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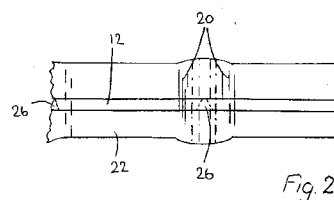
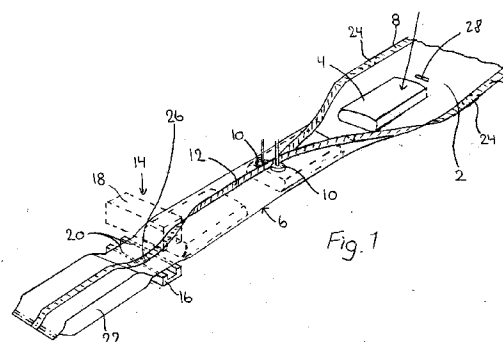
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(54) **A method of flow-packing of articles.**

(57) In a flowpacking procedure the articles (4) to be packed are supplied a mutual spacing to a running sheet web (2), which is caused to be folded up and length welded (10) to form a tubular casing (6), which in a cross welding station (14) is provided with cross welding lines (20), between which the successively packaged articles can be separated. By the cross welding is effected a rapid pressing together of the sheet tube, whereby an undesirable inflation of the packing of the foremost article may occur. According to the invention care is taken to provide a perforation in the web between the cross weldings (20), e.g. by way of a hole (28), whereby the air may escape through the perforation without giving rise to the said undesired inflation of the finished article packings.



The present invention relates to a method of flow packing of articles, that is a packing method by which the articles are successively deposited on a sheet web, which is advanced, continually or intermittently, through a folding station, in which the web is folded into a tubular casing about the articles as likewise advanced and is welded along a longitudinal seam for stabilizing the tubular shape of the web, whereafter the web is brought further to a cross welding station, in which the web tube is subjected to a crosswise welding together in the successive interspaces between the articles, which are originally supplied with a correspondingly required mutual spacing. Hereby the tube or hose packing is caused to be end closed about the articles, partly at the rear end of a preceding article and partly at the leading end of a succeeding article. Thereafter - or even in connection with the cross welding - the web tube is cut between the preceding and the succeeding article, whereby the preceding article is divided off in a totally packed condition.

This is a very simple, cheap and rapid packing method, which is well suited for many kinds of articles. Only there is the problem that in connection with the cross welding the tubular casing is pressed rapidly together, whereby a noticeable volume of air will be displaced from the relevant area. To a certain extent this air can escape rearwardly, through the open trailing end of the web tube, but here a noticeable obstruction will be effected by the succeeding article, which has already been surrounded by the web, so a good deal of the air will be pressed forwardly, i.e. into the foremost packing member as already closed at its front end, and since the cross closing of the rear end thereof is effected as the next step, rapidly thereafter, a resulting effect is that the leading packing member is finally closed upon a certain air intrusion therein.

This intrusion of air will normally be undesired, already because it will increase the volume of the packing. Typically the product will be single packings, which are placed in a row or a pile in a larger packing, and it may well be a consequence that this larger packing will have to be e.g. 10-15% larger than required, if the air volume in the single packings was minimized.

Such a minimizing, of course, could be effected by running the whole process under a suitable vacuum, but then the method would no longer be very simple. For the invention it is a purpose to provide a method, whereby the said problem can be minimized in a simple manner, without any vacuum being required.

The invention is based on the simple consideration that in the cross welding area there is no need of any sealed longitudinal welding of the web tube, as a sealed welding is required only along the articles, between the opposed end weldings of the packings, but not outside these, i.e. generally in the area in which

the cutting between two consecutive packings is effected. Thus, according to the invention it will be sufficient to arrange for the longitudinal welding to be untight or absent at just these places, because the air will then be able to escape to the surroundings in response to the cross welding area being pressed together. After that, the escape opening will be of no further concern, as it is located in or between areas, which, by the associated cross welding, are entirely sealed towards the adjacent packing portions. The escape opening, therefore, will only have a purely temporary effect, which, on the other hand, is decisive for the fact that at least the major part of the air that is pressed together will be able to escape prior to the said cross welding. Consequently, the single packings, as desired, will avoid an inclusion of a noticeable surplus of air.

If the longitudinal welding is effected in an intermittent manner by means of longitudinally extending welding jaws covering the welding length of each single packing, then the invention can be realized in a simple manner, by successively advancing the web somewhat more than corresponding to the length extension of these jaws, such that in or between the cross welding areas there will be left unwelded partial lengths of the longitudinal seam. If this seam is fully welded without such spacings, e.g. by a continuous roller welding, it will be correspondingly possible to prepare the web in such a manner that despite the welding action it will not be welded together in the relevant areas. Normally, these should be optically marked anyhow, for an accurate control of the cross weldings, and on that background it will be particularly easy to prepare the web in the desired manner, when it is known in advance where the cross weldings will occur.

In connection with an ordinary heat weldable web it will be possible to pretreat the web, that is the outer edge areas thereof, in such a manner that a welding together will be prevented at the relevant places. If the welding is based on a melting together of a varnish applied to the web it is correspondingly possible to avoid the application of varnish to the relevant web areas.

In the following the invention is described in more detail with reference to the drawing, in which:

Fig. 1 is a perspective view illustrating a packing method according to the invention, and

Fig. 2 is a top view of an end portion of a packing string produced thereby.

By the flow packing method illustrated in Fig. 1 a sheet web 2 is advanced, by means not shown, along a non-illustrated support, and in a depositing station articles 4 to be packed separately are deposited with uniform spacing on the web. The articles are supplied with such a timing that they will be deposited on the web in a row with reasonably well defined and optimized short mutual spacing. As the web and the ar-

articles 4 are advanced, the web is caused, by known means, to be folded about the row of articles 4, such that these will be enclosed in a web casing 6. By this folding the free side edge areas 8 of the web 2 will be gripped by special gripping means causing these areas, as shown, to be laid together, such that they can then be joined into a longitudinal welding seam 12, e.g. by means of opposed welding rollers 10. Thereby the row of articles 4 will be enclosed in the surrounding sheet tube 6, which will extend with unchanged cross section over the gap between two consecutive articles 4.

Thereafter the casing is advanced to a cross welding station 14, in which a pair of welding jaws 16 and 18 are moved together, thus pressing the casing flat and producing two parallel cross welding zones 20. The casing can be cut between these zones for dividing off the foremost packing member 22, which is now entirely closed. This cutting may be effected in direct association with the operation of the jaws 16, 18 or in a subsequent operation or station.

As mentioned, the bringing together of the jaws 16 and 18 and the associated displacement of air inside the casing may cause extra air to be introduced into the packing 22 as now being finally closed, and since the closing should be fully tight the packing member 22 will thus be somewhat inflated just prior to being sealed. According to the present invention this drawback is counteracted in that the sheet web is in advance prepared in such a manner that at those areas, which will later be located between adjoining cross welding zones 20, there are provided edge sub areas 24 that are unfit to be welded together by the action of the tools producing the longitudinal welding. In this welding, therefore, a non-welded penetration area 26 will occur, through which the said surplus air can escape widely during the pressing together of the jaws. Once the cross weldings 20 have been made, the penetration 26 will be without any effect, and a rest or trace of it may well occur at the free ends of the packings outside the respective welding lines 20.

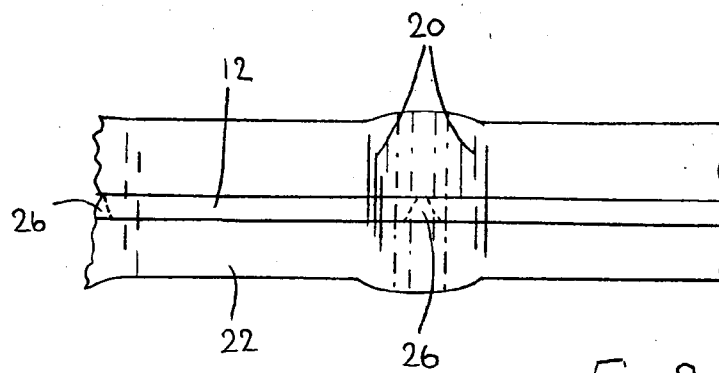
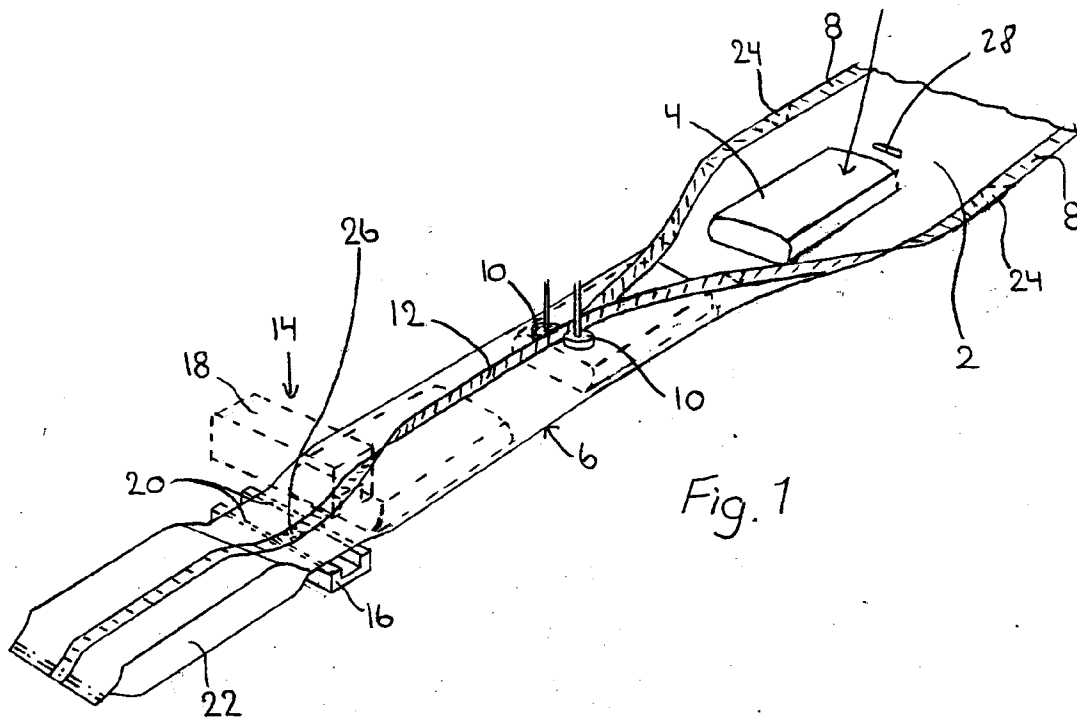
The penetrations 26 may be established otherwise, e.g. by neutralisation of the longitudinal welding at the relevant places. If the welding is effected by means of jaws having the full length of the packings, the penetrations may be established by the web casing being advanced, per operation, somewhat longer than the length of the packings. Also, a real perforation may be provided at the relevant places, either by stamping away the sub areas 24 or by stamping a hole in the sheet, spaced from the edge area, e.g. as shown at 28 in Fig. 1. Optionally, such a perforation may be arranged in connection with an optical marking of the relevant places, as such a marking may well be required anyway for a correct controlling of the advancing of the sheet web.

Alternatively, the perforation may be effected by a working immediately adjacent the cross jaws 16, 18,

e.g. by introducing through one of these jaws a stamping rod, which carries out a short blow just before the jaws are brought together, or a cutting of the casing can be initiated in association with the bringing together of the jaws, e.g. by means of a glow wire.

Claims

1. A method of flow packing of articles, whereby the articles are successively deposited on a sheet web which, continually or intermittently, is advanced through a folding station, in which the web is folded into a tubular casing about the co-advanced articles and is welded together along a longitudinal seam for stabilizing the tubular shape of the web, whereafter the web is conveyed further to a cross welding station, in which there is effected a crosswise welding together of the sheet casing in the successive interspaces between the articles, which are deposited onto the sheet web with correspondingly required mutual spacing, characterized in that the sheet web, by previous preparation or by discontinuous longitudinal welding, is treated in a manner such that in the cross welding areas there is established a leakiness located in an interspace between sealed cross weldings (20) at the rear end of a preceding packing and the front end of the following packing, respectively.
2. A method according to claim 1, characterized in that the sheet web is previously prepared with holes (28) or non-weldable edge area portions (24) positionable in the cross welding areas.
3. A method according to claim 1, characterized in that the longitudinal welding is effected in a discontinuous manner by a selective activation of the applied welding tools.
4. A method according to claim 1, characterized in that the leakiness in the cross welding area is provided by perforating the sheet immediately prior to the cross welding operation.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 61 0023

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 106 265 (ATERIANUS) * abstract; figures 15,20-22 * * column 13, line 23 - column 14, line 11 * ---	1,2	B65B9/06 B65B51/30
X	FR-A-2 291 094 (SEGALE ET PASSERINI) * the whole document * ---	1,2	
A	FR-A-2 494 226 (UNI CHARM CORP.) * page 2, line 35 - page 3, line 23; figures * ---	2	
A	US-A-4 964 259 (YLVISAKER ET AL.) * abstract; figures * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 JULY 1993	Examiner GINO C.P.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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