Oct. 24, 1939. O. BOETTGER 2,177,015

MACHINE FOR OPERATING UPON HIDES, SKINS, AND LEATHER

Filed March 21, 1938

Fig.1

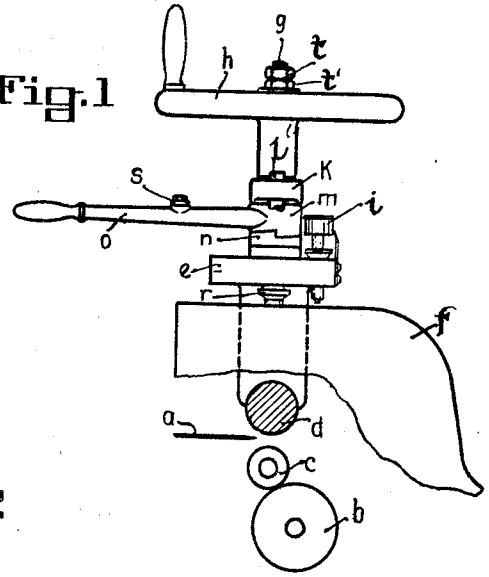


Fig.2

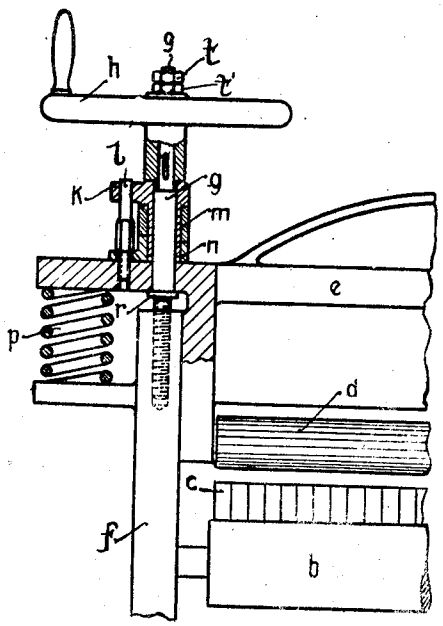


Fig.3

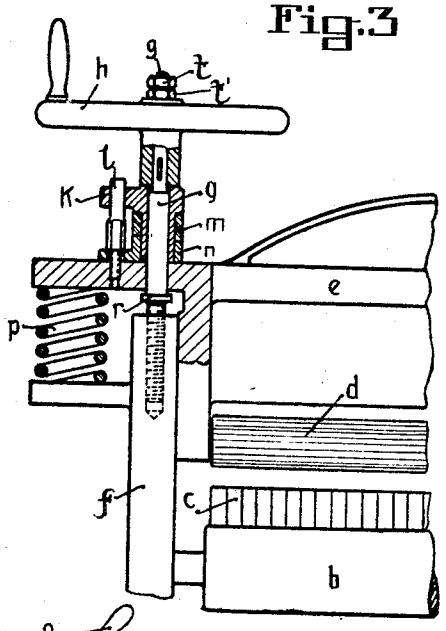
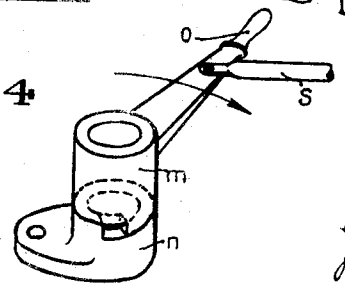


Fig.4



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MACHINE FOR OPERATING UPON HIDES, SKINS, AND LEATHER

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In Germany April 5, 1937

13 Claims. (Cl. 69—10)

This invention relates to machines for operating upon hides, skins and leather. While the invention is illustrated as embodied in a machine for splitting hides, whether tanned or untanned, it is to be understood that the invention and various important features thereof may have other applications and uses.

As heretofore constructed, splitting machines, particularly those of the belt knife type, have commonly provided for adjustment of a gauge roll with respect to the knife or cutter by means of spindles which carry the gauge roll support and which are screw threaded into the side frames of the machine so as to be adjustable to effect every desired adjustment of the gauge roll with respect to the knife or cutter. A disadvantage of this arrangement is found in the fact that the necessarily frequent rotary movements of the spindles produce a premature wear of these parts which are so essential to accurate operation of the machine. Furthermore, with such a construction the operator must exercise care and some considerable effort in each instance to secure just the right adjustment through rotation of the spindles.

It is an object of this invention to secure adjustment of such a gauge roll without any rotation of the roll supporting spindles, in making the desired adjustments while splitting a given batch of work pieces. It is a further object to provide a construction by which the desired adjustment of a gauge roll at a certain point in the treatment of a work piece may be greatly facilitated.

It is an important feature of the invention that the gauge which positions the work piece for treatment by the tool is adjusted through a cam surface arranged helically about the axis of the gauge carrying member and rotatable a predetermined extent alternatively in opposite directions on said member to provide different positions of the gauge with respect to the tool. It is an advantage of this construction that the regular adjustment of the gauge for each work piece in a given batch of work will be secured through cam means having a predetermined movement in opposite directions thus facilitating the work of the operator, while adjustment rendered necessary by a substantial change in the class of work being operated upon will be taken care of by adjustment of the member which supports the helical cam surface.

In the illustrated construction, a gauge roll to position a work piece with respect to a cutter is carried by a head which is in turn supported at each end by screw threaded spindles adjustable in the side frames of the machine. To effect adjustment of the gauge roll for each work piece in a given batch of work, manually operable cam means is mounted on each spindle, while adjustment of said spindles is depended upon to secure variations in the position of the gauge roll to suit different batches of work. It follows that adjustment of the spindles will be relatively infrequent, thus minimizing wear of the threaded parts, and that the usual adjustment during the treatment of each work piece is markedly facilitated through the cam means provided for that purpose.

With these and other objects and features in view, the invention will now be described in detail in the specification and then pointed out more particularly in the appended claims.

In the drawing,

Fig. 1 shows in perspective end view the principal parts of a splitting machine with the device for lifting the head or bridge;

Figs. 2 and 3 each show a cross-section of the head lifting device viewed from the front side, Fig. 2 showing the gauge roller in the lowered position and Fig. 3 in the raised position; and

Fig. 4 is a perspective representation of important parts of the novel device.

In the illustrated machine, which is specially designed for the splitting of hides and skins, the skin to be split is fed against a band knife *a* (Fig. 1) through the narrow space intermediate a gauge roll *d* and an articulated roller *c*, the latter being yieldingly supported on a rubber roller *b*. The gauge roll *d* is supported in a head *e* of the bridge type. The latter is adjustable in vertical guides at the two side posts *f* of the machine frame, to a higher or lower position according to the thickness desired in the upper or grain split of the hide, it being understood that the upper split is discharged from the machine between the knife *a* and the gauge roll *d*.

As shown, adjustment of the head *e* and gauge *d* is made by means of spindles *g* with a hand wheel *h* fixed to the upper end of each spindle, a micrometer-screw *i* (with a scale and an index) serving as a measuring and guiding means during adjustment. At its lower end each spindle *g* is provided with a screw threaded portion fitted into a threaded boring in the side post *f*. Above the threading, is a flange *r* on the spindle. This flange *r* serves as a stop against which the head *e* abuts in one of the adjusted positions of gauge roll *d*.

According to the illustrated construction, a

bushing *k* is mounted on the shaft of the adjusting spindle *g* and said bushing is secured against rotary displacement by means of a pin *l*. This bushing *k* serves as a guide for a sleeve *m* surrounding it, and this sleeve can be rotated coaxially with the spindle *g* by means of a handle *o*. The lower frontal surface of the sleeve *m* is shaped to form a right-handed helical cam surface and in rotating it slides on the upper frontal similarly shaped helical cam surface of a counter sleeve *n*, which is fixed against rotation with respect to the head *e* and concentrically to the spindle *g*. A similar adjusting device has been provided at both ends of the head *e*, and the hand levers *o* may be connected to one another by means of a bar *s*, so that the sleeves *m* at both ends of the head *e* are rotated through the same angle, if either one of the hand levers *o* is actuated. A rotation of the sleeves *m* in the counterclockwise direction (viewed from above) increases the total axial length of the sleeves *m* and *n* with the result that the bushing *k* is lifted from the head *e* until the flange *r* abuts fixedly against the lower face of head *e* (Fig. 2). In case, however, the levers *o* are moved back in a clockwise direction, the space taken up by the sleeves *m* and *n* is axially reduced and the head *e* is lifted through a corresponding distance by the action of two powerful springs *p*, which may be replaced if desired by levers with counterweights. As will be apparent from Fig. 3, a space now opens between the flange *r* and the head *e*, the width of which corresponds to the lift of the gauge roll *d*. This lift is adjusted and set by the two nuts *t*, *t'* at the upper end of the adjusting spindles *g*, as will be hereinafter described. The lower end of bushing *k* may serve as a stop, or the rotary sleeve *m* may be the stop since the springs *p* press the head *e* and the sleeve *n* constantly against sleeve *m*.

In order to adjust the illustrated splitting machine to different thicknesses of work pieces in different batches of hides, the head *e* is first lifted free of the supporting springs *p* by rotating the two hand wheels *h*. The levers *o* are then swung in a clockwise direction (Fig. 4) as far as possible, that is, until the stepped interruptions in the helical surfaces of the sleeves *m* and *n* abut one against the other. The next step is to loosen the lock nut *t* so that the nut *t'* may be backed off a distance corresponding to the space it is desired to have between the head *e* and the flange *r* when the parts are in the positions shown in Figs. 1 and 3. The operator or his mechanic helper, making this adjustment, will know the pitch of the thread on the upper end of the spindle *g* and therefore will know how many turns to give the nut *t'* to secure the desired spacing between flange *r* and the head *e*. With the nut *t'* backed off the proper distance, the levers *o* are then swung in a counterclockwise direction, thus taking up the space between the upper surface of the hub of wheel *h* and the adjusted nut *t'*. The taking up of the space requires always a predetermined swing of the levers *o*. The lock nut *t* is then replaced to serve its proper function. Now by rotating the hand wheels *h*, the head *e* is adjusted in the usual manner to the desired thickness of the body portion of the upper split passing above the cutter *a*, this adjustment of the head *e* by the spindles *g* being facilitated by proper use of the micrometer screw *i*. It will be understood that, during this adjustment of the spindles *g*, the head is moved downwardly to a point where pressure is replaced upon the springs *p*. In other words, the machine will be conditioned with the parts substantially in the position shown in Fig. 2, ready for treatment on a work piece, such as an untanned hide.

As soon as the skin has passed through the machine as far as the thick part of the neck, the hand lever *o* is swung in the direction of the arrow in Fig. 4. The space taken up by the sleeves *m* and *n* in the axial direction is thereby reduced and the head *e* under action of the springs *p* is upwardly displaced so that the width of the split between the knife *a* and the gauge roll *d* increases by a corresponding amount, and the thickness of the upper split is increased from then on.

As already indicated, the illustrated embodiment is only an example. Therefore modifications are possible without departing from the spirit and scope of the invention defined in the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine for operating on a piece of work, a tool, a gauge to locate a work piece and the tool relatively to each other, a member on which the gauge is movably mounted, said member being supported on a part of the machine having a fixed relation to the tool, and means, including a cam surface arranged helically about the axis of said gauge carrying member and rotatable a predetermined distance alternately in opposite directions to adjust the gauge on said member successively to two different positions.

2. In a machine for operating on a piece of work, a tool, a gauge to locate a work piece and the tool relatively to each other, a member on which the gauge is movably mounted, said member being supported on a part of the machine having a fixed relation to the tool, a stop on said member to limit movement of the gauge in one direction, a cam member mounted for rotation about the axis of said member and arranged to move said gauge against said stop, and a spring to hold the gauge yieldingly against said cam member, whereby said cam member serves as a stop to limit movement of the gauge member in the other direction.

3. In a machine for operating on a piece of work, a tool, a gauge to position a work piece and the tool with relation to each other, a member carrying said gauge, a spindle mounted on the machine slidably to support said gauge member, the spindle having a flange or rib to limit the movement of the gauge member thereon in one direction, a spring to urge the gauge member away from said flange or rib on the spindle, a bushing on the spindle secured against rotation with respect thereto, a sleeve on the bushing also secured against rotation and having a cam surface, and a second sleeve rotatable on the bushing and having a cam surface for co-operation with the first-mentioned cam surface to cause movement of the gauge member, against the pressure of said spring, into engagement with the flange on said spindle, and to cause also a controlled movement of the gauge member, under pressure of said spring, in a direction away from said flange on the spindle, whereby said second sleeve may serve as a stop to limit movement of the gauge member in the other direction.

4. In a machine for operating on a piece of work, a tool, a gauge to locate a work piece and the tool with respect to each other, a head mount-

ed for adjustment on the frame of the machine to support the gauge, a member on which the head is slidable, said member being supported by the machine frame and having a rib or flange to limit movement of the head and gauge in one direction, a stop to limit movement of the head and gauge in the opposite direction, a spring tending constantly to move the head away from the flange and into engagement with said stop, and cam means associated with said member to move the head against the pressure of said spring into contact with the rib or flange, whereby the head and the gauge carried thereby may readily be made to occupy either one of two positions through the co-operation of said stop and said flange.

5. In a machine for operating on a piece of work, a tool, a gauge roll to locate a surface of the work piece with respect to the tool, a head mounted for adjustment on the frame of the machine to support the gauge roll at predetermined distances with respect to the tool, a member on which the head is slidable, said member being supported by the machine frame and having a rib or flange to limit movement of the head toward the tool, said member also carrying a stop to limit movement of the head in a direction away from the tool, a spring tending constantly to move the head away from the tool and into engagement with said stop, and cam means rotatable on said member to move the head against the action of said spring into contact with the rib or flange whereby the head and the gauge roll carried thereby may readily be made to occupy either one of two positions through the co-operation of said stop and said flange.

6. In a machine for cutting hides, skins, and leather, a cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles mounted on the frame of the machine, one at each end of said head and upon which the head is slidable, a stop at each end of the head to limit the movement of the head and gauge roll toward said cutter, a spring at each end of the head tending constantly to move the head in a direction away from said stops, and cam means associated with each spindle to force the head against the pressure of the springs and into contact with said stops or alternatively to release the head for movement by said springs to a position determined by said cam means, whereby the head and the gauge roll carried thereby may be located alternatively in two positions with respect to said cutter.

7. In a machine for cutting hides, skins, and leather, a cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles adjustably mounted on the frame of the machine, one at each end of said head to adjust the latter, each spindle having a flange or rib to limit the movement of the head toward said cutter, a spring at each end of the head tending constantly to lift the head away from said flanges or ribs on the spindles, and cam means on each spindle operative to force the head against said flanges or alternatively to release the head for upward movement by said springs to a position determined by said cam means, whereby the head and the gauge roll carried thereby may be located alternatively in two positions with respect to said cutter, in an arrangement in which these positions may be changed by adjustment of said spindles on the machine frame.

8. In a machine for cutting hides, skins, and leather, a cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles adjustably mounted on the frame of the machine, one at each end of said head to adjust the latter, each spindle having a flange or rib to limit the movement of the head toward said cutter, a spring at each end of the head tending constantly to lift the head away from said flanges or ribs on the spindles, and members each movable about the axis of its associated spindle to force the head against the flanges on the spindles, said members being rotatable in the opposite direction to permit the springs to move the head and gauge roll in an upward direction to a position determined by said members, and said spindles being adjustable on the frame of the machine to secure a further adjustment of the head and the gauge roll carried thereby with respect to the cutter.

9. In a machine for cutting hides, skins, and leather, a cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles adjustably mounted on the frame of the machine, one at each end of said head to adjust the latter, each spindle having a flange or rib to limit the movement of the head toward said cutter, a spring at each end of the head tending constantly to lift the head away from said flanges or ribs on the spindles, a sleeve on each spindle, the lower ends of which may serve as stops to limit the movement of the head away from the cutter, and members, each movable on a sleeve and about the axis of its associated spindle, to force the head against the flanges on the spindles, said members being rotatable in the opposite direction to permit the springs to move the head against said stops, whereby the gauge roll may be located alternatively in two positions with respect to said cutter, said spindles being adjustable on the frame of the machine to secure a further adjustment of the head and the gauge roll carried thereby with respect to the cutter.

10. In a machine for cutting hides, skins, and leather, a cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles mounted on the frame of the machine, one at each end of said head upon which the head is slidable, each spindle having a flange or rib to limit the movement of the head and gauge roll toward said cutttr, a spring at each end of the head tending constantly to move the head away from said flanges or ribs on the spindles, a bushing on each spindle secured against rotation with respect thereto, a sleeve on each bushing also secured against rotation and having a cam surface, and a second sleeve rotatable on the bushing and having a cam surface for co-operation with the first-mentioned cam surface to cause adjustment of the head and gauge roll in directions toward and from the cutter.

11. In a machine for cutting hides, skins, and leather, a belt knife cutter, a gauge roll to position one surface of a work piece with relation to the cutter, a head carrying said gauge roll, spindles screw threaded into the frame of the machine, one at each end of said head to support the latter, each spindle having a flange or rib to limit movement of the head toward said cutter, a spring at each end of the head constantly tending to lift the head away from said flanges or ribs on the spindles, a sleeve on each spindle, the lower ends of which may serve as stops to limit the movement of the head away from the cutter, and cam members movable, one on each sleeve and about the axis of the asso-

ciated spindle, to force the head against the pressure of the springs into contact with the flanges on the spindles, said cam members being movable in the opposite direction to permit the springs to move the head against said stops, whereby the flanges and stops determine the two positions of the gauge roll with respect to the cutter, said spindles being adjustable on the frame of the machine to secure a further adjustment of the head, and the gauge roll carried thereby, with respect to the cutter.

12. In a machine for operating on a piece of work, a tool, a gauge to locate a work piece and the tool relatively to each other, a member on which the gauge is movably mounted, said member being supported on a part of the machine having a fixed relation to the tool, a stop on said member to limit movement of the gauge in one direction, a cam surface arranged helically about the axis of said member and operative to move said gauge against said stop, and a spring to hold the gauge yieldingly against said cam surface, whereby said cam surface serves as a stop to limit movement of the gauge member in the other direction.

13. In a machine for operating on a piece of work, a tool, a gauge to locate a work piece and the tool relatively to each other, a member on which the gauge is movably mounted, said member being supported on a part of the machine having a fixed relation to the tool, and means including a helical cam surface rotatable alternatively in opposite directions to adjust the gauge on said member.

OSKAR BOETTGER.