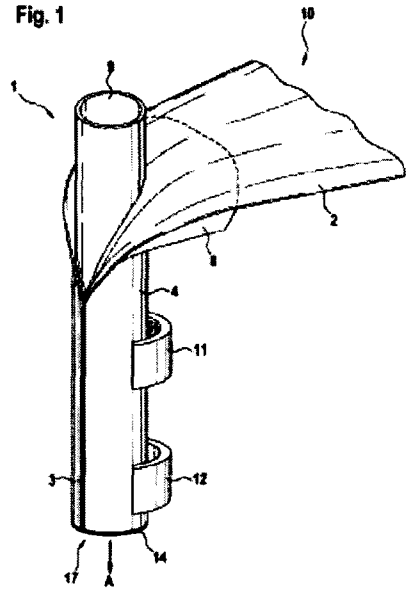
ORIGINAL

ABSTRACT

METHOD AND DEVICE FOR PRODUCING A PACKAGING BAG FROM FLEXIBLE FILM MATERIAL AND STIFFENED PARTIAL REGION AND PACKAGING BAG

The present subject matter relates to a method for producing a packaging bag from a flexible film material (2) comprising the following steps: feeding of the flexible film material (2); adding an additional material (7) to the flexible film material (2) and producing at least one stiffened partial region (6) from the additional material (7), wherein the additional material (7) is hardened and forms the stiffened partial region (6). The present subject matter further relates to a device for producing a packaging bag, comprising: a film feeding device (10) for feeding flexible film material (2) and an additional material adding device (11) for adding an additional material (7). The present subject matter further relates to a packaging bag (5) comprising: a first transverse seal seam (14), a second transverse seal seam (15), a flexible partial region (16) and at least one stiffened partial region (6), wherein the flexible partial region (16) is produced from the film material (2) and the stiffened partial region (6) is produced from an additional material (7) which was added and hardened to stiffen the packaging bag.

Fig. 1



I/We claim:

1. A method for producing a packaging bag (5) from a flexible film material (2), the method comprising:

    a) feeding of the flexible film material (2);

    b) spraying an additional material (7) to the flexible film material (2) through a plurality of apertures (13), in particular in the flexible film material (2); and

    c) producing at least one stiffened partial region (6) from the additional material (7), wherein the additional material (7) is hardened and forms the stiffened partial region (6).

2. The method as claimed in claim 1, wherein carrying out adding of the additional material (7) on an inner side and/or outer side of the flexible film material (2).

3. The method as claimed in one of the claim 1 or 2, wherein the stiffened partial region (6) comprising a surface shape and/or a line shape and/or a grid structure.

4. The method as claimed in any one of the preceding claims, wherein hardening the additional material (7) using heat or ultraviolet (UV) light or electron beams or by contact with ambient air.

5. The method as claimed in any one of the preceding claims, wherein the flexible film material (2) and the additional material (7) comprises a same or a different material composition.

6. The method as claimed in any one of the preceding claims, wherein the adding of the additional material (7) is carried out in the region of a forming shoulder (8) or in the region of a forming tube (9).

7. A device (1) for producing a packaging bag (5), comprising:

a film feeding unit (10) for feeding flexible film material (2); and

an additional material adding unit (11) for adding an additional material (7) to the film material (2),

characterized in that,

the additional material adding unit (11) is disposed in region of a forming shoulder (8), and wherein a plurality of apertures (13) are formed, particularly in the forming shoulder (8), wherein the additional material (7) is introduced by spraying through the plurality of apertures (13).

8. The device (1) for producing a packaging bag (5) as claimed in claim 7, wherein the device (1) further comprises a hardening device (12) for hardening the added additional material (7).

9. The device (1) for producing a packaging bag (5) as claimed in any one of claims 7 to 8, wherein the additional material adding unit (11) is disposed in the region of the forming tube (9).

10. A packaging bag (5) produced from a flexible film material (2), comprising:

a first transverse seal seam (14);

a second transverse seal seam (15);

a longitudinal seal seam (3);

a flexible partial region (16); and

at least one stiffened partial region (6),

wherein the flexible partial region (16) is produced from the film material (2) and the stiffened partial region (6) is produced from an additional material (7), wherein the additional material (7) is sprayed and hardened to stiffen the packaging bag (5) through a plurality of apertures (13), in particular formed in a forming shoulder (8).

11. The packaging bag (5) as claimed in claim 9, wherein the at least one stiffened partial region (6) is disposed on an inner side and/or outer side of the film material (2).

12. The packaging bag (5) as claimed in one of the claim 10 or 11, wherein the at least one stiffened partial region (6) comprises a surface shape and/or a line shape and/or a grid structure.

13. The packaging bag (5) as claimed in one of the claims 9 to 12, wherein the stiffened partial region (6) comprises such a structure that the stiffened partial region (6) forms a stable support structure so that the packaging bag (5) stands independently.

Dated this 20th day of March 2012

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To
The Controller of Patents
The Patent office at New Delhi

Fig. 1

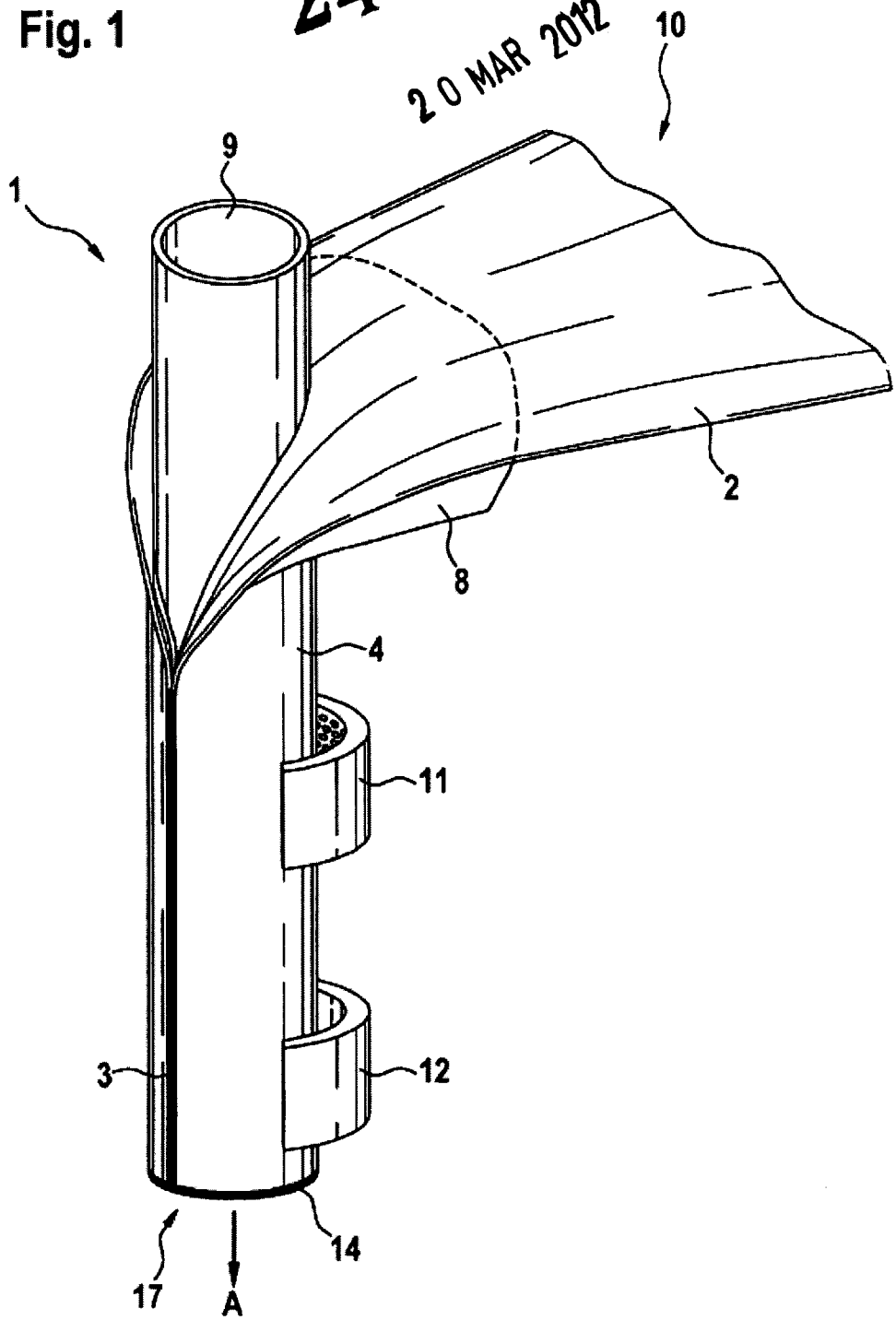

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Fig. 2

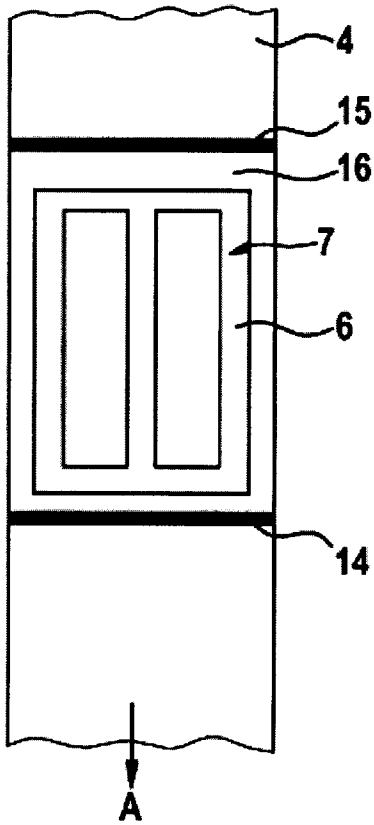

Fig. 3

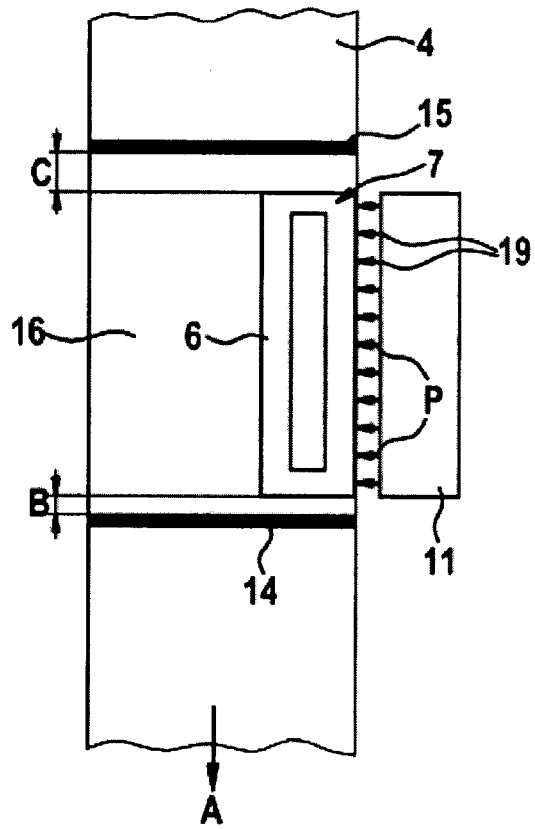

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Fig. 4

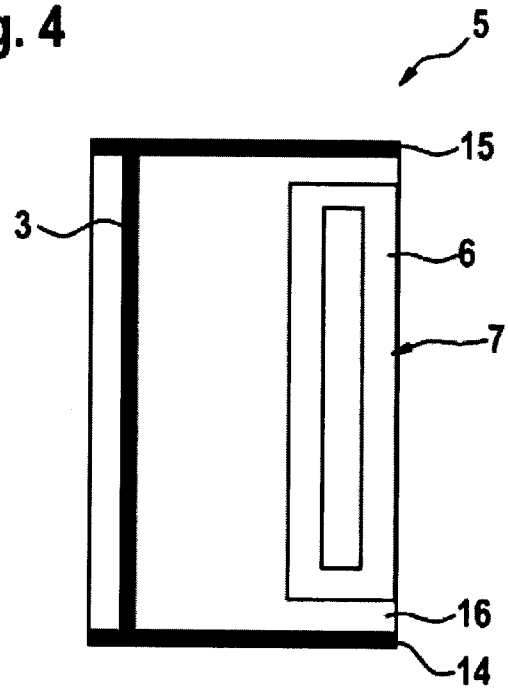

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Fig. 5

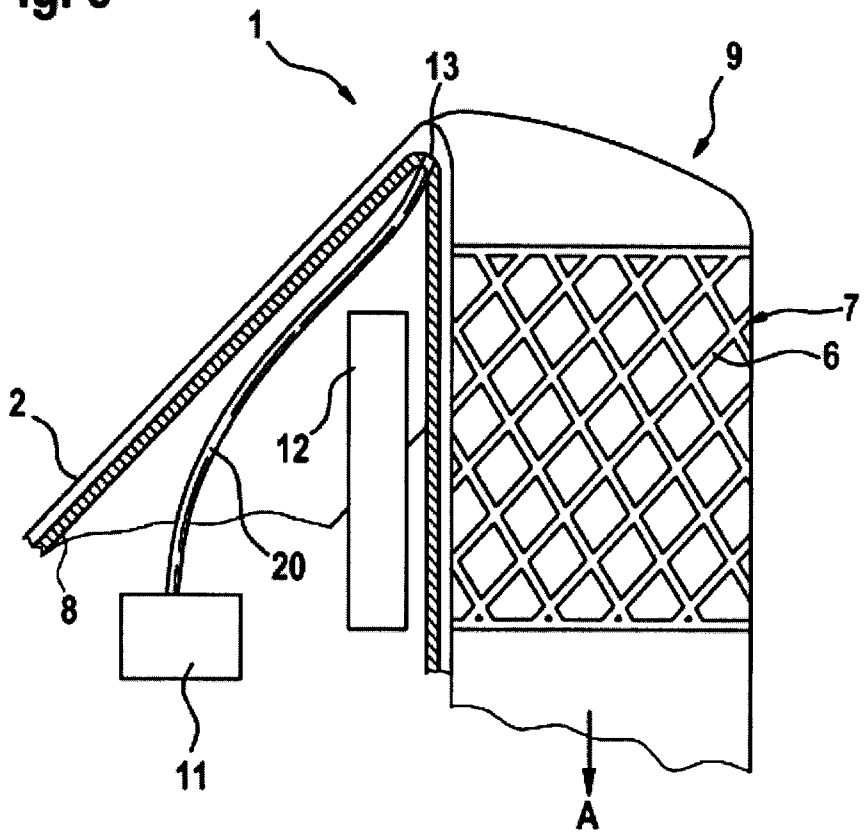

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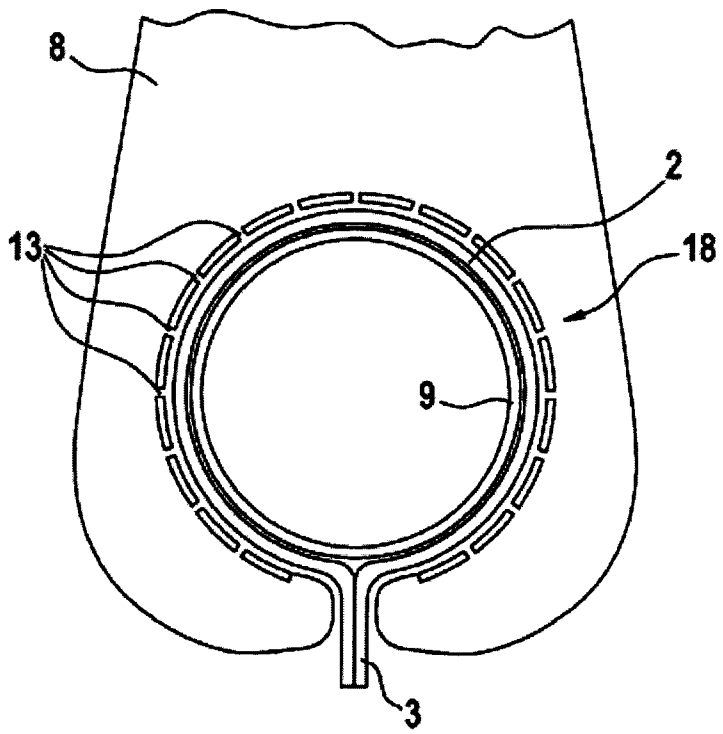
Fig. 6



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TECHNICAL FIELD

The present subject matter relates to a method and a device for producing a packaging bag from flexible film material, and the present subject matter further relates to a packaging bag.

BACKGROUND

Tube-shaped packaging bag for receiving liquid or solid products, where the tube-shaped packaging bags are manufactured and filled by means of horizontal or vertical tubular bag machines, are known in the state of the in various configurations. The packaging bags typically made from flexible film material have the disadvantage that due to the material, the packaging bags have no stiffness, although edges are imprinted at the corners. As a result, the packaging bags, especially when using thin films, possesses relatively flabby bag with an associated bad surface feel. To protect their content, it is also necessary that the packaging bag must be transported and stored in an impact-free and squeeze safe manner.

SUMMARY

This summary is provided to introduce concepts related to a method and device for producing a packaging bag from flexible film material, and the concepts are further described below in the detailed description. This summary is neither intended to identify essential features of the claimed subject matter nor is it intended for use in determining or limiting the scope of the claimed subject matter.

In one embodiment, the subject matter describes a method for producing a packaging bag from a flexible film material. The method includes feeding of the flexible film material; spraying an additional material to the flexible film material through a plurality of apertures, in particular in the flexible film material; and producing at least one stiffened partial region from the additional material, wherein the additional material is hardened and forms the stiffened partial region.

In another embodiment, the subject matter further describes a device for producing a packaging bag. The device includes a film feeding unit for feeding flexible film material; and an additional material adding unit for adding an additional material to the film material.

Further, the additional material adding unit is disposed in region of a forming shoulder and a plurality of apertures are formed, particularly in the forming shoulder. The additional material is introduced by spraying through the plurality of apertures.

In yet another embodiment, the subject matter further describes a packaging bag produced from a flexible film material. The packaging bag includes a first transverse seal seam, a second transverse seal seam, a longitudinal seal seam, a flexible partial region, and at least one stiffened partial region. Further, the flexible partial region is produced from the film material and the stiffened partial region is produced from an additional material. The additional material is sprayed and hardened to stiffen the packaging bag through a plurality of apertures, in particular formed in a forming shoulder.

BRIEF DESCRIPTION OF THE FIGURES

Embodiments of the present subject matter are described in detail with reference to the accompanying figures. In the figures:

Fig. 1 shows a perspective view of a portion of a machine for producing a packaging bag, according to first embodiment of a device.

Fig. 2 shows a schematic front view of a film tube of Fig. 1.

Fig. 3 shows a schematic side view of the film tube of Fig. 2.

Fig. 4 shows a schematic side view of a manufactured reinforced packaging bag according to a first embodiment.

Fig. 5 shows a schematic side view of device for producing the packaging bag according to a second embodiment.

Fig. 6 shows a schematic top view of the device of Fig. 5.

DETAILED DESCRIPTION

The method of the present subject matter for producing a packaging bag having the features of claim 1 has the advantage over a packaging bag made of flexible film material is that the packaging bag has a flexible and a stiffened partial region. Here, the stiffening of the packaging bag is achieved by the fact that in a first method step, a flexible film material is fed. Thereafter, in a further method step, an additional material is added to the flexible film

material. In a final method step, at least one stiffened partial region is produced from the additional material, wherein the additional material is hardened and forms the stiffened partial region. As a result, the stiffness of the packaging bag significantly increased by the stiffened partial region can omit the usage of additional packaging required for the storage and transport, in particular in packaging bags made of flexible film material containing liquid or break-sensitive contents. The method for production of a reinforced packaging bag can be performed reliably and inexpensively on conventional packaging machines.

The dependent claims define further preferred embodiments of the present subject matter.

According to an embodiment of the present subject matter, the addition of the additional material is carried out on an inner side and/or an outer side of the film material. Thus, it is possible to improve surface feel or touch-sensitive of the packaging bag significantly in a simple way and substantially without requiring a major technical effort to adapt to the packing properties.

According to the present subject matter, the stiffened partial region has a surface shape and/or a line shape and/or a grid structure. Thus, it is possible to considerably improve the rigidity of the packaging bag in a simple and inexpensive manner.

Preferably, the additional material is hardened using heat and/or ultraviolet (UV) light and/or electron beams or by contact with ambient air. Depending on the cycle time of a bagging machine and/or the food regulatory requirements, the method of the present subject matter can be re-equipped with the assigned production machine without increasing time and cost required for the type of hardening.

Further, the additional material is added by spraying or rolling. Therefore, the method of the present subject matter on the basis of its application can be used for the production of different packaging bags having different required stiffness on the same type of machine in a cost effective and reliable manner.

According to another embodiment of the present subject matter, the flexible film material and the additional material can have a same or a different material composition. Thus, an economical, that is, time and cost-effective, adaptation of the method on the shape and stiffness properties of the produced packaging is made possible. Further, the additional

material is added in the region of a forming shoulder or in the area of a forming tube of a bagging machine.

The present subject matter further relates to a device for producing a packaging bag. The device includes a film feeding unit for feeding a flexible film material and includes an additional material adding unit for adding an additional material. It is possible that the additional material adding unit is disposed in replaceable manner, so that it can be replaced/changed rapidly to another stiffening pattern during the production.

The device of the present subject matter further includes a hardening unit for hardening the added additional material. The same established energy-efficient technology can be used as far as possible for sealing a foot seam and a top seam of a packaging bag without requiring a large additional structure of a tubular bag machines.

Also, the additional material adding unit is arranged in the area of the forming shoulder. Plurality of apertures, in particular in form of the shoulder, are disposed, and the additional material is introduced through the plurality of apertures. Since the additional material is introduced at a very early feeding stage, that is, during the forming of the tubular bag, the stiffened partial region is formed similarly by hardening of the film material within the region of the forming shoulder and before a longitudinal sealing the film tube.

According to a further embodiment of the present subject matter, the additional material adding unit is disposed in the area of the forming tube. Since the additional material is introduced initially in the region of the forming tube and is then hardened, it is possible to form the stiffened partial region at the already formed film tube. Thus, arrangement has an advantage due to thinner more sensitive film materials and greater thickness of the inserted additional material.

The present subject matter further relates to a packaging bag made from a flexible film material. The packaging bag includes a first transverse seal seam, a second transverse seal seam, a longitudinal seal seam, at least one flexible partial region, and at least one stiffened partial region. The flexible partial region is made from the film material and the stiffened partial region is made from an additional material that is added and hardened to stiffen the packaging bag. Thus, a packaging bag with a new type of surface feel is resutled, wherein the stiffened partial region ensures sufficient stiffness and stability of the packaging

bag. The packaging bag according to the present subject matter is manufactured in a cost effective manner using known machines having minimum requirement of additional units. According to the present subject matter, a particularly thin film is used by the stiffened partial region.

Particularly, the at least one stiffened partial region is disposed on an inner side and/or outer side of the film material. Both improved surface feel recognition by a consumer and a significantly increased stiffness and stability of the packaging bag can be achieved.

Preferably, the at least one stiffened partial region of the inventive packaging bag has a surface shape and/or a line shape and/or a grid structure. Thus, it is possible to stiffen the packaging bag, depending on the application, both in longitudinal direction and transverse direction of the film tube having minimal time and cost by means of the additional material. The specific packing bags are produced with the desired shape and stiffen surface feel.

According to another embodiment of the present subject matter, the stiffened partial region possesses such a structure that the stiffened partial region forms a stable support structure so that the packaging bag stands independently. Thus, a uniform stiffening of the entire packaging bag is achieved during the production with minimal time and cost.

A device 1 of the present subject matter is described in detail with reference to Figs. 1 to 4, according to a first embodiment of the present subject matter.

Fig. 1 shows a perspective view of a section of a machine for producing a packaging bag according to a first embodiment of the device 1 of the present subject matter. Fig. 1 shows a device 1 for producing a packaging bag 5 including only schematically represented film feeding unit 10 that feeds a flexible film material 2, and an additional material adding unit 11. In the present embodiment, the additional material adding unit 11 is arranged at a forming tube 9 of the device 1 to add the additional material 7 to the flexible film material 2 (see Fig. 2). The film material 2 is sealed, by means of a (non-illustrated in the figure) longitudinal seal seam 3 of a longitudinal sealing unit, around the forming tube 9 into an elongated film tube 4. As shown in Fig. 1, the film tube 4 has a first transverse seal seam (foot seam) 14. The first transverse seal seam 14 is formed at a lower end 17 of the film tube 4 using a lateral sealing mechanism not shown in the present embodiment.

Fig. 2 shows a schematic front view of the film tube 4 according to the first embodiment of Fig. 1. It is evident from Fig. 2 that a stiffened partial region 6 configured in a desired form is formed in a flexible partial region 16 of the film tube 4 between the first transverse seal seam 14 (foot seam) and a second transverse seal seam 15 (top seam). As shown in Fig. 2, it is noted that the stiffened partial region 6 is an arbitrarily selectable surface shape and/or line shape and/or grid structure and cannot only be formed on a front or a partial circumference of the film tube 4, but may also be formed on the entire circumference of the film tube 4.

Fig. 3 shows a schematic side view of the film tube 4, wherein the additional material adding unit 11 adds the additional material 7 for the stiffened partial region 6 through a plurality of apertures. For the purpose of simplicity, as an example, only two apertures are characterized by a reference numeral 19. The process of adding or depositing is symbolized in Fig. 3 by arrows P. It is also noted that the additional material 7 is added during a standstill position of the film material 2. In addition, each stiffened partial region 6 is marked in a feeding direction A of the film tube 4 by a predetermined distance B to the first transverse seal seam 14 and by a predetermined distance C to the second transverse seal seam 15, so that foot seam and the top seam cannot be influenced.

In addition, as shown in Fig. 1, device 1 has a hardening unit 12. The hardening unit 12 is disposed next to the additional material adding unit 11 on the forming tube 9 with respect to the feeding direction A of the film material 2. The hardening unit 12 hardens the additional material 7 added by the additional material adding unit 11. The additional material adding unit 11 and the hardening unit 12 are only partially visible in the representation of Fig. 1. It is noted that materials that are easily processed by the provided additional material adding unit 11 (preferably as spraying unit) are used as the additional material and possess substances (such as sensitizers) that harden after application. Further, the used materials have the predefined food regulatory properties and are processed on the packaging machines.

The method of the present subject matter for producing the packaging bag 1 from the flexible film material 2 executes a first method step. In the first method step, the flexible film material 2 is fed via a forming shoulder 8 provided around the forming tube 9 and sealed by the longitudinal seal seam 3 to the film tube 4, as illustrated in detail in Fig. 1.

In second step of the method, the additional material adding unit 11 adds the additional material 7 on the flexible film material 2. In this case, the additional material 7 can be sprayed in an arbitrarily selectable application pattern that may have a surface shape and/or a line shape and/or a grid structure and extends depending on the mode of use, over a portion or the entire periphery of the film tube 4. The additional material 7 is added on a non-moving film tube 4.

In a subsequent third method step, at least one stiffened partial region 6 is produced by the added additional material 7, as the added additional material 7 is preferably hardened by means of heat or UV light or electron beams. For this purpose, the film tube 4 is moved up to a small distance in the feeding direction A. Simultaneously or subsequently, with the third method step, the first transverse seal seam (foot seam) 14 at the lower end 17 is made from the film tube 4. It is noted that a distance B (see Fig. 3) is provided between the first transverse seal seam 14 and the stiffened partial region 6, in order to not to influence the quality of the sealing of the first transverse seal seam (foot seam) 14.

Once the half-finished packaging bag 5 is filled via a hollow cylindrical shape forming tube 9, finally, the second transverse seal seam 15 (top seam) is formed at the film tube 4 and the packaging bag 5 is thus closed. During the formation of the second transverse seal seam 15, the first transverse seal seam 14 of a further below produced packaging bag 5 can also be preferably formed. It is noted that the distance C is provided between the second transverse seal seam 15 and the stiffened partial region 6 (see Fig. 3) in order not to influence the quality of the sealing of the top seam 15.

Fig. 4 shows a schematic side view of such produced and filled packaging bag 5 that is separated from the film tube 4. As evident from Fig. 4, the packaging bag 5 includes the longitudinal seal seam 3, the first transverse seal seam 14, the second transverse seal seam 15, the flexible partial region 16 and the stiffened partial region 6, where the stiffened partial region 6 has, as an example, the shape of a double frame. The flexible partial region 16 is produced from the film material 2 and the stiffened partial region 6 is produced from the additional material 7, where the additional material 7 is added and hardened to stiffen the packaging bag 5.

According to the present embodiment of the present subject matter, the packaging bag 5 has particularly the advantage that the structure of the stiffened partial region 6, depending on the purpose of packaging bag 5, can be selected such that the stiffened partial region 6 provides a solid holding structure so that the packaging bag 5 becomes independent due to the high stiffness and dimensional stability. Thus, allows the packaging bags 5, in particular for fragile or liquid ingredients can thus be so designed that previously required impact and crush proof packaging to protect the contents can be omitted.

In addition, such packaging bag 5 can be disposed in very good standing conditions in transport boxes and presentation displays.

With the inventive packaging bag 5 to produce the improved dimensional stability and durability of the packaging bag 5, only a relatively small material application of the additional material is required, thus contributes to a low total cost of the packaging. The new production method of partially stiffened flexible film packaging bags made of material having reinforced sections is reliable and can be integrated on existing vertical and horizontal fill and seal machines.

Figs. 5 and 6 show a second embodiment of the device of the present subject matter for producing a packaging bag. Similar parts are referenced with the same reference numerals as in the first embodiment. The second embodiment illustrated in Figs. 5 and 6 differs from the previously described first embodiment in such a way that the additional material adding unit 11 is arranged in the region of a forming shoulder 8 of the device 1. As shown in Fig. 5, the film material 2 is fed to the forming shoulder 8 having a plurality of apertures 13. The additional material 7 is added from the additional material adding unit 11 at each aperture 13 during a feed stroke of the film material 2 via a respective connected feed line 20. The plurality of apertures 13, as shown in Fig. 6, are formed in the forming shoulder 8 on a transition region 18 between the forming shoulder 8 and the forming tube 9 on the complete circumference. In the top view shown in Fig. 6, the already sealed longitudinal seal seam 3 is visible. It is noted that the feed lines 20 are not illustrated in Fig. 6 for the simplicity of illustration.

As shown in Fig. 5, the additional material 7 is sprayed by the additional material adding unit 11 via the plurality of apertures 13 (nozzles) on the flexible film material 2. The

flexible film material 2 represented, for example as grid lattice structure after hardening of the stiffened partial region 6.

By positioning the additional material adding unit 11 on the forming shoulder 8, the film material 2 can preferably be provided with a surface-shape structure, line-shape structure and/or grid stiffened structures.

Although the subject matter has been described in considerable detail with reference to certain preferred embodiments thereof, other embodiments are possible. As such, the spirit and scope of the invention should not be limited to the description of the preferred embodiment contained therein.