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(54) **Apparatus for application of linerless labels**

(57) An apparatus (2) for application of linerless labels (12) onto packings or the like, comprising an unwinding system with a spring-loaded hub (4) for a supply roll (6) containing a number of pre-printed labels forming a linerless web (10) and a carrier roller in combination with a carrier member having an anti-stick profiled surface, a stationary cutting unit (16) for cutting said linerless web into individual labels (12), an outlet position from which said individual labels may be automatically applied onto packings or the like, an inclined carrier plate member (24, 36) with a central belt conveyor (26), and in said

outlet position an application roller or brush for said final application of said individual labels (12) on to said packings or the like, where said apparatus in connection with said carrier roller and said carrier member comprising a pivotally holding down arm member (34), and in connection with said central belt conveyor (26) comprising an acceleration roller (36) for taken over the final leading of said individual labels (12) to said outlet position. By simply provisions is hereby achieved an improved apparatus for the application of pre-printed linerless labels on to retail packings and the like.

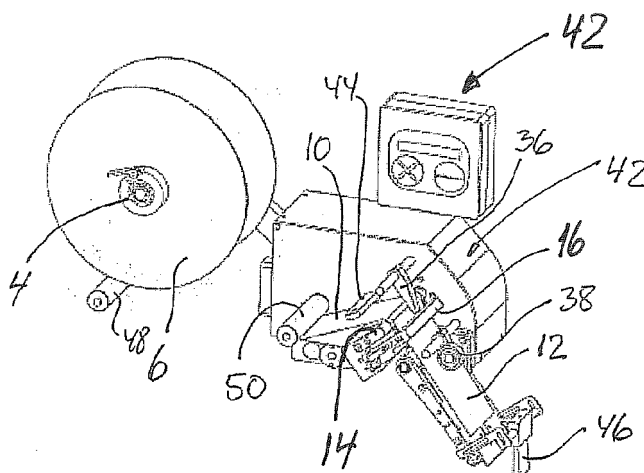


Fig. 3

Description

Field of the Invention

[0001] The present invention relates to the field of labels - on rolls - that are provided without separation liners (Backing Paper) function as a carrier for the labels and protection against its adhesive layer. Like linerless labels provided in roll form.

[0002] More specific the present invention relates to an apparatus for the application of linerless labels and of the type as indicated in the preamble of claim 1.

Background of the Invention

[0003] Labels which are not provided to commence - either to intermediate users or to end users - with liners over an adhesive face, referred to in the art as linerless labels, are less expensive than that of lined labels, more labels can be provided in a roll of a given diameter than conventional labels with release lines, and they are more environmentally friendly since they do not require the disposal of liners after use.

[0004] Linerless labels have also become increasingly more popular because of the many advantages associated therewith. When any type of labels - including linerless labels - are used, it also is necessary to be able to automatically print the labels in a cost-effective manner. One way this can readily be accomplished is by using a thermal printer having a thermal print head with a thermal ribbon unwind and rewind system, or a thermal printer with a direct thermal print head.

[0005] A variety of thermal printers are provided, which overcome this problem and are eminently suited for effective printing of linerless labels as by way of examples disclosed in US-A1-5,560,293 and US-A1-4,784,714.

[0006] Furthermore reference is made to EP-B1-1 687 207 issued to the applicant of the present application.

Purpose of the Invention

[0007] On this background it is the purpose of the present invention to provide an improved apparatus for application of linerless labels on to packings or the like.

Summary of the Invention

[0008] The apparatus according to the invention is characterised in that it in connection with said carrier roller and said carrier member comprising a pivotally holding down arm member, and in connection with said central belt conveyor comprising an acceleration roller for taken over the final leading of said individual labels to said outlet position.

[0009] By simply provisions is hereby achieved an improved apparatus for the application of pre-printed linerless labels on to retail packings and the like. Especial the adding of an acceleration roller to ensure at least a minimum distance between the individual labels and to ensure rapid final leading down the individual labels to said outlet position has shown a remarkable result in achieving a very significant increase of the capacity of the present label application apparatus.

[0010] By way of example the capacity of pre-printed backside labels having a length of 40-80 mm may be about 120 labels pr. min. - while the capacity of known application apparatuses comprising print head would only be some 20-30 labels pr. min.

[0011] Appropriately, the apparatus according to the invention is such provided, that said acceleration roller is pivotally mounted on a sideward projecting arm member in such a manner that the force of gravity acts on said acceleration roller.

[0012] The apparatus according to the invention may be such provided, that is comprises a printer such that an empty space of said pre-printed labels of said linerless web may be provided with individual after-printing such as dates, weight and the like.

[0013] In order to be able to increase the capacity it may be advantageously that the apparatus according to the invention being such provided, that it comprises an ad on unit in the form of a buffer interconnected between the outlet of said printer and the cutting device allowing the printer to print independently of a label application the apparatus.

[0014] And for supporting this possibility of in creasing the capacity the apparatus according to the invention may furthermore be such provided, that said printer being of a type which is able to print independently of the label application apparatus such that said printer can print continuously as the label application apparatus is applying linerless labels in a manner of run and stop.

[0015] In the following the invention is described in more detail reference being made to the accompanying drawing, in which:

Brief Description of the Drawing

[0015] In the following the invention is described in more detail reference being made to the accompanying drawing, in which:

Fig. 1 shows a perspective view of a prior art basic apparatus part of an apparatus of a type similar to that of an apparatus according to the invention,

Fig. 2 shows a perspective view of a prior art label applying apparatus part of a type similar to that of an apparatus according to the invention,

Fig. 3 shows a perspective view of an embodiment for an apparatus according to the invention,

Fig. 4 shows a plane view of the apparatus shown in Fig. 3 as seen from the side, and

Fig. 5 shows a plane view of the apparatus shown in Fig. 3 as seen from above.

Detailed Description of the Invention

[0016] A basic prior art apparatus part 2 shown in Fig. 1 forms the main part of most known apparatuses for the applying of linerless labels, and the basic apparatus part 2 inside a housing 3 comprises the necessary computerized control system for the printing and cutting of individual linerless labels as well as the necessary motor drives for the devices mentioned in the following. The basic prior art apparatus part 2 comprises a spring-loaded hub 4 for a supply roll 6 of a linerless web 10 being used for the forming of individual linerless labels 12 by means of a thermal print head 14 and a cutting unit 16.

[0017] The basic prior art apparatus part 2 have at the corners of an open end part 18 connection members 20, by means of which the basic apparatus part 2 may be connected to a prior art label applying apparatus part 22 (Fig. 2) comprising an inclined carrier plate member 24, at the centre of which an endless belt conveyor 26 is provided for carrying out an active conveyance of an individual linerless label 12 held against the belt conveyor 26 by means of a holding down arm member 28, which above the top end of the carrier plate member 24 is pivotally connected to a shaft arm 30 projecting laterally from a housing 32 of the prior art label applying apparatus part 22.

[0018] An embodiment of a label application apparatus 42 according to the present invention is shown in Figs. 3-5 in which items similar to that of the figs. 1-2 being provided with the same reference numerals.

[0019] In a not shown manner the linerless web from the supply roll 6 passes a lower tightening roller 48, a control roller 50 and a sensor 44 reading cutting marks at the glue side of the linerless web 10 for via the belonging computer control system to control the cutting operation of the cutting device 16.

[0020] After passing the carrier roller 34 and the holding down arm member 36 the linerless web 10 passes through the cutting device 16 by means of which the linerless web 10 is cut into individual labels 12, which afterwards by means of the acceleration roller 38 is accelerated in order to establish at least a minor distance between the individual labels 12.

[0021] Hereby is achieved that the individual labels 12 with a hitherto not known high speed are led to said outlet position for application on to packings and the like assisted by the brush 46 in "a high speed stream" of labels 12.

[0022] Normally the label application apparatus 42 according to the present invention is used for the application of pre-printed labels, that is without comprising a printing unit.

[0023] On the other hand it should be mentioned that the label application apparatus 42 may comprise a printer, situated just before the cutting device 16 such that it will be possible to provide even pre-printed labels with an after-printing consisting of dates, weight and the like.

[0024] In case of the apparatus comprises a printer the

label application apparatus 42 may be provided with an ad on unit as a buffer between the outlet of the printer and the inlet of the cutting device 16 such that the printer is able to print independently of the label application apparatus 42 or said printer can print continuously as the label application apparatus 42 is applying liner less labels in a manner of run and stop.

[0025] Reference numerals of the drawing

10	2	apparatus part
	3	housing
	4	spring-loaded hub
15	6	supply roll
	10	linerless web
20	12	individual labels
	14	thermal printing head
	16	cutting device
25	18	open end
	20	connection members
30	22	apparatus part
	24	inclined carrier plate
	26	endless belt conveyor
35	28	holding down arm member
	30	shaft arm member
40	32	housing
	34	carrier roller
	36	holding down arm member
45	38	acceleration roller
	40	sideward projecting arm member
50	42	label application apparatus
	44	sensor
	46	brush
55	48	tightening roller

Claims

1. An apparatus (42) for application of linerless labels (12) onto packings or the like, comprising an unwinding system with a spring-loaded hub (4) for a supply roll (6) containing a number of pre-printed labels forming a linerless web (10) and a carrier roller (34) having an anti-stick surface, a stationary cutting unit (16) for cutting said linerless web into individual labels (12), an outlet position from which said individual labels may be automatically applied onto packings or the like, an inclined carrier plate member (24) with a central belt conveyor (26), and in said outlet position an application roller or brush (46) for said final application of said individual labels (12) on to said packings or the like, **characterised in that** said apparatus in connection with said carrier roller (34) comprising a pivotally holding down arm member (36), and in connection with said central belt conveyor (26) comprising an acceleration roller (38) for taken over the final leading of said individual labels (12) to said outlet position.

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2. Apparatus according to claim 1, **characterised in, that** said acceleration roller (38) is pivotally mounted on a sideward projecting arm member (40) in such a manner that the force of gravity acts on said acceleration roller (38).

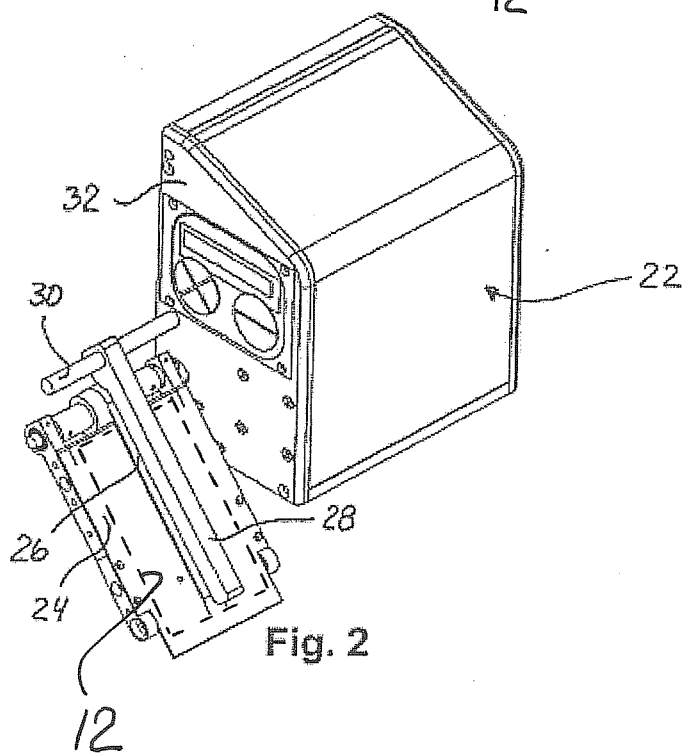
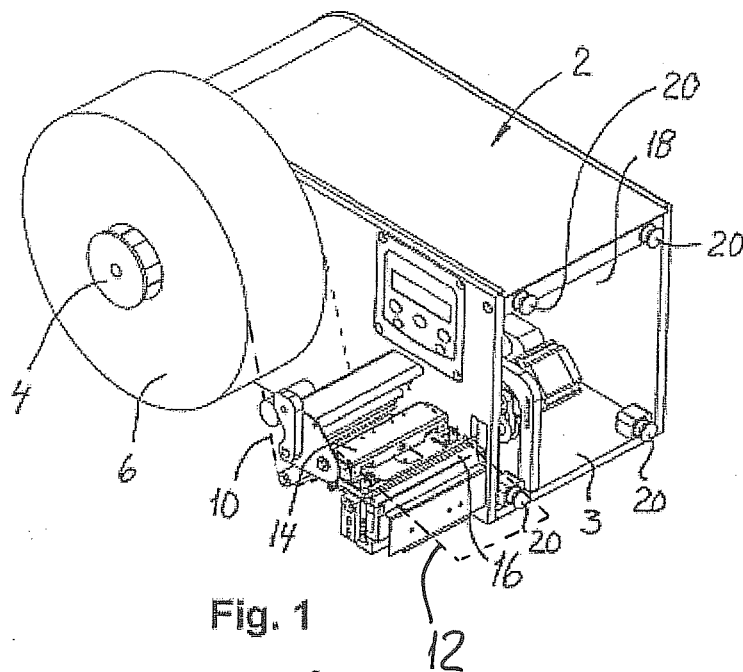
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3. Apparatus according to claim 1, **characterised in** comprising a printer (14) such that an empty space of said pre-printed labels of said linerless web (10) may be provided with individual after-printing such as dates and weight and the like.

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4. Apparatus according to claim 1 and 3, **characterised in that** it furthermore comprises an ad on unit in the form of a buffer connected between the outlet of said printer (14) and the cutting device (16) allowing the printer to print independently of said label application the apparatus (42).

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5. Apparatus according to claim 4, **characterised in that** said printer (14) being of a type which is able to print independently of the label application apparatus (42) such that said printer can print continuously as the label application apparatus 42 is applying linerless labels in a manner of run and stop.

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PRIOR ART
(EP1687207B1)



INVENTION

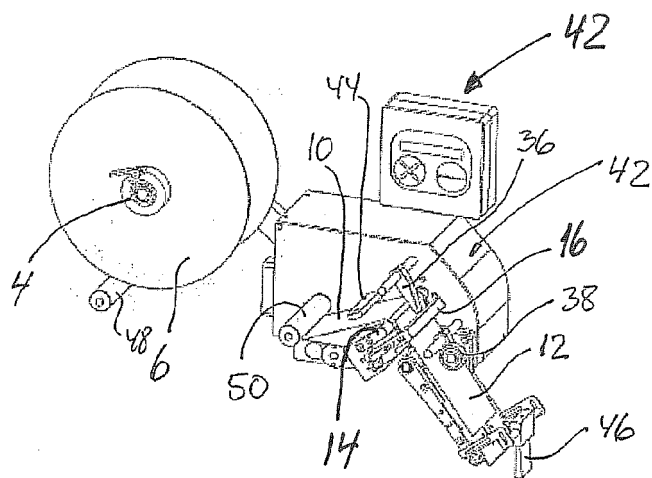


Fig. 3

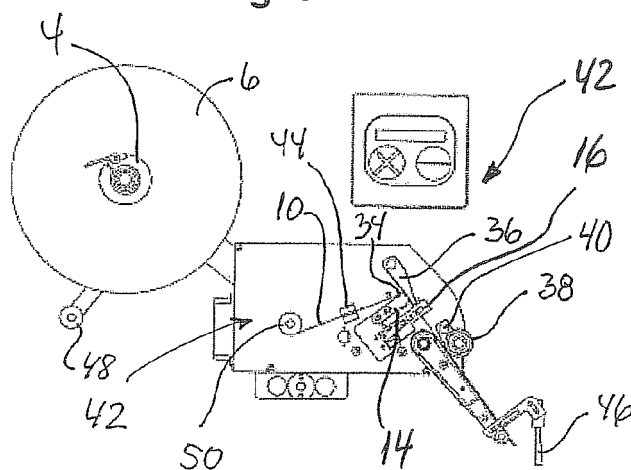


Fig. 4

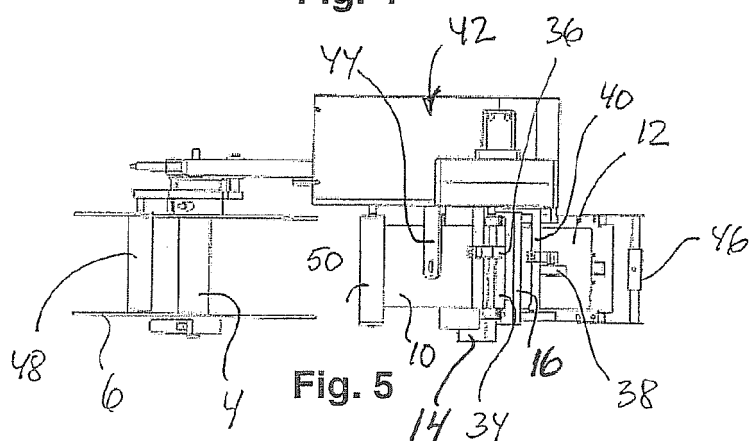


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 12 15 1545

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	EP 1 687 207 B1 (HM LABELLING AS [DK]) 30 April 2008 (2008-04-30) * paragraphs [0020], [0021]; figures 1-4 *	1	INV. B65C9/18
A	US 6 053 231 A (MATSUGUCHI YUTAKA [JP]) 25 April 2000 (2000-04-25) * abstract *; figure 1 *	1	
A	GB 2 379 918 A (SOVEREIGN LABELLING SYS LTD [GB]) 26 March 2003 (2003-03-26) * abstract *; figures 1,2 *	1	
A	US 4 354 894 A (LEWIS ROBERT T ET AL) 19 October 1982 (1982-10-19) * column 4, line 36 - line 49; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65C B67C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 May 2012	Examiner Wartenhorst, Frank
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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EPO FORM 1503 03/82 (P04C01)

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

EP 12 15 1545

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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07-05-2012

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5560293 A1 [0005]
- US 4784714 A1 [0005]
- EP 1687207 B1 [0006]