a rear platen 15 which is preferably constructed of rubber. As shown in Figures 4, 5 and 6, the upper rear portion of the guide bracket 7 is cut away to form a vertical slot 16 while its forward upper portion is provided with an arcuate recess 17 within which is movably seated a segmental plate 18 which is preferably constructed of fibre, the upper edge 19 of said plate 18 being adapted to serve as a forward platen. In the central lower portion of the segmental plate 18 is mounted a forwardly-presented pin 20 to which is pivotally connected the upper end of a rod 21 which as shown in Figure 2, is

resiliently supported at its lower end upon a cushioning spring 22 which extends around a reduced section 21*a* of the rod 21 which is reciprocable in a forwardly-projecting lug 23. The upward displacement of rod 21, under the action of spring 22, may be limited by a shoulder 21*b* on said rod which is positioned to be engaged by the lower edge of transverse plate 7. Secured to the forward face of the bracket plate 7 by means of countersunk screws 24, is a plate or apron 25 which is provided along its upper edge with a beveled surface 26. As shown in Figures 2 and 4, the plate or apron 25 is provided with a vertical recess 27 extending upwardly from its lower edge around the upper end of the rod 21, said recess being of sufficient size to permit vertical and angular movements of the upper end of the rod 21 therein. Reciprocable vertically within the guide slot 16, is an ejector plate 28 which is provided with a forwardly-presented flange 28*a* along its upper edge for normally sustaining the hair in the air current prior to its being clamped in position on the spaced platens 15 and 19. Movable into and out of clamping engagement with the forward platen 19, is an elongated clamping bar 29 arranged at the lower edge of a blade 30 which forms a depending portion of the work-arm 31 of a lever, the power-arm 32 of said lever preferably including a flexible extension made of spring steel. Said lever may be freely pivoted upon a rock-shaft 34 by means of depending bearing lugs 33, said rock-shaft being oscillatably mounted at opposite ends in the side plates 2 and 3. Cooperating with the rear platen 15 is a grooved clamping bar 35 which is freely pivoted on the rock-shaft 34, said clamping bar being provided with an integral portion 36 presented rearwardly from the rock-shaft 34 and to which is secured a spring metal extension 37. Keyed to the rock-shaft 34 is a hair-breaking lever which comprises a rock-arm 38 provided with a depending blade 39 and a rigid power-arm 40, said lever being provided with bearing lugs 41 secured to the rock-shaft 34. Spaced forwardly from the forward platen 19 and arranged parallel thereto is a guide bar 42 over which a skin or fell 43 may be drawn to and fro by hand. The upper surface of this guide bar 42 is suitably disposed so that when a skin or fell is passed around said guide bar as indicated in Figure 4, the hairs will be drawn across the upper surfaces of the platens 19 and 15 by means of the downdraft in suction shaft 6. Any suitable means may be provided for operating the several levers in timed relation with each other to simultaneously clamp the inner finer hair to the forward platen 19 and the outer coarser hair to the rear platen 15 and at the same time to cause a descent of the hair-breaking blade 39. In the form shown in Figures 3 to 6 inclusive, pivot bearing blocks 44 and 45 may be secured to the rear ends of the spring extensions 32 and 37 of the clamping levers, said pivot bearing blocks being pivotally connected together by means of laterally-spaced links 46. The lower pivot bearing 45 may be furthermore connected by a rod 47 to a crank pin 48 which is presented axially from a crank-disk 49 mounted upon a power shaft 50. As shown in Figures 2 and 3, the power shaft 50 may be journaled in an elongated bearing 51 which is mounted upon a lateral extension 1*a* of the bedplate 1. Keyed to the outer end of the power shaft 50 is a pulley 52 by means of which the fur-breaking machine may be belt-driven. Keyed to the outer end of the crank pin 48 by means of a tapered pin 53, is a tangential arm 54, the outer end of said arm being pivotally connected at 55 to the end of a connecting rod 56. The upper end of said connecting rod 56 is pivotally connected to a pin 57 mounted in a bracket 58 which is secured to the rear end of the power-arm 40 of the hair breaking lever. Keyed to the opposite ends of rock-shaft 34, are rock-arms 60, the outer ends of said rock-arms being connected by links 61 to the bearing lugs 62 which are presented rearwardly from opposite ends of the ejector 28 which may be thereby raised and lowered. During the upward movement of the plate 28 subsequent to the fur-breaking operation, its broadened upper edge is adapted to eject the thick masses of hair from and out of the space between the platens 15 and 19.

The operation of the fur breaking machine will now be readily understood and briefly explained is as follows. As a fell 43 is moved backwardly and forwardly over the guide 42 as indicated in Figure 4, the hair is drawn rearwardly by suction and as the forward and rear clamping bars 29 and 35 close down upon the hair, an immediately following downward movement of the fur-breaking blade 39 applies pressure to the hair at its weakest point where the coarse outer hair is joined to the inner finer fur. The hair which naturally breaks at its weakest point under these conditions, is thus parted, the coarser outer hair being removed by suction accompanied by the upward movement of the ejector 28 while the finer inner hair remains on the skin.

I claim:—

1. In a fur breaking machine, the combination with a guide for fells, of spaced fur-clamping means suitably arranged with respect to said guide to clamp the fur on opposite sides of the points of maximum weakness in the hairs on said fells, and means operating between the spaced clamping means for breaking said hairs.

2. In a fur breaking machine, the combination with a guide around which a pelt may

be passed, of front and rear fur-clamping means spaced from each other and cooperatively arranged with respect to said guide, and fur-breaking means movable past and between said fur-clamping means.

3. In a fur breaking machine, the combination with an elongated guide around which a pelt may be passed, of elongated front and rear fur clamps spaced from each other and arranged in parallelism with said elongated guide, means for opening and closing said fur clamps, and a fur-breaking blade movable past and between said fur clamps.

4. A fur breaking machine as recited in claim 3, in which said fur clamps comprise elongated platens and elongated clamping bars movable into and out of clamping engagement with said platens respectively.

5. A fur breaking machine as recited in claim 3, in which a fur-supporting and displacing member is movable past and between said platens.

6. In a fur breaking machine, the combination with an elongated bar around which a pelt may be passed, of elongated front and rear fur-clamping platens spaced from each other and arranged in parallelism with said elongated bar, front and rear clamping bars movable into and out of clamping engagement with said platens respectively, and a fur-breaking blade movable past and between said platens, the first-mentioned platen being tiltable about an axis transverse to its length.

7. A fur breaking machine as recited in claim 6, in which said first-mentioned platen is mounted on a segmental plate extending lengthwise of said platen, an arcuate bearing being provided for slidably supporting the curved edge of said segmental plate.

8. In a fur breaking machine, the combination with an elongated bar around which a pelt may be passed, of elongated front and rear fur-clamping platens spaced from each other and arranged in parallelism with said elongated bar, front and rear clamping bars movable into and out of clamping engagement with said platens respectively, a fur-breaking blade movable past and between said platens, and a fur-supporting and ejecting bar movable upwardly and downwardly between said platens in alternation with said fur-breaking blade.

9. A fur breaking machine as recited in claim 8, in which an oscillatory rock-shaft upon which said fur-breaking blade is mounted, carries a lever arm, a connecting link being connected at opposite ends to said lever arm and fur-ejector bar respectively.

10. In a fur-breaking machine, the combination with an elongated bar around which a pelt may be passed, of spaced elongated front and rear fur-clamping platens, front and rear clamping bars movable into and out of clamping engagement with said platens respectively, a fur-breaking blade movable past and between said platens, a fur-ejector bar movable past and between said platens, coaxially mounted levers for respectively mounting said front and rear clamping and ejector bars, and a lever arm oscillatable about the axis of said levers and movably connected to said fur-ejector bar.

11. In a fur breaking machine, the combination of a fur-clamping platen, a guide for a pelt arranged in juxtaposition thereto, a clamping lever comprising a work-arm provided with a clamping member movable into and out of clamping engagement with said fur-clamping platen, and a power-arm, rockable edgewise between said fur-clamping platen, said rockable supporting means being adapted to permit an angular adjustment of said platen under pressure, a second fur-clamping platen spaced rearwardly from the first-mentioned fur-clamping platen, a second clamping lever comprising a work-arm provided with a clamping member and a power-arm, a fur-breaking lever comprising a work-arm provided with a blade movable edgewise between said fur-clamping platens and a power-arm, and means connected to the power-arms of said levers for moving them in timed relations.

12. A fur breaking machine as recited in claim 11, in which is provided a rock-shaft to which said fur-breaking lever is keyed and upon which said fur-clamping levers are freely pivoted, a vertically movable fur-support and ejector being arranged between said fur-clamping platens and operatably connected to said rock-shaft.

13. In a fur breaking machine, the combination of an elongated fur-clamping platen, an elongated guide for a pelt arranged parallel with and in juxtaposition thereto, a clamping lever provided with an elongated clamping bar movable into and out of clamping engagement with said fur-clamping platen, a second elongated fur-clamping platen spaced rearwardly from the first-mentioned fur-clamping platen, a second clamping lever provided with an elongated clamping bar, a fur-breaking lever provided with a blade movable edgewise between said fur-clamping platens, and a rock-shaft to which said fur-breaking lever is keyed, said fur-clamping lever being freely pivoted on said rock-shaft.

14. A fur breaking machine as recited in claim 13, in which are provided a fur support and ejector movable vertically between said fur-clamping platens, and means for movably connecting said fur support and ejector to said rock-shaft.

15. In a fur breaking machine, the combination of an elongated fur-clamping platen, a cylindrical guide for a pelt arranged parallel with and in juxtaposition thereto, a clamping lever comprising an inflexible work-arm provided on its forward end with an elongated clamping bar movable into and out of

clamping engagement with said fur-clamping platen, and a flexible power-arm, a segmental support for said fur-clamping platen, a yieldably mounted bar pivotally connected at its upper end to said segmental support for yieldably supporting the latter, a rigid member provided with an arcuate bearing surface for permitting a rocking adjustment of said platen under pressure, a second elongated fur-clamping platen spaced rearwardly from the first-mentioned fur-clamping platen, a second clamping lever comprising a work-arm provided on its forward end with an elongated clamping bar and a flexible power-arm, and a fur-breaking lever comprising a work-arm provided at its forward end with a downwardly-presented blade movable upwardly and downwardly between said fur-clamping platens.

16. In a fur breaking machine such as that recited in claim 15, a rock-shaft to which said fur-breaking lever is keyed, a rock-arm keyed to said rock-shaft, a fur support and ejector movable edgewise between said fur-clamping platens, and a connecting link extending between said rock-arm and said fur support and ejector.

17. In a fur breaking machine, the combination of an elongated fur-clamping platen, a guide for a pelt arranged parallel with and in juxtaposition thereto, a clamping lever comprising an inflexible work-arm provided on its forward end with an elongated clamping bar movable into and out of clamping engagement with said fur-clamping platen, and a flexible power-arm, a segmental plate for said fur-clamping platen, a yieldable support to which said segmental plate is pivotally connected, a rigid member provided with an arcuate bearing surface for the arcuate edge of said segmental plate, a second elongated fur-clamping platen spaced rearwardly from the first-mentioned fur-clamping platen, a second clamping lever comprising a work-arm provided on its forward end with an elongated clamping bar and a flexible power-arm, a fur-breaking lever comprising a work-arm provided at its forward end with a downwardly-presented blade movable upwardly and downwardly between said fur-clamping platens and a power-arm, a rock-shaft to which said fur-breaking lever is keyed and upon which said fur-clamping levers are freely pivoted, laterally-spaced rock-arms keyed to said rock-shaft, a fur-supporting and ejecting bar movable vertically between said fur-clamping platens, connecting links extending between said rock-arms and the opposite ends of said hair-ejector bar, and power-transmitting means connected to the power-arms of said levers.

18. In a fur-breaking machine, the combination of an elongated fur-clamping platen, a cylindrical guide for a pelt arranged parallel with and in juxtaposition thereto, a clamping lever comprising an inflexible work-arm provided on its forward end with an elongated clamping bar movable into and out of clamping engagement with said fur-clamping platen, and a flexible power-arm, a segmental support for said fur-clamping platen, a rigid member provided with an arcuate bearing surface for permitting a rocking adjustment of said platen under pressure, a yieldably-mounted bar pivotally connected at its upper end to said segmental support and tending to elevate the latter relatively to said rigid member, a second elongated fur-clamping platen spaced rearwardly from the first-mentioned fur-clamping platen, a second clamping lever comprising a work-arm provided on its forward end with an elongated clamping bar and a flexible power-arm, a fur-breaking lever comprising a work-arm provided at its forward end with a downwardly-presented blade movable upwardly and downwardly between said fur-clamping platens and a power-arm, a rock-shaft to which said fur-breaking lever is keyed and upon which said fur-clamping levers are freely pivoted, laterally-spaced rock-arms keyed to said rock-shaft, a fur-support and ejector movable vertically between said fur-clamping platens, and means for operating said levers in timed relations to each other.

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