

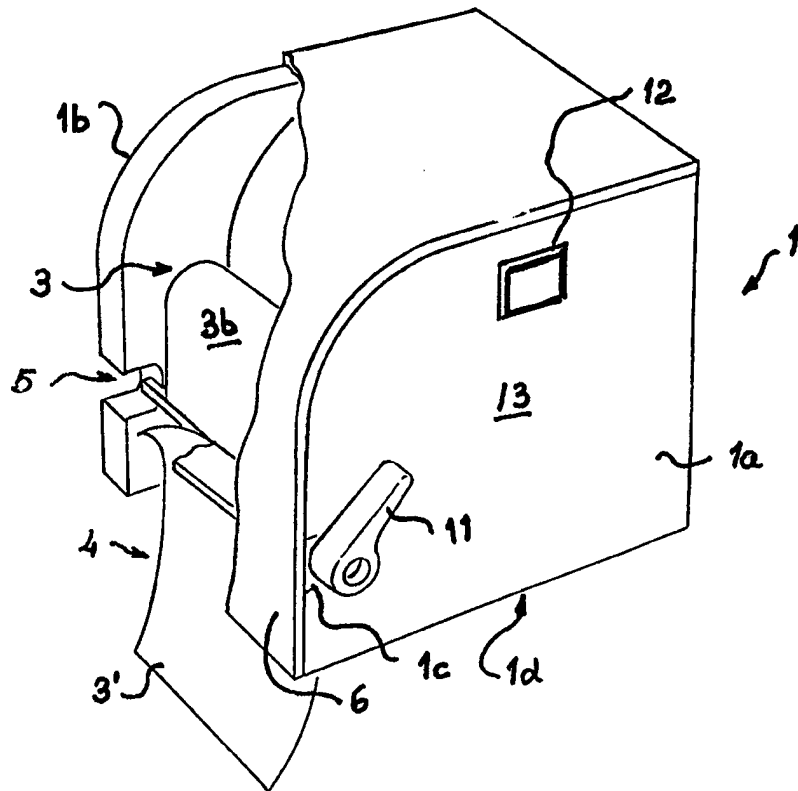
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<p>(21) International Application Number: PCT/SE98/00815 (22) International Filing Date: 4 May 1998 (04.05.98) (30) Priority Data: 9702017-6 28 May 1997 (28.05.97) SE (71)(72) Applicant and Inventor: SVENSSON, Karl, Gunnar [SE/SE]; Ekenhillsvägen 5E, S-632 39 Eskilstuna (SE). (74) Agent: LINDBLOM, Erik, J.; Flotthamn, S-150 23 Enhörna (SE).</p>	<p>(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, ES, FI, FI (Utility model), GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Swedish).</i></p>	

(54) Title: DEVICE FOR REMOVING ONE OR MORE PAPER SECTIONS FROM A REELED PAPER WEB

(57) Abstract

The invention relates to a device (1) for removing one or more paper sections (3') from a paper web which is rotatable about a rotary shaft and rolled-up preferably around a bobbin, while using to this end an edge surface which functions as a tear edge or as a web cutting means and which forms part of a lid or cover (6). A rotatable counter pressure roller (8) is mounted adjacent said edge surface (5) and within or beneath the lid or cover (6), such that part of the peripheral surface of said counter pressure roller will lie against the paper web (3). The device includes a driven feed roller (7) which functions to rotate the counter pressure roller (8), so as to feed a paper section (3') past the edge surface (5). The counter pressure roller (8) is arranged to lie against the paper web under pressure from spring means. The counter pressure roller (8) is carried by a front cover part (6), which also carries beneath said counter pressure roller one part (21), a cutting blade, of a shears-like cutting arrangement (20).



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10 **TITLE OF THE INVENTION:** Device for removing one or more paper sections from a reeled paper web.

FIELD OF INVENTION

15 The present invention relates to a device by means of which one or more paper web sections can be removed from a paper web which is mounted for rotation about an axis or centre rod and normally wound around a bobbin, while using an edge surface that functions as a tear edge or cutting edge.

20

A device of this kind can be used advantageously as a holder for toilet paper rolls, kitchen paper rolls and the like, and has been developed primarily as an aid for disabled and handicapped persons.

25

More specifically, the inventive device may include an electrically powered paper-web outfeed roller which is actuated through the medium of an electric contact.

30 **BACKGROUND OF THE INVENTION**

Various different designs of devices of the aforescribed kind are known to the art, with which one or more paper web sections of mutually different lengths can be removed from a paper roll manually, by gripping the free end of the paper roll and pulling in a direction away from a roll holder, so as
35 to cause the roll to rotate about a centre axis or a about a

centre rod or core and therewith pull-out a paper-web section, which is then torn-off with the aid of a tear edge incorporated in the lid of the roll holding means.

5 The lid, or cover, extends slightly over the paper roll.

Thus, several different kinds of devices of the abovedescribed kind and also devices with which the paper web is unwound electrically are known to the art. The following patent publi-
10 cations disclose examples of the present state of the art.

US-A-4,579,267

This publication teaches a device for removing one or more
15 sections from a paper roll and refers to a special paper-web cutting arrangement.

Paper is advanced from a paper roll (8) by means of at least one web advancing means (11, 14, 15), to an outfeed position
20 (17) at which the web can be cut-off.

A web guiding part (16) is positioned downstream of the web advancing means (11, 14, 15) and functions to change the movement direction of the web (4), so that the web can be directed
25 towards said position (17).

The arrangement includes a fixed cutting blade (18) downstream of the web guiding means (16). The cutting blade faces away from the outfeed position (17) and towards the web guiding
30 means (16), with the cutting edge of the blade defining an acute angle with the web guiding means (16).

FR-A1-2 533 124

35 This publication teaches a device with which mutually opposing rollers are adapted to feed a paper web from a paper roll and with which a separate web-cutting arrangement (14) is used.

This publication teaches a device that includes an electrical-
5 ly powered outfeed roller for dispensing toilet seat covers.

SE-A-363 970

This publication teaches a control means for intermittent
10 feeding of a paper-web length from an outfeed device, in which
a cutting blade is mounted for movement between an inactive,
rest position and a tear-off position. A pivotal slide (140)
is provided with a cutting blade (145) and can be moved in
response to tear-off pressure from the tear-off position
15 against a yieldable device to a set position in which an operating
lever (170) comes into abutment with a camming element
(162) and closes an electric switch (190), which causes the
cam wheel (160) to rotate and therewith advance a further,
predetermined length of paper from the outfeed device. The cam
20 wheel (160) includes a second camming element (163) which
functions to close a stop switch (185) after the cam wheel
(160) has rotated through a predetermined angle, and which
also enables the lever (170) to move to its set position for
opening the switches (190, 185) in sequence.

25

SUMMARY OF THE INVENTION

TECHNICAL PROBLEMS

30 When taking into consideration the technical deliberations
that must be made by a person skilled in this particular art
in order to provide a solution to one or more technical prob-
lems that he/she encounters, it will be seen that on the one
hand it is necessary initially to realise the measures and/or
35 the sequence of measures that must be undertaken to this end,
and on the other hand to realise which means is/are required
in solving one or more of said problems. On this basis, it

will be evident that the technical problems listed below are highly relevant to the development of the present invention.

A study of the present state of the art as described above
5 will reveal that a technical problem resides in the ability to provide a simple device of the aforesaid kind that is particularly adapted for use by disabled and handicapped persons, by enabling the core of an empty paper roll to be readily replaced with a full paper roll and by enabling a leading section
10 of the paper roll to be easily advanced past a feed roller.

It will also be seen that a technical problem resides in realising the significance of using a simple device whose function
15 and construction will provide a paper saving facility.

It will also be seen that a technical problem is one of providing a web advancing function by means of which one or more sections of the web can be advanced and which enables an advanced paper-web section to be easily gripped and torn-off.
20

Another technical problem in the present context resides in realising the significance of providing an effective web advancing function that will be effective even if the front tear
25 edge of a paper section should be located slightly beneath a tear edge or tear surface or a shears-like cutting arrangement mounted on the lid or cover of the roll holder.

It will also be seen that a technical problem resides in providing a device of the aforesaid kind that includes a simple
30 web-section advancing facility and which can be manoeuvred and released for the replacement of an empty paper roll with a full paper roll solely with one hand.

It will also be seen that a technical problem resides in realising the significance of using a rotatable feed roller which
35 is adapted to the aforesaid technical application and which

enables a paper-web section to be readily advanced beyond a tear edge and/or beyond a part of a shears-like web cutting arrangement, and also to realise the significance of enabling a feed roller to be brought into abutment with the outer
5 surface of the paper web in response to an adapted pressure.

It will also be seen that a technical problem resides in realising the significance of including a feed roller that can be rotated by means of an electrically actuatable motor or like
10 means.

Another technical problem is one realising the significance of including opposite the feed roller a counter pressure roller (not driven) which can be urged into contact with the paper
15 web with the aid of a spring arrangement acting against a front lid-part, and also to realise the significance of providing the peripheral surface of the feed roller and/or the peripheral surface of the counter pressure roller with a high friction surface.

20 Another technical problem is one realising the significance of providing the shaft and/or the feed roller with a larger diameter in its central region than in the region of its ends, with the intention of centring the outfeed of paper sections
25 from the paper roll.

Another technical problem is one of realising that the drive means required to drive a feed roller, such as an electric motor, can be located within or adjacent to a side member, or
30 that the drive motor can be positioned centrally in a tubular section that supports the feed roller.

Another technical problem resides in realising that when the device is battery powered, the requisite batteries can be
35 placed in the side part and/or in said shaft, centre rod or tubular section.

It will also be seen that a technical problem is one of realising the significance of rotatably mounting the shaft and/or the centre rod on the side member or side members.

- 5 It will also be seen that a technical problem resides in realising the significance of providing electric circuits which will cause a feed roller to feed web sections of mutually equal lengths singly from a paper roll.
- 10 Another technical problem is one realising the significance of and the advantages associated with forming an easily removed lid as a front surface and attaching a web-advancing counter pressure roller to the lid with the aid of springs, and to pivotally mounting on the lid a cutting edge that forms part
- 15 of a shears-like web cutting arrangement, and to mount a corresponding counter-cutting edge on said holder.

- It will also be seen that a technical problem resides in providing a sprung attachment for and guided movement of said
- 20 counter-cutting edge with the aid of simple means.

- Another technical problem is one of providing conditions with the aid of simple means, whereby the counter-cutting edge can be caused to move to a position in which a paper section can
- 25 be freely advanced, by virtue of the positional setting of the cutting edge and by virtue of cutter-related camming discs, while allowing the counter-cutting edge to be pressed against the cutting edge by spring forces during a web cutting sequence.

- 30 In the case of a web cutting arrangement that includes a pivotal cutting edge and a reciprocatingly movable counter-cutting edge, a technical problem resides in providing conditions whereby a partially severed paper-web section will
- 35 remain attached to but easily torn from the remainder of the paper roll.

SOLUTION

The present invention is based on a device with which one or more paper-web sections can be removed from a paper roll which is preferably wound around a bobbin and can be rotated about an axis, while using the edge surface of a lid or cover part as a tear edge or cutting edge, and which includes a drivable feed roller for advancing the paper web.

10 In accordance with the present invention, a device of this kind includes a front lid or cover on which there is spring-mounted a counter pressure roller which is pressed against the driven feed roller and on which one part of a multi-part cutting arrangement is also attached.

15 According to further developments of the inventive device, said one part of the cutting arrangement is placed beneath the counter pressure roller and pivotally or rotatably attached to said front lid.

20 According to one embodiment, this part of the cutting arrangement is flat although slightly twisted, while a second flat part of the cutting arrangement has the form of a counter-cutting edge related to a bottom part.

25 According to one embodiment, the device includes a rotatable feed roller which is adapted so that part of its peripheral surface will lie against the paper web and can be rotated to feed a paper-web section beyond said cutting-edge surface or
30 said cutter arrangement, said feed roller being intended to lie against the paper web under pressure.

It is also suggested in accordance with further embodiments of the invention that the feed roller shall be rotatable through
35 the medium of an electrically operatable motor or like means.

It is also suggested that the counter pressure roller shall be pressed against the paper web and the feed roller with the aid of a spring unit acting on said lid part.

5 It is also proposed in accordance with the invention that the peripheral surface of the feed roller has a high friction surface, and that said rotary shaft and/or said feed roller have a larger diameter within their/its central region than in their/its end regions/region.

10

It is also proposed that the device will include a side member and that the rotary shaft and the feed roller are rotatably mounted on said side member and that a recess or aperture is provided for accommodating an operating device.

15

Alternatively, however, the drive motor may be placed in the actual feed roller.

20 The feed roller may be battery powered, in which case the necessary batteries may be placed in or adjacent said side part and/or in said rotary shaft or centre rod.

The rotary shaft or centre rod may be rotatably mounted on the side members.

25

In accordance with one embodiment, the device includes electric circuits whereby the feed roller can be caused to advance paper-web sections of mutually equal lengths.

30 It is also proposed that the counter-cutting edge that forms part of the web cutting arrangement is spring mounted for movement away from and towards the cutting edge.

35 It is also proposed that the counter-cutting-edge can be moved to a position in which the paper web can be freely advanced, through the medium of cutter-related camming discs and by virtue of the positional setting of the cutting edge, and that

the counter-cutting-edge is arranged to be pressed against the cutting edge under a spring force during a web cutting sequence.

- 5 It is also proposed that the web cutting arrangement is adapted to make one or more cuts in the web during a web cutting sequence, so as to partially separate a paper-web section from the paper web, where the cuts thus made are disposed so that said paper-web section while remaining attached to the paper
10 roll can be easily torn therefrom.

ADVANTAGES

Those advantages that can be considered primarily characteristic of an inventive device reside in the provision of
15 conditions that will enable one or more paper-web sections to be removed from a rotatably mounted paper roll, said device being particularly suitable for use by disabled persons.

- 20 The device also enables sections of the paper web, or paper roll, to be advanced in adapted lengths, through the medium of electric circuits or like means.

The device also enables an empty paper roll to be replaced
25 with a full paper roll, by simply removing the front piece of the container and allowing the outermost part of said front piece to drop down and thereafter place the front piece in position so that it will contain a counter pressure roller that acts under spring pressure and that presses the paper web against the feed roller, wherewith one part of a web cutting
30 arrangement is brought to a position adjacent its corresponding other part.

The primary characteristic features of an inventive device are set forth in the characterising clause of the following Claim 1.

5

BRIEF DESCRIPTION OF THE DRAWINGS

So that the invention will be more readily understood and further features thereof made apparent, the invention will now be described in more detail with reference to embodiments at present preferred and also with reference to the accompanying drawings, in which

15 Figure 1 illustrates in perspective and partly in section a device in which a paper roll has been placed, with the paper being shown partly withdrawn;

20 Figure 2 illustrates in perspective a cover-related front piece on which there is mounted a spring-loaded counter pressure roller and one part of a shears-like web cutting arrangement;

25 Figure 3 illustrates the embodiment of Figure 1 in another perspective with the cover part or the front piece removed and without the paper roll, and shows a spring actuated counter-cutting edge that forms part of said shears-like cutting arrangement; and

30

Figure 4 is a sectioned side view of the device shown in Figure 1.

DETAILED DESCRIPTION OF EMBODIMENTS AT PRESENT PREFERRED

35

Illustrated in the drawings, and particularly in Figure 1 is a device 1 which is constructed to enable one or more sections

3' to be removed from a paper web 3 rolled-up about a rod 2 and rotatable about a rotary shaft 2.

In the illustrated case, the paper web 3 is wound-up around a centrally positioned bobbin 3a.

One or more sections 3' of the paper web can thus be dispensed from the paper roll 3 to a desired length. A paper-web section 4 (3') is torn-off with the aid of an edge surface 5 of a lid or cover part 6, said edge surface functioning as a tear edge. The tear edge 5 extends through a distance "a" beneath the attachment of the paper roll 3 between two clamping rollers 7, 8.

Mounted within the cover part 6 and adjacent the tear edge 5 is a rotatable and drivable counter pressure roller 8 and a drivable feed roller 7 for advancing the paper web.

The outer peripheral part 7a of the feed roller 7 is intended to lie against the paper web 3. The feed roller 7 is rotatable and can be driven intermittently so as to feed one or more paper-web sections (4) 3' past the tear edge surface 5.

The peripheral surface of the counter pressure roller 8 is pressed against the paper web by two spring devices 9, 9' in the region 3b and engagement line 3", and acts on the feed roller 7, which is fixed in relation to the holder.

This pressure should normally exceed 1 kp but need not exceed 10 kp in normal cases. A suitable value in this respect is between 5 and 8 kp and will depend on the outer surface of the roller 7 and the surface of the paper web.

According to the invention, the feed roller 7 shall be rotatable and drivable via a web advancing arrangement. Such an arrangement could include a mechanical spring arrangement

or the like that can be actuated by means of an operating lever 11.

5 In the case of the illustrated embodiment, the web advancing arrangement is driven by an electrically actuatable motor.

This electric motor is not shown in the drawings, but may either be placed in or attached to a side member 1a and may rotate the feed roller 7 with the aid of bevel gear. The motor
10 may alternatively be incorporated in the roller 7.

The tear edge surface 5 shall be located at an adapted distance "a" beneath the engagement line 3" of the paper web relative to the feed roller 7, regardless of the diametrical
15 size of the paper roll 3. This criterion places special requirements on the position of the feed roller 7 relative to a cover pivot axis 10 or the like.

The bobbin 3a or the paper roll 3 shall have an inner diameter
20 such as to surround the aforesaid rod or centre rod 2 with a small clearance therebetween, e.g. a clearance of 2-5 mm. The centre rod 2 may be attached to the side member 1a or to the side member 1b so as to be removable therefrom.

25 The peripheral surface 7a of the feed roller 7 may be provided with a high friction surface or machined to present such a surface, such as with the aid of a knurling tool or rubber rings.

30 The rotary shaft 2 and/or the feed roller 7 may conveniently have a larger diameter within their central regions than within the end regions thereof, with a difference in diameter of between 1 and 5 mm.

35 The inventive device builds on the use of a holder that includes two side members 1a, 1b. As before indicated, the rod 2 is fixed to one of these side members and the side member 1a is

provided with a recess 1c for accommodating a device 11 for operating a shears-like web cutting arrangement 20.

5 The illustrated device also includes a further operating device 12 in the form of an electric switch which, when switched-on, activates driving of the feed roller 7 so as to dispense a paper-web section 3', preferably with the aid of a circuit which dispenses sections 3' of constant lengths or in lengths which correspond to the time in which the switch 12 or corresponding electric contact is kept activated.
10

Alternatively, the device may include a timing circuit or the like which when the electric contact 12 is activated causes the feed roller to dispense a paper-web section of predetermined length.
15

When the device is constructed for battery operation, at least the side member 1a may be conveniently constructed to accommodate the batteries or to also accommodate in addition to said batteries other electrical devices required to drive the feed roller 7 in the aforescribed manner.
20

When the rod 2 is attached to only one side member 1a and is unable to rotate, it may be convenient to insert one or more batteries in the rod 2 and to provide the necessary openings and cover means in the side member 1a at reference 13.
25

The batteries may alternatively be housed in the feed roller 7, in a similar manner.
30

As previously indicated, a counter pressure roller 8 which presses against the driven feed roller 7 is mounted on the front cover or lid 6 via springs 9, 9'. One part of a shears-like web cutting arrangement 20 is also attached to said cover, said one part being referred to as the web cutting blade 21.
35

This part 21 of the web cutting arrangement 20 is positioned immediately beneath the counter pressure roller 8 and is rotatably mounted in the front cover 6.

5 The part 21 of said web cutting arrangement is generally flat, although slightly twisted about its longitudinal axis, as evident from Figure 2.

10 A second part of the web cutting arrangement 20, referred to as the counter-cutting blade 22, constitutes a bottom-related part and has a counter-cutting-edge 22a which is adapted to coact with the cutting edge 21a of the cutting blade 21.

15 The part 21 of the web cutting arrangement is rotatably mounted to the cover 6 and coacts with the operating device 11. This device may be spring biased towards the open position of the shears-like web cutting arrangement 20 (shown in Figure 4).

20 The counter-cutting blade 22 is mounted for reciprocating movement and can be moved to a position shown on the right in Figure 4 by means of a spring arrangement 19.

25 The spring arrangement 19 supports against a bottom-related stop 19a.

30 The cutting blade 21 co-acts with two side-related cam discs 30, 31 which function to press the counter-cutting blade 22 to a position in which the paper web is able to pass freely between the cutting blades 21 and 22, this position being shown to the left in the Figure.

35 At the beginning of a web cutting sequence, initiated by turning the operating device 11, the cam discs 30, 31 allow the cutting edge 22a of the counter-cutting blade 22 to be moved against the cutting edge 21a of the cutting blade 21 with a force determined by the springs 19, 19'.

The device also includes the facility of allowing the web section 3' cut by the web cutting arrangement 20 to remain fixed to the web but easily torn therefrom.

5

In this respect, the cam discs 30, 31 may be dimensioned so that the counter-cutting blade 21 will be moved towards the cutting blade 21 subsequent to the end-part of the cutting edge of said cutting blade having passed the counter-cutting blade 22 such as to leave a narrow tab uncut at one edge of the paper web.

The cam discs 30, 31 may also be dimensioned to press the counter-cutting blade 22 back from the cutting blade 21 before the end-part opposite the cutting edge of said cutting blade passes the counter-cutting blade 22 and therewith leave an uncut narrow tab at both edges of the paper web.

Alternatively, the length of the cutting edge 21a of the cutting blade 21 may be made shorter than the width of the paper web, so that one or more narrow tabs will remain uncut at both edges of the paper web.

The upper part 1c and the end wall part 1b of the container may be attached to the front cover part 6 and the resultant assembly may be displaceable relative to remaining container parts parallel with the bottom part 1d, therewith enabling the rotary shaft 10 to be omitted.

It will be understood that the invention is not restricted to the illustrated exemplifying embodiment thereof and that modifications can be made within the scope of the inventive concept illustrated in the following Claims.

CLAIMS

1. A device for removing one or more paper sections from a paper web which is mounted for rotation about an axis and normally wound around a bobbin, while using an edge surface that functions as a tear edge or as a cutting edge of a shears-like cutting arrangement, c h a r a c t e -
5 r i s e d by a front lid or cover which carries a spring-mounted counter pressure roller for pressure engagement with the driven feed roller, and which also carries one part of a
10 multi-part shears-like cutting arrangement.
2. A device according to Claim 1, c h a r a c t e -
r i s e d in that said one part, a cutting blade, of the
15 cutting arrangement, is placed beneath the counter pressure roller.
3. A device according to Claim 1, c h a r a c t e -
r i s e d in that said one part of the cutting arrangement
20 is rotatably mounted on said front part.
4. A device according to Claim 3, c h a r a c t e -
r i s e d in that said one part is twisted slightly about
its longitudinal axis.
25
5. A device according to Claim 1, c h a r a c t e -
r i s e d in that a second part of said shears-like
cutting arrangement is comprised of a counter-cutting blade.
- 30 6. A device according to Claim 1, c h a r a c t e -
r i s e d in that the device includes a rotatable feed
roller; in that part of the peripheral surface of said roller
lies against the paper web; in that the drive roller can be
rotated to feed a paper web section beyond said edge surface
35 or said cutting arrangement; and in that the web feeding
roller is arranged to lie against the paper web against a
counter pressure exerted by a counter pressure roller.

7. An arrangement according to Claim 1, c h a r a c -
t e r i s e d in that the feed roller is rotated via an
electrically activatable motor or the like.

5

8. A device according to Claim 1, c h a r a c t e -
r i s e d by a counter pressure roller which is pressed
against the paper web with the aid of a spring unit acting on
said lid or cover part.

10

9. A device according to Claim 1, c h a r a c t e -
r i s e d in that the peripheral surface of the feed
roller is provided with or machined to present a high friction
surface.

15

10. A device according to Claim 1, c h a r a c t e -
r i s e d in that the shaft and/or said feed roller has a
slightly larger diameter in its central region than at its
end-related regions.

20

11. A device according to Claim 1, c h a r a c t e -
r i s e d in that the shaft and said feed roller are
rotatably mounted on at least one side member, which includes
a cut-out for accommodating an operating device.

25

12. A device according to Claim 11, c h a r a c t e -
r i s e d in that a necessary drive means, such as an
electric motor, is placed within or attached to at least one
side member.

30

13. A device according to Claim 12, c h a r a c t e -
r i s e d in that the drive means is placed in the feed
roller and batteries are placed in said side member and/or in
said shaft or centre rod.

35

14. A device according to Claim 13, c h a r a c t e -
r i s e d in that said shaft or said centre rod is

attached to at least one of said mutually opposing side members.

15. A device according to Claim 1, c h a r a c t e -
5 r i s e d by electric circuits which cause the feed roller to advance an adapted length of a paper-web section.

16. A device according to Claim 2 or Claim 5, c h a r -
a c t e r i s e d in that the counter-cutting blade of
10 said shears-like cutting arrangement is resiliently mounted for movement away from and towards the cutting blade of said arrangement.

17. A device according to Claim 16, c h a r a c t e -
15 r i s e d in that the cutting blade is able to take a position in which the paper web can be advanced freely, by means of cam discs related to said cutting blade and by virtue of the positional setting of said cutting blade; and in that
20 the counter-cutting blade is arranged to be pressed against the cutting blade by spring forces, or vice versa, during a web cutting sequence.

18. A device according to Claim 16, c h a r a c t e -
r i s e d in that the shears-like cutting arrangement is
25 adapted to make one or more cuts so as to partially separate an advanced paper-web section from the remainder of the roll, such that said paper-web section will remain attached to but is readily tornable from said paper roll.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00815

A. CLASSIFICATION OF SUBJECT MATTER				
IPC6: A47K 10/36 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)				
IPC6: A47K				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
SE,DK,FI,NO classes as above				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
WPI				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	CH 416002 A (NEUCO APPARATEBAU AG), 13 January 1967 (13.01.67), page 1, line 70 - line 72, figure 1	1-6,8-11		
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X	SE 363970 B (STEINER CO.), 11 February 1974 (11.02.74), page 3 - page 8, figures 1-2	1-9,11-15		
Y	US 4765555 A (J.J. GAMBINO), 23 August 1988 (23.08.88), figures 1-2, abstract	7,12-18		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents: <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search		Date of mailing of the international search report		
18 Sept 1998		25-09-1998		
Name and mailing address of the ISA: Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer Paul Winblad Telephone No. +46 8 782 25 00		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00815

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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X	US 3297269 A (E.F. MCGREW), 10 January 1967 (10.01.67) --	7,12-15
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X	US 4192442 A (L.J. BASTIAN ET AL), 11 March 1980 (11.03.80), figures 1-3, abstract --	1,6,8-11
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A	US 5001952 A (S. MYOGADANI), 26 March 1991 (26.03.91), figure 1, abstract -- -----	3-4

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Information on patent family members

27/07/98

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