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Novak

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[54] **SINGLE SHEET PAPER SLITTER**

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[52] **U.S. Cl.** **30/294;** 30/164.9; 30/317; 30/DIG. 3

[51] **Int. Cl.** **B26b 29/00**

[58] **Field of Search** 30/294, 317, 286, 293, 30/DIG. 3, 164.9

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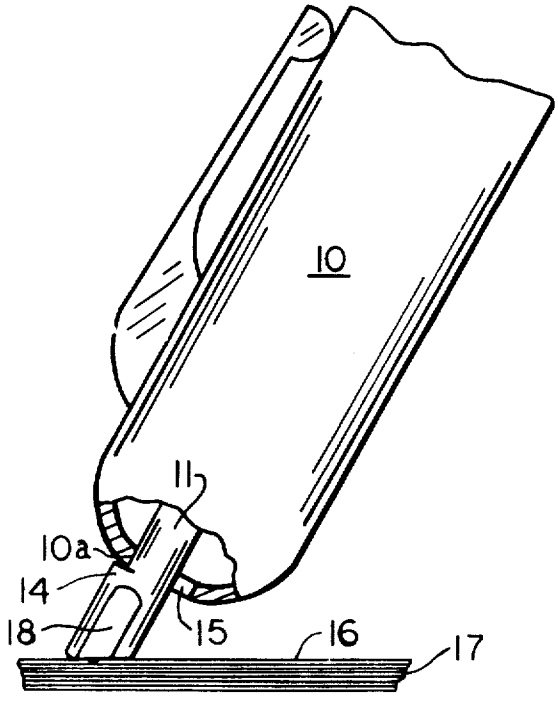
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[57] **ABSTRACT**

A paper-cutting device comprises a blade-holding member having a gauging surface area that surrounds a blade protruding a distance limited to substantially the thickness of a sheet of paper to be cut. Penetration of the blade is thus limited to a single sheet of paper. Because of its very short extension from the gauging surface, the blade will not cut a soft yielding material such as the hand of the user. The blade-holding member may be part of or attached to an elongate article, such as a pen or pencil, which provides a manipulating handle and enables the device to be used with a straight-edge.

5 Claims, 6 Drawing Figures



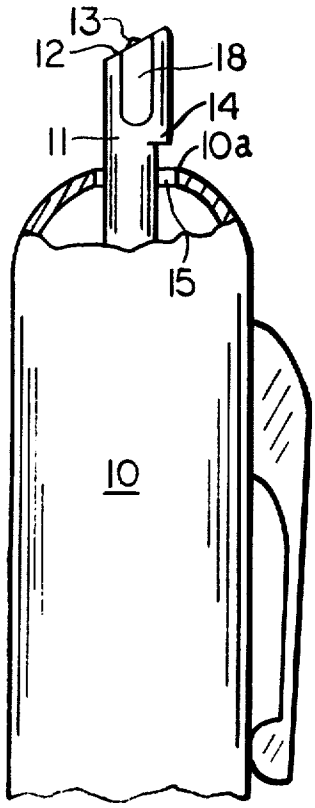


FIG. 1

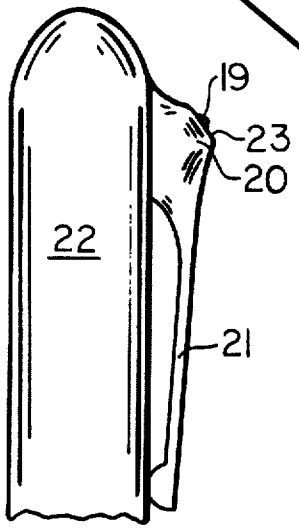


FIG. 4

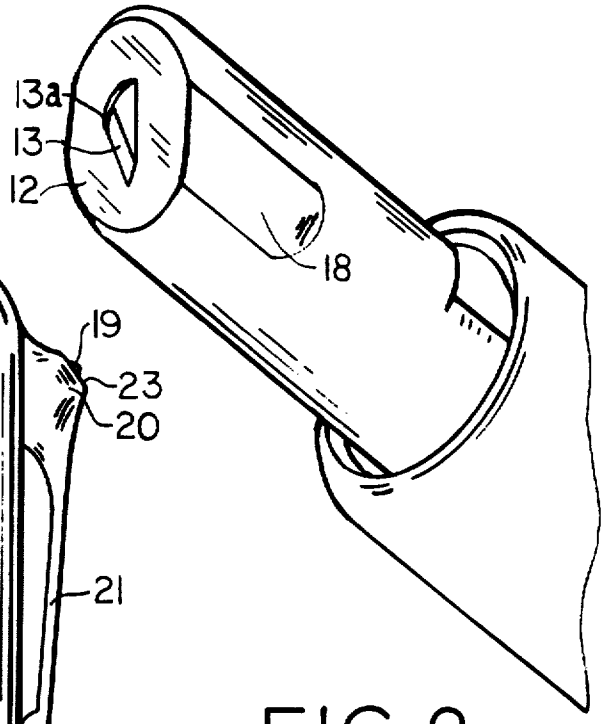


FIG. 2

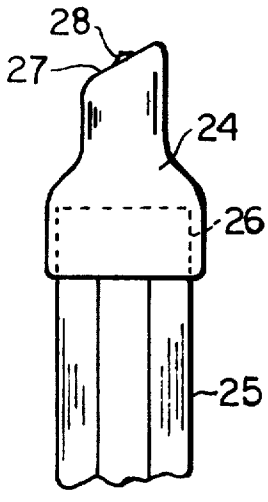


FIG. 5

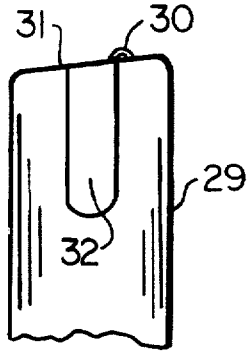


FIG. 6

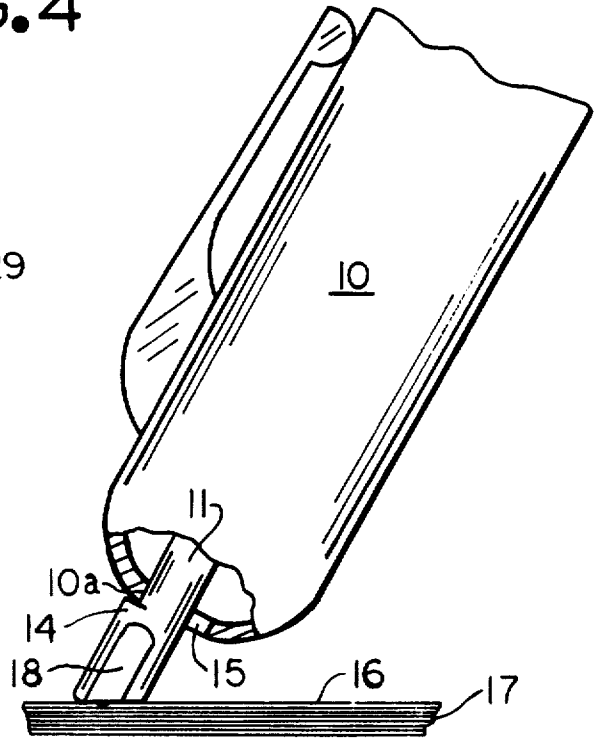


FIG. 3

SINGLE SHEET PAPER SLITTER

BACKGROUND OF THE INVENTION

1. Field

The invention is in the field of cutting devices, specifically those having a penetrating blade and a handle for grasping and manipulation.

2. State of the Art

Several cutting devices utilizing a single blade of slitting or slicing paper are known. One such device is disclosed in U.S. Pat. No. 3,249,091, and another is currently being marketed by the Eversharp Pen Company under the trademark "Clipit". With all these devices, the blade is pushed through the paper and then cuts from underneath. The slitting or slicing action obtained is much the same as that of a knife used to slit envelopes open, slicing up from the bottom of a fold or a sheet to be slit.

SUMMARY OF THE INVENTION

According to the invention, a blade is fixedly secured in and protrudes a limited distance from a holding member having a surface area that surrounds the blade and serves as a gauge that limits blade penetration. The surface area is smooth and flat or gently curved. The holding member may be part or or attached to manipulating means, such as a pencil, pen or other elongate article facilitating use with a ruler or other straight-edge.

In use, the gauging surface is pressed flatwise against a sheet of paper to be cut, which must be on a firm flat surface, such as a stack of similar sheets. The blade penetrates the sheet to be cut, with the depth of cut being limited by the gauging surface.

Cutting of the paper is accomplished by drawing the device over the paper surface along the desired path while the blade penetrates the paper to the gauging surface and while the paper is supported by a firm support from underneath, for example, by the sheets under it in the stack of sheets. By limiting the extent of protrusion of the blade from the gauging surface, a single sheet of paper can be effectively cut. A protective cover for the blade when not in use is not necessary, since a soft and yielding material, such as human skin and flesh, will be deflected around the blade and will not be cut.

THE DRAWING

Several embodiments representing the best mode presently contemplated of carrying out the invention are illustrated in the accompanying drawing, in which:

FIG. 1 is a fragmentary elevational view of the invention as incorporated in the pen-point-extending-and-retracting plunger of a ballpoint pen;

FIG. 2, a perspective view of the same looking from above;

FIG. 3, a view similar to that of FIG. 1 but showing the device being used to slit a single sheet of paper on a stack of such sheets;

FIG. 4, a fragmentary elevational view of a writing instrument, with the device of the invention incorporated as a part of the usual attaching clip secured to the closure cap of such instrument;

FIG. 5, a similar view of the invention as embodied in a cap for attachment to the end of an ordinary pencil or the like; and

FIG. 6, a similar view of the invention as embodied in the end of a rod-like manipulating handle, the blade here being arcuate rather than pointed.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

In the embodiment shown in FIGS. 1–3, a paper-cutting device according to this invention is incorporated in a mechanical ballpoint pen **10** at the exposed, manipulating end of a plunger **11** provided for extending and retracting the writing point at the opposite end of the pen. The end surface **12** of the plunger is preferably flat and smooth and surrounds an extremely short blade **13** as a gauging surface for such blade, limiting its penetration. Blade **13** projects outwardly from gauging surface **12** a distance substantially equal to the thickness of a sheet of paper to be cut, e.g. within a range of about 4 to 25 mils. For general use in the cutting of newsprint or writing paper, a projection of about 9 mils in optimum.

In the operation of axial-feed pens such as shown in FIGS. 1–3, the plunger is depressed to extend the pen point to its operable position, and is again depressed to retract the pen point. When pressure is applied to the manipulating end of the plunger, such plunger moves coaxially into the pen body.

For purposes of the present invention, plunger **11** must be capable of exerting sufficient pressure to force blade **13** through the paper being cut. The plunger of a normal ballpoint pen is capable of exerting such pressure only when depressed to its ultimate degree of movement, which causes extension or retraction of the pen point as the case may be.

In the embodiment shown in FIGS. 1–3, there is provided means for developing sufficient pressure on plunger **11** for utilizing the cutting capacity of blade **13**, without depressing plunger **11** sufficiently to extend or retract the pen point. For this purpose, plunger **11** has an offset **14** arranged to abut against the marginal lip **10***a* of opening **15** in the body of pen **10** when the plunger is pressed sidewardly toward such offset. To accomplish this automatically, end surface **12** of plunger **11** is placed at an angle to the longitudinal axis of the pen such that an appropriate side thrust is imparted to plunger **11** and offset **14** thereof engages lip **10***a* when surface **12** is pressed against the paper to be cut, see FIG. 3. With offset **14** engaging lip **10***a*, plunger **11** is prevented from movement into the body of the pen **10**, and sufficient pressure can be applied to plunger **11** to force blade **13** through a sheet of paper **16** on a stack **17** without depressing the plunger sufficiently into pen **10** to extend or retract the ballpoint at the other end thereof. When the pen is used for writing, plunger **11** can easily be depressed axially, so that offset **14** does not engage lip **10***a*.

Flat surfaces **18**, formed laterally of and parallel with blade **13** on plunger **11**, enable the user to properly orient the implement for cutting along a desired line and enable it to be used effectively with a ruler or other straight-edge. A single such surface could be used.

Blade **13** may be secured in the end of plunger **11** in any suitable manner. For example, a receiving recess may be provided in guaging surface **12** and an adhesive such as an epoxy resin used to hold the received base portion of blade **13** tightly in place.

In the embodiment of FIG. 4 a blade **19**, corresponding to **13** in FIGS. 1–3, is secured in a base **20** that rises

from the attaching clip **21** on the cap **22** of a fountain pen or mechanical pencil and provides a gauging surface **23.**

In the embodiment of FIG. **5,** the device is in the form of a cap **24** for an ordinary pencil or the like **25** having an end adapted to fit into the receiving recess **26** of the cap. Gauging surface **27** is preferably sloped as illustrated with respect to the longitudinal axis of the cap, to make convenience in use of the blade **28** that protrudes therefrom.

The cutting device of this invention can also be provided at one end of a rod **29** or other member serving as a manipulating handle, see FIG. **6.** A blade **30,** here shown as arcuate in configuration, protrudes from gauging surface **31** at the end of the rod similarly to the blades **13, 19,** and **28** of the foregoing embodiments. Here surface **31** is slightly curved, as indicated. Flat surfaces **32** may be provided as in FIGS. **1–3.**

In all embodiments of the invention, the blade can be generally triangular in shape, as shown in FIGS. **1–5,** having its leading edge sharpened and terminating in a point, as at **13***a*, which is advantageously blunted somewhat as indicated in FIG. **2.** The blade can be of various shapes so long as it will penetrate and cut a sheet of paper under pressure of use. Thus, the arcuate shape of blade **30** in FIG. **6** is quite satisfactory.

In all instances, it is preferred that the blade be from stainless steel, but it can be made from any material which will hold a sharp knife edge.

The gauging surface of the various forms of the device must have a substantially smooth surface which is also substantially flat to provide for proper sliding of the device over the paper which is being cut. Such surface should also have rounded shoulders about its periphery to facilitate sliding over paper surfaces.

A novel feature of the device of the invention, as mentioned previously, is that it is completely safe and will not cut the skin of the operator. By virtue of the very small protrusion of the blade and the surrounding of the blade with a gauging surface, such blade will not penetrate a person's skin, or similar yielding surface. This novel feature makes it safe to incorporate the cutting device into the end of the feed plunger of an axial-feed ballpoint pen, as shown in FIGS. **1–3.**

With proper use, the paper cutting device of this invention cuts only one sheet of paper at a time, no matter how many sheets of paper are beneath the one being cut. Because of this novel feature, the device can be conveniently used to open letters. The device is drawn directly over the envelope, and, because the cutter only cuts one thickness of paper, the sheets enclosed in the envelope are not damaged.

The size of the gauging surface is significant in the combination, as well as the distance the blade protrudes from such surface. Thus, the area of the gauging surface should be within the range of from about one two-hundred fiftieth of a square inch to about one-sixteenth of a square inch and, as previously stated, the distance of protrusion of the blade from the guaging surface should be within the range of about 4 mils to about 25 mils.

When the invention is incorporated in an axial-feed ballpoint pen as shown in FIGS. **1–3,** the blade **13** should not protrude from surface **12** more than 15 mils.

Whereas this invention is here described and illustrated with respect to certain forms thereof, it is to be understood that many variations within the scope of the following claims are possible.

What is claimed is:

1. A writing instrument device for cutting a single sheet of paper at a time without danger of cutting the user, comprising a ballpoint pen having an elongate pen body, and a manually-depressible plunger extending axially of said pen body, with an exposed end of said plunger projecting through an opening in an end of said pen body and surrounded by a lip defining said opening, for extending and retracting a ballpoint at the other end of the pen body, said exposed end of the plunger serving as a blade-holding member and having a gauging surface adapted to be pressed flatwise against and drawn across a sheet of paper to be cut; and a blade fixedly secured in and having a cutting edge sloping down to and terminating at said surface and protruding therefrom a distance substantially equal to the thickness of a sheet of paper to be cut, said surface having an area flanking said blade and sufficient in extent to serve as a gauge that limits penetration of said blade to a single sheet of paper and prevents penetration of said blade into the skin of a user when said plunger is finger-operated to extend or retract the ballpoint.

2. A device in accordance with claim **1,** wherein the plunger is provided with a lateral offset adapted to engage the lip of the opening when the plunger is pressed laterally during a cutting operation.

3. A device in accordance with claim **1,** wherein the blade-holding member is provided with at least one flat area laterally of and angularly disposed with respect to the gauging surface such that it provides a guide in properly orienting the device and in using it with a straight-edge.

4. A device in accordance with claim **1,** wherein the blade protrudes from the gauging surface a distance within the range of about 4 to about 25 mils.

5. A device in accordance with claim **4,** wherein the gauging surface has an area within the range of about one two-hundred fiftieth to about one-sixteenthh of a square inch.

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