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KNIFE REST FOR A BAND SHAPED SPLITTING KNIFE

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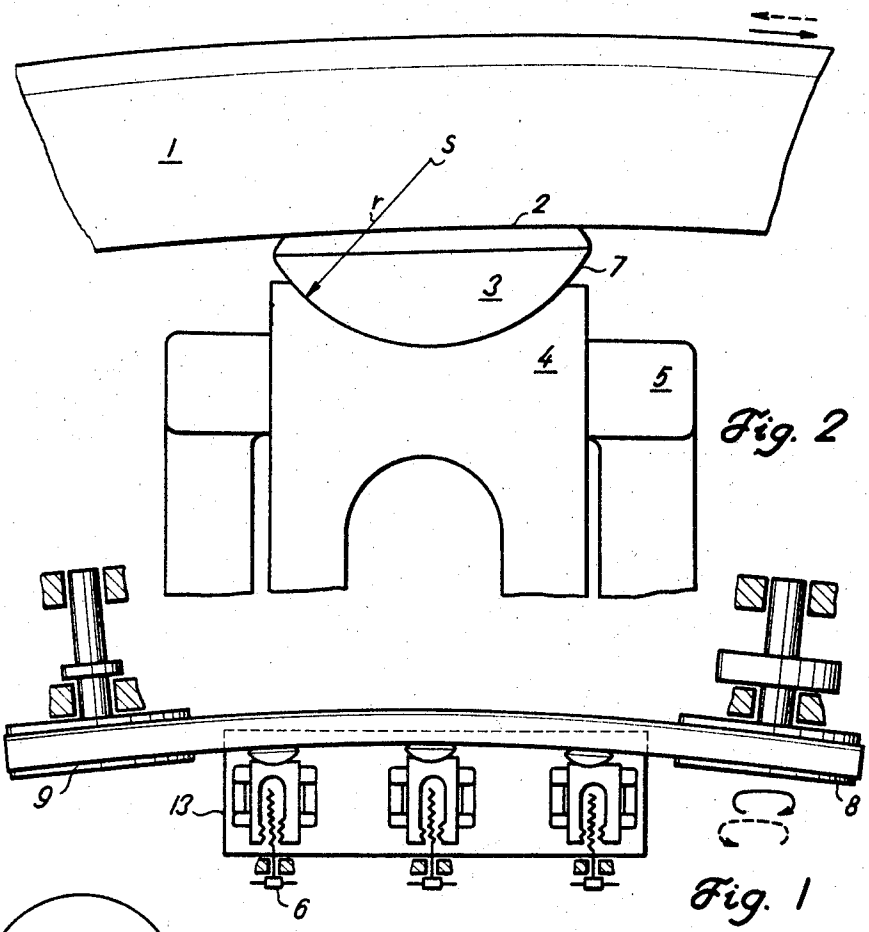

Fig. 2

Fig. 1

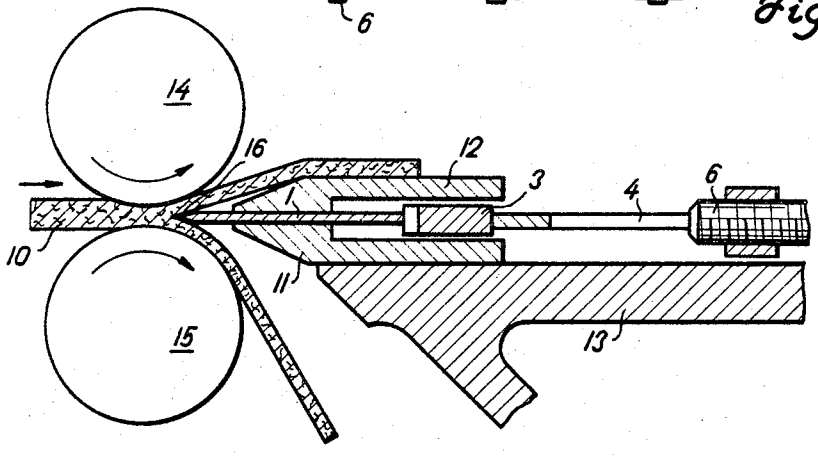

Fig. 3

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KNIFE REST FOR A BAND SHAPED SPLITTING KNIFE

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U.S. Cl. 69—10 1 Claim

ABSTRACT OF THE DISCLOSURE

A knife rest for a band shaped splitting knife of a splitting machine for leather, hides and similar flat material, said knife rest automatically adjustable to different conditions of the splitting knife in operation, securing thus a contact between the rear surface of the knife and the active contact surface of the knife rest along a large contact area said rest having a curved face contacting its backing member to facilitate rotation of the rest against its backing member.

BACKGROUND OF INVENTION

Splitting machines for leather and hides are very important in the leather industry as the economy of manufacturing depends mostly on a proper splitting operation. The most important element for the operation of a leather splitting machine is the splitting knife, its correct guiding and grinding. At present splitting knives from relatively thin steel, connected to an endless band, are generally used for this purpose. The knife is guided between lateral gibs and is supported by differently arranged rests, against which the knife leans with the width of its rear surface. There is a number of different systems of distribution and of adjustment of such knife rests.

In order to safeguard a correct operation of the knife, which moves at a relatively high speed, it is necessary to provide a correct inclination of the respective driving and tensioning rollers, in order to achieve in the course of operation of the machine automatically the contact of the knife with the knife rests. This of course causes a bending of the knife and the result of this bending is that there is frequently only a point contact between knife and rest.

A point contact between knife and rest is furthermore caused due to a certain clearance of the guiding, whereby the rest is moved due to friction in the course of operation of the machine. In addition during the life time of the knife, the bending of the knife is equally changing, it is different for a new knife and for a used knife and is also different if some different technology has been used for manufacturing the knife. It should be also noted, that the sense of motion of the knife is frequently reversed so that even if for one sense some contact area is created, a point contact is again established for the reverse sense.

The point contact between knife and rest, which particularly occurs on the rests on both extremities at a high pressure and speed, substantially affects the life time of the knife. Due to a concentrated pressure on the rear surface of the knife a high local stress of the material of the knife is created, resulting in cracks, which lead to a rupture of the knife, and which practically occur only on the rear part of the knife.

Rests with hard metal on the active contact surface have been also used with increasing outputs of the machines. The life time of the rests has been prolonged, but the stress of the rear part of the knife has been

rather increased. Rollers have been also used where the operating conditions of the machine allowed such an arrangement. But due to the high stress imposed on these rollers both due to the speed and character of application, this solution has only a limited significance.

SUMMARY OF THE INVENTION

It is an object of this invention to eliminate these drawbacks, what is achieved by providing the active contact surface of the rest of the splitting knife on an element capable to be deviated, which element is supported by an adjustable part of the rest comprising a circular part, the centre of curvature of the circular part of this element situated in front of the active rest surface.

DESCRIPTION OF DRAWINGS

An embodiment of the object of this invention is shown on the accompanying drawings where FIG. 1 is an elevation of the whole arrangement, FIG. 2 a detail of the knife rest and FIG. 3 a partial sectional view of a part of the splitting machine with the knife.

DESCRIPTION OF PREFERRED EMBODIMENT

The knife **1** of the splitting machine rests with its rear part against the active supporting surface **2** of an element **3** capable to be deviated. Hard metal may be advantageously used on the active supporting surface **2**. The element **3** capable to be moved is supported by its rear circular part **7** by an adjustable supporting part **4** of the rest, guided laterally between gibs **5**. The adjustment of the adjustable part **4** of the rest in this case accomplished by means of screw bolts **6**. Gibs **11** and **12** (see FIG. 3) guide the knife **1** in the direction, in which pressure is transmitted to the knife **1**. In the case given they simultaneously enable by their shape the lateral guiding of the element **3** capable to be moved. The lower gib **11** is fixed on the rear support **13** of the splitting machine. The leather is supplied by feeding rollers **14** and **15** towards the knife **1** and splitting is accomplished due to the action of the sharp cutting edge at place **16**. A driving roller **8** transmits motion to the knife **1** which is tensioned by the tensioning roller **9**. The center S of curvature of the circular part **7** is situated in front of the active supporting surface **2** in order to achieve in the course of operation of the machine, where the knife moves in its longitudinal direction, a cooperation of the forces of friction to adjust automatically the element **3** capable to be deviated into its most advantageous position, so that the force acting on the rear surface of the knife is uniformly distributed along the whole active supporting surface **2**.

The opposite case, i.e. a point contact between knife **1** and the active supporting surface **2** would result if the center S of curvature of the element **3** would be in front of the rear surface of the knife **1**, for instance if the center of rotation of the element **3** would be the place, where the element leans against the adjusting screw.

Pressure of the knife **1** against the element **3** capable to be moved is generated not only due to pressure of the split material **10** which is fed towards the knife **1**, but also in the course of idle running due to a relative inclination of the rollers **8** and **9** as already mentioned, as otherwise the knife **1** could leave the rollers **8** and **9**.

As the coefficient of friction between the knife **1** and the active supporting surface **2** of the element **3** capable to be deviated is relatively small, the force, which tends to force the element **3** towards the adjustable part **4** of the rest prevails, what equally cooperates for an automatic adjustment of the element **3** into its most advantageous position if the center of curvature of the circular part **7** is properly chosen.

If the adjustment of the machine, the tension of the knife, the direction of motion of the knife or other conditions are changed, the arching and deviation of the knife from the machine axis are changed, but the element **3** capable to be moved adjusts itself automatically so that the rear surface of the knife is in the course of operation subject to a minimum stress and the active supporting surface **2** of the element **3** capable to be deviated is stressed uniformly so that wear of both elements is reduced to a minimum and requirements for adjustment are equally substantially reduced.

I claim:

1. Knife backing rest for a knife of a splitting machine for leather, hides and similar flat material, said knife in the shape of an endless bend with a cutting edge and a rear surface; said knife rest comprising an element, capable to be moved within a plane substantially parallel with the band shaped knife, said element provided with an active contact surface adapted to contact the rear surface of said knife and with a circular surface opposite to said active contact surface; a supporting part of the knife rest, means for guiding said supporting part in direction towards and away from said band knife; means

for adjusting the position of said supporting part; said supporting part provided with a circular supporting surface for said element capable to be moved; the curvatures of both said circular parts being equal and having a common center of curvature situated in front of the active contact surface between the band shaped knife and said element capable to be moved.

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