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CUTTING STICK MEMBER FOR PAPER CUTTING MACHINES

Filed April 22, 1959

FIG. 1.

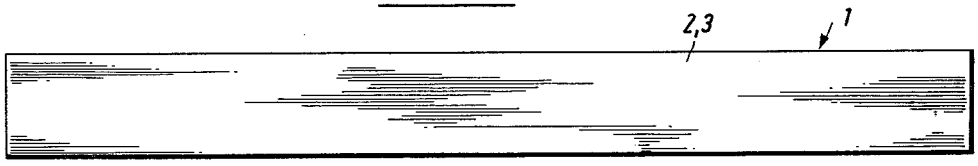


FIG. 2.

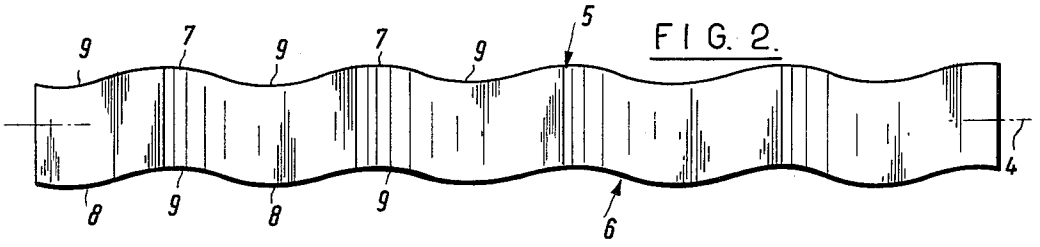
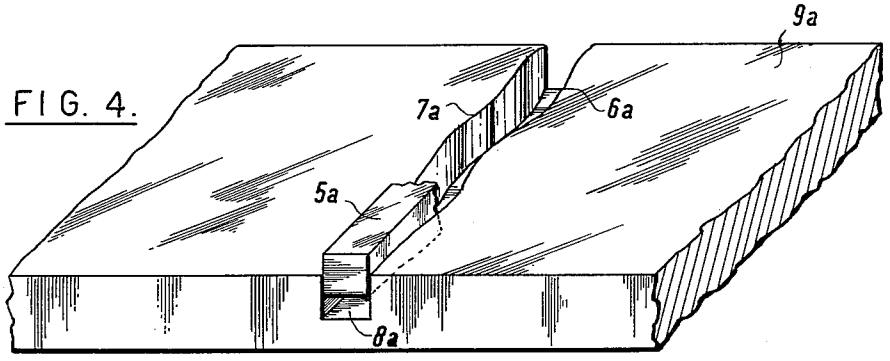


FIG. 4.



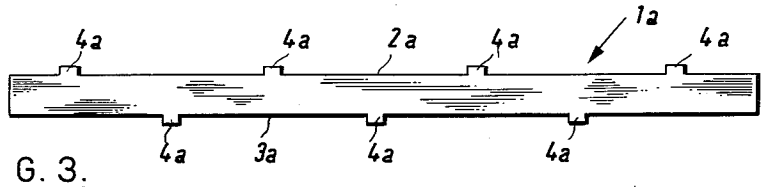


FIG. 3.

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CUTTING STICK MEMBER FOR PAPER CUTTING MACHINES

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The present invention relates to a counter-strips or cutting sticks for the blades of paper-cutting and like machines.

As known a counter-strip is countersunk into the worktable of such machines under the blade. Generally, these counter-strips are made of wood or plastic. The strip is chosen to be hard enough for giving adequate support to the cut material whilst causing minimum wear to the cutter blade.

To ensure that an accurate cut will result across the entire width of the table the counter-strip must be firmly wedged in its containing slot in the table. To satisfy this requirement the use of counter-strips of various kinds and shapes has been proposed. One such proposal consists, for instance, in wedging the strip sunk into a groove in the worktable of the machine by means of appropriate keys.

Another proposal is to secure the counter-strip in its groove by spring-loaded pins which press into the material of the strip. It has also been proposed to hold the strip by inserting a flat spring together with the strip when the latter is inserted into the groove.

Apart from these various fixation means a known method is to sink the counter-strip into the table with a tight press fit.

Although these means and methods ensure that the counter-strip will be firmly held in the slot in the table, they have the drawback that firm contact is established only at the points where, for instance, the spring-loaded pins actually bear on the strip, whereas at other points the pressure on the strip is less so that the strip can still warp or throw.

Even when using a fitting key, the same troubles may arise, because the key does not actually bear along the whole length of the strip.

Wedges sunk into the groove with a press fit have the defect of being difficult to remove and of special tools being required to replace them.

The present invention concerns a counter-strip which overcomes the defects of known types of strip and which requires no accessory wedging means, such as keys or springs, because it is held firmly wedged by the inherent elasticity of its material.

A counter-strip for cutter blades according to the invention is so contrived that the contour formed by the longitudinal edges deviates from parallelism with the medial axis of the strip in such a way that without an increase in width the strip will be held in its containing slot in the worktable of the cutting machine by the wedging action which is due to its shape.

Preferably the contour of the longitudinal edges may be undulating or constitute a zig-zag outline. To impart intrinsic elasticity to the strip it may consist, for instance, of a plastic or like material.

Alternatively the strip may be provided along its lengthwise edges with regularly or irregularly distributed projections or the like which cause the strip to be elastically deformed.

Conversely, the same effect may be achieved if the lateral edges of the slot for the reception of the strip define an outline which deviates from parallelism with the lengthwise centre line of the slot, in such manner that the counter-strip will be elastically deformed when inserted therein. If the slot is thus contrived the counter-strip may have a normal rectangular section. Moreover, the lateral faces of the slot may define an arbitrary continuous or discontinuous stepped geometric contour.

Since the counter-strip is inherently elastic and requires no supplementary wedging means to hold it in position, production is simplified and its manufacturing cost thereby reduced.

The counter-strip may be shaped by cold or hot deformation or by machining. The proposed conformation of the strip enables such a strip to be easily and readily replaced. The procedure that can be adopted for forcing the strip into its slot consists in placing the strip over the slot and then pressing it in sections into the same. Conveniently pressure may be applied by making use of the clamping beam of the machine.

The invention will now be more particularly described with reference to counter-strips or cutting sticks shown in the accompanying drawings in which

FIG. 1 is a general view of a counter-strip for the blade of a cutting machine,

FIG. 2 is a plan view of the strip,

FIG. 3 is a counter-strip provided with lateral projections, and

FIG. 4 is a perspective view of a section of the table top with a shaped slot and part of the counter-strip in position in the slot.

The counter-strip **1** has a rectangular cross section. It has two opposite plane faces **2** and **3** which cooperate with the cutter blade and two lateral faces **5** and **6** which deviate in contour from parallelism with the longitudinal centre axis **4** of the strip. As shown in FIG. 2 these lateral faces **5** and **6** may have an undulating shape or they may constitute a zig-zag outline. It is an essential feature, for instance, of the proposed undulating shape that the perpendicular distance between wave crests **7** and **8** on opposite faces of the strip shall slightly exceed the width of the containing slot in the table top to ensure that the conformation of the strip in conjunction with the inherent elasticity of its material will produce wedging friction between the undulating faces and the lateral faces of the slot.

The distance between wave crest **7** and adjacent valley **9** and the deviation from crest to valley are sufficiently small to ensure that when the strip has been wedged between the lateral faces of the slot, the sides **5** and **6** of the strip will be substantially flattened and approximate a linear outline. This will eliminate the formation of gaps between the edges of the slot and the edges **5** and **6** of the strip. Bits of paper and like waste material cannot then become lodged in crevices and obstruct the feeding of the stack of sheets, as is the case in known forms of construction.

The counter-strip **1***a* illustrated in FIG. 3 is formed with projections such as ridges **4***a* on each lateral face **2***a* and **3***a*. These may be regularly or irregularly spaced along the sides. The projections **4***a* on one side are staggered in relation to those on the other side, and when the strip **1***a* is forced into a straight-sided containing slot the projections will cause the strip to be somewhat elastically deformed and to be tightly wedged in the slot.

In the embodiment shown in FIG. 4 the counter-strip **5***a* has a rectangular section, and the lateral edges of the strip **5***a* which bear against the lateral edges **6***a*, **7***a* of the containing slot are straight. To wedge the strip **5***a* firmly in the slot **8***a* the lateral edges **6***a* and **7***a* of the slot in the table **9***a* have an undular shape. In this arrangement only the lateral faces of the slot **8***a* need be contrived to have a shape that differs from the outline of the counter-strip **5***a* and the latter may have a normal rectangular linear shape.

I claim:

1. In a paper cutting machine, a cutting stick member adapted to be mounted in a retaining groove having side walls and a base defining a U-shaped member formed in a rigid support of such machine, said cutting stick member being of resilient material of generally rectangular cross-section having opposed plane faces for cooperation with a cutter blade, one of said members having opposite side faces, each side face being provided with alternate high points and low points with the high points of one side face lying opposite the low points of the other side face, the other of said members having flat side faces, and the distance between the high points of said one side face and the adjacent high points of said other side face being slightly greater than the distance between the side faces of said other member so that when the stick member is mounted in the retaining groove member, the inherent elasticity of said cutting stick member will produce a wedging friction between the side faces having the alternate high points and low points and the flat side faces for retaining the stick member in the retaining groove member.

2. A cutting machine as claimed in claim 1 in which said one member is the cutting stick member.

3. A cutting machine as claimed in claim 1, in which said one member is the retaining groove member.

4. A cutting machine as claimed in claim 1 in which said high points and low points are defined by crests and valleys.

5. A cutting machine as claimed in claim 1 in which said high points are defined by spaced projections and the low points by the area between adjacent projections.

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