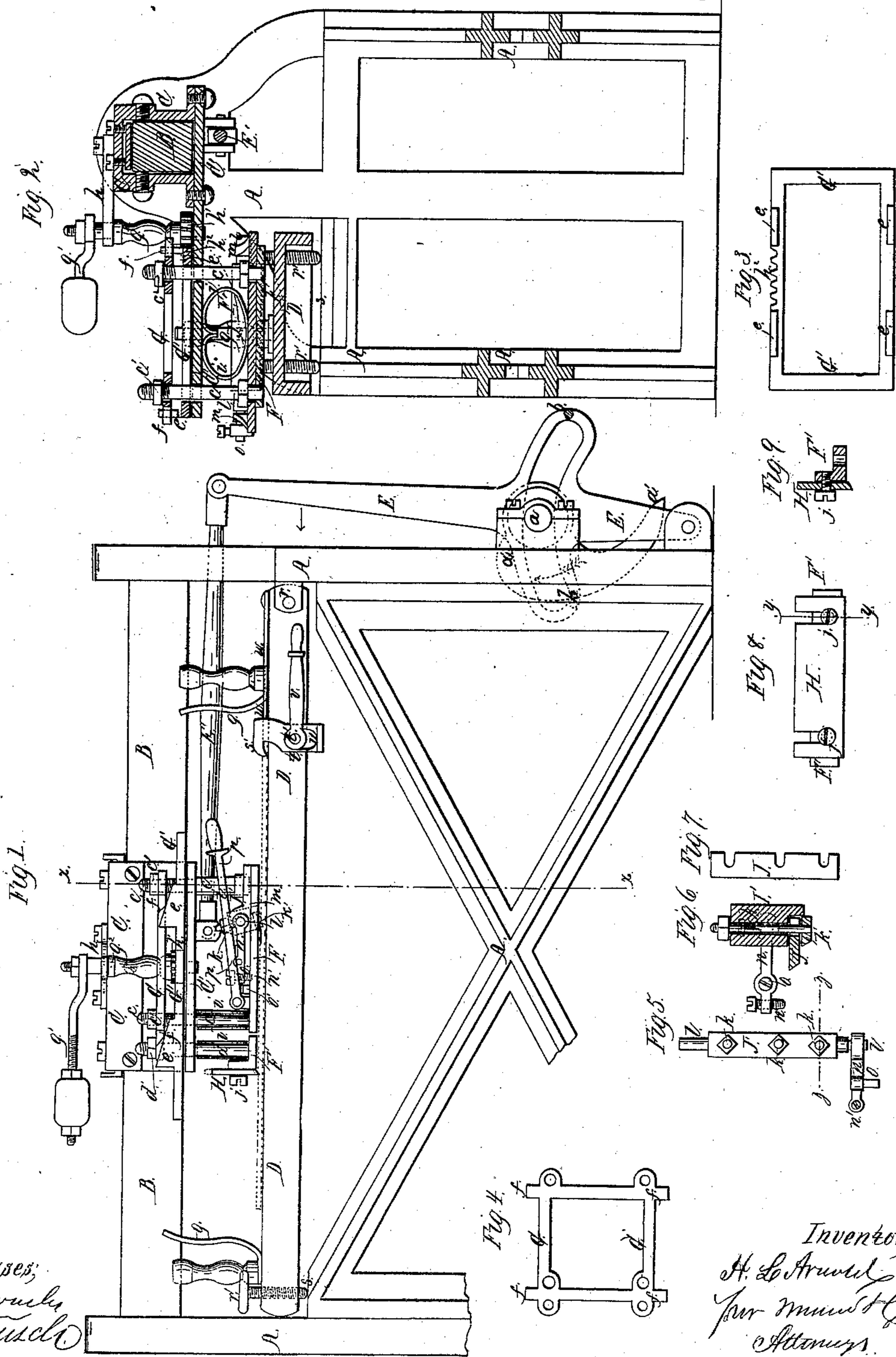


H. L. Arnold,

Preparing Hides,

N^o 33,229.

Patented Sep. 10, 1861.



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UNITED STATES PATENT OFFICE.

HORACE L. ARNOLD, OF ELK HORN, WISCONSIN.

IMPROVEMENT IN MACHINES FOR DRESSING HIDES.

Specification forming part of Letters Patent No. 33,229, dated September 10, 1861.

To all whom it may concern:

Be it known that I, HORACE L. ARNOLD, of Elk Horn, in the county of Walworth and State of Wisconsin, have invented certain new and useful Improvements in Machinery for Dressing Hides; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of my improved machine for dressing hides. Fig. 2 is a transverse section through Fig. 1 in the vertical plane indicated by red line *xx* thereon. Fig. 3 is a top view of a reciprocating quadrangular frame carrying inclined planes for lifting the knives, &c., from the hide during the back-stroke. Fig. 4 is a toe-carrying frame, which is acted upon by the inclined planes on the frame of Fig. 3. Fig. 5 is a top view of the shaving-knife stock and right-angular arm. Fig. 6 is a transverse section through Fig. 5, indicated by red line *zz* thereon. Fig. 7 is a view of the shaving-knife blade of Figs. 5 and 6. Fig. 8 is a front view of the depilating-knife. Fig. 9 is a transverse section through Fig. 8, showing the rubbing-plate to which the depilating-knife is secured.

This invention relates to certain new and useful improvements in machinery for depilating, fleshing, and preparing hides for the tanning process, consisting in the employment of an alternate reciprocating carriage arranged over a horizontal bed on which the hides to be dressed are suitably clamped and carrying suitable knives and a rubbing-plate arranged within said carriage, as will be hereinafter described, so as to operate upon the hides at every forward stroke of the carriage, all as will be hereinafter fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the frame of the machine, which is of a suitable size and strength to contain and support the mechanism which I am about to describe.

B is a longitudinal way on which the saddle C slides back and forth, and C' is a horizontal plate which extends out from the bottom of the saddle C, to which it is bolted, over the adjustable bed D, on which the hides to be dressed are placed. The saddle C forms

a carriage for supporting the several parts used in the dressing operation, as will be hereinafter described. This carriage receives an alternate reciprocating movement from a vibrating lever E and a pitman E', the former of which is pivoted at its lower end to the base of frame A, at one end of this frame, as shown in Fig. 1 of the drawings. The lever E has a sector-slot formed in it. Described from the pivot at the foot of this lever and through this slot passes the horizontal driving-shaft *a*. The sector thus allows the lever E to vibrate each side of the shaft *a*. The cam *a'*, which is keyed to shaft *a* and rotated by this shaft, acts alternately against the headed studs *b b* at the extremities of the sector-slot and vibrates the lever E with a uniform movement. The pitman E' is pivoted at one end to the upper end of lever E, and at the other end this pitman is pivoted to the bottom plate of the saddle on sliding box C, all as clearly shown in Figs. 1 and 2 of the drawings. The saddle C fits snugly on the square bar B, and the horizontal plate C' receives a steady and uniform movement from end to end of the frame A.

F is a rectangular plate which is hung under the plate C' in a plane parallel with this plate by four perpendicular rods *c c c c*, which pass loosely through holes through the plate C' and receive adjusting-nuts *c' c' c' c'* on their upper ends. These four rods *c c c c* will allow the plate F, to which they are secured, to rise and fall in a horizontal plane.

Preceding the plate F, or at one end of it, is a plate F', which is bent so as to form a right angle, or one perpendicular and one horizontal surface, as shown in Figs. 1 and 9 of the drawings. This plate F' is the rubbing-plate, as will be hereinafter explained, and it is hung by two perpendicular rods *d d*—one at each end—which rods also pass up through the plate C' and receive adjusting-nuts *d' d'* on their upper ends. These two rods *d d* allow the plate F' to rise and fall in the same plane as plate F. The bottom surfaces of plates F and F' should be kept in the same plane. The six perpendicular rods *c c c c* and *d d* pass through the corners of a quadrangular lifting-frame G, between which and the plate C' a reciprocating frame G' (shown in Fig. 3) is interposed, which rests on the plate C', as shown in Figs. 1 and 2. This

reciprocating or sliding frame G' carries on its two longitudinal sides four inclined planes $e e e e$, on the inclined surfaces of which rest lifting-toes $f f f f$, which project out from the sides of the lifting-frame G , as shown clearly in Fig. 4. The alternate sliding movement of frame G' will raise and depress the lifting-frame G , and this frame G will raise and depress the two plates F and F' . The sliding movement is imparted to the frame G' by the buffers $g g$ at each end of the adjustable bed D , against which buffers the ends of the frame G' alternately strike. The frame G is held in the desired position by a vibrating loaded arm g' , which is secured to the upper end of a vertical rock-shaft g^2 , having its upper bearings in a bracket h , projecting from saddle c and stepped in plate C' . Shaft g^2 carries on its lower end a pinion spur-wheel h' , the teeth of which engage with rack-teeth h^2 which are formed on one edge of the frame G' . Thus as the frame G' is moved back and forth on plate C' by its striking the buffers at each end of the bed D the loaded arm or lever g' will be vibrated, describing a semi-circle, more or less. This loaded arm g' , with the mechanism attached to it, is introduced for the purpose of counterbalancing the weight of the plate C' and the tools which this plate carries during the return-stroke, when the loaded arm hangs as so much dead-weight upon one side of the saddle, and also to add a sufficient weight to the said plate C' during the forward or working stroke to keep the springs $i i i$ from pushing it up.

Between the plates F and F' and the plate C' are interposed elliptic or other suitable springs $i i i$, two of which act upon the plate F to force it downward and one acts upon the plate F' to force it downward. These three springs $i i i$ are compressed during the backward stroke of the carriage when the plates $F F'$ are elevated, and when the frame G' strikes the buffer g previous to the forward stroke of this carriage the springs recoil and throw the plates $F F'$ downward as far as the adjusting-nuts $c' c' c' c' d' d'$ will permit.

The right-angular plate F' is suitably shaped on its bottom surface for rubbing down and smoothing out the skins which are spread over the bed D , and on the outside surface of the perpendicular portion of this rubbing-plate F' the depilating-knife H is affixed by set-screws $j j$, which pass through vertical slots through the knife H for allowing the knife to be properly adjusted or removed at pleasure. This knife H may be set so that its edge will project below the lower surface of the rubbing-plate F' or its edge may be set slightly above the lower surface of the rubbing-plate. In the former position the knife is used for fleshing the hide, and in the latter for depilating it. The knife H is at right angles, or nearly so, with the edges of the bed D , and the knife may stand either in a perpendicular position to the lower surfaces of the plates $F F'$ or it may incline from this position, as

occasion requires. In rear of this knife H is another knife J , which is intended for green shaving. This latter knife is a plain right-angular piece of steel having a beveled cutting-edge on one edge and three or more notches cut in the other edge, as shown in Fig. 7 of the drawings. The knife J is bolted to a stock J' by the bolts $k k k$, which are secured to a beveled-edge face-plate k' and project perpendicularly from this plate. The bolts $k k k$ pass through the notches in the back of knife-plate J and through the stock J' , receiving on their ends nuts, by means of which the face-plate k' is made to clamp the knife J tightly in its place. The ends $l l$ of the knife-stock J rest in half-bearing portions $m m$, formed on each side of the rear end of the plate F , as shown in Figs. 1 and 2 of the drawings, which bearing portions allow the knife-stock J to be removed and replaced at pleasure.

One of the portions l of the knife-stock J is extended out beyond its bearing portion m to receive a bent arm n , which is secured to the knife-stock by a set-screw Z . (Shown in dotted lines in Fig. 6.) This bent arm n is provided with a gage-screw n' at its extreme end, which rests upon plate F and is used to regulate the cut of the knife J . Arm n also carries a stud o , on which rests a lever p , that is keyed to a transverse rock-shaft p' , which has its bearings on top of and near the forward end of the plate F . Lever p passes back over the stud o on arm n , and the sole use of this lever is to depress the said bent arm. A small spring o' on plate F raises the bent arm n whenever the lever p is at liberty.

The knife J sets in a throat which is made transversely across plate F after the manner of a common plane, and the edge of the knife J projects, when desired, a variable distance below the lower surface of the plate F in the proper position to shave the hide beneath it. When the hand-lever is depressed, a corresponding though greatly-decreased downward motion is imparted to the cutting-edge of the knife J , and this motion is arrested by the gage-screw n' , and by means of this gage-screw n' the thickness of the shaving or the cut of the knife J can be regulated with the greatest nicety. It will be observed that when the operator does not depress the hand-lever p the edge of knife J does not touch the hide, and that when he does depress lever p then the knife J is in a position to cut.

The metallic bed D has a plain smooth surface on top and extends from end to end of frame A . One end of this bed D is pivoted to ears $r r$ and the other end of this bed is sustained by the adjusting-screws $r' r'$, which pass perpendicularly through the bed and rest on a bracket s , projecting from the inside of frame A . By means of screws $r' r'$ the bed D can be adjusted at any desired inclination from a horizontal plane.

At or near the pivoted end of the adjustable bed D is arranged a clamping device for

confining the hides to this end of the bed. This device consists of gripping-plate s' , placed transversely across the bed D, which plate has two right-angular slotted ears $t t$ projecting down on each side of bed D, through the slots of which pass a rod t' , carrying on its ends cams $u u$, and a lever v , which, on being turned so as to force the cams $u u$ down on foot-pieces projecting from the ears $t t$, will force the plate s' down hard on the surface of bed D or on the hide which is slipped under this plate s' . The forked spring-plate w is used to raise the gripping-plate s' when it is released from cams $u u$.

The operation of the entire machine is as follows: Rotary motion is communicated to the main driving-shaft a , and by means of the cam a' , (of equal rise,) rotating in the direction indicated by the arrow in Fig. 1, the long arm E receives a uniform vibrating motion, which motion communicates an alternate reciprocating motion to the saddle C and the devices which are attached to this saddle. The length of the stroke of this saddle C is so regulated that the right-angular frame G' will strike the buffers $g g$ at the terminus of each stroke, and this frame G is moved back and forth on the plate C' in consequence of its striking the buffers $g g$.

The hide to be dressed is placed on the adjustable bed D and clamped to one end of this bed by forcing the lever v down in the position shown in Fig. 1, which grips the hide and retains it in place. The hide is not secured at the opposite end of bed D. This bed D is now adjusted so as to bring the surface of the hide in the proper relation to the plates F F', so that these plates will bear on the hide the full length of the forward stroke of these plates. The plates F F' are also adjusted by means of nuts $c' c' c' c' d' d'$, so that they will receive the desired rise-and-fall movement from the inclined planes $e e e e$ on sliding frame G. The knife-plate H is also adjusted in a proper position to operate upon the hide either as a depilating-knife or as a fleshing-knife. Now it will be seen that at the termination of every forward stroke of the carriage the end of frame G' will strike the buffer g at this end of the table and be moved backward on plate C' , which movement will cause the inclined planes $e e e e$ to raise the frame G, and with it the two plates F F'. The loaded arm g' will at the same time be thrown round, and the two plates F and F' will be held above the surface of the hide in the backward stroke of the carriage. At the termination of the backward stroke of the carriage the frame G' strikes the buffer g at this end of the bed D, and the inclined planes $e e e e$ are thrown back, allowing springs $i i i i$ to force the plates F F' down simultaneously on the surface of the hide upon bed D, so that in the forward stroke of the carriage the knife H and plates F F' will operate upon the hide. In this forward or working stroke the oper-

ator depresses the free end of lever p , which operation moves arm n down until the adjusting-screw n' rests on the plate F. This movement will bring the edge of knife J into cutting action, and a shaving will be uniformly cut from the hide, the thickness of which shaving is determined by the adjustment of arm n by means of screw n' . When lever p is released at the end of the forward stroke, the spring o' under arm n raises the parts to their former position. When the knife F is adjusted as indicated in red lines in Fig. 1 of the drawings, the plate F' rubs the hide down on bed D smoothly, while the knife scrapes off the hair from the hide.

The operation of knife J is that of cutting, not scraping, as in the process of depilating. As one part of the hide is dressed another part is drawn under the knives until the surfaces of the entire hide are properly dressed, when the hide is removed and another put upon the bed D, clamped, and dressed in the same manner.

Having thus described my invention, what I claim as new in hide-dressing machines, and desire to secure by Letters Patent, is—

1. The described arrangement of reciprocating knives H J, working over an adjustable bed D, in the manner and for the purpose substantially as herein set forth.

2. A knife J, placed in plate F and working through this plate, as herein described, for the purposes set forth.

3. Placing in front of knife J and plate F a disconnected independent rubber plate F', as and for the purposes herein specified.

4. The herein-described manner of securing the knife H to the rubber plate F, so that it can be adjusted relatively thereto, for the purposes herein set forth.

5. A knife-stock J', with bearings, prolongations, tongue, clamping-plate k' , and bolts k , for securing and adjusting knife J, as herein set forth.

6. The arm n , with gage-screw n' , stud o , and set-screw Z, as set forth, for the purposes mentioned.

7. A hand-lever p , rack-shaft p' , and bearings, and spring v' , for elevating bent arm n , as set forth.

8. Keeping the knife-plate F and rubber plate F' snug upon the hide by means of springs $i i i$, arranged as set forth.

9. The combination of buffers $g g$, sliding rectangle G' , inclined planes $e e e e$, lifting-frame G and studs $d d c c c c$, with their nuts, by means of which all the tools are lifted from the hide at the commencement of the return-stroke and suffered to fall upon it again at the commencement of the working-stroke, substantially as herein described.

10. The combination of buffers $g g$ with the sliding frame G' , rack h^2 , pinion h' , shaft g^2 , and loaded arm g' , as herein set forth.

11. Placing the bed D in front of the saddle-way B instead of beneath it, as and for the purposes herein set forth.

12. So forming and extending the saddle C and its plate C' that it may work over bed D in the manner herein set forth.

13. Giving motion to the saddle C or cutter-head of a hide-dressing machine by means of a segmental 'slotted lever E, as described, whereby a uniform motion of the tool is obtained.

14. Hinging the bed D of a hide dressing

machine to the frame A at one end, and supporting said bed at the opposite end by adjusting-screws $r' r'$ on bracket s, as and for the purposes set forth.

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