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(71) Applicant: **Salvaro, Marziano**
37024 Negrar (Prov. of Verona) (IT)

(72) Inventor: **Salvaro, Marziano**
37024 Negrar (Prov. of Verona) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati,
Via Meravigli, 16
20123 Milano (IT)

(54) Device for generating at least partial vacuum in bags for packaging clothes or the like

(57) A device (1) for generating at least partial vacuum in bags for packaging clothes comprising a box-like body (2) that forms a suction chamber designed to accommodate at least one portion of a mouth of a bag (3) for packaging clothes; elements for providing at least partial airtightness act between the bag and the box-like body; the suction chamber being provided with an air suction intake (18) that can be connected to air suction elements (5); and heat-sealing elements (18a) that act on a region of the bag (3) that is interposed between the mouth portion and the clothes or the like contained within the bag.

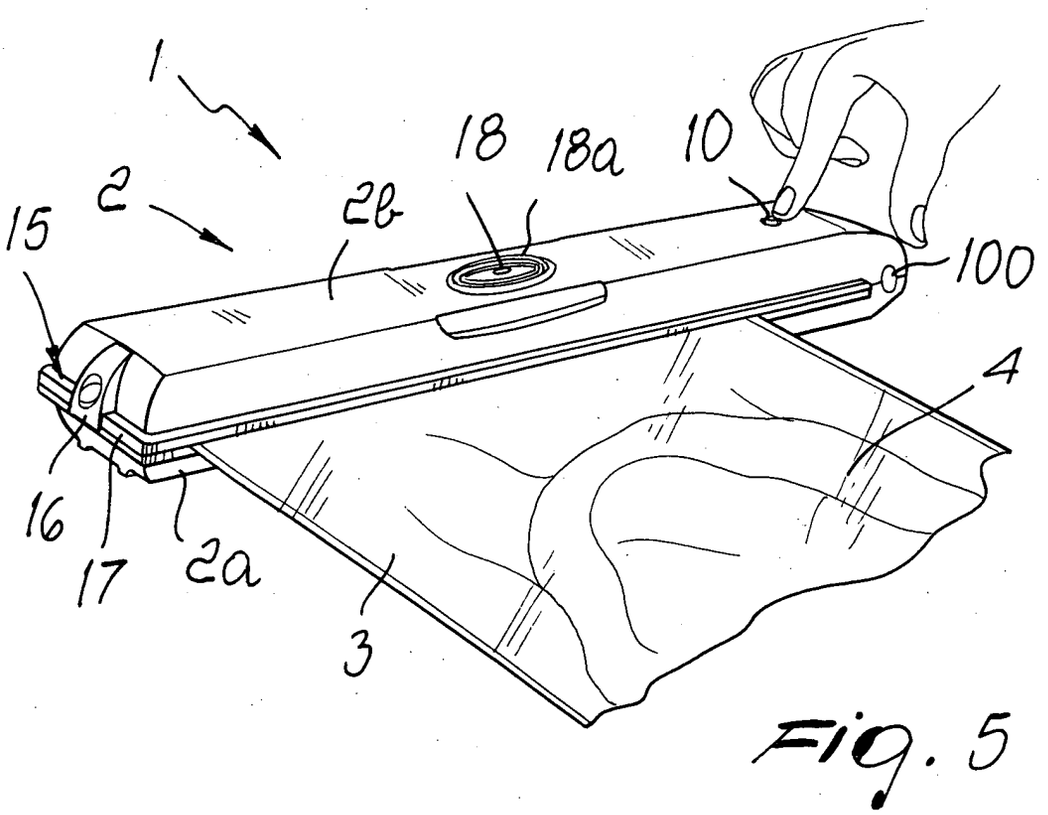

Fig. 5

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Description

[0001] The present invention relates to a device for generating at least partial vacuum in bags for packaging clothes or the like.

[0002] Bags are commercially available which are constituted by two walls made of heat-sealing synthetic material, which are mutually connected so as to form a receptacle that can be accessed from a mouth of the bag and is designed to contain, for example, clothes, blankets, duvets and the like.

[0003] In particular, closure of the inlet is ensured by means of various kinds of device.

[0004] One of these devices consists of a cylindrical element, around which the rim of the mouth of the bag is wrapped, and of a closure element, which has a surface that is complementary to the lateral surface of the cylindrical element and is designed to be coupled to the cylindrical element in order to keep the rim of the mouth locked between the two complementary surfaces so as to close it.

[0005] Bags are known which have, at one of the two walls, a valve for aspirating the air contained therein, in order to reduce the volume of the items of clothing contained in the bag.

[0006] The valve is suitable to be connected to the suction connector of a conventional vacuum cleaner.

[0007] It is evident that such bags allow not only to reduce the bulk of the clothes or blankets to be stored for example in wardrobes, but also allow to avoid contact thereof with dust, moths and humidity.

[0008] However, the practical application of currently commercially available bags of the type described above suffers drawbacks.

[0009] First of all, the presence of the valve on the bag constitutes a very awkward bulk, especially in the very frequent case in which a plurality of bags are to be stacked one on top of the other.

[0010] Moreover, the valve is a critical point for maintaining vacuum over time.

[0011] Another drawback is the complexity of the operations for closing the mouth of the bag by way of the closure devices currently in use.

[0012] Moreover, if this operation is not performed precisely, creases can form on the mouth of the bag, degrading the hermetic sealing capacity of the closure devices, which are already inherently unreliable from this standpoint.

[0013] Obviously, the presence of a valve that has to be welded to the bag, and the fact of having to resort to the use of closure devices, entails a considerable cost increase.

[0014] The aim of the present invention is to eliminate the drawbacks noted above by providing a device for generating at least partial vacuum in bags for packaging clothes or the like, which allows to extract air from the bags in a practical manner.

[0015] Within this aim, an object of the present invention is to provide a device for generating at least partial vacuum in bags for packaging clothes or the like that allows to close the bags hermetically.

[0016] Another object of the invention is to provide a device for generating at least partial vacuum in bags for packaging clothes or the like that allows to use bags that do not have a suction valve.

[0017] A further object of the present invention is to provide a device for generating at least partial vacuum in bags for packaging clothes or the like that thanks to its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use.

[0018] A still further object of the present invention is to provide a device for generating at least partial vacuum in bags for packaging clothes or the like that has a very simple structure, is easy to use, and has a competitive production cost.

[0019] This aim and these and other objects that will become better apparent hereinafter are achieved by a device for generating at least partial vacuum in bags for packaging clothes or the like, according to the invention, characterized in that it comprises a box-like body that forms a suction chamber designed to accommodate at least one portion of a mouth of a bag for packaging clothes or the like, means for providing at least partial airtightness acting between said bag and said box-like body, said suction chamber having an air suction intake that can be connected to air suction means, said device comprising heat-sealing means that act on a region of said bag that is interposed between said at least one portion of said mouth and the clothes or the like contained within said bag.

[0020] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the device according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the device according to the invention, in an open condition;
Figure 2 is a perspective view of the device according to the invention, in a closed condition;
Figure 3 is a view, similar to Figure 2, of the device according to the invention, illustrating a bag engaged with the device according to the invention;
Figures 4, 5 and 6 are sequential views of the use of the device according to the invention;
Figures 7, 8, 9, 10, 11 and 12 are sequential views of the use of the device according to the invention with a bag in which the side provided with the mouth is larger than the longitudinal dimensions of the device according to the invention.

[0021] In the examples of embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other differ-

ent characteristics that exist in other examples of embodiments.

[0022] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0023] With reference to the figures, the device for generating at least partial vacuum in bags for packaging clothes or the like, according to the invention, generally designated by the reference numeral 1, comprises a box-like body 2, which forms internally a suction chamber that is designed to accommodate at least one portion of an inlet or mouth of a bag 3 adapted to package clothes 4 or the like.

[0024] Also according to the invention, means for providing at least partial airtightness are provided and act between the bag 3 and the box-like body 2.

[0025] In detail, the suction chamber has an air suction intake 18, which is conveniently surrounded by a sealing element 18a and can be connected to air suction means 5.

[0026] According to an important aspect of the invention, the air suction means 5 are constituted by a vacuum cleaner provided with a suction hose 6 that ends with a connector 7 that can be connected to the suction intake 18 of the suction chamber and can engage hermetically the sealing element 18a, which is advantageously capable of adapting to the various diameters that the connector 7 can have.

[0027] The device according to the invention further comprises heat-sealing means 8, which are adapted to act on a region 9 of the bag 3 that is interposed between the portion of the mouth of the bag 3 that engages the suction chamber and the clothes 4 contained in said bag 3.

[0028] With reference to the embodiment shown in the figures, the box-like body 2 is formed by two parts 2a and 2b, which are associated to each other and can move with respect to each other to pass from an open condition, in which they allow to arrange at least one portion of the mouth of the bag 3 in the suction chamber, to a closed active condition, in which the sealing means form an at least partial seal between the outer surface of the bag 3 and the two parts 2a and 2b, so as to isolate the suction chamber from the outside.

[0029] Going into the details of the heat-sealing means 8, such means comprise, at one of the two parts 2a and 2b, for example at the part 2a, heating means which, according to an example of embodiment, are constituted by an electric resistor that is controlled by a control circuit provided with an activation button 10.

[0030] Advantageously, the heating means are also provided with a protective element 11 that covers the electric resistor.

[0031] Conveniently, the heat-sealing means 8 are completed by an insulating element 12, which is supported by the part 2b and is designed to face the protective element 11 when the two parts 2a and 2b are placed in their closed active condition.

[0032] By way of example, the protective element 11 is constituted by a plate-like element made of Teflon, while the insulating element 12 can be formed advantageously by a plate-like element made of silicone material.

[0033] With reference in particular to Figure 1, at least one of the two parts 2a and 2b has a recess 13, which forms the suction chamber in cooperation with a portion of the other part that faces it in the closed active condition.

[0034] Conveniently, both parts 2a and 2b are provided, in matching positions, with a respective recess 13, which, when the two parts 2a and 2b are in the closed active position, forms a corresponding portion of the suction chamber.

[0035] Advantageously, at the perimetric region of the recesses 13 there is a sealing gasket 14, which constitutes such sealing means.

[0036] Conveniently, the two parts 2a and 2b are constituted by two elongated elements, which are pivoted to each other, for example at one of their ends, about a rotation axis that is formed by a pivot 100 that is substantially perpendicular to their longitudinal extension.

[0037] Advantageously, the parts 2a and 2b have, at their end that lies opposite the pivoting end, retention means 15, which are designed to keep the two parts 2a and 2b arranged so that they face each other when they are in the closed active condition and are constituted by a tooth 16 that is supported for example by the part 2b and can engage detachably an abutment profile formed on the part 2a.

[0038] Use of the device according to the invention is as follows.

[0039] After inserting clothes 4 or the like in the bag 3, with the two parts 2a and 2b in the open condition, the mouth of the bag 3 is arranged within one of the recesses 13, so that the clothes 4 are arranged on the opposite side of the mouth with respect to the heat-sealing means 8 (as shown in Figure 3).

[0040] At this point, the parts 2a and 2b are placed in the closed active condition, and as shown in Figure 4 the intake 7 of the vacuum cleaner is connected to the suction intake 18 of the suction chamber and engaged, on its outer lateral surface, with the sealing element 18a in order to extract the air from the suction chamber and accordingly from the inside of the bag 3.

[0041] Once the intended degree of vacuum has been reached inside the bag 3, the heat-sealing means 8 are activated by way of the activation button 10 and seal the region 9 of the bag 3 that is interposed between the insulating element 12 and the protective element 11.

[0042] It should be noted that in order to ensure correct operation of the device during suction, it is important to ensure that air passages, connecting at least the internal part of the bag 3 interposed between the region 9 and the clothes 4 to the suction chamber, can form inside said bag.

[0043] In this regard, it is advantageous to provide the bag 3, at least proximate to its mouth and at least up to the region 9, with means for spacing its internal surfaces that are suitable to form a plurality of air suction channels. Such per se known spacer means can be constituted by an embossed internal surface of the bag 3 or by a plate-like element that is interposed between the internal surfaces of the walls of the bag 3 and has a substantially undulated configuration.

[0044] As an alternative, it is possible to use a bag 3 of the concertina type, or the user can directly form the creases in the region that is engaged by the device according to the invention, so as to form channels through which the air to be aspirated can flow.

[0045] Another possible solution is to insert, through the mouth of the bag 3, at least one tubular element, which can be arranged so that one end is connected to a suction chamber and the other end lies within the internal portion of the bag 3 arranged between the region 9 and the clothes 4.

[0046] It should also be noted that the bag must be made, at least at its internal surfaces, of a heat-sealing material, such as for example polypropylene or polyethylene.

[0047] If the dimensions of the mouth of the bag 3 are larger than the longitudinal extension of the two parts 2a and 2b, it is possible to proceed, as also clearly shown in Figures 5 to 12, by first providing a heat-seal at a corner region of the bag 3 towards the mouth, so as to reduce the extent of the mouth to be engaged within the suction chamber.

[0048] All the characteristics of the invention described above as advantageous, convenient or the like may also be omitted or be replaced with equivalents.

[0049] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0050] Thus, for example, the two parts 2a and 2b can be constituted by two elongated elements that are associated to each other on a long side and so that they can rotate about a rotation axis that is substantially parallel to their longitudinal extension.

[0051] In practice it has been found that the invention has achieved the intended aim and objects in all of the embodiments.

[0052] In practice, the materials used, so long as they are compatible with the contingent use, as well as the shapes and dimensions, may be any according to requirements.

[0053] The disclosures in Italian Patent Application No. VR2003A000115 from which this application claims priority are incorporated herein by reference.

[0054] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device for generating at least partial vacuum in bags for packaging clothes or the like, **characterized in that** it comprises a box-like body that forms a suction chamber designed to accommodate at least one portion of a mouth of a bag for packaging clothes or the like, means for providing at least partial airtightness acting between said bag and said box-like body, said suction chamber having an air suction intake that can be connected to air suction means, said device comprising heat-sealing means that act on a region of said bag that is interposed between said at least one portion of said mouth and the clothes or the like contained within said bag.

2. The device according to claim 1, **characterized in that** said suction intake can be connected to a connector of a vacuum cleaner.

3. The device according to claim 1, **characterized in that** said box-like body is formed in two parts that are associated to each other and can move with respect to each other in order to pass from an open condition, in which said at least one portion of said mouth can be arranged within said suction chamber, to a closed active condition, in which said sealing means form an at least partial seal between an outer surface of said bag and said two parts, in order to isolate said suction chamber from the outside.

4. The device according to claim 3, **characterized in that** said heat-sealing means comprise heating means that are supported by at least one of said two parts.

5. The device according to claim 4, **characterized in that** said heat-sealing means comprise said heating means on one of said two parts and an insulating element on the other one of said two parts, said insulating element facing said heating means when said two parts are in the active closed condition.

6. The device according to claim 5, **characterized in that** said heating means comprise an electric resistor that is controlled by a control circuit and a protective element for said resistor that is designed to face said insulating element when said two parts are in the closed active condition.

7. The device according to claim 6, **characterized in that** said protective element comprises a plate-like Teflon element.

8. The device according to claim 5, **characterized in**

that said insulating element comprises a plate-like element made of silicone material.

9. The device according to claim 3, **characterized in that** at least one of said two parts comprises a recess that forms said suction chamber in cooperation with a portion of the other part that faces it in said closed active condition, said sealing means comprising at least one gasket that is designed to act between a perimetric region of said recess and the other part.

10. The device according to claim 3, **characterized in that** said two parts are pivoted to each other about a rotation axis, in order to pass from said open condition to said closed active condition, and vice versa, means for retaining said two parts in said closed active condition being provided.

11. The device according to claim 3, **characterized in that** said two parts comprise two elongated elements, which are pivoted to each other substantially at one of their longitudinal ends and form respective longitudinal recesses that are surrounded perimetrically by a sealing gasket, said elongated elements comprising, adjacent to said recesses, respectively said heating elements and said insulating elements, said elongated elements comprising said retention means at the other longitudinal end.

12. The device according to claim 1, **characterized in that** said bag comprises, at least at a region that is proximate to said mouth, means for spacing internal surfaces thereof that form a plurality of air suction chambers.

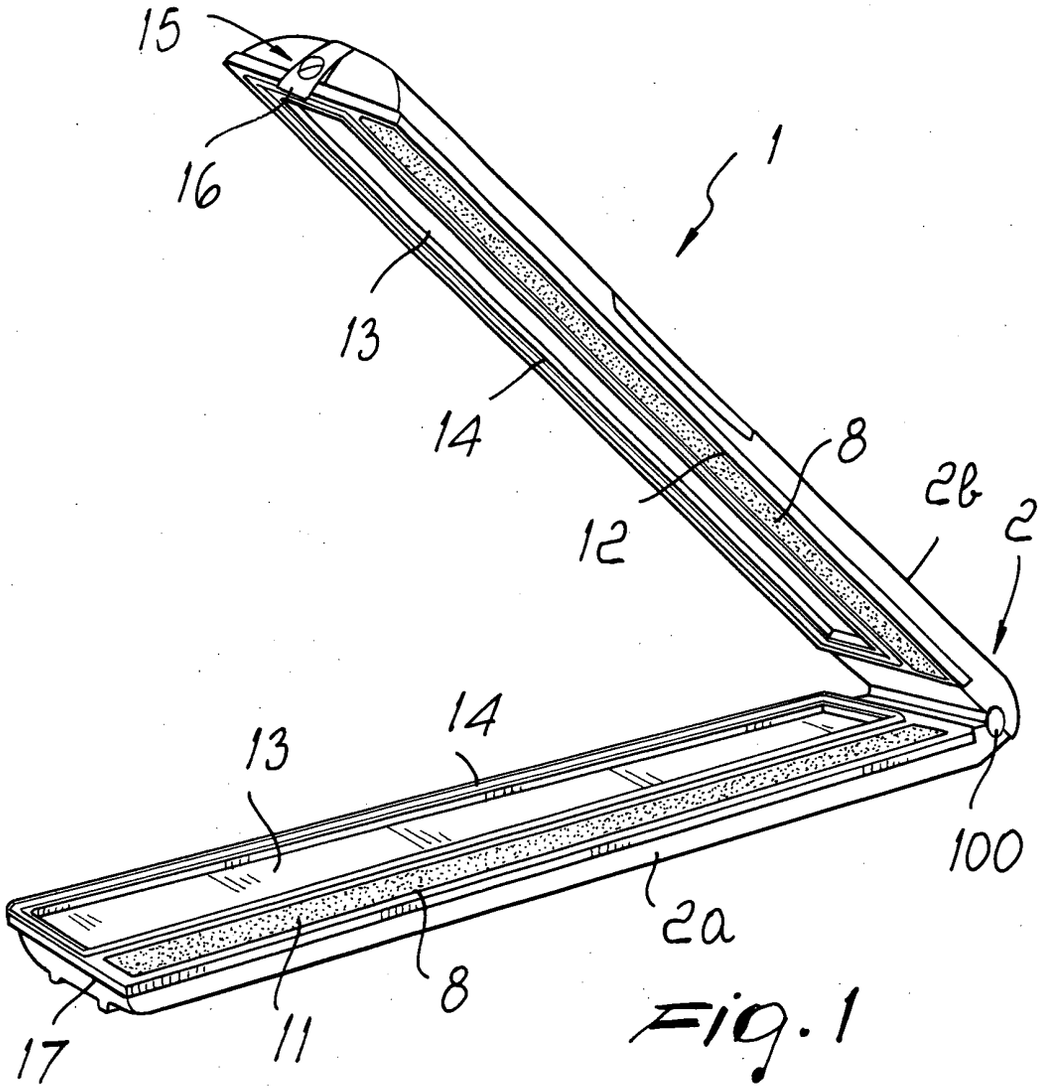
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Fig. 1

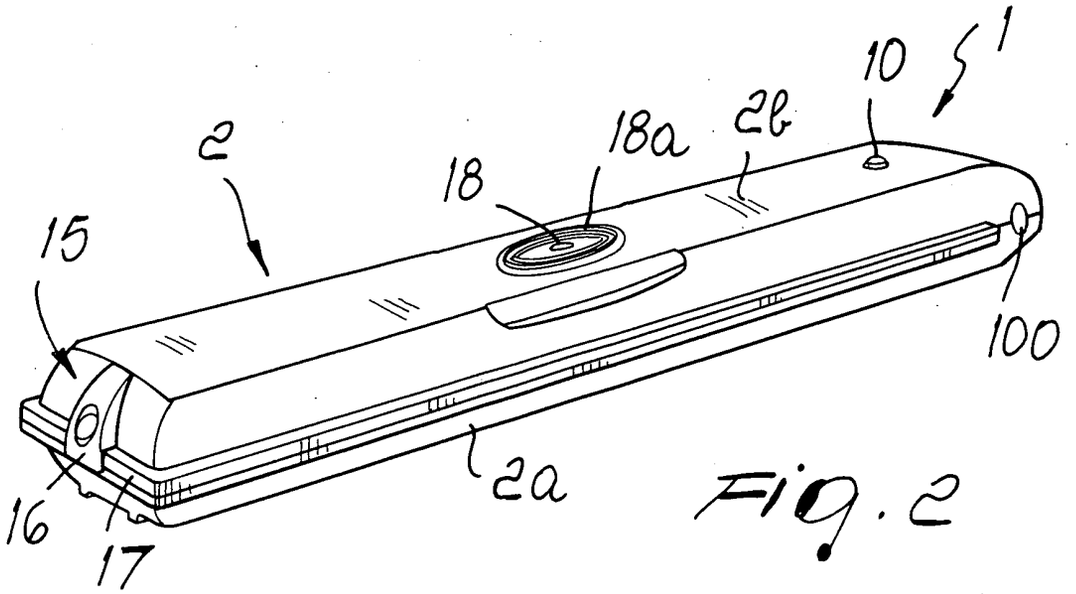
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Fig. 2

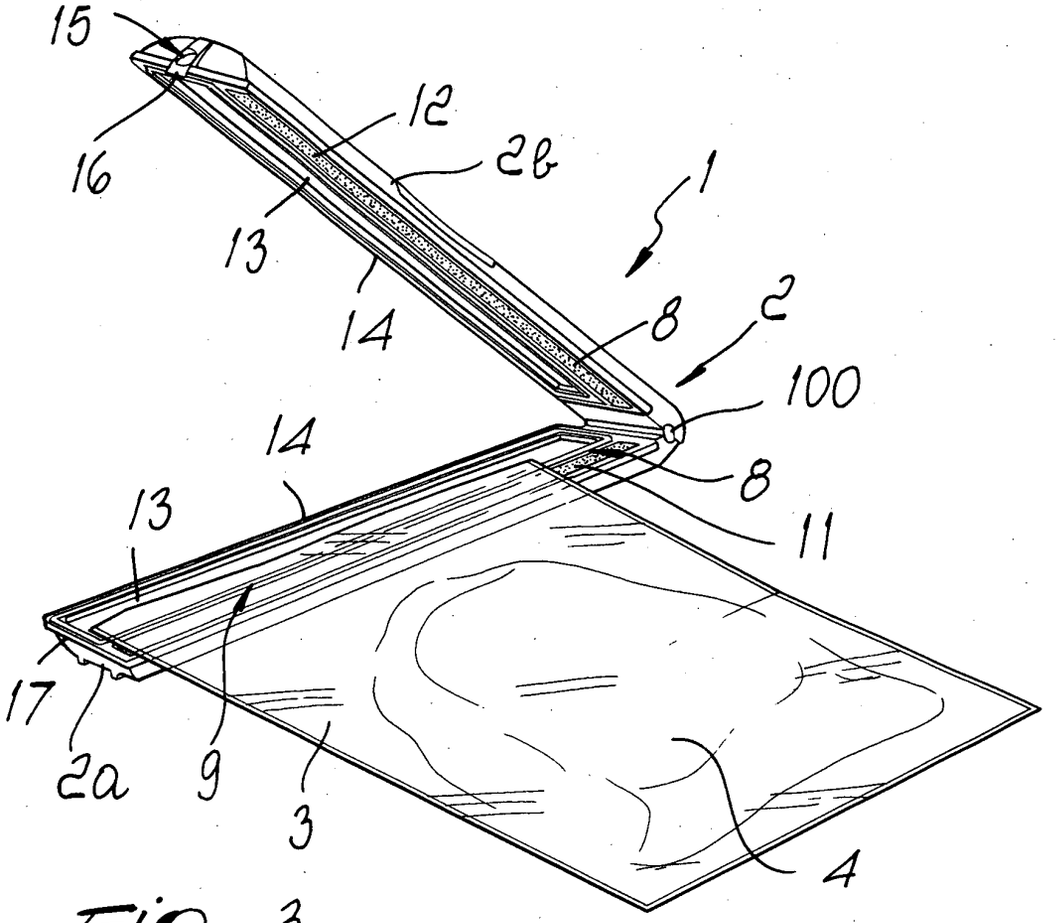

Fig. 3

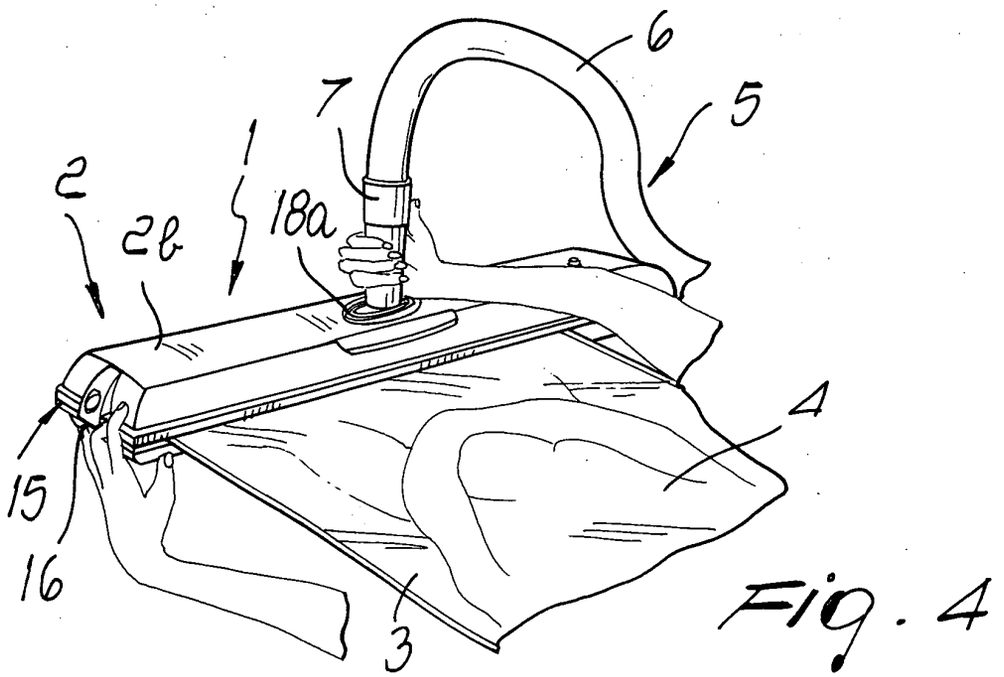

Fig. 4

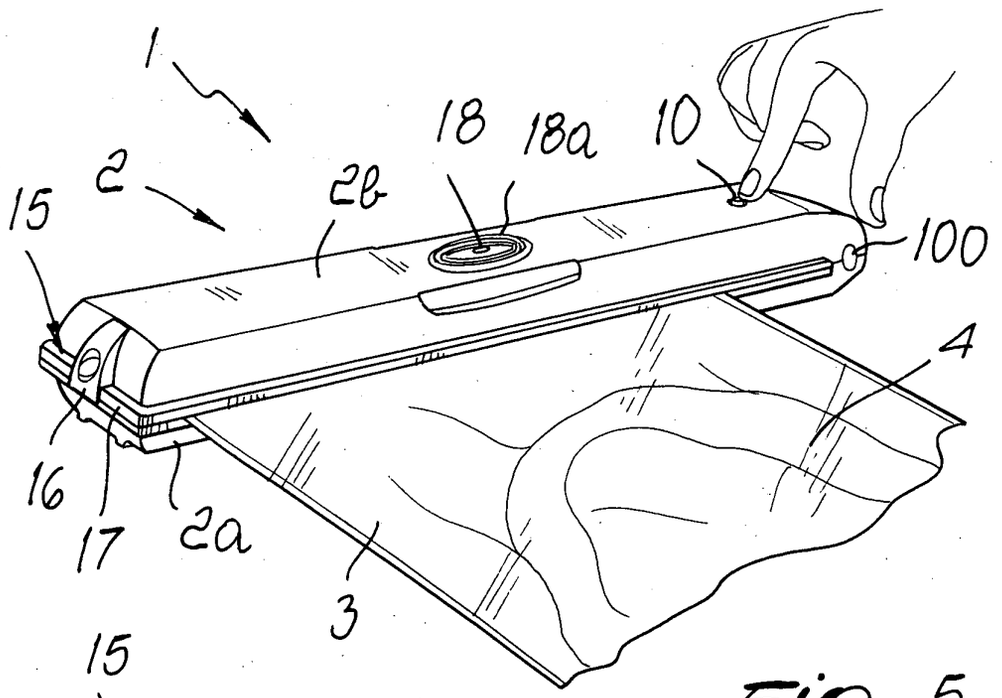
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Fig. 5

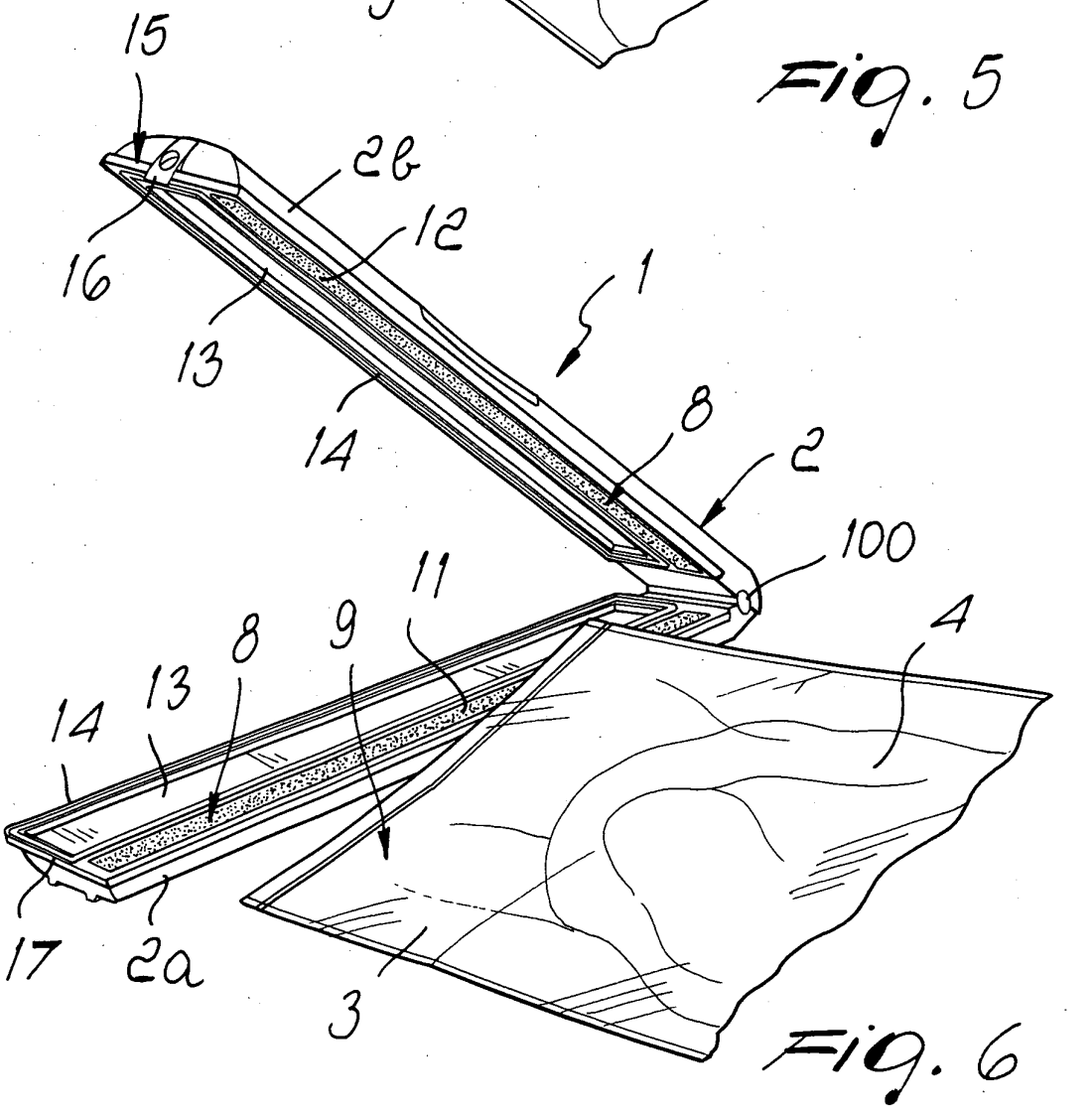
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Fig. 6

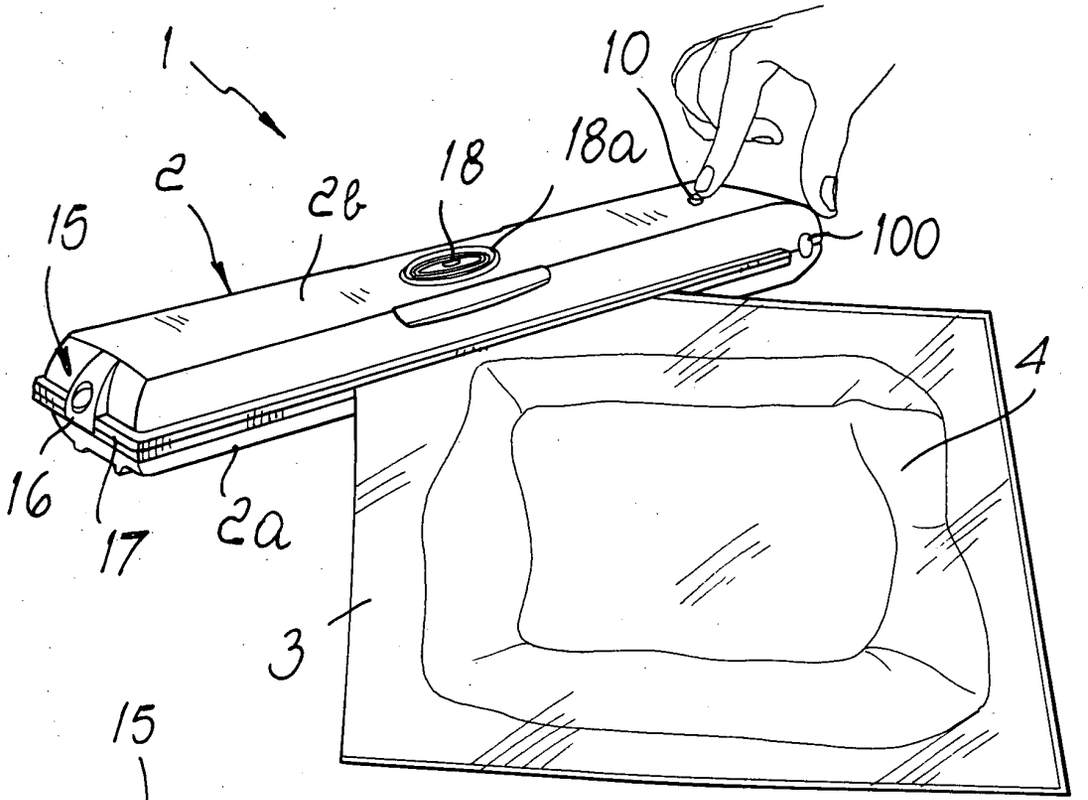
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Fig. 8

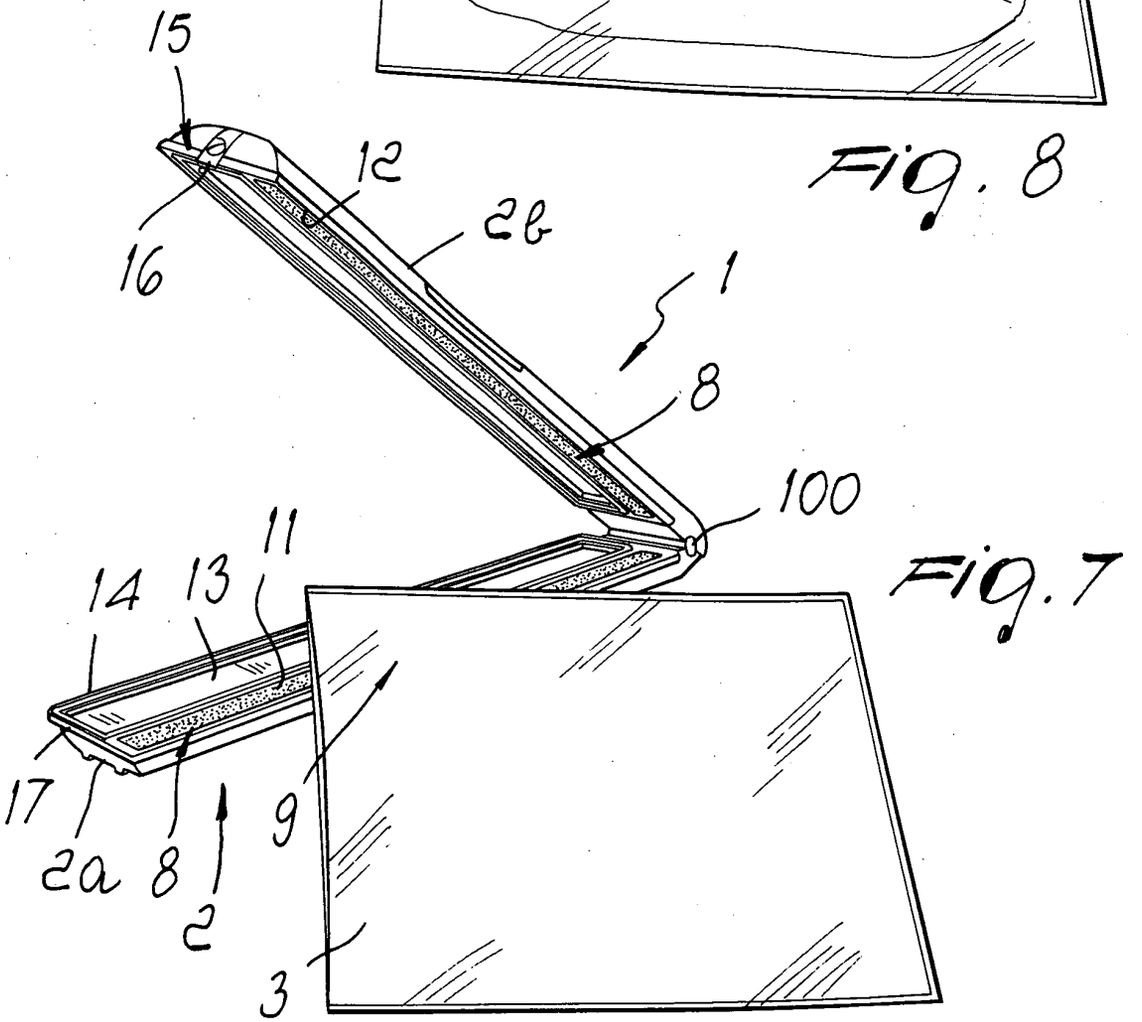
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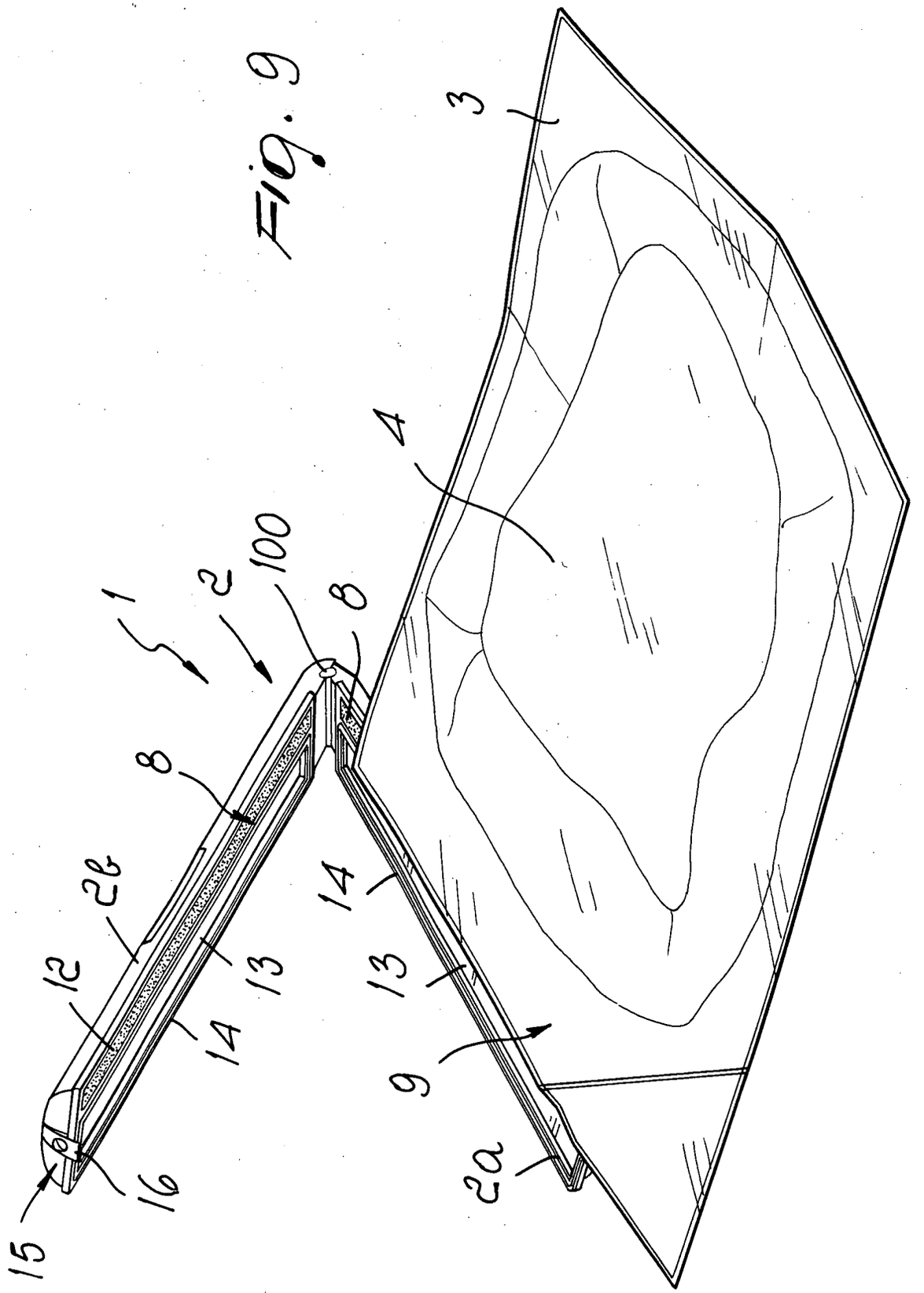
Fig. 7

Fig. 9



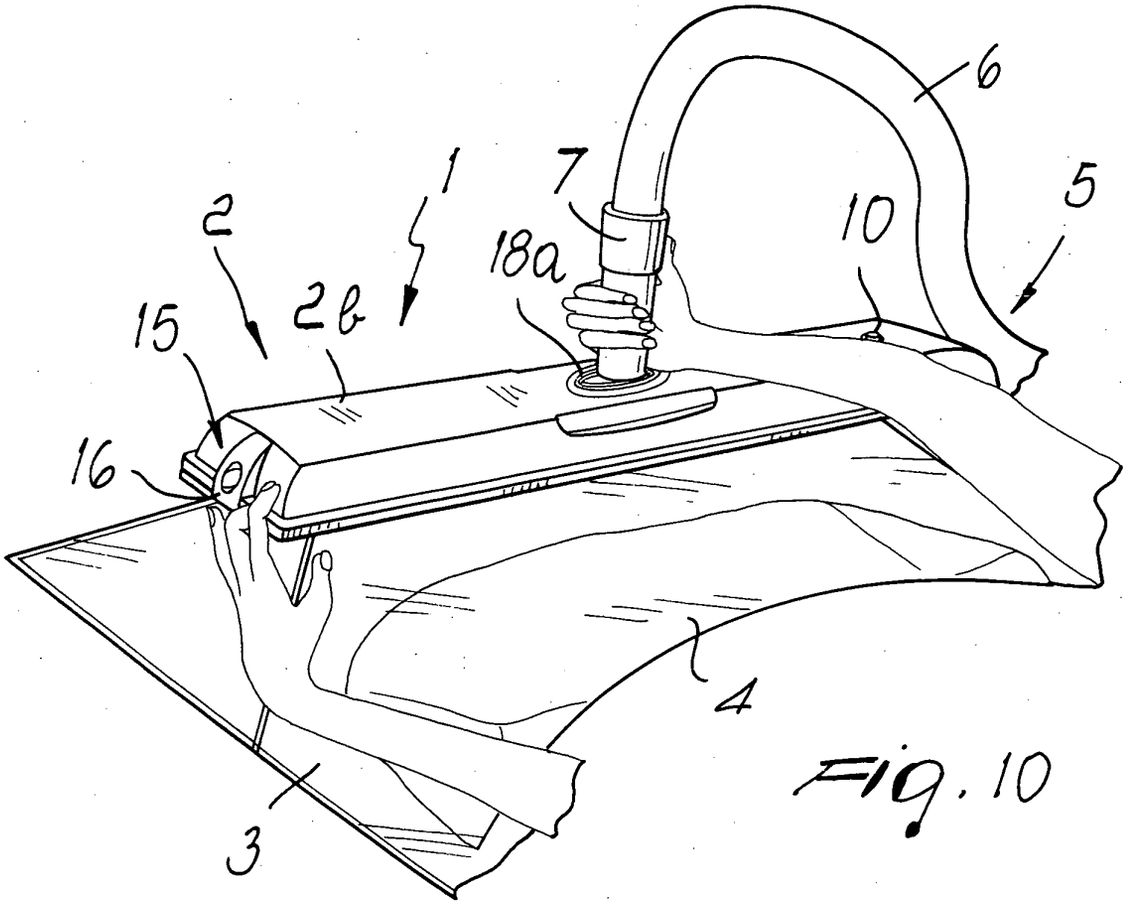


Fig. 10

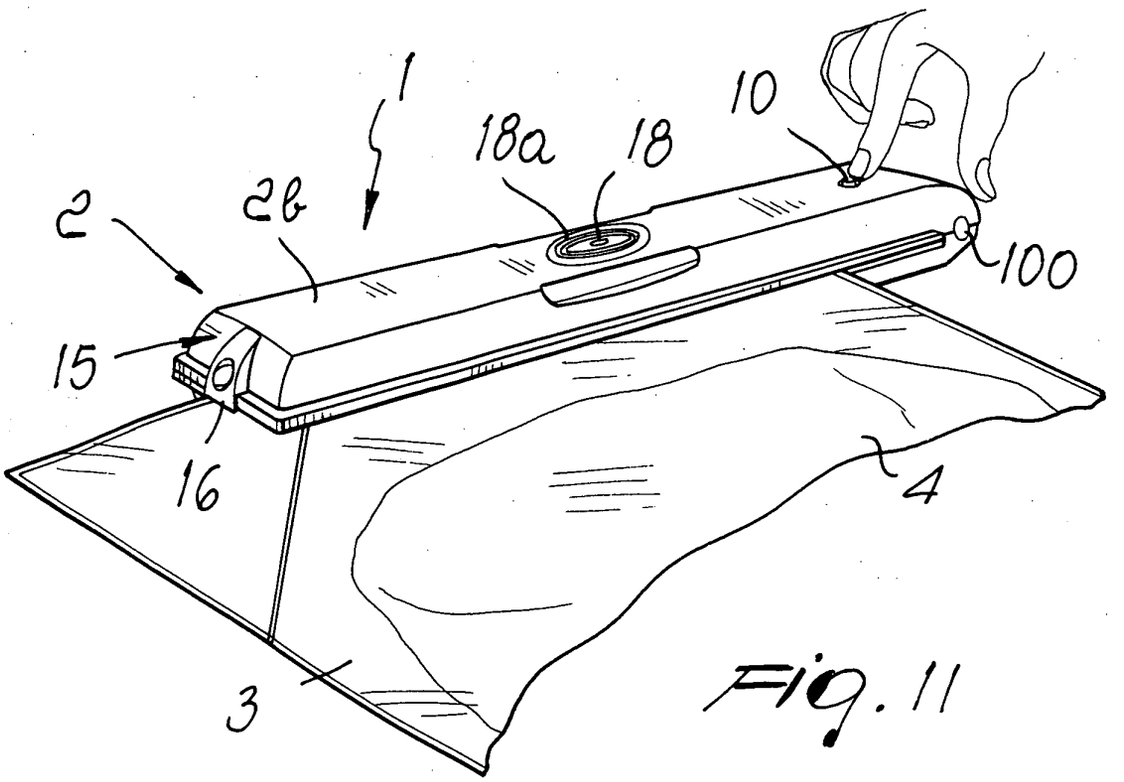


Fig. 11

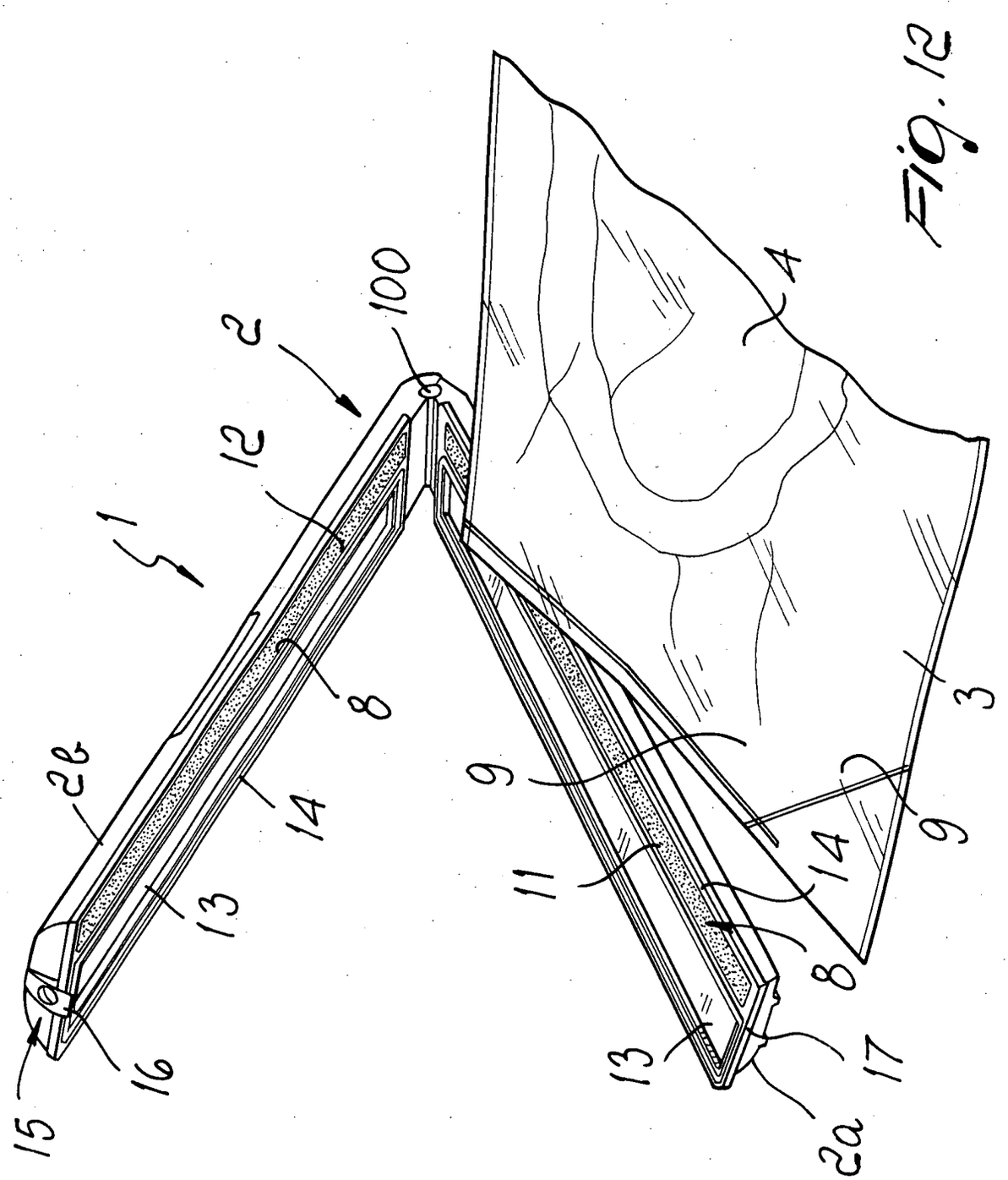


Fig. 12

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 02 2318

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 January 2005	Schelle, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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