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Description

The invention concerns a plastic bag strip, from which individual bags, in particular bin liners, can be torn off.

A plastic bag strip where individual bin liners can be torn off along a perforation between a base seam of a first bag and an opening border of a second bag is known from US 2009/0184123 A1. The perforation is interrupted by a punched opening in the middle, through which an opening of a waste bin can be pressed in an unfolded condition. A person can also take hold of the opening to be able to tear off the second bag from the first bag along the perforation.

A bag roll where consecutive bags are connected with each other via a tear-off perforation is known from 2006/0188180 A1, wherein tabs of a front and a back of the next bag that are offset to the side project into an interim area below a base seam of the front bag.

A continuous requirement exists for simplifying the handling of a bag to be torn off a plastic bag strip.

It is the task of the invention to provide measures that enable a simple handling of a bag to be torn off a plastic bag strip.

The task is solved according to the invention by a plastic bag strip with the characteristics of claim 1. Preferred designs of the invention are listed in the subclaims and the following description, and can constitute an aspect of the invention either individually or in combination.

According to the invention a plastic bag strip for tearing off individual bags is envisaged with a first bag, wherein the first bag has a base seam for forming a bag bottom, a second bag, wherein the second bag has an opening border partly delimited by a perforation line for opening the second bag, wherein the opening border of the second bag is connected with the base seam of the first bag via an intermediate strip following the base seam of the first bag and the perforation line of the second bag, wherein the second bag has an opening appendage projecting into intermediate strip towards the base seam of the first bag from the perforation line of the second bag, wherein the opening appendage is delimited in the intermediate strip by a continuous separation slot and overlaying layers of a front and a back of the second bag are envisaged in the area of the opening appendage.

The respective bag can have a base closed with a base seam, whilst the opening border is not closed. In this way the bag can be opened at the opening border in the torn-off condition and possibly unfolded in order to use the volume delimited by the bag, in particular for receiving waste. When the bag is not torn off and is still part of the plastic bag strip, the layers of the bag lie flat against each other at a distance in the condition of the bag that has been torn off the plastic bag strip. The respective layer can easily adhere to each other in this way, for example through adhesion effects and/or an electrostatic charge. It has been found to be difficult to open the torn off bag for this reason. The layers of the bag adhering to each other make it difficult for a person to grab the bag with thumb and index finger of one hand on one side, and with thumb and index finger of the other hand on the other side and to pull the bag open.

The opening appendage does however form an area that projects from the opening border, which a person would easily and intuitively place between thumb and index finger. The person would then rub the layers of the bag overlaying each other in the area of the opening appendage with a relative movement of thumb and index finger, which would displace the individual layers relative to each other. In this condition one part of a layer of the opening appendage will project further than the part of the other layer of the opening appendage and vice versa. The person can then grab each one of these protruding parts of the respective layer of the bag with a thumb and index finger each and easily and intuitively pull the bag open. The risk that the person will unintentionally grab both layers of the overlaying layers of the bag is substantially reduced in this way. The individual layers of the bag can be pulled apart in the area of the holding start through rubbing with thumb and index finger, which makes it easy to grab the respective layer for pulling the bag apart, so that a simple handling of a bag to be torn off a plastic bag strip is facilitated.

With a bag with a straight tearing edge the two layers would stay on top of each other during a relative movement of the overlaying layers of the bag parallel to the tearing edge, and a slight protrusion of one layer from the other layer may at most result in a random position. The protruding areas can here be so far offset from each other that the hand responsible for the relative movement would have to be repositioned, which would negate the force with which the layers are grabbed. The layers would then move back to their original position once more and lie flat against each other. A light grabbing of individual layers would not be possible in this situation. If a relative movement of the overlaying layers of the bag perpendicular to the tearing edge of both layers is applied to a bag with a straight tearing edge, only one layer can project, so that at least the other layer cannot be grabbed easily and the bag cannot be unfolded. Thanks to the protruding opening

appendage the overlaying layers can however be displaced relative to each other and held with one hand, so that a protruding part of one layer can be grabbed with the other hand and the respective other layer grabbed with the first hand. This can be carried out very quickly as a matter of course within a tightly enclosed area, so that such a plastic bag strip is in particular suitable for commercial use, for example by cleaners, as unnecessary time delays can be avoided.

The opening appendage is not delimited by a perforation, but by a continuous separation slot, wherein the side of the opening appendage facing away from the base seam of the first bag, which in particular extends as an extension of the perforation line, transforms into the material of the second bag as a single piece and uninterrupted, namely without perforation or separation slot. When the second bag is to be torn off the second bag can be separated from the interim area of the first bag along the perforation. When the tear extending along the perforation reaches the opening appendage the tear meets the separation slot, so that the opening appendage is automatically separated from the interim area. After the separation slot the tear can extend further along the remaining perforation until the second bag is completely torn off from the first bag. The separation slot, for example produced through punching, safely prevents that the material of the opening appendage is accidentally torn off by the second bag. Instead the tear created when tearing off the second bag can progress in a non-straight way across the separation slot without having to fear damage to the opening appendage or the base seam.

The opening appendage can be envisaged in the interim area of the first bag that is envisaged in any case. The interim area if required to ensure that the base seam of the first bag cannot be damaged when the second bag is torn off the first bag along the perforation. As the opening appendage is delimited by a continuous separation slot, and not by an uninterrupted perforation, no major forces need be expected in the area of the opening appendage, so that no safety gap from the base seam needs to be adhered to either. The separation gap can also be envisaged with high precision relative to the base seam, so that the separation slot can be positioned much closer to the base seam than the perforation. Material use for the plastic bag strip with a specific number of bags is therefore not, or at least not significantly increased. As the perforation can be produced through use of a punching stamp it is easily possible to also envisage the cutting tool for the separation slit delimiting the opening appendage in the punching stamp, so that tooling costs and manufacturing costs also remain substantially unchanged.

The bags can in particular be manufactured from a plastic material, which is preferably of a substantially transparent or coloured and/or dyed design. The plastic bag strip is preferably

manufactured of plastic film made of polyethylene or polypropylene. The plastic material can in particular be manufactured from a non-regenerative or regenerative material (“regenerate”), which is preferably biologically degradable.

It is in particular envisaged that the separation slot starts at the perforation line and terminates at the perforation line, wherein the perforation line is interrupted in a width area spanned by the opening appendage. The perforation line can extend from one side edge to the other side edge of the bag, wherein the perforation line is interrupted in the area of the opening appendage, i.e. not envisaged there. The separation slot can start as an imagined extension of the perforation line on one side and end on the other side. The perforation line can therefore quasi extend transitionless along the entire separation slot. The perforation line can extend continuously from one side edge to the other side edge together with the separation slot. A simple separation of the second bag from the remaining plastic bag strip is therefore easily possible.

The area and/or the shape of the opening appendage preferably substantially equals the bearing face of an adult’s thumb in the area of the distal phalanx. The opening appendage can therefore be adapted to the space requirement that will suffice for grabbing and rubbing the same intuitively between thumb and index finger.

The individual opening appendage particularly preferably has an expansion s parallel to expansion D of the base seam, wherein $0.05 \leq s/D \leq 0.30$, in particular $0.10 \leq s/D \leq 0.25$ and preferably $0.15 \leq s/D \leq 0.20$ applies. The expansion s is for example $s = 3 \text{ cm} \pm 0.5 \text{ cm}$. The expansion s of the opening appendage is therefore large enough to be able to grab and rub it easily. At the same time expansion s of the opening appendage is however also small enough to be able to roll easily up and roll out bags connected with each other via the perforation line without creasing the opening appendage when rolling these up.

The individual opening appendage in particular has an extent h perpendicular to the base seam, and the intermediate strip has an extent h that is perpendicular to the base seam, wherein $0.50 \leq h/H \leq 0.95$, in particular $0.60 \leq h/H \leq 0.90$, preferably $0.70 \leq h/H \leq 0.85$ and particularly preferably $0.75 \leq h/H \leq 0.80$ applies. Extent h is for example $h = 2.5 \text{ cm} \pm 0.4 \text{ cm}$. Extent h of the opening appendage is therefore large enough to be able to easily grab and rub the same. At the same time it is ensured that the base seam is not damaged during the manufacture of the separation slot.

The opening appendage is substantially preferably envisaged centrally between a first longitudinal

border connecting the respective base seam with the perforation line and a second longitudinal border of the first bag and the second bag. In particular precisely one opening appendage only is envisaged, in which an upper layer and a lower layer of the respective bag are envisaged. When the bag is torn off the plastic bag strip a central elevation results through the opening appendage, which can be grabbed intuitively for unfolding an opening the bag. In particular it is possible to fold a part of the bag inwards along the longitudinal borders, so that a part area with four layers can be created. It can be ensured with the central opening appendage that only two layers are present there and that opening the bag is particularly easy.

A first opening appendage and a second opening appendage distanced from the first opening appendage at the side are particularly preferably envisaged, wherein the first opening appendage in particular and the second opening appendage are spaced apart at a substantially equally sized distance from a central line of the first bag and the second bag in different directions. It may be simpler for opening, in particular with a comparatively large bag, for example a 120 l bin bag, if the opening appendage is envisaged off-centre, so that the bag can be held and rubbed open with the opening appendage at the highest point. An area of the bag covering the opening appendage, which hangs down due to gravity, can thus be avoided.

The separation slot of the opening appendage in particular follows on from the perforation line at a sharp edge, wherein an angle α of $80^\circ \leq \alpha \leq 135^\circ$, preferably $90^\circ \leq \alpha \leq 120^\circ$ and particularly preferably $100^\circ \leq \alpha \leq 110^\circ$ is enclosed between the separation slot and the perforation line at the connection point. As the opening appendage is delimited by the separation slot, it is not necessary to envisage a soft transition of the increase between the perforation line and the separation slot. An accidental tearing off or damaging of the opening appendage can be avoided by means of the separation slot. Instead the separation slot can project in a sharp-edged way, in particular substantially without transition, describing a direction change of the widening treat with a step-like change of increase when the bag is torn off the perforation line. The area of the opening appendage can be easily delimited to necessary area of the layers of the bag required for rubbing in this way.

The perforation line preferably runs substantially parallel to the base seam along its entire expansion. A change in the distance of the widening tear resulting when the bag is torn off from the base seam is thus created only in the area of at least one opening appendage. The expansion of the perforation line therefore extends along an intuitively resulting tear-off direction in order to separate the respective bag from the plastic bag strip.

The base seam and/or the perforation line substantially particularly preferably extends as a straight. The manufacture of the plastic bag strip is simplified in this way.

The bags are in particular rolled up into a roll. The storage space requirement for the plastic bag strip can be minimised in this way. Each bag to be torn off can also be easily rolled off the plastic bag strip and then torn off, so that handling the plastic bag strip is simplified and accelerated.

Bags are preferably manufactured from the tubular infinite material, in particular through welding and punching. Manufacturing the plastic bag strip is simplified and mass production made possible in this way.

The invention is explained hereafter with reference to the enclosed drawing and a preferred embodiment example by way of example, wherein the characteristics illustrated hereafter can illustrate an aspect of the invention either individually or also in combination. Shown is:

Fig. 1: a schematic top view of a part of a plastic bag strip.

The plastic bag strip 10 illustrated only in part in a rolled-up condition in Fig. 1 has a first bag 12 and a second bag 14. The first bag 12 is closed by a base seam 16 produced through welding at its base facing the second bag 14. The second bag 14 is connected with the first bag 12 via a perforation line 18 extending parallel to the base seam 16, wherein the second bag 14 can be separated from the first bag 12 by tearing open the perforation line 18. After tearing it off the first bag 12 equals the second bag 14, which can in turn be torn off a first bag 12 along the perforation line 18 and so on, until the last bag is reached. The first bag 12 and the second bag 14 are designed identically. In the embodiment example illustrated the base seam 16 and the perforation line 18 extend from a first side edge 20 to an opposite second side border 22 across the entire width D of the bags 12, 14.

An intermediate strip 24 with a height H is formed in longitudinal direction of the plastic bag strip 10 between the base seam 16 and the perforation line 18 to ensure that a separation of the perforation line 18 cannot damage the base seam 16. When the second bag 14 is separated from the first bag 12 an opening border 26, which forms an opening to the inner volume of the second bag 14, results along the perforation line 18 of the second bag 14. To facilitate the opening of the second bag 14 an opening appendage 28 is envisaged, preferably centrally, which interrupts the

perforation line 18 along a width s . The opening appendage 28 projects into the intermediate strip 24 with a height h without reaching the base seam 16. The opening appendage 28 is delimited by a continuous separation slot 30 in the intermediate strip 24, which transforms into the perforation line on both lateral sides of the opening appendage 28 at its ends with an angle α . Tearing off the second bag 14 from the first bag 12 is thus easily possible without damaging the base seam 16 of the first bag 12. When the second bag 14 is torn off the first bag 12 the layers of the second bag 14 overlaying each other in the area of the opening appendage 28, namely front side and rear side, can be grabbed with thumb and index finger and pushed sideways in relation to each other with a rubbing movement of thumb and index finger. In this way one layer can project on one side and the other layer on the other side and can easily be grabbed individually by a pair of thumb and index finger each to pull open the second bag 14. This results in an opening for the second bag 14 that is delimited by the opening border 26.

Patentkrav

1. Plastpose for å rive av individuelle poser (12, 14), som har en første pose (12), hvori den første posen (12) har en basesøm (16) for å konfigurere
5 en posebase;
en andre pose (14), hvori den andre posen (14) har en åpningsgrense (26) for å åpne den andre
posen (14), delvis avgrenset av en perforeringslinje (18);
hvori åpningsgrensen (26) av den andre posen (14) er forbundet med basesømmen (16) til den
10 første posen (12) ved hjelp av en mellomstrimmel (24) som tilstøter basesømmen (16) av den
første posen (12) og perforeringslinjen (18) til den andre posen (14);
hvori den andre posen (14) har et åpningsvedheng (28) som rager ut fra perforeringslinjen (18)
til den andre posen (14) mot basesømmen (16) til den første posen (12) i mellomstrimmelen (24),
karakterisert ved at
åpningsvedhenget (28) i mellomstrimmelen (24) avgrenses av et kontinuerlig separeringsspor
15 (30) og lag av en frontside som ligger ovenpå hverandre og en bakside av posen (14) er
tilveiebrakt i regionen til åpningsvedhenget (30).
2. Plastposestrimmel ifølge krav 1, karakterisert ved at separeringssporet (30) starter ved
perforeringslinjen (18) og slutter ved perforeringslinjen (18), hvori perforeringslinjen (18)
20 avbrytes i en bredderegion som spennes av åpningsvedhenget (28).
3. Plastposestrimmel ifølge krav 1 eller 2, karakterisert ved at området og/eller formen til
åpningsvedhenget (28) tilsvarer i det vesentlige bæreflaten til en fullvoksen tommel til en voksen
i distalfalansregionen.
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4. Plastposestrimmel ifølge ett av kravene 1 til 3, karakterisert ved at det individuelle
åpningsvedhenget (28) parallelt med utstrekningen D av basesømmen (16) har en utstrekning s,
hvori $0,05 \leq s/D \leq 0,30$, særlig $0,10 \leq s/D \leq 0,25$, og fortrinnsvis $0,15 \leq s/D \leq 0,20$.
- 30 5. Plastposestrimmel ifølge ett av kravene 1 til 4, karakterisert ved at det individuelle
åpningsvedhenget (28) vinkelrett på basesømmen (16) har en utstrekning h, og
mellomstrimmelen (24) vinkelrett på basesømmen (16) har en utstrekning H, hvori $0,50 \leq h/H \leq$
 $0,95$, særlig $0,60 \leq h/H \leq 0,90$, fortrinnsvis $0,70 \leq h/H \leq 0,85$, og særlig foretrukket $0,75 \leq h/H$
 $\leq 0,80$.

6. Plastposestrimmel ifølge ett av kravene 1 til 5, karakterisert ved at åpningsvedhenget (28) er tilveiebrakt slik at det er i det vesentlige sentrert mellom en første langsgående kant (20) og en andre langsgående kant (22) til den første posen (12) og til den andre posen (14) som forbinder den respektive basesømmen (16) med perforeringslinjen (18).
7. Plastposestrimmel ifølge ett av kravene 1 til 6, karakterisert ved at et første åpningsvedheng og et andre åpningsvedheng som er adskilt lateralt fra det første åpningsvedhenget er tilveiebrakt, hvori det første åpningsvedhenget og det andre åpningsvedhenget er særlig anordnet for å være adskilt i forskjellige retninger fra en midtre linje av den første posen (12) og den andre posen (14) med en i det vesentlige identisk verdi.
8. Plastposestrimmel ifølge ett av kravene 1 til 7, karakterisert ved at separeringssporet (30) til åpningsvedhenget (28) tilstøter perforeringslinjen (18) på en skarp kant, hvori en vinkel α på $80^\circ \leq \alpha \leq 135^\circ$, fortrinnsvis $90^\circ \leq \alpha \leq 120^\circ$, og særlig foretrukket $100^\circ \leq \alpha \leq 110^\circ$ er særlig omsluttet ved forbindelsespunktet mellom separeringssporet (30) og perforeringslinjen (18).
9. Plastposestrimmel ifølge ett av kravene 1 til 8, karakterisert ved at perforeringslinjen (18) over hele sin utstrekning derav løper slik at den er i det vesentlige parallell med basesømmen (16).
10. Plastposestrimmel ifølge ett av kravene 1 til 9, karakterisert ved at basesømmen (16) og/eller perforeringslinjen (18) løp/løper for å være en i det vesentlige rett linje.
11. Plastposestrimmel ifølge ett av kravene 1 til 10, karakterisert ved at posene (12, 14) rulles opp for å danne en rulle.
12. Plastposestrimmel ifølge ett av kravene 1 til 11, karakterisert ved at posene (12, 14) fremstilles av et rørformet kontinuerlig materiale, særlig ved sveising og stansing.

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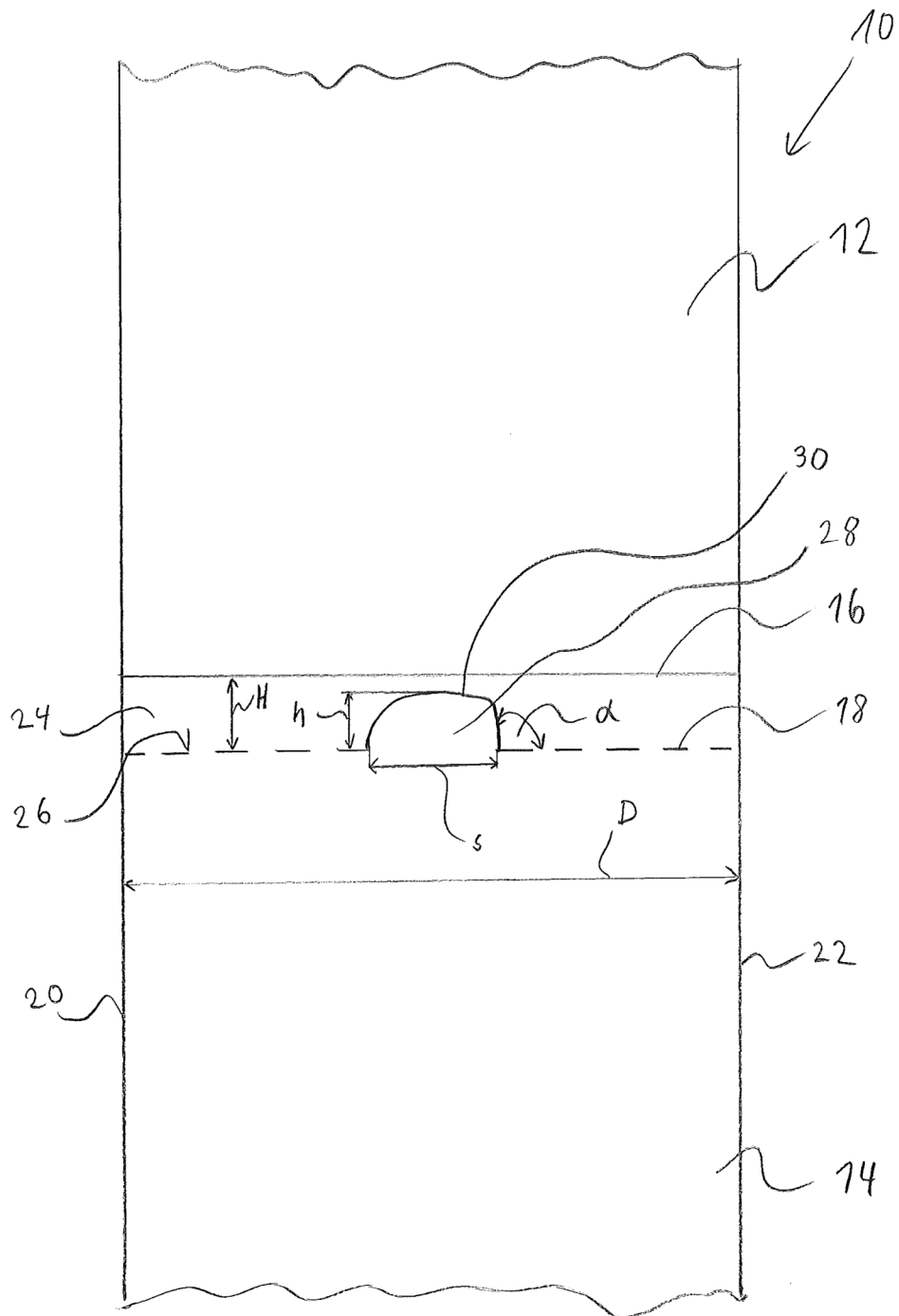


Fig. 1