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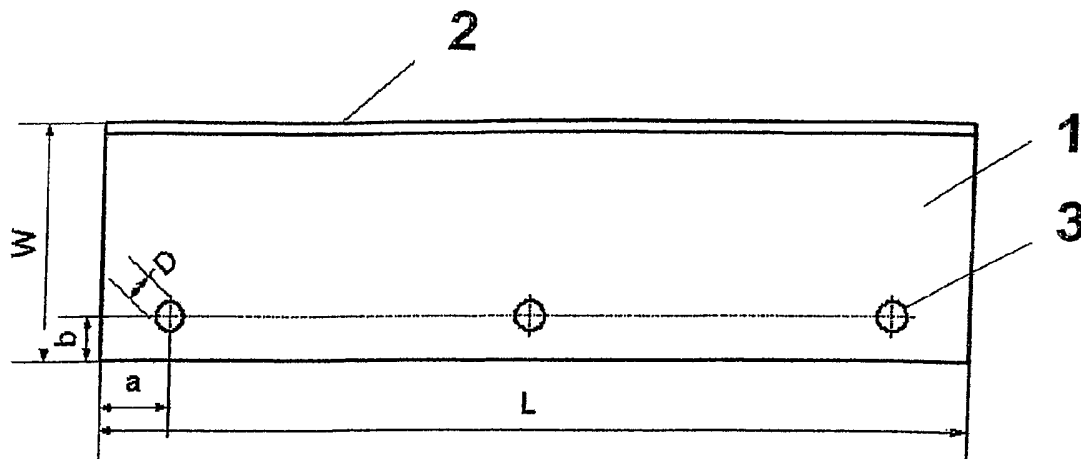
— as to the identity of the inventor (Rule 4.17(i)) for all designations

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(54) Title: KNIFE FOR CUTTING/COMMUNUTING ORGANIC PLANT MATERIALS, PARTICULARLY TOBACCO MATERIALS



(57) Abstract: A knife for cutting/comminuting organic plant materials, particularly tobacco materials, comprising an oblong blade having one sharpened edge being a cutting edge, characterised in that at least one opening is located at the edge of the knife (1) opposite to the cutting edge (2).

Knife for cutting/comminuting organic plant materials,  
particularly tobacco materials

This invention relates to a knife for cutting/comminuting organic plant materials, particularly tobacco materials.

A knife for cutting/comminuting tobacco materials is known in the art, being a steel oblong blade having the cutting edge on the one side, while being attached to the cutter drum of a cutting machine on the other side. Such a knife or a knife assembly is situated on the circumference of the rotary cutter drum of a cutting machine for tobacco. Due to the wearing out of the cutting edge of the knife during the cutting/comminution process and/or due to mechanical damages, a necessity of regular replacement of knives arises. This is a periodical maintenance operation and the minimisation of its duration is important for users.

In all known cutting machines the knife only is advanced (ejected) by a mechanical assembly, i.e., moved towards the

cutting/comminuting edge.

According to the invention, a knife for cutting/comminuting organic plant materials, particularly tobacco materials, comprising an oblong blade having one sharpened edge being a cutting edge, is characterised in that at least one opening is located at the edge of the knife opposite to the cutting edge.

In a preferred embodiment of a knife according to the invention the openings are circular openings arranged symmetrically along the edge opposite to the cutting edge.

In another preferred embodiment of a knife according to the invention the openings are rectangular openings arranged adjacent to the lateral edges of the knife, optionally they are circular openings arranged symmetrically along the edge opposite to the cutting edge of the knife and rectangular recesses adjacent to the lateral edges of the knife.

The openings and/or the recesses enable the functionality of retracting a knife from the working position to the maintenance/resting position on demand of an operator and/or a control signal from a controlling processor, by inserting mechanical catches into the openings/recesses, e.g., pins or bolts coupled with a mechanism for retraction movement.

Additionally, it is possible to insert catches/pins/bolts into the openings, which may be used as elements for quick positioning the knife.

Furthermore, once formed, the openings can be utilised as a carrier for a magnetic, electric and/or optical signal, which can be then processed for obtaining data concerning the position and/or wearing out of the knife.

The openings located along the back edge and/or the lateral edges of the knife may be shaped openings, the shape of which is selected so as to perform various tasks, particularly several tasks simultaneously, including guiding the working movement and the retraction movement on a signal from an operator or a controlling processor.

Embodiments of the present invention will be described with reference to the drawings in which:

Figure 1 shows a knife according to the invention with openings arranged along the edge opposite to the cutting edge;

Figure 2 shows the knife of Figure 1 additionally equipped with shaped recessions adjacent to the lateral edges, and

Figure 3 shows a knife according to the invention with recessions adjacent to the lateral edges.

According to Figure 1, a knife 1 has three circular openings

3 arranged along the edge opposite to the cutting edge 2 of the knife. Optionally, a single opening 3 may be employed instead of three openings 3, e.g., the opening being situated centrally, or, in yet another alternative, one can employ two openings 3 or even several openings 3, arranged symmetrically along the edge opposite to the cutting edge 2 of the knife 1. Additionally and irrespective of the openings 3, the knife 1 may have shaped, preferably rectangular recesses 4 arranged adjacent to the lateral edges of the knife 1, as shown in Figures 2 and 3.

In an embodiment of the knife 1 the length L of the knife 1 is 500 mm, the width W of the knife 1 is 100 mm, the distance a of the axis of the extreme opening 3 from the lateral edge of the knife 1 is 5 mm, the distance b of the axis of the openings 3 from the edge opposite to the cutting edge 2 is 4 mm, the diameter D of the openings 3 is 2 mm, the depth X1 of the recess 4 is 2 mm, the width W1 of the recess 4 is 4 mm, and the distance Y1 of the recess 4 from the edge opposite to the cutting edge 2 of the knife 1 is 2 mm.

The openings 3 and/or the recesses 4 enable a new functionality of the knife 1 this being the possibility to retract the knife 1 from the working position to the maintenance/resting position on demand of an operator and/or a control signal from a controlling processor, by inserting mechanical catches into the openings/recesses, e.g., pins or

bolts coupled with a mechanism for retraction movement. Additionally, it is possible to insert catches/pins/bolts into the openings, which may be used as elements for quick positioning the knife 1.

Furthermore, once formed, the openings can be utilised as a carrier for a magnetic, electric and/or optical signal, which can be then processed for obtaining data concerning the position and/or wearing out of the knife.

The openings located along the back edge and/or the lateral edges of the knife may be shaped openings, the shape of which is selected so as to perform various tasks, particularly several tasks simultaneously, including guiding the working movement and the retraction movement on a signal from an operator or a controlling processor.

## Claims:

1. A knife for cutting/comminuting organic plant materials, particularly tobacco materials, comprising an oblong blade having one sharpened edge being a cutting edge, characterised in that at least one opening is located at the edge of the knife (1) opposite to the cutting edge (2).
2. A knife according to claim 1, characterised in that the openings are circular openings (3) arranged symmetrically along the edge opposite to the cutting edge (2) of the knife (1).
3. A knife according to claim 1, characterised in that the openings have form of rectangular recesses (4) located adjacent to the lateral edges of the knife (1).
4. A knife according to claim 1, characterised in that the openings have forms of circular openings (3) arranged symmetrically along the edge opposite to the cutting edge (2) of the knife (1) and rectangular recesses (4) arranged adjacent to the lateral edges of the knife (1).

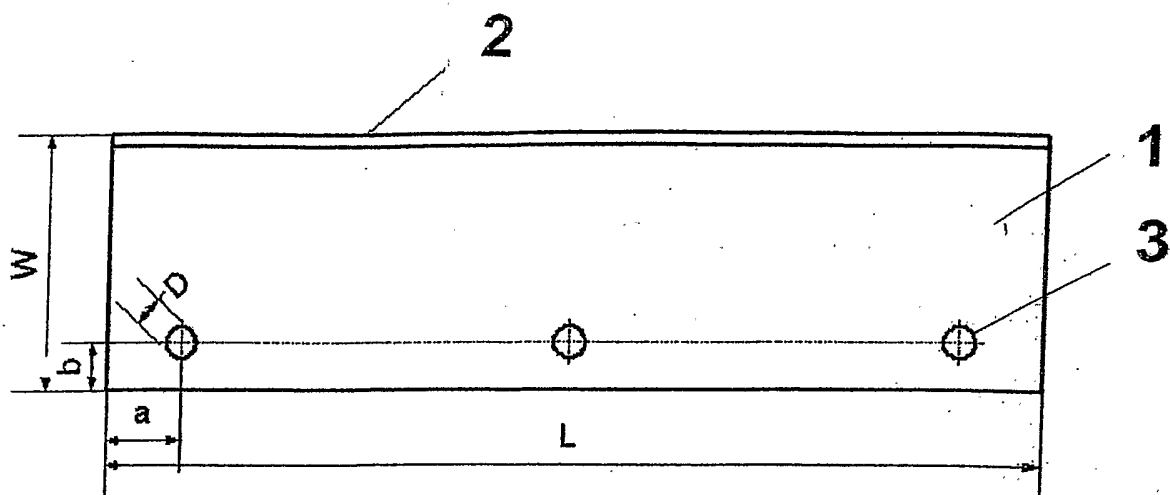


FIG. 1

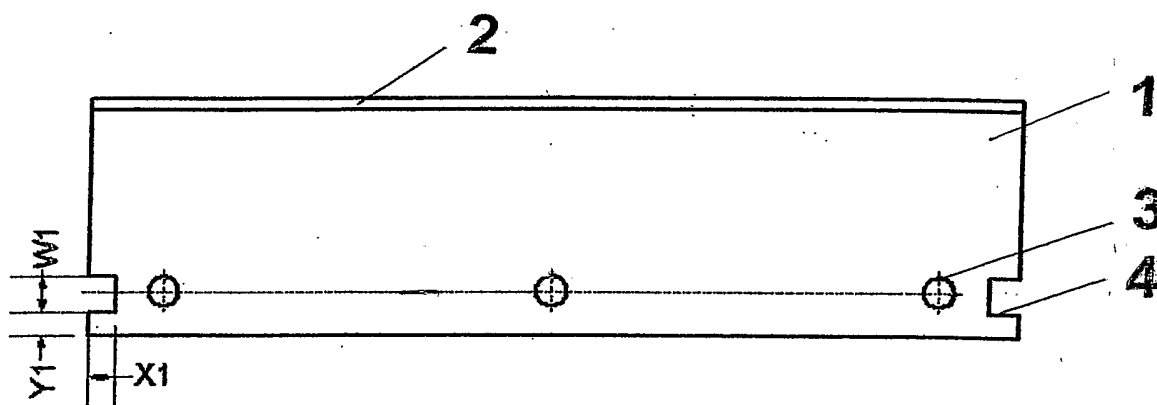


FIG. 2

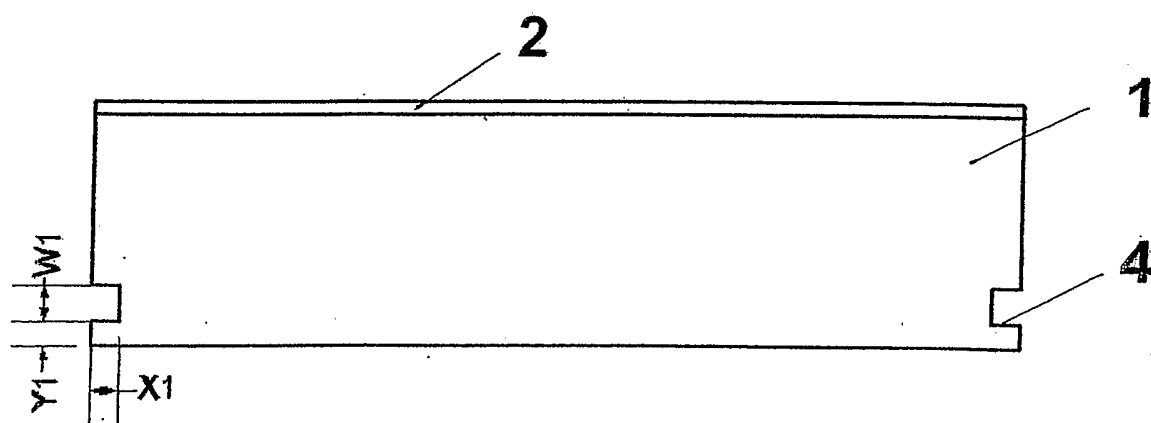


FIG. 3

# INTERNATIONAL SEARCH REPORT

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## A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

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PCT/PL2004/000095

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