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(71) Applicants:
• **LMO Holding, Esbjerg Aps
6700 Esbjerg (DK)**

• **RSN Holding, Esbjerg Aps
6700 Esbjerg (DK)**

(72) Inventors:
• **Nielsen, Ronni Steen
6731, Tjæreborg (DK)**
• **Olsen, Lars Mose
6700, Esbjerg (DK)**

(74) Representative: **Gregersen, Niels Henrik
Patrade A/S
Fredens Torv 3A
8000 Aarhus C (DK)**

(54) **Apparatus for cutting of a web**

(57) The invention indicates an apparatus which may ensure that cutting of the web (2) occurs under good ergonomic conditions causes a saving of time and contributes to less waste than by the prior art. This is achieved by an apparatus (1) which is peculiar in that the apparatus has a winding shaft (6), and that the winding shaft (6) is provided with drive means (7) for rotating the winding shaft (6). Hereby is ensured that the web material (2) can be rolled up simultaneously with measurement. This means that the prior art method of measuring with an

inch rule is made unnecessary.

By in this way rolling up the web, transport of the measured and cut off section to the building site is made easier. Moreover, such an exact cutting is enabled that the web (2) does not have to be adapted/cut any more after building into a construction. Thereby the well-known waste is avoided and the time previously used on extra cutting and clearing/disposing of the waste as well.

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Description

Field of the Invention

[0001] The present invention concerns an apparatus for cutting a web, preferably web material for use in connection with construction work, where the apparatus is provided with a storage space for rolled up web material, where the web has a free end and where the apparatus furthermore includes a trip counter for measuring the web.

Background of the Invention

[0002] In construction work it has been common to use different membranes in the building structure for optimising the tightness of the building construction against water and moisture/vapour, and tightness against air, particularly for preventing the heat in a building from being ventilated away to the surroundings through the building structure.

[0003] The membranes to be applied are often a web of material entirely or partly consisting of a thin layer of plastic or other resiliently flexible material with low penetration of air molecules and/or water molecules.

[0004] The technical terms for these types of web material may be vapour barrier and roofing underlay. The web material is most often delivered rolled up in rolls of e.g. 100 m or 200 m, why the web material most frequently has to be cut into proper lengths before fitting into the building construction.

[0005] This cutting work has hitherto occurred by rolling off the roll of web material, normally on a surface, measuring with an inch rule and cutting with a box cutter or similar. This occurs on a more or less plane base close to the building site - e.g. on a table of supports and boards. Alternatively, the web material may often be rolled out upon an unswept floor filled with more or less sharp remains from the building process with associated danger of puncturing the membrane/web material.

[0006] Irrespectively which of the above mentioned methods being applied, there are great disadvantages associated with the prior art methods. By rolling out upon a floor, besides the puncture risk there is a risk of back and knee loads on the craftsman associated with this ergonomically inferior prior art method.

[0007] If table space is to be provided at suitable working level for the cutting, this is often time-consuming and sometimes impossible due to the other building processes which often have to take place in a construction work that is often under time pressure. This cutting work may therefore be referred to take place in the outdoors with disadvantages related to changing weather being the consequence for the craftsman and for the web material.

[0008] The prior art method of cutting webs moreover has the inexpediency that the unrolled and cut web material then has to be manually folded or rolled up in order to be transported to the construction site. At the same

time, measuring with e.g. an inch rule and subsequent cutting in the entire width of the web is most often made by eye. In order not to allow cutting so skewly that the web material becomes too short, the craftsman often cuts on the large side, eventually adapting the length when the web material has been built into the construction. This provides a not insignificant number of handlings of the web material and a waste of redundant cut-off pieces of web which is also to be handled with the object of disposal.

Object of the Invention

[0009] The purpose of this invention is to indicate an apparatus which may ensure that cutting of the web will occur under better ergonomic conditions, cause a saving of time and contribute to less waste, such that the above drawbacks of the prior art are avoided.

Description of the Invention

[0010] According to the present invention, this object is achieved by an apparatus of the kind mentioned in the introduction, which is peculiar in that the apparatus furthermore has a winding shaft, where the winding shaft is provided with drive means for rotating the winding shaft.

[0011] In order that the apparatus can operate according to the intention, it may include a storage space for rolled up material, where the rolled up web has a free end, and where the apparatus furthermore includes a trip counter for measuring the web. The rolled up web material is delivered in various sizes of cylindric rolls which may be with or without a cylindric tube in the centre about which the web is rolled up. The web material may, as previously described, be of different character, as both vapour barrier, roofing underlay and all other flexible flat materials delivered in rolls may be arranged in the apparatus with the purpose of cutting. A rolled up web normally has a free end of the web material accessible at the outer side. Most often, this free end is fastened to the underlying web during transport of the roll, e.g. in that the roll is taped or wrapped with plastic or heat-shrinkable film. Before placing the web roll in the storage space of the apparatus intended for the roll of web material, the fastening at the end is removed such that the free end can be introduced in the apparatus.

[0012] The storage space may have different embodiments, e.g. a housing or a bearing, in which the web roll can rotate about its longitudinal axis, or in an embodiment where the web material can be placed on a shaft, and where the shaft is rotatably provided in the apparatus and with space for the roll of web material.

[0013] The trip counter may be of the type wherein a counter wheel, or possibly two or more synchronously rotating counter wheels, with a certain surface resistance along the periphery of the counter wheel is connected with a revolution counter which in turn is connected with a counter that may convert and display the given travel

of the periphery of the counter wheel to a current unit of measurement.

[0014] In that the apparatus furthermore has a winding shaft, and that the winding shaft is provided with drive means for rotating the winding shaft, it is ensured that the web can be rolled up simultaneously with measurement. This means that the prior art method of measuring with an inch rule, which is rarely long enough to measure the entire desired length of web material at once, is no longer necessary.

[0015] When the web material is rolled from the delivered roll of web material and to a winding shaft, the possibility of performing a more accurate cutting at right angles of the web is provided. This may be effected in that a rail is disposed in parallel with the winding shaft which can indicate the cut to be performed in the web.

[0016] By rolling up the web in this way, transport of the measured and cut off section to the building site is made easier. Moreover, a so exact cutting is enabled such that the web does not have to be adapted and cut any more after fitting. Thereby, the well-known waste is avoided as well as the time previously used on extra cutting and clearing/disposing of the waste.

[0017] In a preferred embodiment of the invention, the winding shaft may be provided with means for retaining at least part of the free end of the web material, where these means are provided with a recess, preferably a longitudinal slot, for introducing the web for rolling up on the winding shaft.

[0018] In order to be able to fasten the web material to the winding shaft it is achieved that the winding is easily effected, and without necessitating manual retention of the web, e.g. by a hand on the winding shaft, in order thereby to ensure that the web material will not slide around the shaft and thus not be rolled up as desired.

[0019] In a further preferred embodiment of the invention, the trip counter may be mounted between the storage space and the winding shaft and in contact with the web material between the storage space and the winding shaft.

[0020] By placing the trip counter as indicated, there is achieved the possibility of using a single trip counter, and the challenges of having to repair and possibly replace a trip counter integrated in the storage space for the web material or close to the winding shaft are thus avoided. A simple trip counter will be more reliable.

[0021] It may be a great advantage to make the apparatus such that the storage space for the rolled up web material includes an unwinding shaft on which the rolled up web material is arranged, as it is ensured thereby that unrolling from the storage may readily be effected and without any friction that may occur if the outer side of the web roll were to be pulled along a large surface in order to unwind the web.

[0022] In a particularly preferred embodiment of the invention, the drive means for rotating the winding shaft may be a crank handle.

[0023] This implies a simple design of the drive means

where movement performed by the crank handle is directly converted to movement of the roll. The craftsman using the apparatus may also be able to stop the winding action accurately and possibly roll slightly backwards if too much web material has been rolled up.

[0024] In a further variant of the said embodiment, the said crank handle may be connected to the winding shaft via a gear transmission.

[0025] This will provide the advantage that it is not necessary to turn the crank handle so much in order to achieve the desired number of revolutions of the shaft.

[0026] In an embodiment of the invention, the unwinding shaft and the winding shaft, respectively, may be rotatably and removably suspended by their end parts in a frame construction. That the unwinding shaft and the winding shaft are disposed in the said way in a frame construction ensures possibility of a stable apparatus, and thereby a stable winding and unwinding are ensured. If the apparatus is made stable in this way, it means a time-saving performance, which is accurate in measurement, of the work of cutting the web material.

[0027] In a particularly preferred embodiment, the frame construction may have two side members which via a number of intermediate pieces are secured at a distance.

[0028] A frame construction which in this way only has sufficient rigidity at the points where it is necessary will entail an apparatus provided with the greatest possible strength in relation to the weight. Such an optimised apparatus will weigh as little as possible, making it easy to move around on the construction site.

[0029] In a further, particularly preferred embodiment of the invention, the distance between the side members may substantially correspond to the distance between the end parts of the unwinding shaft and of the winding shaft.

[0030] This entails that the apparatus is as compact as possible, not taking up more space than needed. Thereby it is made relatively easy to move the apparatus around on a construction site, depending on need and expediency.

Description of the Drawing

[0031] The invention will be explained below with reference to the accompanying drawing, wherein:

Fig. 1 shows the apparatus as seen obliquely from above;

Fig. 2 is a view of the central part of the apparatus and one end, as seen from the side with the winding shaft.

Detailed Description of the Invention

[0032] Fig. 1 indicates how the apparatus 1 for cutting the web material 2 may be designed. The apparatus 1 is provided with a storage space 3 for rolled up web material

2, where the web 2 has a free end 4 and where the apparatus furthermore includes a trip counter 5 for measuring the web material 2. Moreover, the apparatus 1 has a winding shaft 6, where the winding shaft 6 is provided with drive means 7 for rotating the winding shaft 6.

[0033] The winding shaft 6 is provided with a longitudinal slot 8 for introducing and retaining part 9 of the free end 4 of the web 2.

[0034] The trip counter 5 is mounted between the storage space 3 and the winding shaft 6. The trip counter 5 is in contact with the web 2 in that two counter wheels 10 lean down against the web material 2 resulting from the self-weight of the trip counter 5. The storage space 3 for the rolled up web material 2 includes an unwinding shaft 11 on which the rolled up web material 2 is arranged.

[0035] The drive means 7 for rotating the winding shaft 6 is a crank handle 12. The crank handle 12 is connected with the winding shaft 6 via a gear transmission 13. The unwinding shaft 11 and the winding shaft 6 are rotatably and removably suspended by their respective end parts 14, 15 in a frame construction 16 at a side member 17. The counter wheels 10 of the trip counter 5 bear against an intermediate piece 18 where the intermediate piece 18 serves as support at the inner side 19 of the web material 2.

[0036] From Fig. 1 it furthermore appears that the unwinding shaft 11 and the winding shaft 6 are approximately of equal length.

[0037] The frame construction 16 has two side members 17 which via a number of intermediate pieces 18, 21 are secured at a distance 22.

[0038] The distance 22 between the side members 17 correspond to the distance 23 between the end parts 14, 15 of the unwinding shaft 11 and the winding shaft 6.

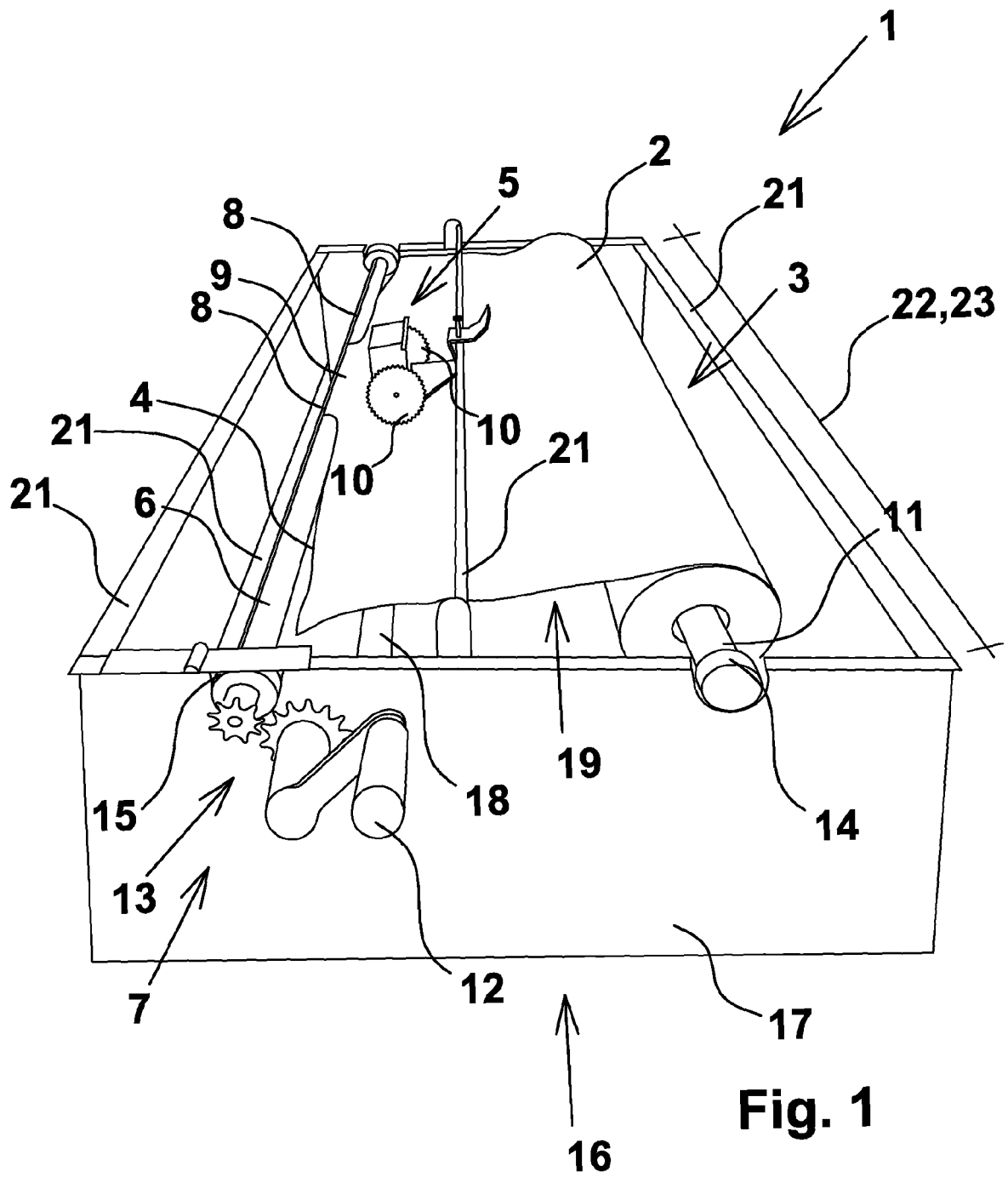
[0039] Fig. 2 shows how the trip counter 5 bears against an intermediate piece 18, which is part of the frame construction 16, with its counter wheels 10 before introducing the web 2. Thereby it is made clear how the given intermediate piece 18 serves as support at the inner side 19 of the web material, such that the web material 2 will not just go away from the counter wheels 10 during the measuring and thereby show a wrong measurement on the trip counter 5. The trip counter 5 is provided with a display 20 in which the number of metres, indicated with two decimals, measured by the counter wheels 10 appears.

with drive means for rotating the winding shaft.

2. Apparatus according to claim 1, **characterised in that** the winding shaft is provided with means for retaining at least part of the free end of the web material, where these means are provided with a recess, preferably a longitudinal slot, for introducing the web for rolling up on the winding shaft.
3. Apparatus according to any of claims 1-2, **characterised in that** the trip counter is mounted between the storage space and the winding shaft and in contact with the web material between the storage space and the winding shaft.
4. Apparatus according to any of claims 1-3, **characterised in that** the storage space for the rolled up web material includes an unwinding shaft upon which the rolled up web material is arranged.
5. Apparatus according to any of claims 1-4, **characterised in that** the drive means for rotating the winding shaft is a crank handle.
6. Apparatus according to claim 5, **characterised in that** the crank handle is connected with the winding shaft via a gear transmission.
7. Apparatus according to any of claims 1-6, **characterised in that** the unwinding shaft and the winding shaft, respectively, are rotatably and removably suspended by their end parts in a frame construction.
8. Apparatus according to claim 7, **characterised in that** the frame construction has two side members which via a number of intermediate pieces are secured at a distance.
9. Apparatus according to claim 8, **characterised in that** the distance between the side members substantially corresponds to the distance between the end parts of the unwinding shaft and of the winding shaft.

Claims

1. An apparatus for cutting a web, preferably web material for use in connection with construction work, where the apparatus is provided with a storage space for rolled up web material, where the web has a free end and where the apparatus furthermore includes a trip counter for measuring the web, **characterised in that** the apparatus furthermore has a winding shaft, and that the winding shaft is provided



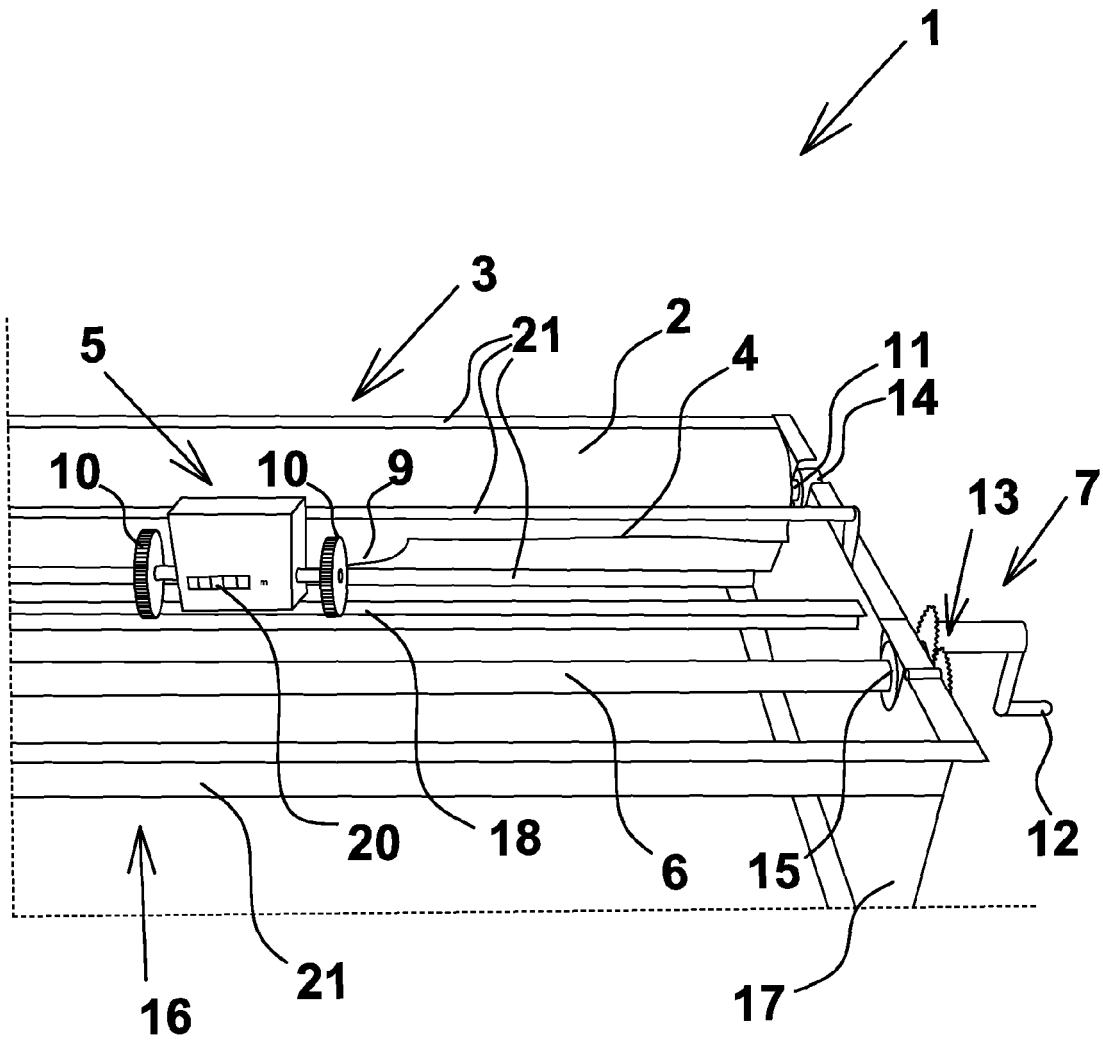


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 08 16 8308

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 525 509 A (PUGH WILLIAM J) 10 October 1950 (1950-10-10) * the whole document *	1-9	INV. E04D15/06 B65H35/00
X	US 3 132 820 A (TOLL RICHARD F) 12 May 1964 (1964-05-12) * the whole document *	1-9	
X	US 2 827 961 A (PUGH WILLIAM J) 25 March 1958 (1958-03-25) * the whole document *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65H E04D B26D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 March 2009	Examiner Jezierski, Krzysztof
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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02-03-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2525509	A	10-10-1950	NONE	

US 3132820	A	12-05-1964	NONE	

US 2827961	A	25-03-1958	NONE	
