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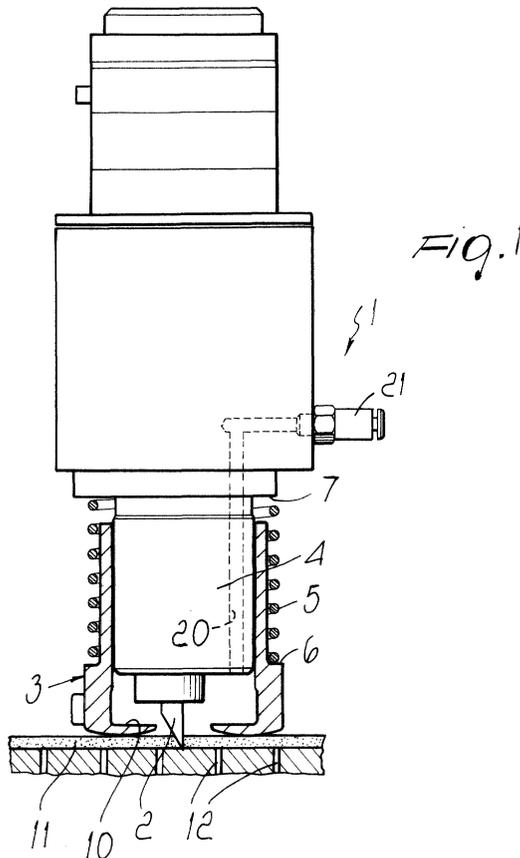
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(54) **Cutting unit for sheet-like elements in general and particularly for hides and the like**

(57) A cutting unit (1) for sheet-like elements (11) in general and particularly for hides, comprising a cutting blade (2) arranged inside a telescopic element (3) which ends axially with a pad (10) acting on the upper face of

the sheet-like element (11) to be cut. Means (20) for introducing pressurized fluid in the telescopic element (3) being provided in order to apply pneumatic pressure to the upper face of the sheet-like element (11).



## Description

**[0001]** The present invention relates to a cutting unit for sheet-like elements in general and particularly for hides and the like.

**[0002]** It is known that cutting units used for hides are generally provided by means of a suction table on which the hide to be cut is placed.

**[0003]** A cutting blade acts on the upper face of the hide and is accommodated in a telescopic element which ends with a pad which is pushed elastically against the hide.

**[0004]** With this embodiment, during the movement of the blade the hide can crimp due to both the relative friction produced by the blade and by the sliding of the pad against the hide.

**[0005]** It should also be noted that the pad, which is pushed elastically against the upper face of the hide, is meant to keep the hide stretched in order to facilitate correct cutting.

**[0006]** The aim of the invention is to solve the above described problem, by providing a cutting unit for sheet-like elements in general and particularly for hides which allows to keep the hide always perfectly stretched out and in position without producing crimps or in any case displacements determined by the movement of the pad over the hide.

**[0007]** Within the scope of the above aim, a particular object of the invention is to provide a cutting unit which allows to adjust at will the pressure applied to the hide, thus adjusting, according to the contingent requirements, the retention force that is applied.

**[0008]** Another object of the present invention is to provide a cutting unit which, thanks to its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

**[0009]** Another object of the present invention is to provide a cutting unit which can be easily obtained starting from commonly commercially available elements and materials and is furthermore competitive from a merely economical point of view.

**[0010]** This aim and these and other objects which will become better apparent hereinafter are achieved by a cutting unit for sheet-like elements in general and particularly for hides, comprising a cutting blade arranged inside a telescopic element which ends axially with a pad acting on the upper face of the sheet-like element to be cut, characterized in that it comprises means for introducing pressurized fluid in said telescopic element in order to apply pneumatic pressure to the upper face of said sheet-like element.

**[0011]** Further characteristics and advantages of the present invention will become better apparent from the description of a preferred but not exclusive embodiment of a cutting unit for sheet-like elements in general and particularly for hides, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic view of the cutting unit, with the telescopic element shown in cross-section;

Figure 2 is a view of the cutting unit with a different type of pad;

Figure 3 is a view of the cutting unit with another embodiment of the pad;

Figure 4 illustrates the compensation of the force applied by the pad to the sheet-like element.

**[0012]** With reference to the figures, the cutting unit for sheet-like elements in general and particularly for hides, according to the invention, generally designated by the reference numeral 1, comprises a cutting blade, generally designated by the reference numeral 2, which is arranged within the region delimited by a telescopic element 3 which is slidingly accommodated on the body 4 that supports and actuates the blade.

**[0013]** The telescopic element 3 is pushed elastically by a spring 5 which acts between a shoulder 6 formed on the outer surface of the telescopic element and a fixed abutment 7 formed by the cutting unit.

**[0014]** The telescopic element 3 ends in a downward region, at its axial end, with an annular pad 10 which rests on the sheet-like element 11, generally a hide, which is supported by a worktable 12 which can be of the suction type.

**[0015]** The particularity of the invention consists in that it comprises means for introducing pressurized fluid inside the telescopic element 3; such means consists of a duct 20 ending inside the telescopic element 3 and connected to an inlet 21 which is connected to a source of pressurized fluid.

**[0016]** The pressurized fluid introduced in the telescopic element 3 is capable of applying a pneumatic pressure to said hide which produces an adequate force for retaining said hide.

**[0017]** The hide is thus pressed against the supporting surface, which might even not be of the suction type.

**[0018]** In order to adjust at will the pressure applied by the pad 10, it is possible to shape the pad so that the force applied to the hide is a function of the differential between the surface contained within the contact contour of the pad and the internal cross-section of said pad.

**[0019]** Thus, for example, considering the embodiment of Figure 1, the upper face of the pad is larger than the part of the lower face of the pad that does not touch the sheet-like element, so that in static conditions a low pressure is applied to the pad of the telescopic element 3.

**[0020]** According to what is shown in Figure 2, the pad 10 is formed in such a way that the lower face not in contact with the hide, is larger than, or equal to, the portion of the upper face, so that the pressurized fluid is capable of applying a pressure to the pad, which is either neutral, if the two cross-sections are identical, or is such to lift the pad, if the exposed lower face is larger than the upper face.

**[0021]** According to what is shown in Figure 3, the

lower face of the pad 10 is fully in contact with the surface of the hide, so that the cross-section determined by the upper face of the pad produces an increase in thrust.

[0022] It should also be observed that by further increasing the air pressure it is possible to provide outward seepage of the air, as shown in Figure 4, so as to keep the pad lifted with respect to the hide and thus avoid mechanical scraping during cutting, thus eliminating completely friction between the pad and the surface of the hide.

[0023] From the above description it is thus evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that the application, by pneumatic means, of pressure to the upper face of the hide allows to keep the hide firmly in position and to adjust at will the force applied by the pad according to the ratio between the surfaces of the lower and upper face of the pad affected by the pressurized fluid.

[0024] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0025] All the details may furthermore be replaced with other technically equivalent elements.

[0026] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0027] The disclosures in Italian Patent Application No. MI2000A000954 from which this application claims priority are incorporated herein by reference.

[0028] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A cutting unit for sheet-like elements in general and particularly for hides and the like, comprising a cutting blade arranged inside a telescopic element which ends axially with a pad acting on the upper face of the sheet-like element to be cut, **characterized in that** it comprises means for introducing pressurized fluid in said telescopic element in order to apply pneumatic pressure to the upper face of said sheet-like element.
2. The cutting unit according to claim 1, **characterized in that** the area of the upper face of said pad is equal to the area of the lower face of said pad not in contact with the surface of the sheet-like element and is affected by said pressurized fluid in order to keep unchanged the thrust applied by said pad on the sheet-like element.

3. The cutting unit according to claim 1, **characterized in that** the area of said upper face is larger than the area of the lower face of said pad that is affected by the action of the pressurized fluid in order to increase the thrust of said pad on the sheet-like element.

4. The cutting unit according to claim 1, **characterized in that** the area of the upper face of said pad is smaller than the area of the lower face of said pad that is affected by said pressurized fluid in order to produce a lifting action on said pad.

5. The cutting unit according to claim 1, **characterized in that** said means for introducing pressurized fluid are suitable to generate a seepage of fluid under said pad in order to keep said pad in a raised position so as to prevent scraping contact between said pad and said sheet-like element.

6. The cutting unit according to claim 1, **characterized in that** said pad is annular.

