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(54) A method and device for wrap packaging of articles.

(57) The invention relates to a method of wrap packaging of an article, comprising the steps of adhering a tear tape onto a wrap film web, making cuts in the tear tape area of said film so as to form at least one tear tab, folding the film web into a tube around the article to be wrapped, closing said tube in the longitudinal direction by connecting the longitudinal edges of said tube one to another and closing the tube ends by flat squeezing and cross-sealing the tube end portions, the improvement consisting therein, that the tab forming cuts are made in a location such that the tear tab falls within a cross-sealing area, the cross-sealing procedure being performed in such a way, that the tear tab is kept loose from the underlying tube wall portion in said area.

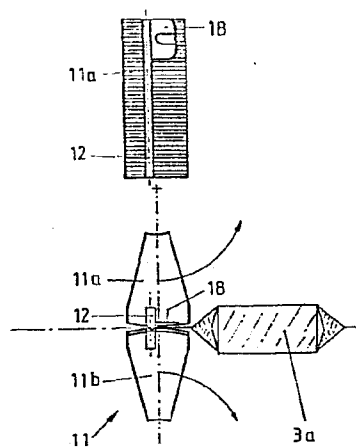


FIG. 2

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Title: A method and device for wrap packaging of articles.

The invention relates to a method of wrap packaging of an article, comprising the steps of adhering a tear tape onto a wrap film web, making cuts in the tear tape area of said film so as to form at least one tear tab, folding the film web into a tube around the article to be wrapped, closing said tube in the longitudinal direction by connecting the longitudinal edges of said tube one to another and closing the tube ends by flat squeezing and cross-sealing the tube end portions.

A method of this kind is disclosed in US patent 4.203.270.

In this well-known method the tear tab forming cuts are made at a location such that after cross-sealing of the end portions of the tube the tear tab appears in the tube wall at a location between the two cross-sealed areas. As a consequence of this there is an air leakage opening formed by the tear tab, which makes this wrapping method unsuitable for various types of articles, such as foods.

The invention aims at improving the well-known method so as to become suitable for wrap packaging of the articles of all kinds, including products which require to be wrapped in an air-tight manner. The improvement according to the present invention consists therein that the tab forming cuts are made in a location such that the tear tab falls within a cross-sealing area, the cross-sealing procedure being performed in such a way, that the tear tab is kept loose from the underlying tube wall portion in said area.

By the improved method according to the invention an air-tight wrapper is obtained while the tear tab facilities are not affected in comparison with a wrapper obtained by the well-known method above referred to.

The invention also relates to a device for conducting the method according to the invention, comprising conveyor means for feeding a flow of articles in longitudinally spaced relationship towards a folding station located in the travelling path of the articles, first and second means for supplying a wrap film web and a tear tape respectively towards an intermediary station, means in said station for adhering said web and said tape one to another, cutting means in said station located downstream of said adhering means adapted for making tear tab forming cuts in the tear tape area of said web at intervals corresponding to the

interspacing of the articles on said conveyor means, guide means for supplying the composite wrap film web from said intermediary station towards said folding station, the latter comprising means adapted to fold the web into a tube around the articles, means for longitudinally
5 closing said tube by connecting the longitudinal edges of the tube one to another and means for cross-sealing the tube in the areas between successive articles, the improvement consisting therein, that said cutting means are controlled in such timed relationship with said conveyor means and cross-sealing means, that the tear tabs formed are
10 falling within the cross-sealing areas, while said cross-sealing means are constructed to prevent the tear tabs from being sealed to the opposite tube wall portion.

The invention also relates to a wrapped package, comprising a tube of a flexible thermo-plastic material, more particularly a heat
15 sealable material, folded around an article and longitudinally closed by sealing the longitudinal edges of the tube one to another, the terminal end portions of said tube being squeezed flat and cross-sealed, a tear tape extending longitudinally of said tube, while in at least one of the cross-sealed areas a pair of cuts are made along the
20 longitudinally edges of the tear tape, so as to form a tear tab extending loosely from said cross-sealed area.

Further characteristics of the invention will be hereinafter further explained with reference to the accompanying drawings, in which

Fig. 1 represents a diagrammatic side elevation of a device
25 according to the invention;

Fig. 2 is a side elevation of the two cooperating jaws of the cross-sealing device and a plan view of the sealing surface of one of said jaws respectively and

Fig. 3 shows a perspective of a package wrapped in accordance
30 with this invention.

The device shown in Fig. 1 is designed for wrap packaging of a continuous flow of articles 3, such as packages of thin products, e.g. wafers and similar bakery products.

With reference to Fig. 1 of the drawings 1 designates a wheeled
35 frame carrying an oblong supporting plate for the articles 3 to be wrapped. The device further comprises a station 4 for the supply of the wrapping film web 5 and a folding station 6. The wrap film web 5 supplied

from the station 4 towards the folding station 6 is a composite of a plain film web 5' paying off from a reel 14 and a tear tape 5" paying off from a reel 15. The web 5', which may e.g. consist of a heat sealable plastic, and the tear tape 5" are each guided to pass over and under a series of guide rollers towards an intermediary station 4a at which
5 the web 5' and tape 5" are adhered one to another e.g. by supplying heat in the area indicated at x. The composite wrap film web 5 then passes through a punch cutting station 4b, in which U-shaped cuttings are made into the web 5 at intervals which correspond to the distances between the individual articles 3 and such that the "legs" of the U-shaped
10 cuttings each extend along an edge of the tear tape 5".

Said cuttings are made by means of a punch roller 16 which is driven in the arrow direction by means not shown in the drawing and which carries three uniformly and circumferentially spaced punches. The punch roller 16 cooperates with a backing roller 17, which is spring-mounted
15 on the other side of the travelling path of the web 5.

Thus the composite web 5 leaving the punch cutting station 4b and entering the station 4 for further transportation towards the folding station 6 is provided with a continuous series of uniformly spaced tear tabs.

20 The articles 3 which are deposited on the left hand end of the supporting plate 2 are fed along the latter in mutually spaced relationship towards the folding station 6 by means of an endless conveyor 7 mounted under the plate 2 and adapted to be driven, by means not shown in the drawing, in the arrow direction. For this purpose the conveyor 7 carries
25 a plurality of serially arranged pusher members⁸ adapted to extend from the upper run of the conveyor upwardly through a longitudinal slot in said plate 2 and to engage the trailing end of an article 3.

The wrap film web 5 supplied from the station 4 is formed within the folding station 6 into a tube or wrapper 10 which encases the
30 articles 3. Said wrapper is then longitudinally closed around said articles by means of sealing rollers 9 arranged in pairs of cooperating rollers on either side of the longitudinal closure seam and having their axes of rotation positioned in a vertical plane and perpendicular to the axis of the wrapper. The longitudinal edges of the web 5 are gripped
35 by and pressed together between the cooperating sealing rollers, while being

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sealed under supply of heat. The sealing rollers 9 simultaneously function as transport rollers for the web 5 and the wrapper formed therefrom.

The wrapper or tube 10 emanating from the right hand end of the station 6 is then cross-sealed in the zones between the articles encased by the wrapper 3. Said cross-sealing procedure is effected by means of a pair of cross-sealing jaws 11, comprising an upper and a lower jaw 11a and 11b respectively. The sealing jaws 11a and 11b are driven in opposite directions about axes 13 and in such timed relationship with the travelling speed of the wrapper 10 that said jaws will periodically meet in the intermediary spaces between successive articles 3 so as to squeeze and cross-seal the superimposed wall portions of the wrapper 10 in said intermediary spaces.

Turning back to the cutting operation in the cutting station 4b, the punch roller 16 is driven in such timed relationship with the cross-sealing jaws 11a, 11b, that the tear tabs 19 fall within the cross-sealing areas between the successive articles. In order to prevent the tabs 19 from being heat-sealed to the underlying tube wall portion when passing between the jaws 11b, 11b, the upper jaw 11a has been recessed at 18, i.e. at the location where the tabs 19 get successively between the cooperating jaw surfaces. Due to the recess 18 there will be no heating of the material of the tabs 19, so that they will remain freely projecting from the plane of the respective cross-sealed areas.

The sealing jaws 11a, 11b are further provided with cooperating cutting blades 12 extending transverse to the travelling direction of the articles and adapted to sever the cross-sealed wrapper into individual wrapped packages 3a.

In the example shown in the drawing the recess 18 is provided on the right hand side of the cutter blades 12 (see Fig. 1 and 2) so that a tab 19 is formed in the upstream cross-sealed end portion of each wrapped package 3a.

It will be understood, however, that the recess 18 might extend on both sides of the cutting blades 12. In that case it would be enough for the punch roller 16 to make two parallel cuttings instead of a U-shaped cutting in each intermediary space or in alternating intermediary spaces between the successive articles. The severing action of the blades 12 would then simultaneously result in forming two adjacent tear tabs, viz. one tab in the upstream cross-sealed end of the package 3a just severed from the wrapper and a second tab in the downstream cross-sealed end portion of the following package 3a to be severed.

C L A I M S

1. A method of wrap packaging of an article, comprising the steps of adhering a tear tape onto a wrap film web, making cuts in the tear tape area of said film so as to form at least one tear tab, folding the film web into a tube around the article to be wrapped, closing said
5 tube in the longitudinal direction by connecting the longitudinal edges of said tube one to another and closing the tube ends by flat squeezing and cross-sealing the tube end portions, the improvement consisting therein, that the tab forming cuts are made in a location such that the tear tab falls within a cross-sealing area, the cross-sealing procedure being performed
10 in such a way, that the tear tab is kept loose from the underlying tube wall portion in said area.

2. A method of wrap packaging articles which are supplied in a flow of serially spaced articles, comprising the steps of adhering a continuous tear tape onto a continuous wrap film web, making tear tab
15 forming cuts in the tear tape area of said film and intervals which correspond to the interspacing of the articles in said flow, folding the web into a tube around the articles to be wrapped, closing said tube in the longitudinal direction by connecting the longitudinal edges of said tube one to another and cross-sealing the tube in the successive
20 interspace-areas between the articles, while severing the wrapper into individual wrapped packages, the improvement consisting therein, that the tab forming cuts are made in such timed relationship with the supply of the articles to be wrapped and the cross-sealing action that the tear tabs fall within cross-sealing areas, while the cross-sealing
25 procedure is performed in such a way, that the tear tabs are kept loose from the underlying tube wall portions in said areas.

3. A method according to claims 1 and 2, characterized in that U-shaped cuttings are made.

4. A method according to claim 2, characterized in that two
30 parallel cuttings are made at each tab forming location and that the severing of the tube into individual wrapped packages is accompanied by the forming of two adjacent tear tabs.

5. A device for wrap packaging of articles, comprising conveyor means for feeding a flow of articles in longitudinally spaced relationship
35 towards a folding station located in the travelling path of the articles,

first and second means for supplying a wrap film web and a tear tape respectively towards an intermediary station, means in said station for adhering said web and said tape one to another, cutting means in said station located downstream of said adhering means adapted for making
5 tear tab forming cuts in the tear tape area of said web at intervals corresponding to the interspacing of the articles on said conveyor means, guide means for supplying the composite wrap film web from said intermediary station towards said folding station, the latter comprising means adapted to fold the web into a tube around the articles, means
10 for longitudinally closing said tube by connecting the longitudinal edges of the tube one to another and means for cross-sealing the tube in the areas between successive articles, the improvement consisting therein, that said cutting means are controlled in such timed relationship with said conveyor means and cross-sealing means, that the tear tabs formed
15 are failing within the cross-sealing areas, while said cross-sealing means are constructed to prevent the tear tabs from being sealed to the opposite tube wall portion.

6. A device according to claim 5, in which the cross-sealing device comprises two cooperating jaws which are mounted for rotation in
20 opposite directions so as to periodically meet in a sealing position, means being provided to raise the temperature of said jaw to a heat sealing level, at least one of said jaws being recessed at a location corresponding to the location at which the successive tabs will pass between the jaws, said recess being effective to prevent the superimposed
25 tube wall portions to be sealed at that location.

7. A device according to claim 6, characterized in that the cooperating sealing jaws are provided with cooperating cutter blades extending transverse to the travelling direction of the articles, said
cutter blades dividing said recessed portion of the jaw into equal
30 sections.

8. A wrapped package, comprising a tube of a flexible thermo-plastic material, more particularly a heat sealable material, folded around an article and longitudinally closed by sealing the longitudinal edges of the tube one to another, the terminal end portions of said tube being squeezed
35 flat and cross-sealed, a tear tape extending longitudinally of said tube, while in at least one of the cross-sealed areas a pair of cuts are made along the longitudinally edges of the tear tape, so as to form a tear tab extending loosely from said cross-sealed area.

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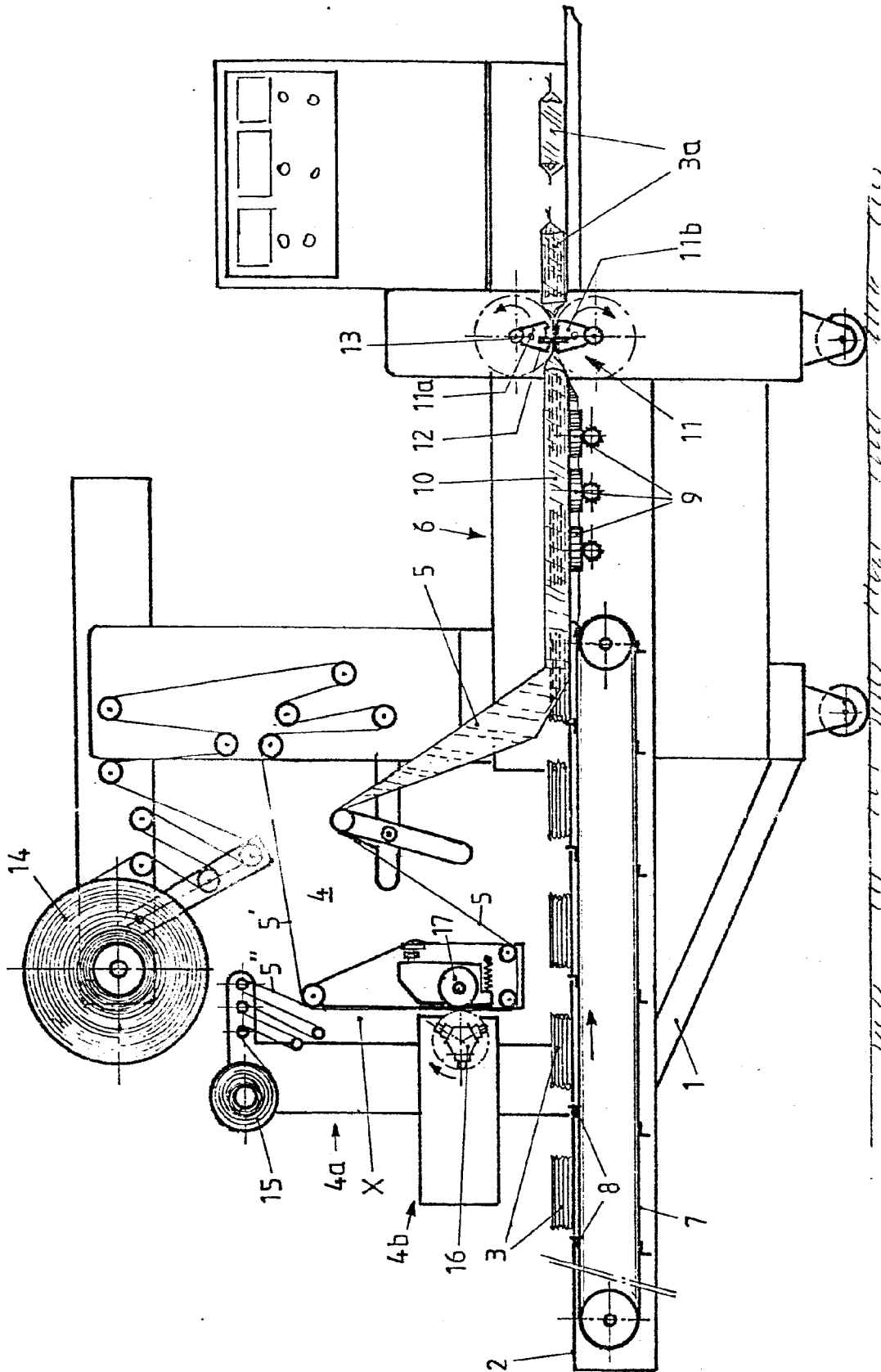


FIG. 1

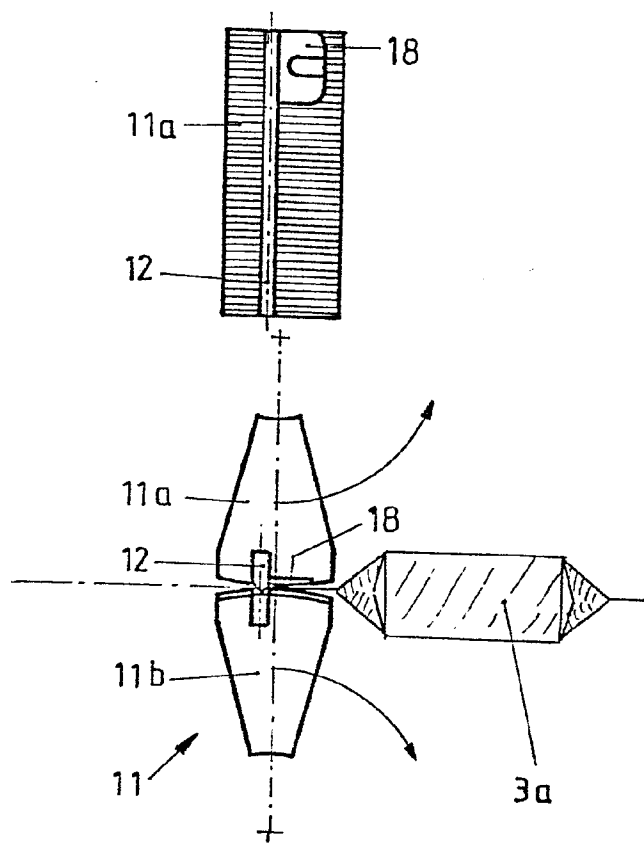


FIG. 2

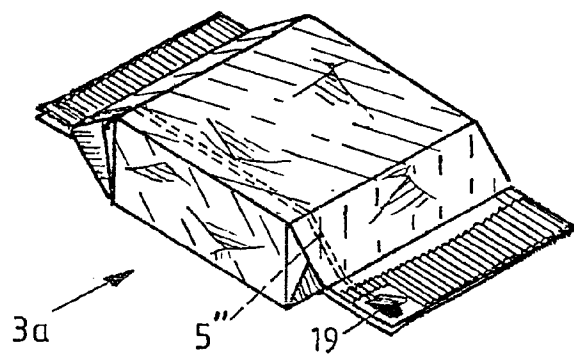


FIG. 3