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(54) A method and installation for packaging an adhesive product or similar product

(57) The invention pertains to a method and an installation for packaging an adhesive product or similar products, the liquid adhesive product being sheathed in a protective sheath of a nonadhesive material. In addition, the adhesive product is sheathed in the protective sheath by means of a coextrusion process (30), the extruded product thus formed of the adhesive product and the protective sheath then being subjected to a solidification process (60), at least for the protective sheath.

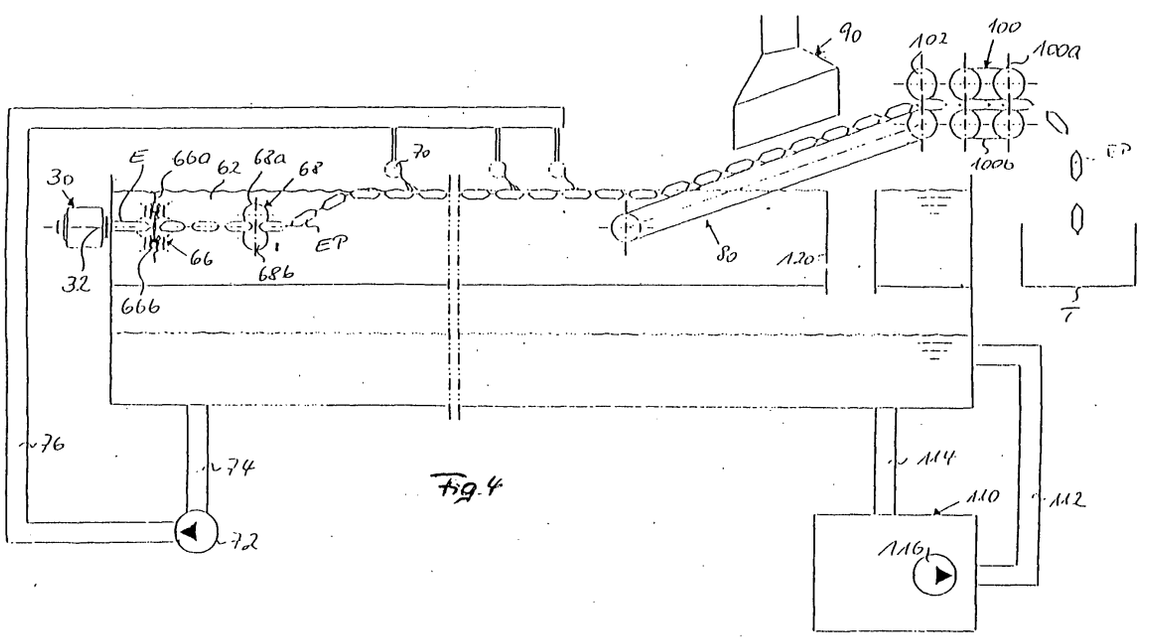

Fig. 4

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Description

[0001] The present invention concerns a method and an installation for packaging an adhesive product according to the characterizing clauses of claims 1 and 10. The present invention also concerns a packaged adhesive product or similar products.

[0002] In practice, an adhesive product, for example in the form of a hot melt adhesive, is most often not used at the place of manufacture. Thus the adhesive product must be packed into suitable shipping containers so that the adhesive product can be shipped from the place of manufacture to the place of use. Therefore, an important function of the shipping container-is to keep the means used for transportation and possibly storage from contact with the adhesive product. The shipping container also must be designed so that the adhesive product can be completely removed, i.e., so that it does not adhere to the inside walls of the container.

[0003] US Patent 5,373,682 describes a method and an installation of the above type wherein a plastic film is first continuously formed by means of a film bonding device into a hollow tubular body in a filling station for the adhesive product to be packaged. The leading end of the tubular body, in the direction of tube formation, is first contracted into sections by means of constricting rolls, so that the tubular body is closed at one end. The liquid adhesive product is then filled into the tubular body closed at one end. After a certain degree of filling has been achieved, a next section of the continuously formed tubular body is again contracted by the constricting rolls so as to make a separate packet filled with the adhesive product. This packet is cooled at a predetermined temperature before being separated from the continuously formed tubular body.

[0004] This disclosed method and installation have the disadvantage that a separate plastic film must be provided for the protective sheath, which must be formed into a hollow tubular body by means of a complicated manufacturing method. Because of this complicated manufacturing method, the filling installation itself must be provided with tooling and/or additional components, which increases the cost of the filling installation.

[0005] US Patent 3,469,363 also describes a method and an installation of similar operation and construction to those mentioned in reference to the above US Patent 5,373,682. An essential difference is that the tubular body is not formed from a plastic film, but from two plastic films. Thus the problems explained in reference to US Patent 5,373,682 are doubled.

[0006] US-A-4,093,485 refers to a known co-extrusion method which however is said to be unsuitable for products comprising homogeneous hot melt cores.

[0007] Finally, US Patent 3,327,349 describes an extrusion tool that can apply a sheath on the extruded product by means of a co-extrusion process. The material to be sheathed is in a viscous state so that the protective sheath can be applied readily to the adhesive product.

[0008] The object of the present invention is to provide a method and an installation of the type mentioned above that can package an adhesive product in a simple and profitable way. Another object of the present invention is to provide an adhesive product of the type mentioned above packaged profitably in a protective sheath.

[0009] Regarding the method, the object is achieved by the characteristics of claim 1. The co-extrusion of the liquid adhesive product and the nonadhesive material comprising the protective sheath in an extrusion tool permits a very simple and profitable packaging of the adhesive product. This method does not require the complicated manipulations needed for the two methods described in the US Patents 5,373,682 [sic? -- Tr. Ed.] and 3,469,363.

[0010] Depending on the viscosity of the adhesive product and that of the protective sheath, it might be advantageous to carry out the solidification process directly after the co-extrusion process.

[0011] To facilitate the solidification process, the extruded product can be subjected to a very wide range of treatments. It would be particularly advantageous to guide the extruded product for a predetermined distance in order to solidify it.

[0012] When the adhesive product is heated in order to liquefy it, the solidification process can consist of a procedure of cooling the extruded product comprised of the liquid adhesive product and the protective sheath for the adhesive product.

[0013] One particularly simple possibility for the cooling process is to immerse the extruded product obtained by the co-extrusion process in a water bath. To this end, the extruded product can be introduced directly into the water bath. The design can be such that the extrusion tool provided for the co-extrusion process discharges below the water level in the water bath, so that the emerging extruded product is immediately completely surrounded by water when it emerges.

[0014] In order to perform other treatments on the extruded product after cooling in the water bath, etc., it is preferable to provide a drying process after the cooling process.

[0015] To facilitate the further treatment of the extruded product by the users of the adhesive product, it can be preferable to separate the extruded product into separate packets after the co-extrusion process, in particular after the solidification process. This method can be facilitated by preliminarily dividing the extruded product into a chain of separate packets connected together before the final solidification. This chain then would resemble, for example, a chain of sausages connected together. To this end, it is preferable to perform this preliminary subdivision when the extruded product is still soft enough to be deformed by mechanical tools.

[0016] With regard to the installation, the object is accomplished by the characteristics of claim 10. To this end, it provides the same advantages as those ex-

plained above in reference to the method.

[0017] In this case, it is also preferable that the solidification path be connected directly to the outlet of the extruded product from the extrusion tooling.

[0018] In order to make the installation particularly compact, it is advantageous that the solidification path extend spirally in one plane, and preferably in a horizontal plane.

[0019] As explained above in reference to the method, the solidification process can consist of cooling in the case where the adhesive product had been heated in order to liquefy it. Thus the solidification path consists of a cooling path. In principle it is possible to provide a cooling path consisting of special cooling installations, for example cold-air fans, etc. A particularly simple possibility that additionally ensures gentle handling of the product is to provide a cooling path in the form of a water bath. The cooling bath can use water or any other liquid that is chemically neutral to the extruded product. The liquid of the cooling bath also can be used to treat the protective sheath of the extruded product.

[0020] In order to cool the extruded product as quickly as possible after it emerges from the extrusion tool, the outlet of the extruded product preferably can discharge directly in the water bath. To this end, it is quite particularly advantageous if the outlet of the extruded product from the extrusion tool discharges under the water in the water bath, so that, as explained above, the extruded product emerging from the extrusion tool is immediately completely surrounded by water when it emerges.

[0021] To ensure the regular extraction of the extruded product from the extrusion tool, it is preferable to equip the water bath with extraction rollers for the extruded product.

[0022] A very great variety of conveying means can be used to convey the extruded product in the water bath. Because the extruded product leaving the extrusion tool is still deformable because of the residual heat, the conveying method must be carried out gently. To this end, the extruded product can be conveyed along the cooling path, at least part way, by means of water spray nozzles. Obviously the conveying method also can be combined with other conveying means.

[0023] To facilitate the further treatment of the extruded product after cooling, it is preferable to provide a drying path after the water bath.

[0024] As explained above in reference to the method, it is preferable to separate the extruded product leaving the solidification path into separated packets by means of a separating device, thereby facilitating the use and particularly the portioning of the extruded product. This operation could be further facilitated if a constricting device is provided on the solidification path to form the extruded product leaving the extrusion tool into a chain of separated packets connected together before the final solidification. This constricting device for example can consist of two star-shaped rollers that receive between them the extruded product leaving the extrusion tool. Depending on the desired length of the different packets, these star-shaped rollers have several ribs extending radially outward over the entire circumference. The two star-shaped rollers are arranged so that the two opposing ribs receive the extruded product between them.

[0025] If the extruded product is solidified by cooling in a water bath, it is particularly advantageous to place the constricting device between the extruded product outlet and the extraction rollers in the water bath.

[0026] The extrusion tool can be an extrusion head having an inlet port for the adhesive product and an outlet port for the adhesive product connected together at least in a practically coaxial manner, and also, situated between those inlet and outlet ports, an annular outlet port for the nonadhesive protective sheath material.

[0027] With regard to the adhesive product that can be packaged by the method and in the installation according to the invention, it must be noted again that the nonadhesive protective sheath can be chemically neutral to the adhesive product. The protective sheath also can be chemically compatible with the adhesive product. The protective sheath also can consist of a material that is outwardly nonadhesive, but reacts with the adhesive product at an interface layer between the protective sheath and the adhesive product. The protective sheath also can consist of a material that has nonadhesive properties outwardly, but reacts with the adhesive product at an interface layer between the protective sheath and the adhesive product. In all these cases, it is preferable if the protective sheath can be processed along with the adhesive product during the subsequent use of the adhesive product without needing to be detached from the adhesive product.

[0028] The protective sheath should comprise between about 1 to 5% by weight of the adhesive product.

[0029] With regard to the term "adhesive product", it must be further noted that it includes also fabrics whose function is not to connect two or several components by adhesion, but to provide an adhesive property as a result of their chemical composition. Such materials also can be packaged in a simple manner by the method and the installation according to the invention. The proposed invention is shown to be particularly advantageous in combination with hot melt adhesives.

[0030] Other preferred embodiments, as well as an example of accomplishing the present invention, will be described below in reference to the attached drawings, in which:

Figure 1 is a top view of an installation according to the invention for accomplishing the method according to the invention;

Figure 2 is a side view of the installation according to the invention shown in Figure 1, in the direction of the arrow X in Figure 1;

Figure 3 is a front view of the installation shown in Figure 1, in the direction of the arrow Y in Figure 1;

Figure 4 is a schematic representation to explain the operation of the installation shown in Figure 1;

Figure 5 is a cross section of an extrusion tool that can be used in the method and the installation according to the invention; and

Figure 6 is a front view of the extrusion tool according to the invention.

[0031] As shown in Figure 1, the installation according to the invention for packaging an adhesive product or similar products has a tank 10 containing the adhesive product. The adhesive product can be added to this tank 10 in the form of granules, powder, etc., and can be liquefied there by means of a heating device, not shown in detail. The adhesive product to be packaged also can be added to the tank already in liquid form and kept there in a liquid state by means of the heating device.

[0032] From the tank 10, the liquid adhesive product is transferred through a connecting line 12 to a metering pump 20. From the metering pump 20, the adhesive product is transferred through a connecting line 22 to an extrusion device 30, the extrusion tool 32 of which will be described in greater detail below in reference to Figures 5 and 6. The extrusion device 30 can have the known configuration of either a single-screw extruder or a double-screw extruder.

[0033] As shown in Figure 1, another tank 50 holds the nonadhesive material constituting the protective sheath. Here, too, the nonadhesive material can be added to the tank 50 in the form of granules, powder, etc., and can be liquefied there by means of a heating device, not shown in detail.

[0034] The nonadhesive material comprising the protective sheath also can be added to the tank 50 already in liquid form and kept there in a liquid state by means of the heating device.

[0035] From the tank, the nonadhesive material comprising the protective sheath is transferred to the extrusion device 30 through a connecting line 52.

[0036] The extruded product E continuously issuing from the extrusion device 30, or more particularly from the extrusion tool 32 (see Figure 4), and consisting of the adhesive product from the tank 10 and the nonadhesive protective sheath from the tank 50 in the form of a film enveloping the adhesive product is conveyed to a cooling device 60 composed of a passage containing water 62 and extending spirally in a plane, particularly in a horizontal plane, from the exterior; that is, from the extrusion device 30 toward the interior, as clearly shown in Figure 1. As shown in particular in Figures 2 and 3, the cooling device 60 is supported by a frame 64, which also supports the extrusion device 30. The passage 62 of the water bath 60 can be formed by arranging a profile, having for example a U section, in a spiral in a horizontal plane. It is also possible to provide a vessel equipped with baffles extending spirally in order to form the passage 62. In the embodiment example shown, the cooling path is 190 m long and is equipped with a tank or vessel 2.5 x 4.5 m in size.

[0037] After the extruded product E passes through the cooling path formed by the passage 62, the extruded product is extracted from the cooling device 60 obliquely upward by means of a conveyor belt 80, as shown in Figures 2 and 4. Upon leaving the passage 62, the extruded product E is dried along a drying path formed by the conveyor belt 80. The drying itself can be accomplished by providing a hot-air fan 90 above the drying path. At the end of the drying path formed by the conveyor belt 80 is a separating device 100 which separates the individual packets EP of the extruded product E. The conveyor belt 80, the drying device 90, and the separating device 100 will be described in greater detail below in reference to Figure 4.

[0038] Figure 4 diagrams the arrangement of the extrusion device 30, the cooling ,device 60, the outlet conveyor belt 80, the drying device 90, and the separating device 100. The extruded product E upon leaving the extrusion tool 32 of the extrusion device 30 immediately enters the water bath formed by the water passage 62, which extends spirally in a horizontal plane. In other words, the extrusion tool 32 discharges into the water bath so that the extruded product E upon leaving the extrusion tool 32 is completely surrounded by water. Two constricting rollers 66a and 66b of a constricting device 66 are situated immediately by the extrusion tool 32 in the direction that the extruded product E is conveyed. As shown in Figure 4, the constricting rollers 66a and 66b, the axes of rotation of which are essentially horizontal, have on each six ribs that extend radially outward and are spaced at an equal angular distance over the circumference of the axes of rotation. The two constricting rollers 66a and 66b are situated so that one rib each of the upper roller 66a and the lower roller 66b are opposite in the vertical plane of the axes of the two rollers 66a and 66b. The two constricting rollers 66a and 66b ensure a preliminary subdivision of the extruded product E leaving the extrusion tool 32 into separate packets of extruded product EP of identical size and shape, these packets being connected together in the form of a chain.

[0039] In the direction in which the extruded product E or the extruded product packets EP are conveyed, the constricting device 66 is followed by an extraction or conveying device 68 composed of two conveying rollers 68a and 68b. These two rollers 68a and 68b also are arranged parallel to one another in a manner similar.to the constricting rollers 66a and 66b of the constricting device 66, so that their horizontally extending axes of rotation extend in the plane of the drawing of Figure 4

and are superposed in a vertical plane. The extruded product packets EP pass through the two rollers 68a and 68b. It also must be noted that the conveying device 68 also serves to keep the extruded product E under water after it leaves the extrusion device 30.

[0040] After passing through the extraction device 68, the different extruded product packets EP reach the surface of the water bath and are conveyed by means of several water spray nozzles 70 along the passage 62. The water needed for the water spray nozzles is taken from the passage 62 by a pump 72, which is shown schematically in Figure 4, and delivered to the spray nozzles 70. Two connecting lines 74 and 76 are provided for this: the line 74 connects the pump 72 to the water bath of the cooling passage 62, and the line 76 connects the pump 72 to the spray nozzles 70.

[0041] After passing through to the end of the spiral cooling passage 62, the extruded product packets EP reach the conveyor belt 80, which takes them from the cooling passage 62 to the separating device 100, which is described in greater detail below. The conveyor belt 80 also forms part of the drying path provided with a drying device 90 above, for example a hot-air fan. The hot-air fan 90 is connected to a hot-air source not shown in detail.

[0042] In the direction of conveyance, the conveyor belt 80 is followed by a separating device 100. The separating device 100 can consist of a knife. As shown in Figure 4, the separating device 100 also can consist of two conveyor belts 100a and 100b which extend parallel to one another, are superposed in a vertical plane, and are situated after the conveyor belt 80 in the direction of conveyance. The separating device 100 also can comprise a roller 102 at the end of the conveyor belt 80 and situated above the conveyor belt 80 to receive the different extruded product packets EP between itself and the conveyor belt 80. As a result of a difference in the conveying speeds of the conveyor belts 100a, 100b, and 80 and the roller 102, the different extruded product packets EP are separated from the chain. After they pass through the separating device 100, they fall into a handling container T shown schematically in Figure 4.

[0043] It must be further noted that the water is delivered to the cooling passage 62 in a cooling device 110 connected by two lines 112 and 114 to the cooling passage 62. The cooling device 110 also can include a pump 116.

[0044] It must be further noted that a tubular element 120 can be situated in the water bath to control the water level.

[0045] Figures 5 and 6 show greater detail of an extrusion tool 32 that can be used with the installation and the method according to the invention. The extrusion tool 32 has an adhesive product inlet port 34 and an adhesive product outlet port 36 consisting of two tubular elements with respective flanges 34a and 36a. The two tubular elements 34 and 36 have the same inside and outside diameters and are seated coaxially in a holder 38 having a corresponding internal bore 38a with an inside diameter nearly identical to the outside diameter of the two tubular elements 34 and 36. The tubular element 34 comprising the extrusion product inlet port is secured in the holder 38 by means of several screws 34b. The screws 34b pass through the flange 34a, which is situated a certain distance from the outer left end of the tubular element 34 shown in Figure 5. A seal ring 40 is situated between the flange 34a and the holder 38. On the end away from the holder 38, the tubular element 34 has an external thread that allows a connection to the extrusion device 30.

[0046] The tubular element 36 comprising the outlet port for the extruded product E is screwed into the holder 38 by means of an external thread 36b and is retained there by means of a lock nut 37.

[0047] The two tubular elements 34 and 36 are retained coaxially, but with a certain gap, in the internal bore 38a of the holder 38. The gap between the two tubular elements 34 and 36 forms an annular passage 42 connected by an inlet bore 44 to a connecting line 52 leading to a tank 50 that contains the nonadhesive material constituting the protective sheath. In order to make a connection to the line 52, the inlet passage 44 has an internal thread 44a.

[0048] As shown in Figure 5, the inlet passage 44 is oriented at an angle of 90° to the internal bores 38a of the holder 38. As shown also in Figure 6, the passage 44 is oriented in a plane containing the median axes of the two tubular elements 34 and 36.

[0049] The inlet passage 44 also has a section 44b having a diameter smaller than that of the inlet zone with the internal thread 44a and leading to the annular passage 42.

[0050] To package the adhesive product by the method according to the invention, the liquefied adhesive product is withdrawn from the tank 10 by a metering pump 20 and taken by the line 22 to the extrusion device 30. The adhesive product there enters the tubular element comprising the inlet port 34 of the extrusion tool 32. At the same time a suitable conveying device withdraws the nonadhesive material comprising the protective sheath from the tank 50 and takes it also to the extrusion device 30. This material enters the inlet passage 44 having a section 44a of larger diameter, and then into the smallerdiameter section 44b and from there into the annular passage 42. The nonadhesive material coming from the tank 50 thus continuously sheathes the adhesive product passing through the tubular elements 34 and 36. The adhesive product is coated by the nonadhesive material within the extrusion device 30; as an alternative, a different coating process may be used for achieve the same product. The product thus formed, which is the extruded product E, is transferred from the outlet 36 directly into the water bath of the cooling passage 62. There it is seized by the constricting cylinders 66a and 66b and subdivided into a continuous chain of separate extruded product packets EP. In order to ac-

complish the cooling method, the chain comprising the different extruded product packets EP is held under the water by the extraction device 68. Only after passing through the extraction device 68 do the different extruded product packets EP arrive at the water surface and there are transferred by spray nozzles 70 along the spiral cooling passage 62 toward the outlet conveyor belt 80. The different extruded product packets EP there are dried by the drying device and separated into individual packets by the separating device 100.

Embodiment 1. A method of packaging a liquid adhesive product or similar products, particularly a hot melt adhesive product, the liquid adhesive product being sheathed in a protective sheath composed of a nonadhesive material, characterized in that the liquid adhesive product is sheathed in the protective sheath by a co-extrusion process, the extruded product thus formed of the adhesive product and the protective sheath being then subjected to a solidification process, at least for the protective sheath.

Embodiment 2. A method with the features of embodiment 1, characterized in that the solidification process is accomplished immediately after the co-extrusion process.

Embodiment 3. A method with the features of embodiment 1 or 2, characterized in that the extruded product is guided over a distance having a length predetermined for the purpose of solidification.

Embodiment 4. A method with the features of embodiment 1-3, characterized in that the solidification process consists of a cooling process.

Embodiment 5. A method with the features of embodiment 4, characterized in that the cooling process is accomplished by immersing the extruded product in a water bath.

Embodiment 6. A method with the features of embodiment 5, characterized in that after leaving the extrusion tool provided for the co-extrusion process, the extruded product immediately enters the water bath.

Embodiment 7. A method with the features of embodiment 5 or 6, characterized in that after the cooling process, the extruded product is subjected to a drying process.

Embodiment 8. A method with the features of embodiment 1-7, characterized in that the individual packets are separated from the extruded product after the solidification process.

Embodiment 9. A method with the features of embodiment 1-8, characterized in that after leaving the extrusion tool provided for the co-extrusion process, the extruded product is subdivided first into a continuous chain of separate packets before the final solidification.

Embodiment 10. An installation for packaging a liquid adhesive product or similar products, particularly a hot melt adhesive product, that can be sheathed in a protective sheath composed of a nonadhesive material, in particular for the purpose of accomplishing the method with the features of embodiment 1-9, characterized in that it comprises an extrusion tool (32) to which the adhesive product can be brought in a liquid state and in which the nonadhesive material comprising the protective sheath can be applied onto the liquid adhesive product by a co-extrusion process in order to sheath it, and in that a solidification path (60) is situated after the extrusion tool (32) in order to solidify at least the protective sheath.

Embodiment 11. An installation with the features of embodiment 10, characterized in that the solidification path (60) is situated directly after the outlet of the extruded product (36) from the extrusion tool (32).

Embodiment 12. An installation with the features of embodiment 10 or 11, characterized in that the solidification path (60) extends spirally in a plane.

Embodiment 13. An installation with the features of embodiment 10-12, characterized in that the solidification path consists of a cooling path (60).

Embodiment 14. An installation with the features of embodiment 13, characterized in that the cooling path (60) consists of a water bath (62).

Embodiment 15. An installation with the features of embodiment 14, characterized in that the extruded product outlet (36) from the extrusion tool (32) discharges directly into the water bath (62).

Embodiment 16. An installation with the features of embodiment 14 or 15, characterized in that the water bath (62) has rollers (68a, 68b) for extracting the extruded product (E).

Embodiment 17. An installation with the features of embodiment 14-16, characterized in that the extruded product (E) can be displaced in the water bath (62) over the length of the cooling path (60), at least by sections, by means of water spray nozzles (70).

Embodiment 18. An installation with the features of embodiment 14-17, characterized in that a drying path (90) is situated after the water bath (62).

Embodiment 19. An installation with the features of embodiment 10-18, characterized in that the solidification path (62) has a constricting device (66) to give the extruded product (E) leaving the extrusion tool (32) the shape of a chain of separate packets connected together (EP).

Embodiment 20. An installation with the features of embodiment 16 or 19, characterized in that the constricting device (66) is situated between the extruded product outlet (36) from the extrusion tool (32) and the extraction rollers (68a, 68b) in the water bath (62).

Embodiment 21. An installation with the features of embodiment 10 through 20, characterized in that a separating device (100) is situated after the cooling path (60) to separate the individual packets (EP) from the extruded product (E).

Embodiment 22. An installation with the features of embodiment 10-21, characterized in that the extrusion tool (32) has an adhesive product inlet port (34) and an extruded product outlet port (36) that are connected at least in a practically coaxial manner, as well as an annular outlet port (42) for the nonadhesive material constituting the protective sheath situated between the inlet port (34) and the outlet port (36). Embodiment

Embodiment 23. A packaged adhesive product, particularly a hot melt adhesive product, sheathed in a nonadhesive protective sheath applied by means of a coextrusion method onto the adhesive product that is at least during this stage in a liquid state.

Embodiment 24. A packaged adhesive product with the features of embodiment 23, characterized in that the nonadhesive material for the protective sheath is chemically compatible with the adhesive product,

Embodiment 25. A packaged adhesive product with the features of embodiment 23 or 24, characterized in that the protective sheath comprises about 1 to 5% by weight of the adhesive product.

Claims

1. A method of packaging a liquid adhesive product or similar products, particularly a hot melt adhesive product, the liquid adhesive product being sheathed in a protective sheath composed of a nonadhesive material, **characterized in that** the liquid adhesive product is sheathed in the protective sheath by a co-extrusion process, the extruded product thus formed of the adhesive product and the protective sheath being then subjected to a solidification process, at least for the protective sheath, and
in that the solidification process consists of a cooling process, which is accomplished by immersing the extruded product in a liquid bath, and
in that the extruded product is displaced in the liquid bath over the length of the cooling path, at least by sections by means of spray nozzles.

2. A method according to claim 1,
characterized in that the extruded product is conveyed along the cooling path, which consists of a water bath, by means of water spray nozzles.

3. A method according to claim 1, **characterized in that** the solidification process is accomplished immediately after the co-extrusion process.

4. A method according to any of claims 1-3, **characterized in that** after leaving the extrusion tool provided for the co-extrusion process, the extruded product immediately enters the water bath.

5. A method according to any of claims 1-4, **characterized in that** after the cooling process, the extruded product is subjected to a drying process.

6. A method according to any of claims 1-5, **characterized in that** the individual packets are separated from the extruded product after the solidification process.

7. A method according to any of claims 1-6, **characterized in that** after leaving the extrusion tool provided for the co-extrusion process, the extruded product is subdivided first into a continuous chain of separate packets before the final solidification.

8. An installation for packaging a liquid adhesive product or similar products, particularly a hot melt adhesive product, that can be sheathed in a protective sheath composed of a nonadhesive material, in particular for the purpose of accomplishing the method according to any of the claims 1-7,
characterized in that it comprises an extrusion tool (32) to which the adhesive product can be brought in a liquid state and in which the nonadhesive material comprising the protective sheath can be applied onto the liquid adhesive product by a co-extrusion process in order to sheath it, and **in that** a solidification path (60) is situated after the extrusion tool (32) in order to solidify at least the protective sheath, and

in that the solidification path consists of a cooling path (60), which consists of a liquid bath (62), and **in that** the extruded product (E) can be displaced in the liquid bath (62) over the length of the cooling path (60), at least by sections, by means of spray nozzles (70).

9. An installation according to claim 8, **characterized in that** the solidification path (60) is situated directly after the outlet of the extruded product (36) from the extrusion tool (32).

10. An installation according to claim 8 or 9, **characterized in that** the solidification path (60) extends spirally in a plane.

11. An installation according to any of claims 8-10, **characterized in that** the extruded product outlet (36) from the extrusion tool (32) discharges directly into the water bath (62).

12. An installation according to any of claims 8-11, **characterized in that** the water bath (62) has rollers (68a, 68b) for extracting the extruded product (E).

13. An installation according to any of claims 8-12, **characterized in that** a drying path (90) is situated after the water bath (62).

14. An installation according to any of claims 8-13, **characterized in that** the solidification path (62) has a constricting device (66) to give the extruded product (E) leaving the extrusion tool (32) the shape of a chain of separate packets connected together (EP), which preferably is situated between the extruded product outlet (36) from the extrusion tool (32) and the extraction rollers (68a, 68b) in the water bath (62).

15. An installation according to any of claims 8 through 14, **characterized in that** a separating device (100) is situated after the cooling path (60) to separate the individual packets (EP) from the extruded product (E).

16. An installation according to any of claims 8-15, **characterized in that** the extrusion tool (32) has an adhesive product inlet port (34) and an extruded product outlet port (36) that are connected at least in a practically coaxial manner, as well as an annular outlet port (42) for the nonadhesive material constituting the protective sheath situated between the inlet port (34) and the outlet port (36).

17. A packaged adhesive product, particularly a hot melt adhesive product, sheathed in a nonadhesive protective sheath applied by means of a co-extrusion method according to one of the claims 1-7 onto the adhesive product that is at least during this stage in a liquid state.

18. A packaged adhesive product according to claim 17, **characterized in that** the nonadhesive material for the protective sheath is chemically compatible with the adhesive product.

19. A packaged adhesive product according to claim 17 or 18, **characterized in that** the protective sheath comprises about 1 to 5% by weight of the adhesive product.

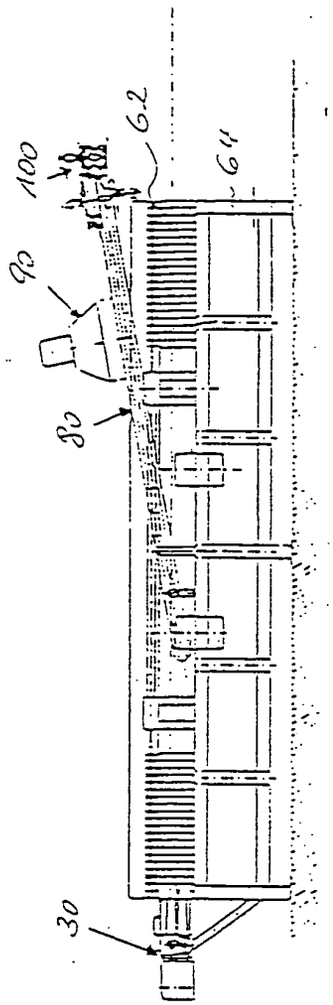


Fig. 2

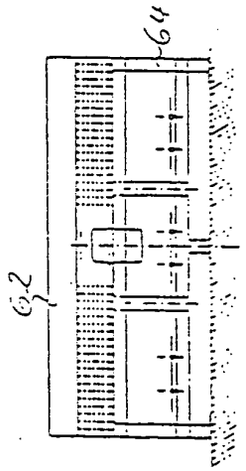


Fig. 3

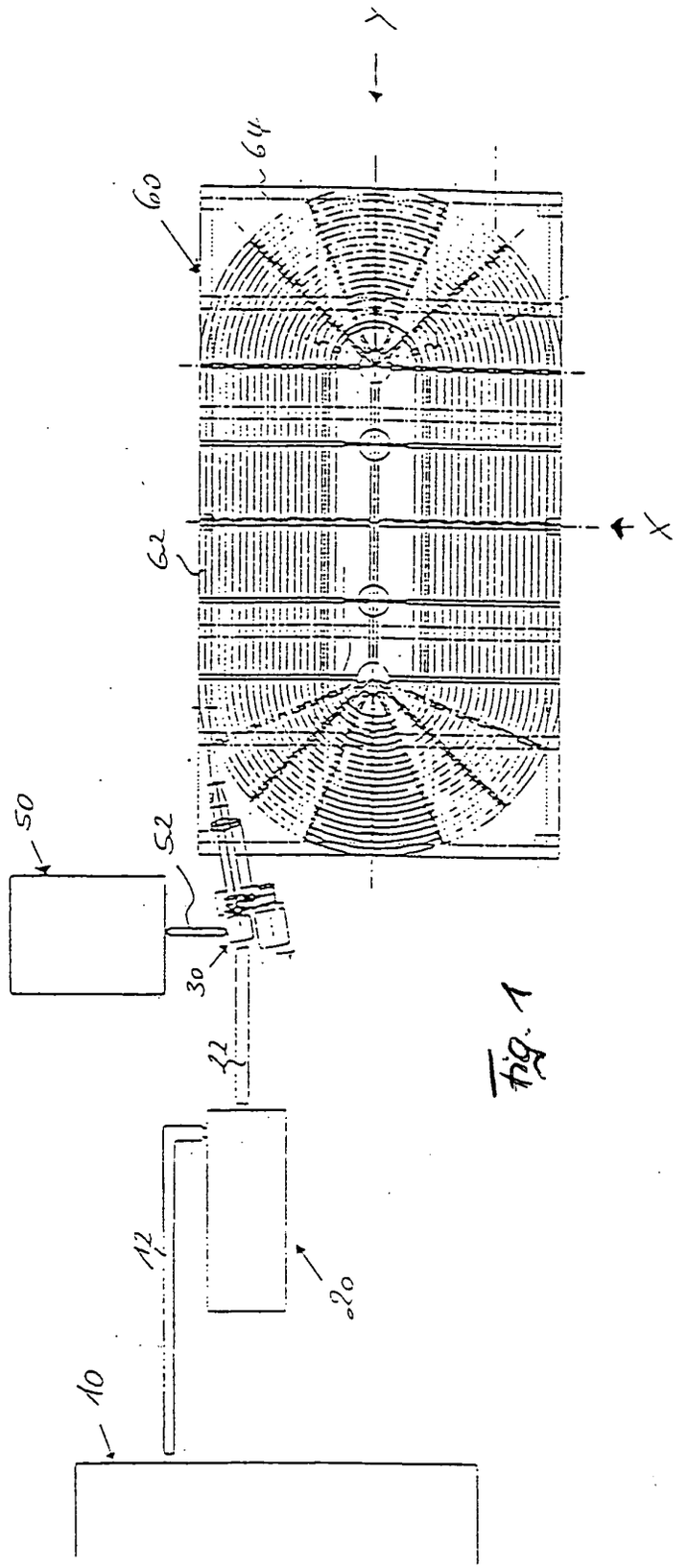
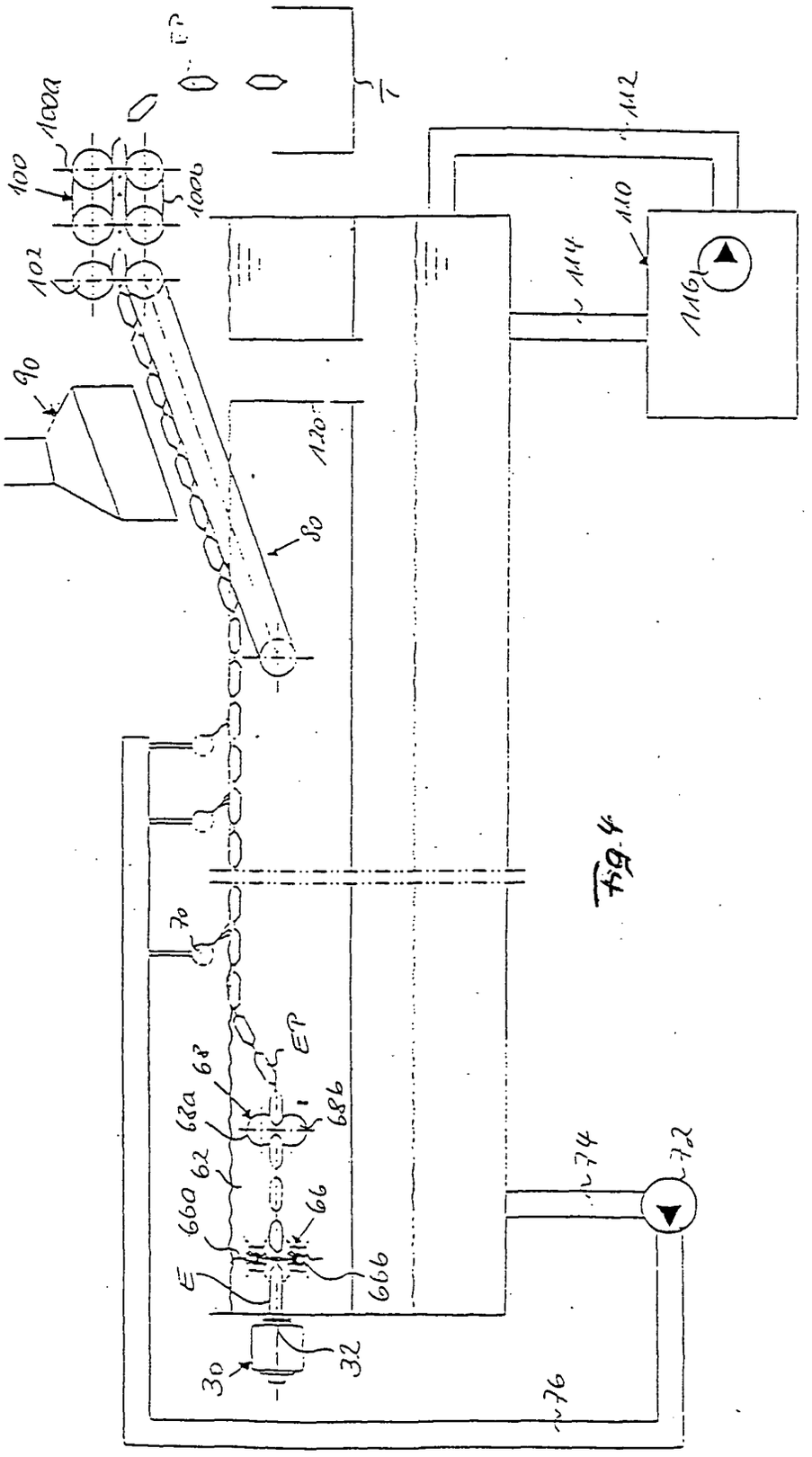


Fig. 1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80
120
112
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70
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68b
EP
62
66
666
660
32
30
74
72
76

Fig. 4

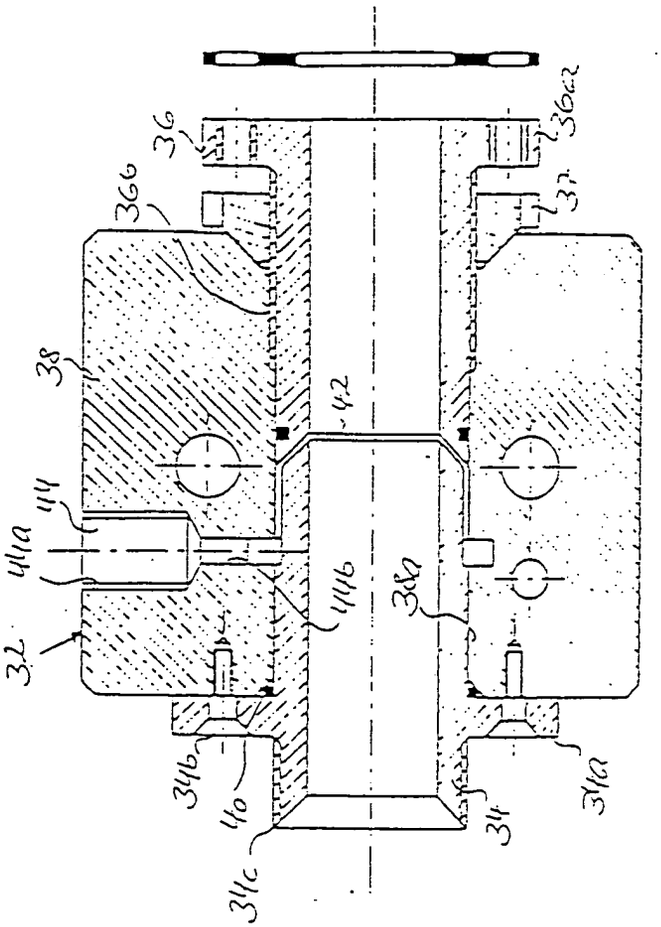

Fig. 5

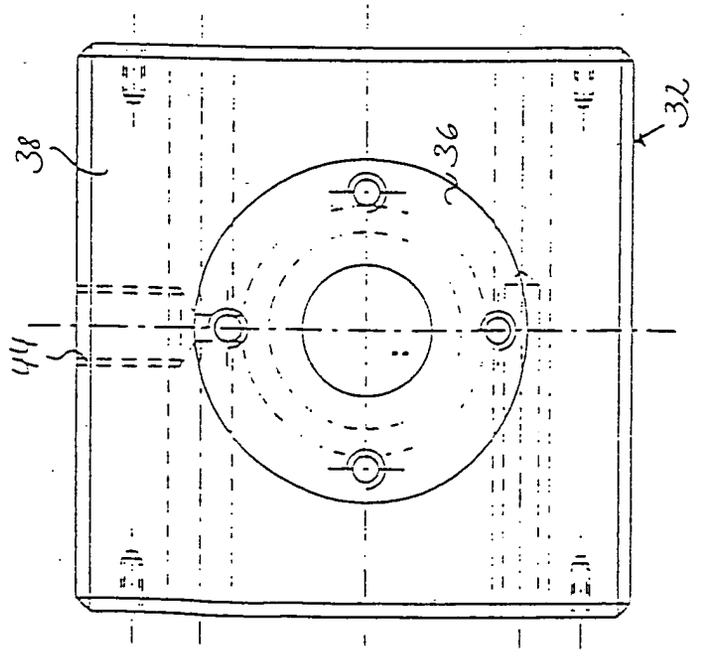

Fig. 6