



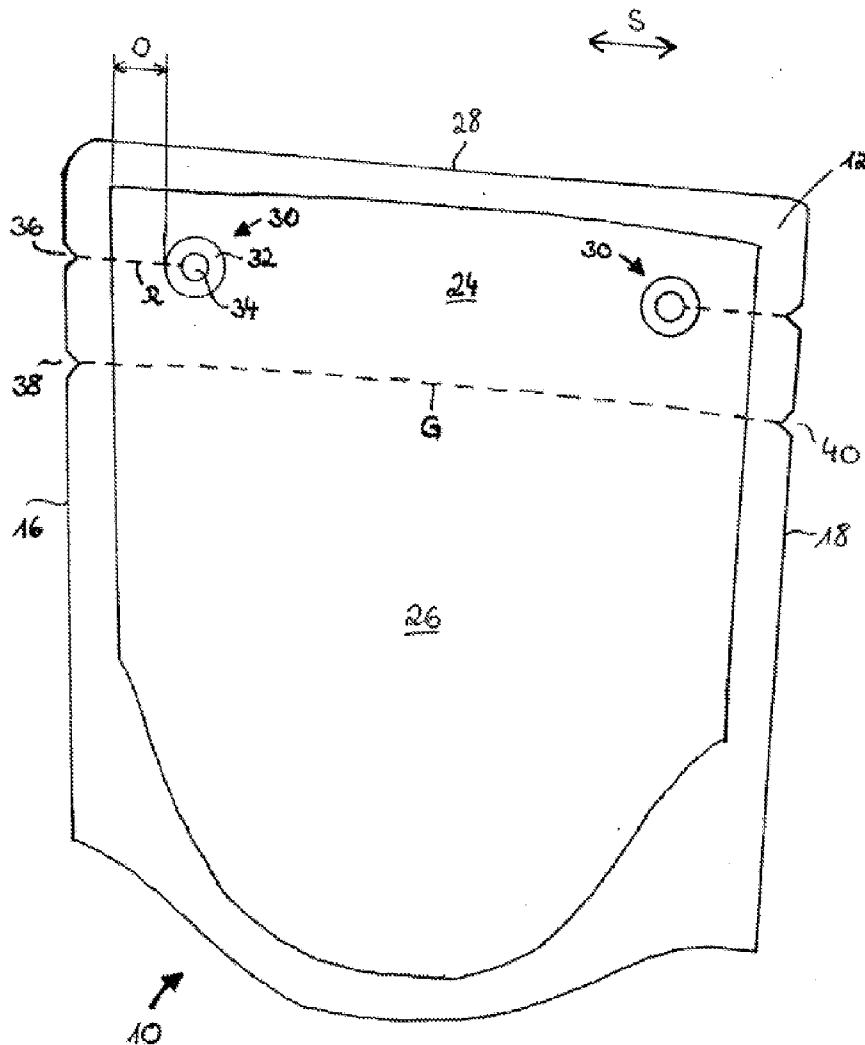
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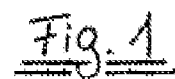
(19) **United States**(12) **Patent Application Publication**
SURDZIEL(10) **Pub. No.: US 2011/0064338 A1**(43) **Pub. Date: Mar. 17, 2011**(54) **TEAR-OPEN POUCH**(75) Inventor: **Agata SURDZIEL, Kempten (DE)**(73) Assignee: **Huhtamaki Ronsberg ZN der
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& Co. KG, Ronsberg/Allgäu (DE)**(21) Appl. No.: **12/880,281**(22) Filed: **Sep. 13, 2010**(30) **Foreign Application Priority Data**

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B65D 30/16 (2006.01)(52) **U.S. Cl. 383/207; 383/104**(57) **ABSTRACT**

The invention relates to a tear-open pouch (110) comprising a front face of the tear-open pouch (126) defined by an outer edge and a rear face of the tear-open pouch defined by an outer edge, the outer edges thereof being joined together in at least one join outer edge region of the tear-open pouch (110), a starting point for a predetermined tear-line (R1, R2) being provided in such a join outer edge region. The front face of the tear-open pouch (126) and the rear face of the tear-open pouch are also joined together at least in portions in an inner region surface portion (130) arranged spaced apart from the outer edges thereof. The inner region surface portion (130) defines a predetermined tear-line deflection point, in which the tear-line (R1, R2) is deflected, in order to terminate in a tear-line end point provided in a join outer edge region of the tear-open pouch (110), the tear-line (R1, R2) extending between the tear-line starting point and the inner region surface portion (130) or/and between the inner region surface portion (130) and the tear-line end point through surface portions of the tear-open pouch (110) which are not joined together.





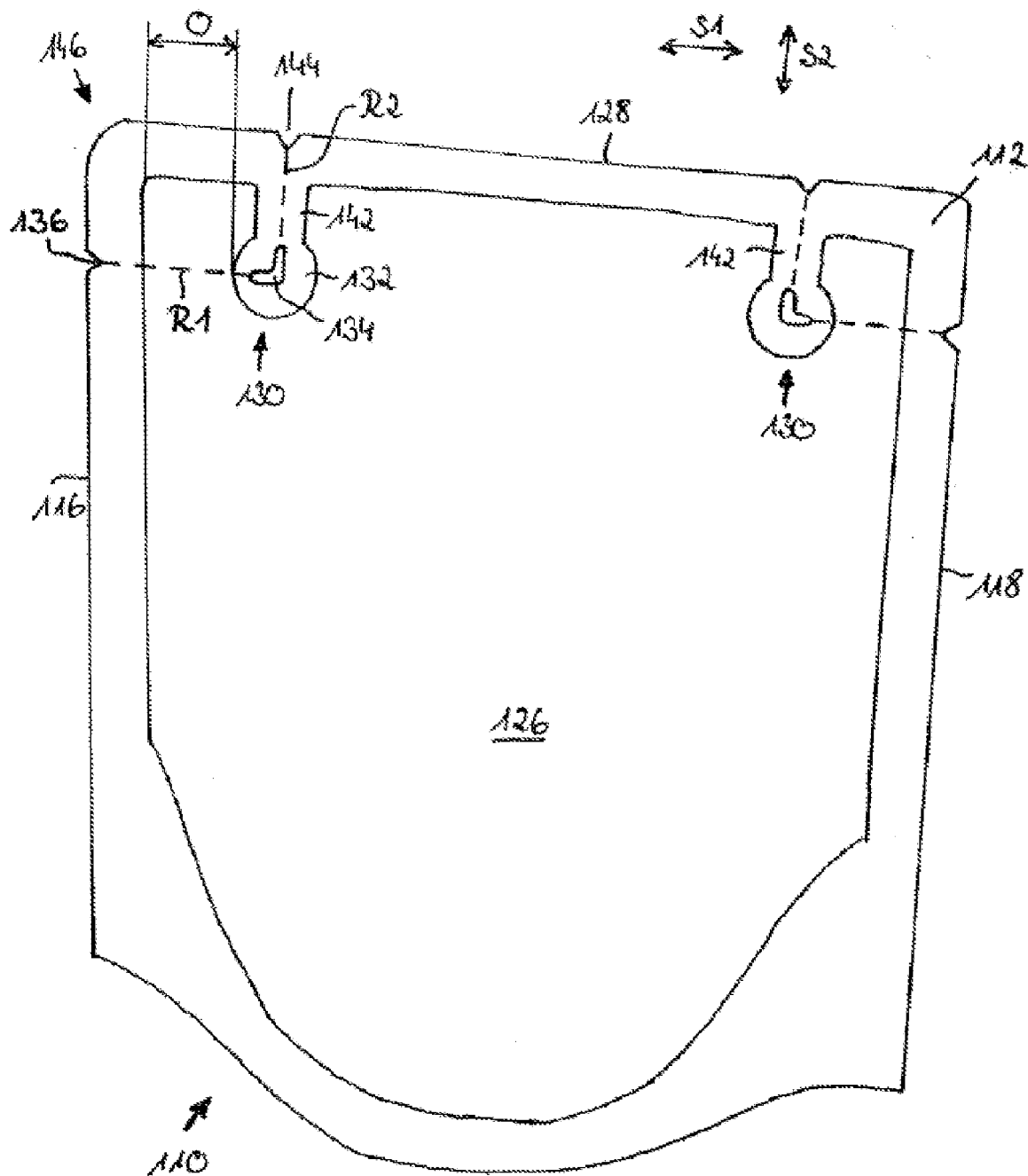
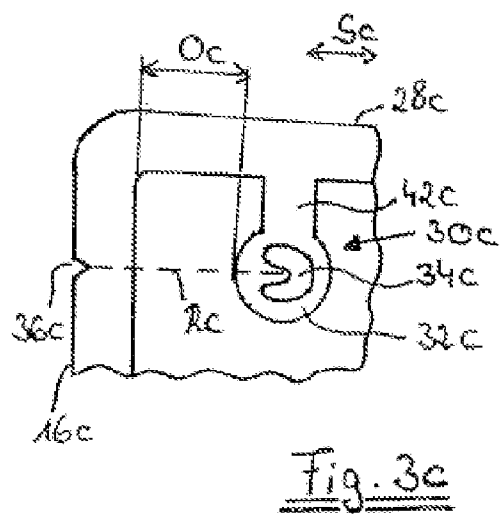
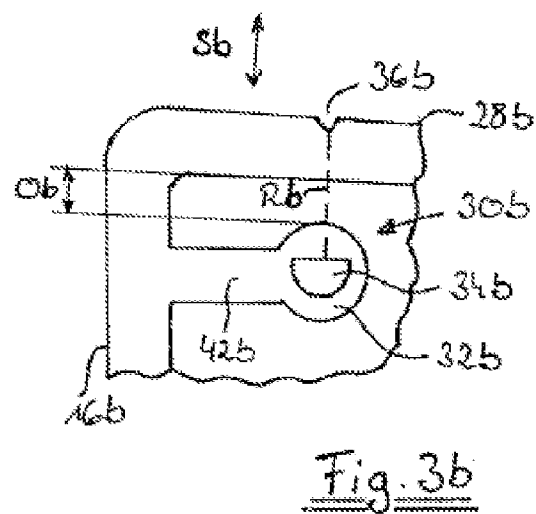
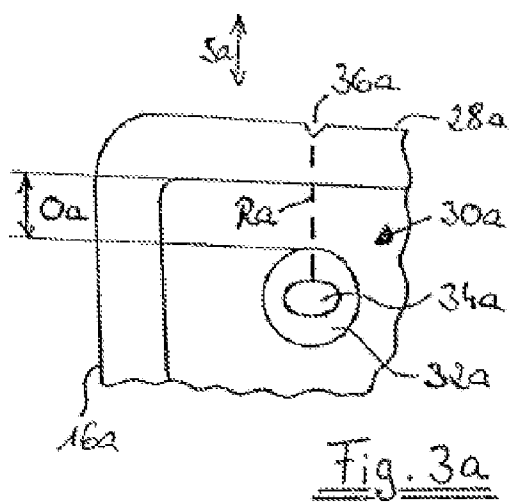
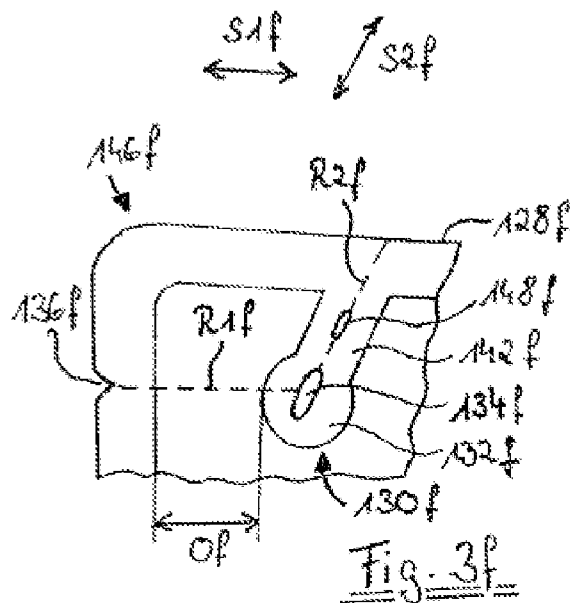
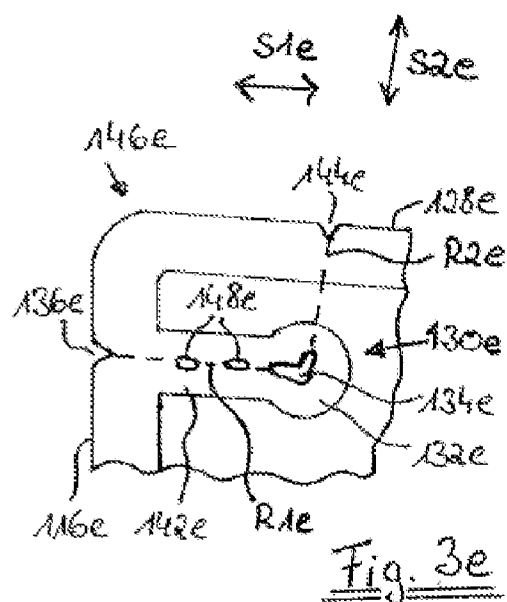
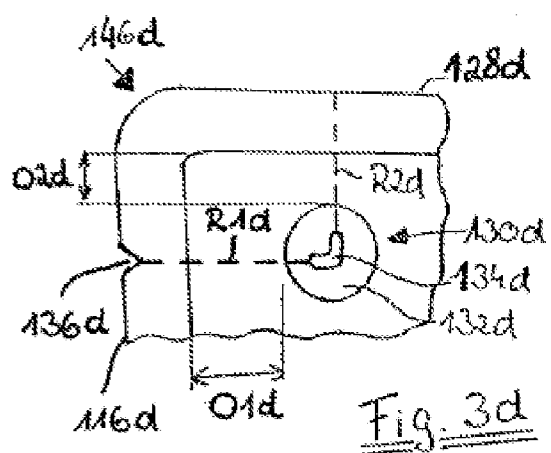


Fig. 2





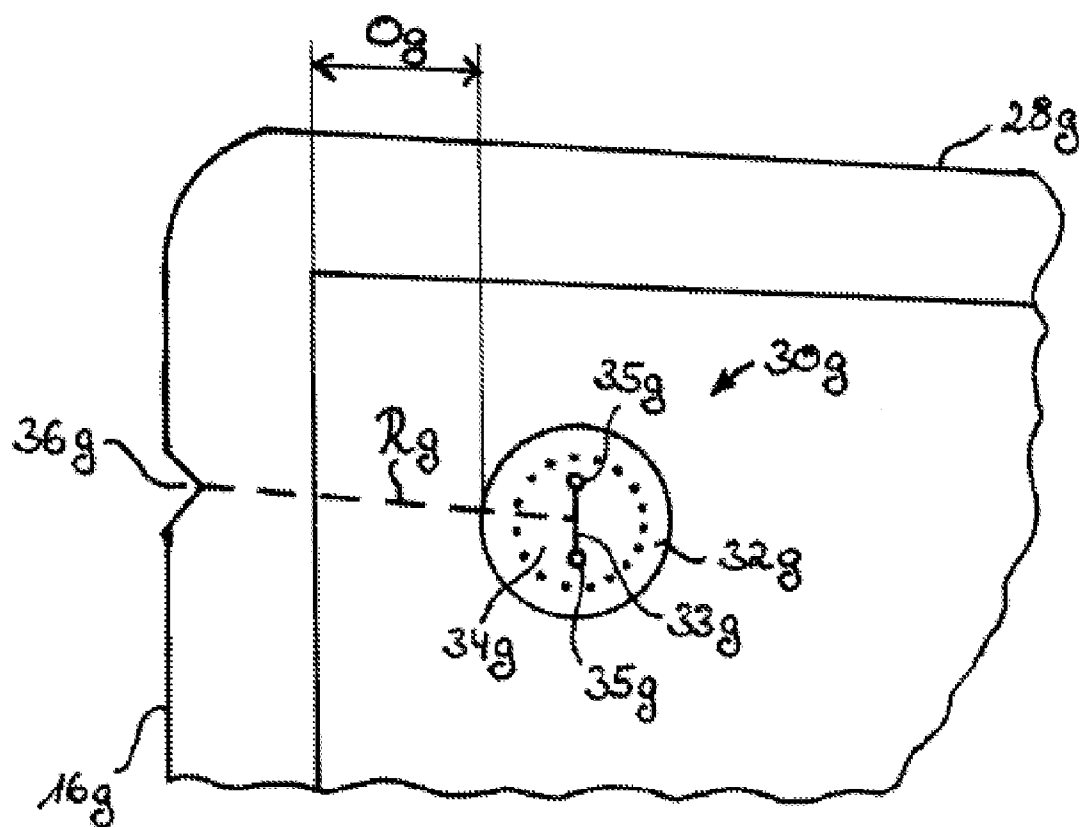


Fig. 3g

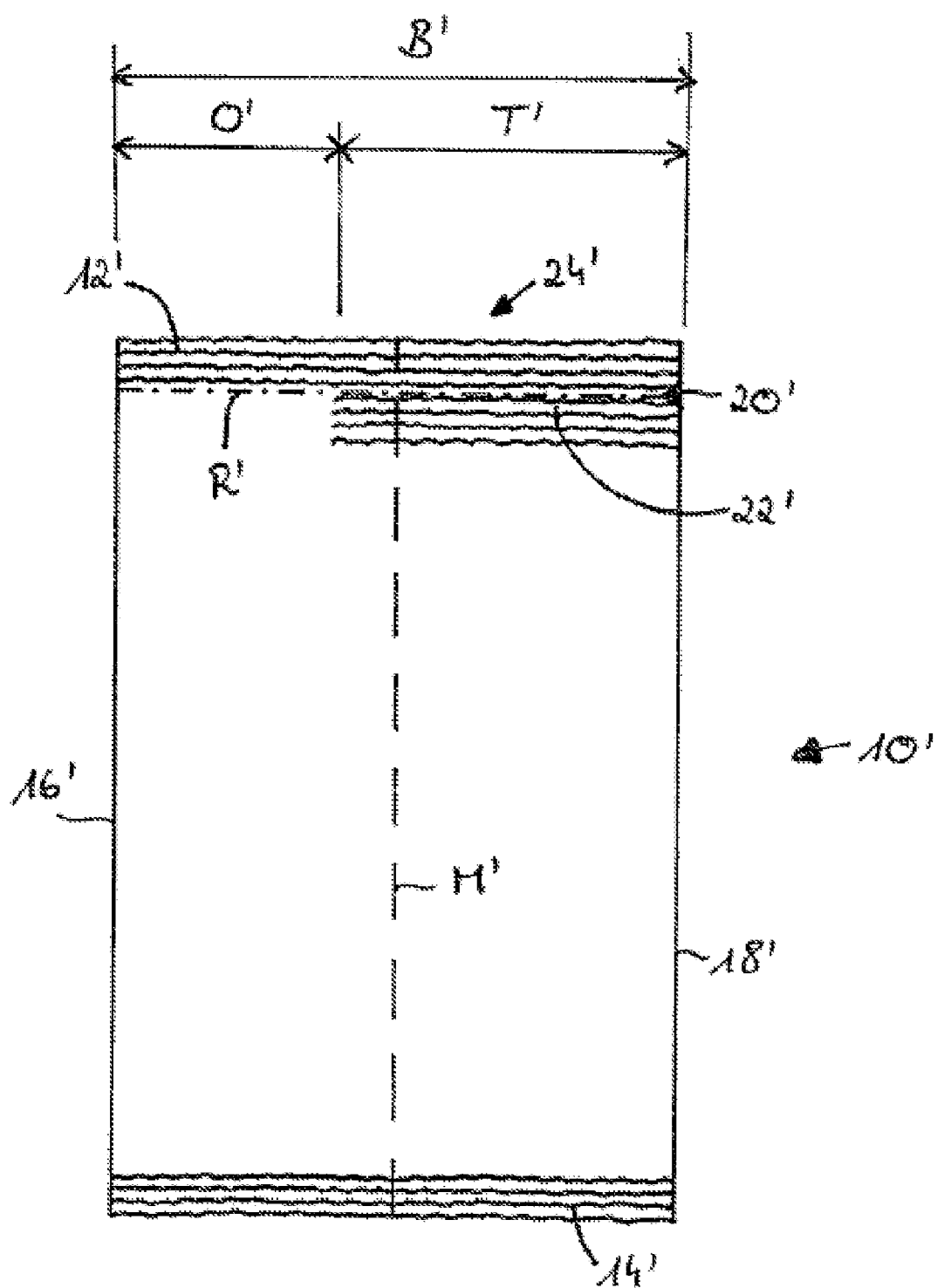


Fig. 4

Prior art

TEAR-OPEN POUCH

[0001] The invention relates to a tear-open pouch comprising a front face of the tear-open pouch defined by an outer edge and a rear face of the tear-open pouch defined by an outer edge, the outer edges thereof being joined together in at least one join outer edge region of the tear-open pouch, a starting point for a predetermined tear-line being provided in such a join outer edge region.

[0002] Nowadays tear-open pouches are used as packaging in large numbers in quite different embodiments and are also becoming increasingly popular, not least because pouches, in comparison with other types of packaging, generally have a relatively low weight and may be disposed of again after use relatively easily in an environmentally acceptable manner. Particularly often, tear-open pouches are used for packaging easily perishable goods, such as foodstuffs, for example potato crisps, soups or other meals, or pet food.

[0003] Different production variants of tear-open pouches are known, in particular as regards joining the front face of the tear-open pouch and the rear face of the tear-open pouch. Thus in a first variant the front face of the tear-open pouch and the rear face of the tear-open pouch may be for example surface portions of a pouch blank which merge with one another into one piece, said pouch blank being formed from a tube which is seamless over the entire periphery around a pouch axis by cutting the tube to length. According to a second variant, however, the two sides may also be surface portions of a pouch blank which merge with one another into one piece on one edge, the edges of the pouch blank being joined together at least in portions to form a tubular semi finished product which is open at the longitudinal ends. Further, in a third variant the two sides may also be blanks formed separately from one another, the edges thereof being joined together at least in portions to form a tubular semi finished product which is open at the longitudinal ends. As a fourth variant in this list given by way of example, the two sides may also be surface portions of a stand up pouch blank joined together in one piece via an integral base portion, it being possible to produce a semi finished product of the stand up pouch which is open at its upper longitudinal end by folding and joining the side edges.

[0004] In the variants set forth above by way of example, edges which are assigned to the respective longitudinal end may be joined together to close the open longitudinal ends and/or the open longitudinal end of the semi finished product to form a closed pouch volume. Thus to form a stand up pouch, optionally a separately formed stand up pouch blank may also be inserted into the relevant longitudinal end.

[0005] For joining surface portions or/and edge portions of the semi finished product, any established joining techniques may be used, for example adhesive bonding and welding. In particular in the field of tear-open pouches which contain foodstuffs, pet food or similar perishable goods, the formation of the join by thermal welding, in particular by forming a sealing seam, is preferred. It should be emphasised at this point, however, that two surface portions which merge with one another into one piece are also "joined together" in the sense of the present invention.

[0006] As the above mentioned tear-open pouch has a starting point for a predetermined tear-line on a join outer edge region, it is possible to open the tear-open pouch simply by tearing open, i.e. without further aids, for example scissors or

a knife, in order to reach the pouch contents in a simple manner. So that the tear-open pouch is not torn open in an uncontrolled manner but along the tear-line, which preferably extends in a substantially linear manner, it is known from the prior art that the material from which the tear-open pouch is made has a preferred tear-open direction.

[0007] A tear-open pouch of the aforementioned type is, for example, disclosed in DE 20 2004 016 420 U1 of the applicant, the tear-open pouch being formed as a tear-open stand up pouch, a unidirectionally stretched film being used for the manufacture thereof. As a result of the stretching, the molecule chains in the film are aligned substantially parallel to the stretching direction, as a result of which the material has obtained a preferred ability to be separated in this stretching direction. Thus, the tear-open stand up pouch may be torn open relatively easily in a linear manner in the stretching direction, in order to detach a defined top portion from the remaining tear-open pouch.

[0008] A drawback with such tear-open pouches, however, is that inevitably a very large opening is produced when, for opening the tear-open pouch, a top portion which may be torn off is torn off the remaining tear-open pouch. Firstly, the quantity of contents poured out of the tear-open pouch may be poorly dispensed through such a large opening. Accurate dispensing is, however, important, for example when the tear-open pouch is intended to function as a type of "salt cellar", this term merely being intended to emphasise the desired accuracy of dispensing, or if it is not intended to be completely emptied. Secondly, a large opening may only be resealed with difficulty, which is always of particular importance when the tear-open pouch which has been only in portions emptied is to be stowed away again. Further, there are other cases where it is advantageous for the user to be able to introduce into the tear-open pouch in a simple manner an opening of predetermined size, in particular of small size compared with the opening cross section which may be achieved by completely tearing off the top portion. This may, for example, be the case when steam which is produced when heating up the pouch contents, for example in a microwave heating device, is intended to be able to escape from the tear-open pouch. The opening required therefor should, however, preferably be sufficiently small so that the pouch contents to be heated up, for example a soup to be brought to boiling point, cannot escape and/or spray in an uncontrolled manner out of the tear-open pouch.

[0009] Even in conventional tear-open pouches there is the possibility of not completely tearing open the tear-open pouch, i.e. not detaching but simply tearing the top portion, but this is frequently a drawback. Firstly, it may arise that the top portion, which can be torn off, gets in the way when it is still in portions connected to the remaining tear-open pouch, when the pouch contents are emptied. Secondly, for the user it is generally difficult to tear the tear-open pouch sufficiently accurately that an opening of the desired size is produced.

[0010] To solve this object, a tear-open pouch of the aforementioned type has already been proposed, which is described hereinafter in more detail with reference to FIG. 4. This tear-open pouch 10' is a so-called tubular pouch, as it is formed from a film with a tubular base body. An upper and a lower longitudinal end of the pouch are sealed in each case by a sealing seam 12' and/or 14' extending transversely to a centre axis M' of the tubular base body. The sealing seams 12' and/or 14' which are indicated in FIG. 4 in each case by a plurality of slightly wavy lines, are produced in this case by

thermal welding of the corresponding film portions. Further, the tear-open pouch 10' has on its side edge 18' a tear-line starting point 20' which is indicated to the user by a small marking and/or notch. Thus the user may easily detach a top portion 24' from the remaining tear-open pouch 10' along a tear-line R' indicated by a dashed dotted line. These features described above may be found in very many known tear-open pouches.

[0011] It is a particularity of the present tear-open pouch 10', however, that directly below the upper sealing seam 12', a further sealing seam 22' adjoins said upper sealing seam and does not extend, as the upper sealing seam 12' does, over the entire width B' of the tear-open pouch 10' but only over a partial region T'. The further sealing seam 22' thus starts from the side edge 18' and encompasses at that point the tear-line starting point 20'. As, therefore, a portion of the predetermined tear-line R' is located in the further sealing seam 22', the tear-open pouch 10' is not opened over its entire width B' when the top portion 24' is detached. Instead, only a relatively small opening is formed, the length O' thereof corresponding to the width B' of the tear-open pouch 10' minus the length T' of the further sealing seam 22'.

[0012] A drawback with this tear-open pouch 10' is, however, that for forming the opening of the width O' a relatively large amount of film material has to be provided, since the entire top portion 24' has to be torn off to form this opening. As tear-open pouches are generally mass produced industrial products, this increased demand for film leads to significantly higher production costs overall and additional environmental pollution.

[0013] It is, therefore, the object of the present invention to provide a tear-open pouch of the aforementioned type, which makes it possible in an alternative manner to introduce an opening of predetermined size therein, which is smaller than a maximum opening which may be achieved by completely tearing off a top portion from a conventional pouch.

[0014] This object is achieved according to a first feature of the present invention by a tear-open pouch of the aforementioned type, in which the front face of the tear-open pouch and the rear face of the tear-open pouch are also joined together at least in portions in an inner region surface portion arranged spaced apart from the outer edges thereof and in which the inner region surface portion defines a predetermined tear-line end point, in which the tear-line terminates, the tear-line extending between the tear-line starting point and the inner region surface portion through surface portions of the tear-open pouch which are not joined together.

[0015] In other words, this means that when tearing open the tear-open pouch, the tear may no longer extend from the tear-line starting point, which is provided in a join outer edge region of the tear-open pouch, as far as a join outer edge region opposing the tear-line starting point in the direction of the predetermined tear-line, but the tear is stopped after a predetermined distance on the path thereto by means of the tear-line end point defined in the inner region surface portion. Nevertheless, in order to continue the tear in the direction of the predetermined tear-line beyond the tear-line end point of the inner region surface portion, a significantly greater exertion of force is required than for tearing open as far as the tear-line end point.

[0016] Because the tear-open pouch, therefore, is only torn open along the predetermined tear-line between the tear-line starting point and the tear-line end point defined by the inner region surface portion, the front face of the tear-open pouch

and the rear face of the tear-open pouch being joined together at the join outer edge portion comprising the tear-line starting point and at the inner region surface portion but not in the surface portions therebetween, an opening of precisely predetermined size may be introduced in a simple manner into the tear-open pouch.

[0017] According to the first feature of the present invention, therefore, the torn top portion of the tear-open pouch stays on the remaining tear-open pouch. This may be acceptable particularly in cases when the opening produced in this manner is not intended to be used for emptying the actual pouch contents but for other purposes, such as for allowing the escape of steam. When the torn top portion stays on the remaining tear-open pouch, this additionally has the advantage that fewer individual items of refuse are produced, and this simplifies disposal.

[0018] If, however, it is considered inconvenient that the torn top portion stays on the remaining tear-open pouch, for example because the actual pouch contents are intended to be emptied through the opening achieved in this manner, it is proposed according to a second feature of the present invention, by which the above mentioned object is also achieved, that the front face of the tear-open pouch and the rear face of the tear-open pouch are also joined together at least in portions in an inner region surface portion arranged spaced apart from the outer edges thereof and the inner region surface portion defines a predetermined tear-line deflection point, in which the tear-line is deflected, in order to terminate in a tear-line end point provided in a join outer edge region of the tear-open pouch, the tear-line extending between the tear-line starting point and the inner region surface portion or/and between the inner region surface portion and the tear-line end point through surface portions of the tear-open pouch which are not joined together.

[0019] The tear-line extending from the tear-line starting point, for example in a substantially linear manner, is thus deflected at the tear-line deflection point defined by the inner region surface portion in a predetermined different tear-line spreading direction, in order to extend in turn in a substantially linear manner, for example, as far as a join outer edge region of the tear-open pouch. Should the user attempt to continue the tear at the tear-line deflection point in a direction which does not correspond to the desired other tear-line spreading direction, the user would require a significantly greater exertion of force therefor than for tearing along the desired tear-line. The specific design of the tear-open pouch means that the tear introduced by the user with a corresponding exertion of force by the user follows the direction of the least resistance, predetermined by the tear-line deflection point.

[0020] At least the two tear-line portions starting from the tear-line deflection point form an angle, preferably a right angle. For improved tear guidance, the designated tear-line portions at the tear-line deflection point are preferably joined together by a deflection point which has a curved shape, particularly preferably without corners.

[0021] As the tear-line extends between the tear-line starting point and the inner region surface portion or/and between the inner region surface portion and the tear-line end point through surface portions of the tear-open pouch not joined together, when detaching such a portion from the tear-open pouch one or more openings of specifically predetermined size is and/or are produced on the tear-open pouch.

[0022] In order to be able to achieve a ratio which is as advantageous as possible between the quantity of film material required, on the one hand, and the pouch volume which may be enclosed thereby, on the other hand, in a development of both features of the invention it is proposed that the inner region surface portion is of insular configuration, being surrounded all around by surface portions of the tear-open pouch which are not joined together. Thus only the inner region surface portion itself is not available to enclose the contents of a pouch whilst the surface portions surrounding said inner region surface portion are able, in principle, to enclose the contents of the pouch.

[0023] With regard to the second feature of the invention, it should be mentioned that the insular solution disclosed here has the result that at least two openings are produced when the portion is torn off from the tear-open pouch. If, however, only one opening is desired, it is alternatively proposed that the inner region surface portion is of peninsular configuration, in that a web portion of surface portions of the tear-open pouch which are joined together, i.e. surface portions of the front face of the tear-open pouch and the rear face of the tear-open pouch which are joined together, extends from the inner region surface portion to a join outer edge region of the tear-open pouch. If either the predetermined tear-line extends between the tear-line starting point and the inner region surface portion or the predetermined tear-line extends between the inner region surface portion and the tear-line end point entirely in the web portion, in which the front face of the tear-open pouch is joined to the rear face of the tear-open pouch, no opening is produced in this portion of the tear-line. It should be mentioned here that this peninsular solution may also be used in combination with the first feature of the invention, for example for production reasons, in which case the tear-line between the tear-line starting point and the inner region surface portion does not extend in the web portion, as otherwise an opening could not be introduced into the tear-open pouch.

[0024] With regard to the second feature of the invention, it should also be mentioned that in the web portion at least one region surrounded by the web portion may also be provided which has a material weakening, for example in the form of a stamped portion or recess or/and no material at all, for example in the form of a through opening, so that the tear guidance is simplified along a predetermined tear-line extending in the web portion. In particular, in the web portion a linear perforation or/and a linear cut-out, introduced for example by a laser, may be provided in the film material in order to form the predetermined tear-line extending in the web portion.

[0025] So that the inner region surface portion may reliably define a tear-line end point and/or a tear-line deflection point, it is further proposed that the inner region surface portion comprises at least one first partial surface portion and one second partial surface portion which have tear spreading properties which are different from one another. Thus, in particular, it is conceivable that, when torn open, the second partial surface portion has a markedly lower resistance relative to the first partial surface portion.

[0026] A markedly lower tear resistance in the second partial surface portion relative to the first partial surface portion may, for example, be advantageously achieved by the second partial surface portion comprising a material weakening in the front face of the tear-open pouch or/and in the rear face of the tear-open pouch. Amongst other things, it is to the credit

of the inventor to have identified that the notch effect which is essential for spreading the tear may be influenced by a suitable design of the aforementioned material weakening and the arrangement thereof in the predetermined tear-line, in particular significantly reduced or even completely eliminated. The notch effect, due to the concentration of stress in the tip of the notch, namely makes it possible to achieve a tear and/or to continue a tear with relatively little force. Thus by means of the design and arrangement of the material weakening, a continuation of a tear in the tearing direction leading to the material weakening may be considerably more difficult beyond the material weakening (tear-line end point) or a tear may be deflected at the location of the material weakening from one tear-line direction into another (tear-line deflection point).

[0027] It may be advantageous if the material weakening in the second partial surface portion is of planar configuration. As a result, a user tearing open the tear-open pouch for example may easily identify haptically and possibly also visually when the tear reaches the material weakening in the second partial surface portion. The haptic detection of the material weakening allows the user, in particular, to identify that at least a linear continuation of the tear is not possible beyond the material weakening in the second partial surface portion or is only possible by an increased exertion of force. The planar material weakening in the second partial surface portion may thus extend over the entire second partial surface portion, and/or in other words the second partial surface portion may be defined in a congruent manner with the planar material weakening. For example, the planar material weakening may be easily produced by puncturing the material, the tool used therefor, such as a type of needle, preferably having a preferably conical shape increasing in diameter in the longitudinal direction, so that when puncturing the material with the tool, the hole may be correspondingly widened according to how far the tool is pushed through the material.

[0028] Alternatively, however, it is also possible for the material weakening to be formed in a linear manner in the second partial surface portion. Thus, for example, it may simply be a linear cut-out or through opening, in particular, in the material of the front face of the tear-open pouch or/and rear face of the tear-open pouch, which may be produced very easily in terms of production. Additionally, forming a linear material weakening generally requires less material than a planar material weakening, which makes the tear-open pouch more economical. It should also be mentioned here that in the case of a material weakening formed in a linear manner, the second partial surface portion may be defined correspondingly so that it completely surrounds the linear material weakening.

[0029] As advantageous shapes for the material weakening in the second partial surface portion it is proposed, for example, that said material weakening may be configured in a substantially circular or semi-circular or crescent-shaped or L-shaped or linear manner. In shapes which have a path which may be substantially continuously differentiated, i.e. no sharp corners or the like, there is generally no point at which a particular concentration of stress may occur in the material, so that in the absence of the notch effect a further spreading of the tear is prevented or at least made considerably more difficult. In particular, in this connection circular or approximately circular, oval shapes are suitable. Such shapes are thus suitable, in particular, for cases where the inner region surface portion is intended to define a tear-line end point. However,

frequently it is also sufficient if the material weakening in the second partial surface portion is free of sharp corners or the like on one side, which opposes the point at which the tear reaches the material weakening in the second partial surface portion. For example, a substantially linear, approximately straight longitudinal cut may be sufficient, in which material is displaced in the front face of the tear-open pouch and the rear face of the tear-open pouch by relinquishing the material connection. In order to achieve the desired stop or deflection effect, however, the longitudinal cut should as far as possible not be formed in the direction of the path of the tear reaching the material weakening in the second partial surface portion, but instead at an angle, preferably perpendicular thereto.

[0030] It may also be conceivable for the material weakening in the second partial surface portion to be formed by the removal of material on the front face of the tear-open pouch or/and the rear face of the tear-open pouch. For example, such a removal may be achieved in a simple manner by stamping out or cutting out the material. A drawback with this is, however, that the material removed from the tear-open pouch could accidentally enter the tear-open pouch interior, where it may lead to contamination of the pouch contents. Even when this may be reliably prevented by corresponding expenditure in terms of production, the removed material still generally leads to an undesirable disposal cost.

[0031] For this reason, it is generally preferred as an alternative to the removal of material, if the material weakening in the second partial surface portion is formed, preferably exclusively, by a displacement of material of the front face of the tear-open pouch or/and the rear face of the tear-open pouch. Such a displacement of material may, for example, be carried out by a preferably linear cut (slit) for example by means of a blade or/and by punctuation (perforation) of the material, for example by the aforementioned needle or the like, or/and by stamping. The advantage relative to the removal of material is thus that no pieces of refuse are produced separately from the remaining tear-open pouch.

[0032] The embodiments cited as preferred for material weakening in the second partial portion, cutting and punctuation, may in principle only extend in the thickness direction of the front face of the tear-open pouch and the rear face of the tear-open pouch (depth direction) over one part of the respective material thickness, so as not to compromise the integrity of the unopened pouch. In order to increase the stop and/or deflection effect of the material weakening, it is however advantageous if the material weakening in the second partial surface portion penetrates the front face of the tear-open pouch or/and the rear face of the tear-open pouch, preferably the front face of the tear-open pouch and the rear face of the tear-open pouch. If the material weakening is namely a through hole, for example a hole or a longitudinal cut in which material has been displaced in the front face of the tear-open pouch and the rear face of the tear-open pouch by relinquishing the material connection, a tear which spreads as a result of the notch effect may not overcome the material weakening due to the relinquished material connection.

[0033] If the pouch contains, for example, foodstuffs, pet food or similar perishable contents, and in particular when the second partial surface portion comprises a through opening, for example a cut or apunctuation, it is then ensured by means of the first partial surface portion that the tear-open pouch remains tightly closed until actually torn open, if the second partial surface portion is surrounded at least in portions, preferably entirely, by the first partial surface portion. Thus, in

particular, it is conceivable that the front face of the tear-open pouch and the rear face of the tear-open pouch are joined together in the first partial surface portion, so that in a state in which it is not torn open, the pouch is securely closed even in the region of the inner region surface portion.

[0034] When opening the tear-open pouch, if the second surface portion is entirely surrounded by the first surface portion, the tear originating from the tear-line starting point and following the predetermined tear-line initially strikes the outer, first partial surface portion in the inner region surface portion. The tear which spreads further then enters the inner, second partial surface portion which has a lower tear-open resistance compared with the first partial surface portion, for example by means of a material weakening.

[0035] If the inner region surface portion is intended to define a tear-line deflection point, it is advantageous if the second partial surface portion has a tear-line continuation point. Such a tear-line continuation point is advantageously formed by a point on the material weakening in the second partial surface portion at which a considerable concentration of stress may occur, for example by a sharp corner, which is formed on a through opening, or the like. As a result, with a suitable configuration and orientation of the material weakening the tear-line may be reliably deflected in the inner region surface portion.

[0036] If the material weakening has, for example, been introduced by a linear cut in the material, a tear-line deflection point in the inner region surface portion may be defined in a simple manner by at least one longitudinal end of the cut, preferably just one longitudinal end, being configured to taper to a point, so that a high concentration of stress may be achieved there. A tear which reaches the material weakening in the second partial surface portion, i.e. in this case the longitudinal cut, may then easily be continued at the at least one longitudinal end which tapers to a point and namely preferably in a different direction from before it reached the longitudinal cut. The longitudinal cut may be formed, but does not have to be formed, in a linear manner. It may also, for example, have an L shape.

[0037] If, however, the inner region surface portion is intended to serve as a tear-line end point, and if the material weakening is formed by a linear longitudinal cut, preferably the two longitudinal ends of the cut are configured to be rounded, for example by means of a corresponding choice of cutting tool, in order, compared with a non rounded end, to have a reduced notch effect and in order, therefore, to make it difficult for the tear to spread further at the longitudinal ends. For this purpose, the cutting tool may be formed approximately in the manner of a blade, the blade tip used for perforation having a relatively sharp edge and the edge becoming increasingly blunt, i.e. round, the further away it is from the blade tip.

[0038] In order to indicate to the user where the tearing should begin in the join outer edge region of the tear-open pouch, and in order to simplify the tearing for the user, it is further proposed that the tear-line starting point is formed by a tearing aid. For example a notch, a stamped portion or the like may serve as a tearing aid. In principle, however, it is also conceivable for the tear-line starting point to be displayed purely visually, for example by a corresponding printed portion on the tear-open pouch, preferably on the outer face thereof. In the event that the inner region surface portion defines a predetermined tear-line deflection point, and thus a tear-line end point is present, it may be advantageous to also

provide the tear-line end point with such a tearing aid, so that said tearing aid may optionally also serve as a tear-line starting point. Moreover, provided it is present, the tear-line continuation point may also have such a tearing aid.

[0039] In order to provide that the tear does not extend in an uncontrolled manner but follows the predetermined tear-line, it is further proposed, as already known per se from the prior art, that the front face of the tear-open pouch or/and the rear face of the tear-open pouch a) comprises and/or comprise a film made of stretched plastics material, the stretching direction of the plastics film defining a preferred direction of the spreading of the tear or/and b) comprises and/or comprise at least one material weakening, in particular stamped portion or recess, extending in a preferred direction of the spreading of the tear. For the stretched plastics film, unidirectionally or bidirectionally stretched films are suitable, in particular. In bidirectionally stretched films, one of the two stretching directions may encourage tearing along the tear-line between the tear-line starting point and inner region surface portion, whereas the other of the two stretching directions may encourage tearing along the tear-line between the inner region surface portion and the tear-line end point, provided the inner region surface portion defines a tear-line deflection point.

[0040] In particular, in the case where the tear-open pouch is intended to be used in order to heat up the pouch contents, for example in a microwave heating device, it may be advantageous if the tear-open pouch comprises at least two inner region surface portions, which are assigned to edge portions spaced apart from one another and preferably opposing one another. In this manner, it may be provided that steam can escape relatively uniformly from the tear-open pouch through a plurality of openings which may be introduced into the tear-open pouch by tearing, so that the risk of excess pressure in the tear-open pouch does not occur anywhere.

[0041] In this case, the predetermined openings, through which the steam is intended to be able to escape when heating up the pouch contents, may preferably be small compared with the width of the top portion of the tear-open pouch, so that during heating only the steam is able to leave the pouch contents, rather than a portion of the actual pouch contents to be heated up, for example a soup to be brought to boiling point.

[0042] So that it can nevertheless be made possible to empty the pouch contents subsequently in a simple manner, it is proposed that the tear-open pouch also comprises at a further join outer edge region at least one further tear-line starting point, which serves for tearing off a top portion of the tear-open pouch, the top portion which may be torn off preferably comprising the inner region surface portion and/or the at least two inner region surface portions. Thus, if desired, bulkier material may be easily emptied from the pouch.

[0043] In a development of the invention it is proposed that the tear-open pouch according to the invention is made from a material which is suitable for use in a microwave heating device. Thus the material of the tear-open pouch should be free of metal as far as possible and not able to be heated up by the microwave radiation itself. However, the material has to be able to withstand safely the temperatures to which the pouch contents are brought when heated up, without suffering damage.

[0044] With regard to the heating of foodstuffs in a tear-open pouch which are pourable or very easy to dispense, according to the invention it is advantageous if said tear-open pouch is a stand up pouch. With a securely upright stand up

pouch, the risk is reduced of the pouch contents flowing out inadvertently when at least one opening is introduced in the region of the upper top portion of the pouch by tearing open.

[0045] Moreover, according to a third feature, the invention relates to the use of a tear-open pouch according to the invention, in particular a stand up pouch according to the invention, for heating up meals, in particular in a microwave heating device. This avoids the effort of transferring the pouch contents into a different container in which the pouch contents would otherwise have to be heated. Furthermore, the washing-up necessary for cleaning such a container is also dispensed with, which saves time and water, in particular. A warm meal may thus be prepared rapidly and easily.

[0046] At this point it should be added that both at least one first inner region surface portion, which according to the first feature of the invention defines a tear-line end point, and at least one second inner region surface portion, which according to the second aspect of the invention defines a tear-line deflection point, may naturally also be provided on a tear-open pouch according to the invention. Thus the tear-open pouch, for example before heating up its contents in a microwave heating device, could be torn as far as the tear-line end point in the at least one first inner region surface portion, so that through the first opening produced thereby steam may escape from the tear-open pouch when the pouch contents are heated up. Subsequently, a portion of the tear-open pouch could then be torn off by means of the tear-line deflection point in the at least one second inner region surface portion, in order to empty the heated pouch contents easily out of the tear-open pouch through the second opening produced thereby. Preferably, therefore, the first opening is spaced apart from the second opening so that, when emptying the pouch contents through the second opening, at the same time air may flow into the tear-open pouch through the first opening, whereby it is possible for the substantially liquid pouch contents to be poured out uniformly without a “slopping effect”.

[0047] The present invention is described in more detail hereinafter with reference to the accompanying figures, in which:

[0048] FIG. 1 shows a schematic representation of a first embodiment of a tear-open pouch according to the invention, in which an inner region surface portion defines a tear-line end point;

[0049] FIG. 2 shows a view similar to FIG. 1 of a second embodiment of a tear-open pouch according to the invention, in which an inner region surface portion defines a tear-line deflection point;

[0050] FIG. 3a shows a detail of the tear-open pouch according to the invention shown in FIG. 1 according to a first modification;

[0051] FIG. 3b shows a detail of the tear-open pouch according to the invention shown in FIG. 1 according to a second modification;

[0052] FIG. 3c shows a detail of the tear-open pouch according to the invention shown in FIG. 1 according to a third modification;

[0053] FIG. 3d shows a detail of the tear-open pouch according to the invention shown in FIG. 2 according to a first modification;

[0054] FIG. 3e shows a detail of the tear-open pouch according to the invention shown in FIG. 2 according to a second modification;

[0055] FIG. 3f shows a detail of the tear-open pouch according to the invention shown in FIG. 2 according to a third modification;

[0056] FIG. 3g shows an enlarged detail of the tear-open pouch according to the invention shown in FIG. 1 according to a fourth modification; and

[0057] FIG. 4 shows a tear-open pouch of the prior art.

[0058] In FIG. 1 a first embodiment of a tear-open pouch according to the invention is denoted generally by 10. The tear-open pouch 10 is a stand up pouch which, in addition to a front face of the tear-open pouch 26 and a rear face of the tear-open pouch, not shown, also comprises a further, not shown, tear-open pouch base. The front face of the tear-open pouch 26 and the rear face of the tear-open pouch are defined by an outer edge in each case, a first side edge 16, a second side edge 18 spaced apart therefrom and a top edge 28 of the front face of the tear-open pouch which extends between the side edges 16, 18 being joined to corresponding edges of the rear face of the tear-open pouch in a join outer edge region. The aforementioned edges are in this case joined together in the join outer edge region, preferably by a sealing seam 12. In their lower region, however, the front face of the tear-open pouch 26 and the rear face of the tear-open pouch are preferably joined by a sealing seam to the tear-open pouch base.

[0059] The front face of the tear-open pouch 26 and the rear face of the tear-open pouch are further joined together at least in portions on two inner region surface portions 30. As the two inner region surface portions 30 shown in FIG. 1 are formed substantially identically, only the inner region surface portion 30 shown in FIG. 1 to the left will be described in the following. Said inner region surface portion comprises an outer first partial surface portion 32 configured in an annular manner and a second partial surface portion 34 completely surrounded by the first partial surface portion 32 and of circular configuration. In the region of the first partial surface portion 32, the front face of the tear-open pouch 26 and the rear face of the tear-open pouch, as described above, are joined together, for example by welding. In the region of the second partial portion 34, the front face of the tear-open pouch 26 and the rear face of the tear-open pouch, however, have a through opening.

[0060] Reference should be made at this point to the fact that the tear-open pouch 10 may also comprise just one single inner region surface portion 30. This applies equally to the embodiments and/or modifications to be described further hereinafter.

[0061] A tearing aid 36 in the form of a notch is provided in the region of the first side edge 16 on the join outer edge portion of the tear-open pouch 10, and indicates to the user where the tear-line starting point is located and at the same time considerably simplifies the tearing process for the user, due to the notch effect. The front face of the tear-open pouch 26 and the rear face of the tear-open pouch both preferably comprise a film, which is stretched unidirectionally in a stretching direction S. As the molecule chains are aligned substantially parallel to the stretching direction S when stretching the film, the material has a preferential ability to separate in this stretching direction S. Therefore, when the tear-open pouch 10 is torn open at the tearing aid 36, a tear extends substantially parallel to the stretching direction S along a tear-line R. After a short distance, when tearing open the tear-open pouch 10, the tear starting from the tearing aid 36 leaves the join outer edge region, in which the front face of

the tear-open pouch 26 is joined to the rear face of the tear-open pouch, in order to enter a region in which these two sides are not joined together.

[0062] After the tear in this region has covered the distance O, it initially enters the first partial surface portion 32, following the tear-line R, and then enters further into the second partial surface portion 34 of the inner region surface portion 30. As already mentioned above, the second partial surface portion 34 has a material weakening in the form of a circular hole, the hole in this case making up the entire second partial surface portion 34. Due to the circular shape, the material weakening which is of planar configuration in the present case in the second partial surface portion 34 has across its entire circumference a substantially constant, continuously differentiable radius of curvature, no further notch or the like being provided in particular in the extension of the tear-line R on the edge of the material weakening of the second partial surface portion 34, so that further tearing is not possible or only possible by a substantially greater exertion of force relative to tearing open along the tear-line R. Thus the second partial surface portion 34 of the inner region surface portion 30 and/or the material weakening provided therein in the form of a hole defines a tear-line end point.

[0063] It is possible in a simple manner, therefore, with the above described arrangement for a user to introduce an opening of the predetermined length O into the tear-open pouch 10. This small opening relative to the overall width of the tear-open pouch 10 may be used in the present exemplary embodiment, in particular, to allow steam to escape from the tear-open pouch 10 when the pouch contents are to be heated up in a microwave heating device.

[0064] That which has been described above naturally also applies analogously to the inner region surface portion 30 shown in FIG. 1 on the right hand side, which is used to introduce a further small opening of predetermined size into the tear-open pouch 10, so that the steam may escape more, uniformly from the tear-open pouch 10. The openings which may be introduced are thus preferably small, so that when heating up the pouch contents only the steam rather than the actual pouch contents can leave the pouch. For example, a liquid such as a soup, which is heated up to its boiling point, could easily spray through the opening if said opening were very large.

[0065] The relatively small openings, however, are rather unsuitable for emptying the heated pouch contents, in particular because the region of the tear-open pouch 10 which has been torn but not torn off may get in the way during the emptying process. Thus the first side edge 16 and the second side edge 18 each further comprise a respective further tearing aid 38 or 40. By means of a tear starting from this tearing aid 38 and/or 40, the entire top portion 24 of the tear-open pouch 10 may be detached therefrom. This is already known per se from the prior art. Thus the user may detach the top portion, optionally by starting to tear the further tearing aid 38 or 40 and then continuing the tear along an overall width tear-line G which extends parallel to the stretching direction S until it reaches the corresponding opposing tearing aid 40 or 38. Thus an opening is produced over the entire width of the tear-open pouch 10 through which the heated pouch contents may be easily emptied. Preferably, therefore, as shown in the exemplary embodiment of FIG. 1, the top portion 24 which may be torn off also comprises the inner region surface portion(s) 30.

[0066] Reference should be made at this point to the fact that in FIGS. 1, 2 and 3a to 3f, only exemplary embodiments in which the material weakenings are formed in the second partial surface portions as planar holes are shown. In these exemplary embodiments, the region of the material weakening in each case extends over the entire second partial surface portion so that here the shape of the second partial surface portion is the same as the shape of the material weakening belonging thereto. Similarly, the material weakening may also have a substantially non planar design, as for example is further disclosed with regard to the exemplary embodiment shown in FIG. 3g, the second partial surface portion in the sense of the present invention thus being a planar region which surrounds the material weakening. Moreover, it is generally preferred but not imperative that the material weakening is formed by a hole in the material. It could as already described also extend, in principle, only over part of the respective material thickness, in the thickness direction of the front face of the tear-open pouch and the rear face of the tear-open pouch (depth direction).

[0067] Hereinafter, possible modifications of the embodiment shown in FIG. 1 are initially described with reference to FIGS. 3a to 3c and FIG. 3g. FIGS. 3a to 3c and FIG. 3g all show a left upper detail of the tear-open pouch 10 shown in FIG. 1, but with different modifications. These alterations and/or modifications relate, in particular according to a first perspective, to the shape of the second partial surface portion of the inner region surface portion and/or the material weakening located therein and according to a second perspective the presence and/or the design of a web portion. Reference should be made here to the fact that these two perspectives are substantially independent of one another and therefore may be freely combined with one another provided nothing to the contrary emerges from the subsequent description. This also applies to the modifications shown in FIGS. 3d to 3e, which are described further below.

[0068] Features similar to the first embodiment shown in FIG. 1 are provided with the same reference numerals in FIGS. 3a to 3c and in FIG. 3g, but with an additional letter a, b, c or g corresponding to the respective figure. Moreover, the modifications according to FIGS. 3a to 3c and FIG. 3g are only described hereinafter insofar as they differ from the embodiment according to FIG. 1, reference being expressly made hereby to the descriptions thereof.

[0069] In FIG. 3a, in contrast to the first embodiment shown in FIG. 1, a second partial surface portion 34a of an inner region surface portion 30a is not perfectly circular but formed slightly elliptically. However, because in particular the edge portion of the second partial surface portion 34a, which opposes the edge portion on which a tear following a tear-line Ra enters the second partial surface portion 34a, has a relatively large radius of curvature and is free of points with a strong notch effect, and because the remaining edge portions of the second partial surface portion 34a also have no points with a strong notch effect, the tear cannot be continued beyond the second partial surface portion 34a, or can only be continued with an increased exertion of force. Thus the second partial surface portion 34a shown in FIG. 3a is capable of defining a tear-line end point.

[0070] Further, the portion shown in FIG. 3a of the embodiment shown in FIG. 1 also differs in that a tearing aid 36a is provided on the upper top edge 28a and not on the first side edge 16a, so that the tear-line Ra in FIG. 3a accordingly extends from top to bottom and not from left to right as in FIG.

1. A stretching direction Sa thus extends parallel to the tear-line Ra in order to encourage spreading of the tear along the tear-line Ra.

[0071] In FIG. 3b a second partial surface portion 34b of an inner region surface portion 30b is of semi circular configuration, the edge portion of the second partial surface portion 34b which opposes the edge portion, at which a tear following a tear-line Rb enters the second partial surface portion 34b, having a uniform radius of curvature and being free of points with a strong notch effect. In the semi circular partial surface portion 34b at the two ends of the semi circle, there are two corners which have a specific notch effect, but in order to continue a tear at these corners, it might be necessary to tear in approximately the opposing direction from before, i.e. before the tear has reached the second partial surface portion 34b. This is, however, not intuitively obvious to someone who tears open the pouch. Thus the second partial surface portion 34b shown in FIG. 3b is also capable of defining a tear-line end point.

[0072] Furthermore, the portion shown in FIG. 3b of the embodiment shown in FIG. 1 differs in that the inner region surface portion 30b is not insular but peninsular. A web portion 42b in which the front face of the tear-open pouch and the rear face of the tear-open pouch are joined together extends between the inner region surface portion 30b and a join outer edge region on a first side edge 16b. The web portion 42b may, for example, be advantageous if it is to be provided that the opening produced by tearing open is intended to be separated on one side from the actual volume which the pouch encloses. Moreover, the design of the web portion 42b in this case may also have advantages in terms of production.

[0073] The arrangement of a tearing aid 36b, the path of a tear-line Rb and the alignment of a stretching direction Sb are substantially as in the modification described in FIG. 3a, to which reference is made here.

[0074] In FIG. 3c a second partial surface portion 34c of the inner region surface portion 30c is of crescent-shaped configuration. The second partial surface portion 34c is thus also capable of defining a tear-line end point, as in principle the same applies as in the modification with the crescent-shaped partial surface portion, which is shown in FIG. 3b and reference is hereby made to the description thereof.

[0075] As in FIG. 3b, in the modification shown in FIG. 3c the inner region surface portion 30c is also peninsular. However, as shown in FIG. 3c, a web portion 42c does not extend substantially horizontally here, but substantially vertically, the web portion 42c extending between the inner region surface portion 30c and a join outer edge region on an upper top edge 28c.

[0076] The modification shown enlarged in FIG. 3g differs significantly from the first embodiment shown in FIG. 1, and from all modifications described hitherto, in that the material weakening provided in the inner region surface portion 30g is configured to be substantially non planar. The material weakening has in this case a different shape from the second partial surface portion 34g, which is a circular surface portion, as indicated in FIG. 3g by a dotted line.

[0077] The material weakening is formed in the modification shown in FIG. 3g by a linear cut 33g, which is oriented substantially perpendicular to the predetermined tear-line Rg. The cut 33g opens at its two longitudinal ends in each case into a substantially circular perforation 35g. The perforations 35g, due to their edges which do not have corners, cause the notch effect at these points to be markedly reduced compared

to the longitudinal ends of the cut **33g**, which more or less taper to a point, so that the inner region surface portion **30g** in this case may reliably serve as a tear-line end point. In the present modification, the material in the front face of the tear-open pouch and the rear face of the tear-open pouch has been displaced beyond the overall thickness at the points of the cut **33g**, for example by a blade or the like, and the two perforations **35g**, for example by a needle or the like, by relinquishing the material connection, so that when incorporating the material weakening no material has been detached from the tear-open pouch, which otherwise could lead in some instances to contamination of the pouch contents.

[0078] A tear starting from the tearing aid **36g** provided on the first side edge **16g** and following the tear-line **Rg**, after the tear-open pouch has been torn open along the predefined length **Og**, enters the first partial surface portion **32g**, in which the front face of the tear-open pouch is joined to the rear face of the tear-open pouch. Following the tear-line **Rg** further, the tear subsequently enters a region of the second partial surface portion **34g**, in which the front face of the tear-open pouch and the rear face of the tear-open pouch also may be joined together, this not being necessarily required. At some point, the tear then meets the material weakening, i.e. the cut **33g**. Due to the absence of corners in the shape of the material weakening, there are no points where a high concentration of stress could occur due to the notch effect, so that the tear is not able to overcome the material weakening or can do so only with a greatly increased exertion of force. The further spreading of the tear may thus be reliably stopped by the material weakening in the second partial surface portion **34g**.

[0079] It should also be mentioned here that the modification shown in FIG. **3g** could also be easily altered to form a tear-line deflection point if the perforation **35g** at the upper longitudinal end of the cut **33g** were not provided, but instead the cut were to taper into a point. As a result, a tear reaching the cut **33g** could easily be deflected towards the upper top edge **28g**. In this case, preferably a further web portion could extend from the inner region surface portion **30g** to the upper top edge **28g**.

[0080] FIG. **2** shows a second embodiment of a tear-open pouch according to the invention. Similar features to the first embodiment shown in FIG. **1** are provided with the same reference numerals, but increased by the number 100. Moreover, the embodiment according to FIG. **2** is only described hereinafter to the extent that it differs from the first embodiment according to FIG. **1**, reference being expressly made to the description thereof.

[0081] The second embodiment, shown in FIG. **2**, differs from the first embodiment, shown in FIG. **1**, in particular in that the two inner region surface portions **130** on the tear-open pouch **110** do not define tear-line end points but instead tear-line deflection points. Moreover, in contrast to the first embodiment, a web portion **142** extends in each case from between one of the two inner region surface portions **130** to a join outer edge region of the tear-open pouch **110**, as is already known from the modification of the first embodiment shown in FIG. **3c**. Reference should also be made here to the fact that a web portion in the second embodiment may also be omitted, as is shown hereinafter with reference to the modification shown in FIG. **3d**. Furthermore, in the tear-open pouch **110** of the second embodiment it is not provided to detach therefrom a top portion which extends over the entire width of the tear-open pouch **110**.

[0082] Because in the second embodiment a second partial surface portion **134** of the inner region surface portion **130** is of L-shaped configuration, it has on the two longitudinal ends of the L shape in each case a point at which a concentration of stress may be easily achieved by the so-called notch effect. These points may, therefore, serve as tear-line continuation points in this case, a tear coming from a specific direction which enters the second partial surface portion **134** being subsequently continued in a different direction, and namely according to the L shape at an angle of approximately 90 degrees. In the tear-open pouch **110** shown in FIG. **2**, therefore, for example a tear coming from the tearing aid **136** provided on a first side edge **116**, which follows a first tear-line **R1**, is deflected upwards by the second partial surface portion **134**, approximately at right angles. The tear after the deflection then follows a second tear-line **R2** until it reaches a further tearing aid **144** provided in an upper top edge **138**, which thus represents a tear-line end point. In this manner, a corner **146** may be relatively easily detached from the tear-open pouch **110**. It should be mentioned that for detaching the corner **146** in this case the further tearing aid **144** may also optionally serve as a tear-line starting point and the tearing aid **136** as a tear-line end point.

[0083] As the front face of the tear-open pouch **126** and the rear face of the tear-open pouch are also joined together in the web portion **142**, the second tear-line **R2** which also may be considered in a similar manner to the first tear-line **R1** as a partial portion of a total tear-line, extends exclusively in regions in which the front and rear faces of the tear-open pouch **110** are joined together, so that when tearing open only along the second tear-line **R2** no opening may be produced in the tear-open pouch **110**. An opening is produced when tearing off the corner **146** from the tear-open pouch **110** only when said pouch is torn open along the first tear-line **R1**. The opening thus has a predetermined length **O** in this case too.

[0084] It remains to be mentioned that the front face of the tear-open pouch **126** and the rear face of the tear-open pouch in this exemplary embodiment each comprise a bidirectionally stretched film, the two stretching directions **S1** and **S2** extending substantially perpendicular to one another in order in each case to encourage spreading of the tear along the first tear-line **R1** and/or the second tear-line **R2**.

[0085] As the corner **146** may be completely detached from the tear-open pouch **110**, in the tear-open pouch **110** of the second embodiment, the pouch contents may be emptied through the opening thus produced without a torn off region of the pouch getting in the way. The length **O** of the opening which may be introduced is preferably selected during production of the tear-open pouch **110**, depending on the pouch contents to be packaged, so that the opening cannot become blocked when emptying the pouch.

[0086] The same applies to the inner region surface portion **130** shown on the right hand side in FIG. **2** as to the left hand inner region surface portion **130** described above. Naturally, however, it would be possible to provide only one inner region surface portion **130** on the tear-open pouch **110** if desired.

[0087] FIGS. **3d** to **3e** all show a left hand upper detail of the tear-open pouch **110** shown in FIG. **2**, but with different modifications. Similar features to the second embodiment shown in FIG. **2** are thus provided with the same reference numerals in FIGS. **3d** to **3e**, but with an additional letter **d**, **e** or **f** corresponding to the respective figure. Moreover, the alterations and/or modifications according to FIGS. **3d** to **3f** are described hereinafter only insofar as they differ from the

embodiment according to FIG. 2, reference being expressly made to the descriptions thereof.

[0088] The modification shown in FIG. 3d differs from the second embodiment shown in FIG. 2 in particular in that an inner region surface portion 130d is not peninsular but insular. As a result, when tearing off a corner 146d from the tear-open pouch both a first opening with the length O1d and a second opening with the length O2d are produced. The provision of the second opening may, for example, be expedient in order to ensure that air may flow into the pouch, when pourable contents are poured through the first opening out of said pouch.

[0089] Moreover, the modification shown in FIG. 3d, in contrast to the second embodiment shown in FIG. 2, has no tearing aid at an upper top edge 128d, so that only one tearing aid 136d is available on a first side edge for tearing off the corner 146d. Naturally, however, in this case a tearing aid could also additionally or alternatively be provided on the upper top edge 128d.

[0090] The modification shown in FIG. 3e differs from the second embodiment shown in FIG. 2 in particular in that a web portion does not extend between an inner region surface portion 130e and a join outer edge region on an upper top edge 128e. Instead, however, a web portion 142e extends between the inner region surface portion 130e and a join outer edge region on a first side edge 116e of the tear-open pouch.

[0091] A tear-line R1e extends along a centre line, extending in a substantially linear manner, of the web portion 142e. One stretching direction S1e of the two stretching directions S1e and S2e of a bidirectionally stretched film is thus identical to the direction in which the centre line of the web portion 142e extends, in order to encourage tearing open of the pouch along the tear-line R1e. Additionally, in the web portion 142e shown in FIG. 3e, two through openings 148e are provided which reliably assist spreading of the tear along the predetermined tear-line R1. It should be mentioned that the number and shape of through openings may vary. Also in some instances it may be sufficient if at the corresponding points the material is merely weakened, but not entirely removed. These measures may be carried out, if required, not only additionally but also alternatively to promoting the spreading of a tear by the stretching of a film in the corresponding direction. It is, however, generally preferred to assist the spreading of the tear along the predetermined tear-line R1 by means of a linear perforation or by a linear cutout in the material from the front face of the tear-open pouch or/and the rear face of the tear-open pouch.

[0092] A second partial surface portion 134e of the inner region surface portion 130e has in this modification a type of L shape, in which however the two limbs do not extend perfectly straight and are also not completely perpendicular to one another. As a result, it is also provided that the two tear-lines R1e and R2e which are linked together via the tear-line deflection point defined by the second surface portion 134e, are not aligned perfectly perpendicular to one another. Moreover, therefore, the stretching directions S1e and S2e of the bidirectionally stretched film of the front face of the tear-open pouch and rear face of the tear-open pouch are not perpendicular to one another.

[0093] Also in the modification shown in FIG. 3f, as in the modification shown in FIG. 3e, two tear-lines R1f and R2f are not at right angles to one another. However, in the modification shown in FIG. 3f a web portion 142f, in which the tear-line R2f runs, extends obliquely to an upper top edge 128f.

Thus in this case too a corner 146f which corresponds to a substantially non right angled quadrilateral may be detached from the tear-open pouch.

[0094] As in the modification shown in FIG. 3e, the modification shown in FIG. 3f also has a through opening 148f in the web portion 142f, in order to promote the spreading of the tear along the tear-line R2f; specifically in addition to promoting the spreading of the tear in this direction by means of a bidirectionally stretched film in which a stretching direction S2f corresponds to the direction of the tear-line R2f.

[0095] A second partial surface portion 134f of the inner region surface portion also does not have an L shape but a slotted shape extending in a substantially linear manner. This slotted shape which extends in a linear manner thus extends in the same direction as a web portion 142f. Thus a tear proceeding from a tearing aid 136f, which reaches the second partial surface portion 134f, may be slightly deflected so that the tear subsequently extends through the web portion 142f to an upper top edge 128f. However, since a corresponding directional deflection of the tear-line would not work in the reverse direction in the present case, because of the specific shape and arrangement of the second partial surface portion 134f, a tearing aid is not provided on the upper top edge 128f.

1. Tear-open pouch (10; 110) comprising a front face of the tear-open pouch (26; 126) defined by an outer edge and a rear face of the tear-open pouch defined by an outer edge, the outer edges thereof being joined together in at least one join outer edge region of the tear-open pouch (10; 110), a starting point for a predetermined tear-line (R; Ra; Rb; Rc; R1, R2; R1d, R2d; R1e, R2e; R1f, R2f; Rg) being provided in such a join outer edge region,

characterised

in that the front face of the tear-open pouch (26) and the rear face of the tear-open pouch are also joined together at least in portions in an inner region surface portion (30; 30a; 30b; 30c; 30g) arranged spaced apart from the outer edges thereof, and

in that the inner region surface portion (30; 30a; 30b; 30c; 30g) defines a predetermined tear-line end point, in which the tear-line (R; Ra; Rb; Rc; Rg) terminates, the tear-line (R; Ra; Rb; Rc; Rg) extending between the tear-line starting point and the inner region surface portion (30; 30a; 30b; 30c; 30g) through surface portions of the tear-open pouch (10) which are not joined together.

2. Tear-open pouch (110) according to the preamble of claim 1, characterised

in that the front face of the tear-open pouch (126) and the rear face of the tear-open pouch are also joined together at least in portions in an inner region surface portion (130; 130d; 130e; 130f) arranged spaced apart from the outer edges thereof, and

in that the inner region surface portion (130; 130d; 130e; 130f) defines a predetermined tear-line deflection point, in which the tear-line (R1, R2; R1d, R2d; R1f, R2f) is deflected, in order to terminate in a tear-line end point provided in a join outer edge region of the tear-open pouch (110), the tear-line (R1, R2; R1d, R2d; R1f, R2f) extending between the tear-line starting point and the inner region surface portion (130; 130d; 130e; 130f) or/and between the inner region surface portion (130; 130d; 130e; 130f) and the tear-line end point through surface portions of the tear-open pouch (110) which are not joined together.

3. Tear-open pouch (10; 110) according to claim 1, characterised in that the inner region surface portion is of insular configuration (30; 30a; 130d; 30g), being surrounded all around by surface portions of the tear-open pouch (10; 110) which are not joined together.

4. Tear-open pouch (10; 110) according to claim 1, characterised in that the inner region surface portion (30b; 30c; 130; 130e; 130f) is of peninsular configuration, in that a web portion (42b; 42c; 142; 142e; 142f) of surface portions of the tear-open pouch (10; 110) which are joined together extends from the inner region surface portion (30b; 30c; 130; 130e; 130f) to a join outer edge region of the tear-open pouch (10; 110).

5. Tear-open pouch (10; 110) according to claim 2, characterised in that the inner region surface portion (30; 30a; 30b; 30c; 30g; 130; 130d; 130e; 130f) comprises at least one first partial surface portion (32; 32a; 32b; 32c; 32g; 132; 132d; 132e; 132f) and one second partial surface portion (34; 34a; 34b; 34c; 34g; 134; 134d; 134e; 134f) which have tear spreading properties which are different from one another.

6. Tear-open pouch (10; 110) according to claim 5, characterised in that the second partial surface portion (34; 34a; 34b; 34c; 34g; 134; 134d; 134e; 134f) comprises a material weakening in the front face of the tear-open pouch (26; 126) or/and in the rear face of the tear-open pouch.

7. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening in the second partial surface portion (34; 34a; 34b; 34c; 134; 134d; 134e; 134f) is of planar configuration.

8. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening (33g) is formed in a linear manner in the second partial surface portion (34g).

9. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening in the second partial surface portion (34; 34a; 34b; 34c; 34g; 134; 134d; 134e; 134f) is configured in a substantially circular or semi-circular or crescent-shaped or L-shaped or linear manner.

10. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening in the second partial surface portion (34; 34a; 34b; 34c; 134; 134d; 134e; 134f) is formed by the removal of material on the front face of the tear-open pouch (26; 126) or/and on the rear face of the tear-open pouch.

11. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening in the second partial surface portion (32g) is formed, preferably exclusively, by a displacement of material of the front face of the tear-open pouch (26) or/and of the rear face of the tear-open pouch.

12. Tear-open pouch (10; 110) according to claim 6, characterised in that the material weakening in the second partial surface portion (34; 34a; 34b; 34c; 34g; 134; 134d; 134e;

134f) penetrates the front face of the tear-open pouch (26; 126) or/and the rear face of the tear-open pouch, preferably the front face of the tear-open pouch (26; 126) and the rear face of the tear-open pouch.

13. Tear-open pouch (10; 110) according to claim 5, characterised in that the second partial surface portion (34; 34a; 34b; 34c; 34g; 134; 134d; 134e; 134f) is surrounded at least in portions, preferably entirely, by the first partial surface portion (32; 32a; 32b; 32c; 32g; 132; 132d; 132e; 132f).

14. Tear-open pouch (110) according to claim 5, characterised in that the second partial surface portion (134; 134d; 134e; 134f) has a tear-line continuation point.

15. Tear-open pouch (10; 110) according to claim 1, characterised in that the tear-line starting point is formed by a tearing aid (36; 36a; 36b; 36c; 36g; 136; 144; 136d; 136e; 144e; 136f).

16. Tear-open pouch (10; 110) according to claim 1, characterised in that the front face of the tear-open pouch (26; 126) or/and the rear face of the tear-open pouch,

a) comprises and/or comprise a film made of stretched plastics material, the stretching direction (S; Sa; Sb; Sc; S1, S2; S1e, S2e; S1f, S2f) of the plastics film defining a preferred direction of the spreading of the tear or/and

b) comprises and/or comprise at least one material weakening, in particular a stamped portion or recess, extending in a preferred direction of the spreading of the tear.

17. Tear-open pouch (10; 110) according to claim 1, characterised in that it comprises at least two inner region surface portions (30, 30; 130, 130), which are assigned to edge portions spaced apart from one another and preferably opposing one another.

18. Tear-open pouch (10) according to claim 1, characterised in that it further comprises at a further join outer edge region at least one further tear-line starting point (38, 40) of a further tear-line (G), which serves for tearing off a top portion (24) of the tear-open pouch (10), the top portion (24) which may be torn off preferably comprising the inner region surface portion and/or the at least two inner region surface portions (30, 30).

19. Tear-open pouch (10; 110) according to claim 1, characterised in that it is made of a material which is suitable for use in a microwave heating device.

20. Tear-open pouch (10; 110) according to claim 1, characterised in that it is a stand up pouch.

21. Use of a tear-open pouch (10; 110) according to claim 20, for heating up meals, in particular in a microwave heating device.

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