

Description

Method for manufacturing a multiple-layer tag and device for implementing the
5 method.

The invention relates to a method for manufacturing a multiple-layer tag, in which two webs of material are brought together by means of two parallel laminating rollers, and in which portions of a coating web arrive on a supporting web, spaced
10 apart from one another. The invention furthermore relates to a device for implementing this method.

A method and a device of the type described hereinabove is described in WO 86/05302. In Figures 18 and 19 of this document it is shown how two webs of
15 material are brought together by means of two laminating rollers and are joined together. Portions composed of printed conductor foils, each with a resonant electrical circuit for the purpose of protecting goods provided with the tag, in that when not deactivated, the resonant circuit triggers an alarm signal, are previously applied at a distance apart from one another to these webs of material.

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The positioning of portions on a supporting foil is a very expensive phase of manufacturing, and limits the speed of production in mass production of tags. Furthermore, the manipulation of the cut-out portions necessary often leads to
breakdowns.

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In order to avoid such breakdowns, it is known from US-A-5,059,950 to bring together a supporting web and a coating web such that the portions configured as security elements are spaced at the same distance apart on the supporting web as on the coating web provided with these portions. After the two webs of material have
30 been brought together, they must be detached together in order to obtain one tag with one portion with each separation. The advantage of such a method is that only

right at the end are there individual tags, so positioning of the portions relative to the supporting web is no longer necessary. However, it is disadvantageous that the portions are inevitably spaced at exactly the same distance apart on the supporting web as on the coating web. If it were desirable to produce tags which are larger
5 than the portions, a coating web would have to be used where the security elements forming the portions were spaced apart, which would be a waste of material with respect to the coating web and would make changing the spacings possible only if the coating web were to be changed correspondingly.

10 The object of the invention is to further develop a method of the type described in the introduction such that tags can be manufactured particularly easily, rapidly and reliably, which tags have a larger area than a portion provided on them, in particular a security element. Furthermore, a device for implementing this method will be developed.

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The problem described firstly is solved according to the invention in that the coating web is alternately advanced to the laminating rollers or to a pair of rollers connected in front of these at the circumferential speed of the pair of rollers, then a portion of the coating web advanced is detached, and lastly the coating web is stopped for a
20 defined period of time.

Using this method, the manipulation and positioning of individual portions on the supporting web, which is time-consuming and prone to causing numerous breakdowns, is eliminated. In exactly the same manner as according to the method
25 described previously in US-A-5,059,950, the portions can be continuously fed to the supporting web by means of the coating web, and need to be detached from the coating web only directly before or during lamination. In spite of using this method, it is possible to change the spacings between the portions on the supporting web in that the coating web can be stopped for a longer or shorter period and in this
30 way the supporting web can advance for a longer or shorter distance. In this way the method according to the invention is just as reliable and can be carried out just



as quickly as that according to US-A-5,059,950 described herein, but is variable in a manner similar to WO 86/05302.

When the method is implemented, the operational phase of applying an adhesive layer is eliminated when a supporting web with an adhesive layer facing the coating web is used.

It is also advantageous when, in accordance with another further development of the method, the adhesive layer applied to the supporting web is temporarily covered with a protective foil and this is removed before the bringing together of the supporting web and the coating web. In this way the adhesive layer remains protected from unintentional adhesion for as long as possible. Re-use of the protective foil removed is possible after the coating web has been applied.

Where a plurality of rows of portions are to be applied to a wide supporting web which is later to be separated into a plurality of individual webs of tags, the spacing of the portions can vary from row to row when the coating web is divided into two or more longitudinal strips by a fanning means before being applied to the supporting web.

The problem described secondly, that is to say the provision of a device for implementing the method according to the invention, is solved in accordance with the invention with a device which has two parallel laminating rollers for bringing together two webs of material, in that in front of the parallel laminating rollers there is arranged an advancing means driven by a servo-motor, which is set up for alternate stopping and driving of the coating web at the speed of the supporting web.

Such a device allows the advancing of the coating web to be interrupted for defined periods of time in a simple manner, and thereby the changing of the spacings of the portions on the supporting web in a defined manner. In this way the device according to the invention makes it possible to change the spacings of the portions

on the supporting web just by different settings of the device and by changing of the cutting tool. In spite of this possibility for adjustment, the device according to the invention is constructed in a very simple manner and is easy to operate as no separate portions have to be manipulated and positioned on the supporting web.

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The individual portions of the coating web can be separated from the coating web in a single operating phase together with lamination when one laminating roller is equipped with at least one stamping blade which projects from the contour of the laminating roller exclusively for detaching the coating web applied to the supporting web.

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The advancing means does not need to accelerate the entire coating web when advancing a portion of the coating web towards the laminating rollers, when, for tensioning the coating web, in front of the advancing means a roller partly looped around by the coating web is arranged on a pendulum. Slack is obtained by means of the roller on the pendulum, from which the advancing means takes up the area of the coating web currently required. Furthermore, in this way the coating web can be payed out from a stock roll at a constant speed.

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An insufficient length of slack in the coating web or excessively fast paying out of the coating web from the stock roll can be prevented using very simple means, when in accordance with another development of the invention, the pendulum has control means for controlling a feed drive connected in front of it for paying out the coating web from a stock roll.

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When the device is configured for cutting the coating web into a plurality of strips running parallel to one another, a fanning means for spreading out the strips can be arranged between the feed drive and the pendulum. It is then possible not only to change the spacing of the portions in the direction of movement of the supporting web, but also the spacing of the portions at right-angles thereto.

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Unintentional gluing together of the two webs of material before reaching the laminating rollers can be prevented in that a separating element separating the coating web from the supporting web until they are fed into the laminating rollers is arranged on the feed-in side of the laminating rollers. This separating element
5 can, for example, be configured as a separating plate or be composed of separating rods.

Instead of separating the portions from the coating web only after applying them to the supporting web, the operational phase of separation can also be carried out
10 directly prior to this. A device configured for this is characterised in that an additional cutting roller for separating the portions from the coating web is assigned to the laminating roller for advancing the coating web, and in that the laminating roller is configured for transporting the portions to the supporting web on the other laminating roller.

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The separated portions must be retained on the cutting roller after separation so that can be fed to the supporting web without changing their position. To do this, the portions could be held on the cutting roller by a partial vacuum. The cutting roller is particularly simply configured when the laminating roller for advancing the
20 coating web is provided with a pressing means covering its lateral surface between the cutting roller and the laminating roller.

Separation of the portions from the coating web is inevitably always in exactly the right area, so when the portions are security elements there is no risk of them being
25 destroyed by being cut in the wrong place if, in accordance with a further development of the invention, in order to control the advancing means a measuring means for recognising an end of a portion on the coating web is arranged in front of the laminating rollers.

30 The invention allows numerous embodiments. For the purpose of further clarification of the method, two embodiments of the device are shown in the

drawings, and will be described hereinafter. There is shown, in:

Fig. 1 a longitudinal section through the device for implementing the method,

5 Fig. 2 a detailed representation of Figure 1,

Fig. 3 a further embodiment in accordance with the invention.

Figure 1 shows a device for manufacturing a multiple-layer tag in its entirety. In
10 it, a coating web 1 is drawn from a stock roll 3 by means of a forward feeding
drive 2. This coating web 1 is separated by a cutting means 4 into a plurality of
webs running parallel to one another, which are then spread out at a distance apart
by means of a fanning means 5 and then fed via a guide roller 6 to a roller 7. This
roller 7 is arranged at the free end of a pendulum 8 which is pre-tensioned to the
15 left as seen in Figure 1 in a manner not shown in more detail.

From the roller 7 the coating web 1 travels over an advancing means 9 between two
laminating rollers 10, 11. The advancing means 9 is alternately driveable and
stoppable by means of a servo-motor 12.

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In addition to the coating web 1, a supporting web 13 runs in the device between
the laminating rollers 10, 11, where portions 14 of the coating web 1 are glued to
the supporting web 13. Prior to this, the exact position of the portions 14 is sensed
by a measuring means 15 which is arranged in front of the advancing means 9,
25 above the coating web 1.

During operation of the device, the pendulum 8 is located in the intermediate
position shown, from which it can swing to both sides in order to keep the coating
web 1 continuously under tension. A potentiometer 16 moves with the swinging of
30 the pendulum 8 and accordingly controls the forward feed drive 2, by means of
which the coating web 1 is unwound from the stock roll 3.

Fig. 2 shows a detailed representation of the two laminating rollers 10 and 11. The supporting web 13 is provided with an adhesive layer 17, from which a protective foil 18 is removed shortly before joining with the coating web 1. Premature and undesired adhesion of the adhesive sheet 17 is prevented by means of a separating element 19 configured as a separating plate. This separating element 19 projects into the space between the two laminating rollers 10, 11. The laminating roller 10 is equipped with a stamping blade 20 which, after each revolution of the laminating roller 10, separates the portion 14, 14a from the coating web 1. The laminating roller 10 forms a stamping cylinder, while the laminating roller 11 is a counter stamping cylinder. The stamping blade 20 in this case only detaches the coating web 1 from the layers lying on top of one another, composed of the supporting web 13, the adhesive sheet 17 and the coating web 1. After separation of the portion 14, 14a, the coating web 1 is stopped by the advancing means 9 shown in Figure 1 until a defined distance from the portion 14, 14a which has passed on ahead is reached, and is then transported at the speed of the supporting web 13 to the laminating rollers 10, 11.

Figure 3 shows a particular embodiment of the device according to the invention. In this, a cutting roller 21 with a stamping blade 22 is arranged above the laminating roller 10. This cutting roller 21 cuts the portions 14 from the coating web 1. In exactly the same way as with the embodiment previously described, spaces are created between the portions 14 in that the coating web 1 is temporarily stopped by the advancing means 9 after each cutting procedure.

A pressing means 23 ensures that the portions 14 remain on the upper laminating roller 10 and go between the two laminating rollers 10, 11 in order to be applied to the supporting web after rotation about 180°.

List of designations

	1	Coating web
	2	Forward-feeding drive
5	3	Stock roll
	4	Cutting means
	5	Fanning means
	6	Guide roller
10	7	Roller
	8	Pendulum
	9	Advancing means
	10	Laminating roller
15	11	Laminating roller
	12	Servo-motor
	13	Supporting web
	14	Portion
	15	Measuring means
20	16	Potentiometer
	17	Adhesive layer
	18	Protective foil
	19	Separating element
25	20	Stamping blade
	21	Cutting roller
	22	Stamping blade
	23	Pressing means
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Claims

1. Method for manufacturing a multiple-layer tag, in which two webs of material are brought together by means of two parallel laminating rollers, and in which portions of a coating web arrive on a supporting web spaced apart from one another, characterised in that the coating web is alternately advanced to the laminating rollers or to a pair of rollers connected in front of these at the circumferential speed of the pair of rollers, then a portion of the coating web advanced is detached, and lastly the coating web is stopped for a defined period of time.
2. Method according to claim 1, characterised in that a supporting web with an adhesive layer facing the coating web is used.
3. Method according to claim 2, characterised in that the adhesive layer applied to the supporting web is temporarily covered with a protective foil and this is removed before the bringing together of the supporting web with the coating web.
4. Method according to at least one of the preceding claims, characterised in that the coating web is divided into two or more longitudinal strips by a fanning means before being applied to the supporting web.
5. Device for implementing the method according to at least one of the preceding claims, which has two parallel rollers for bringing together two webs of material, characterised in that an advancing means (9) driven by a servo-motor (12) is arranged in front of the parallel laminating rollers (10, 11), which is set up for alternate stopping and driving of the coating web (1) at the speed of the supporting web (13).





6. Device according to claim 5, characterised in that one laminating roller (10) is equipped with at least one stamping blade (20) which projects from the contour of the laminating roller (10) exclusively for detaching the coating web (1) applied to the supporting web (13).
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7. Device according to claims 5 or 6, characterised in that for tensioning the coating web (1), in front of the advancing means (9) a roller (7) partly looped around by the coating web (1) is arranged on a pendulum (8).
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8. Device according to claim 7, characterised in that the pendulum (8) has control means (potentiometer 16) for controlling a forward feed drive (2) connected in front of it for paying out the coating web (1) from a stock roll (3).
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9. Device according to at least one of claims 5 to 8, which is configured for cutting the coating web into a plurality of strips running parallel to one another, characterised in that a fanning means (5) for spreading out the strips is arranged between the forward feed drive (2) and the pendulum (8).
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10. Device according to at least one of the preceding claims, characterised in that a separating element (19) separating the coating web (1) from the supporting web (13) until they are fed into the laminating rollers (10, 11) is arranged on the feed-in side of the laminating rollers (10, 11).
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11. Device according to at least one of the preceding claims, characterised in that an additional cutting roller (21) for separating the portions (14) from the coating web (1) is assigned to the laminating roller (10) for advancing the coating web (1), and in that the laminating roller (10) is configured for transporting the portions (14) to the supporting web (13).
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on the other laminating roller (11).

12. Device according to claim 11, characterised in that for advancing the coating web (1), the laminating roller (10) is provided with a pressing means (23) covering its lateral surface between the cutting roller (21) and the laminating roller (10).
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13. Device according to at least one of the preceding claims, characterised in that in order to control the advancing means (9), in front of the laminating rollers (10, 11) there is arranged a measuring means (15) for recognising an end of a portion on the coating web (1).
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