(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 878 152 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.11.1998 Bulletin 1998/47

(51) Int Cl.[6]: **A47F 1/12**

(21) Application number: **98303912.4**

(22) Date of filing: **18.05.1998**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **17.05.1997 GB 9709961**

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(54) Dispensing apparatus

(57) A dispensing apparatus 2 comprises an inclined chute 4 which comprises a channel cross section plastics member of a suitable size to accommodate a product 6 to be dispensed. A carriage 8 incorporating two rollers 20 is provided upstream of the product and is arranged to travel within the chute thereby to urge the product downwardly towards front end 10 of the chute so that, if the forward-most item 6a is removed from the chute, the remaining items 6 are shunted forward so that item 6b becomes the forward-most item.

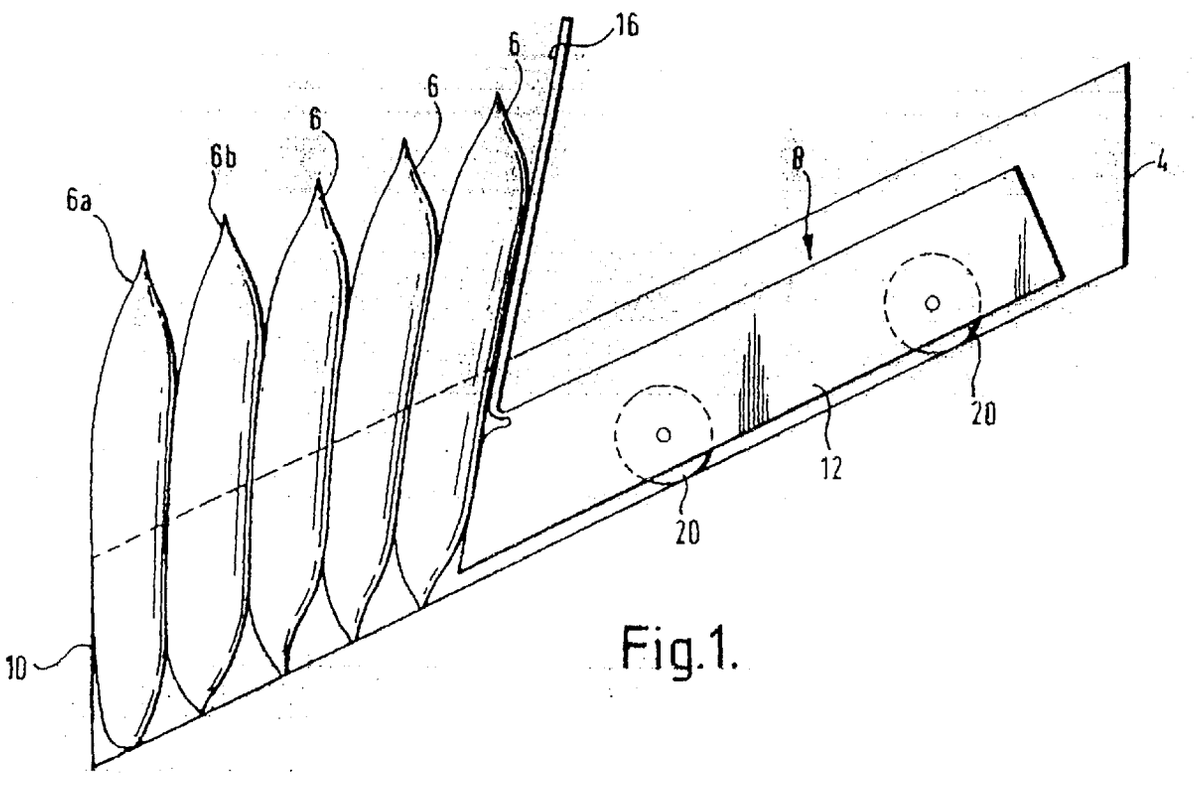

Fig.1.

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Description

This invention relates to dispensing apparatus, a carriage means therefor, a method and a guide means.

Gravity feed dispensing apparatuses are well-known for dispensing products. One known apparatus simply comprises an inclined chute in which a line of products is arranged. When the forward-most product is removed from the chute, the remaining products shunt forward due to gravity acting upon them. One problem associated with such known apparatus is that light products, for example packets of crisps or boxes of women's tights, are restricted from moving forward under gravity by the frictional force existing between them and the chute.

In another known apparatus, a spring-loaded pusher plate may be arranged upstream of the products to be dispensed. On removal of the forward-most item from such a chute, the pusher plate urges the remaining products forward. Problems associated with this apparatus is its relatively complicated design and difficulties in selecting an appropriate spring force which is sufficient to urge products forward but does not damage them.

It is an object of the present invention to address problems associated with known dispensing apparatus.

According to a first aspect of the present invention, there is provided dispensing apparatus comprising a guide means for receiving a product to be dispensed and a carriage means movable within the guide means, said carriage means including a rotatable member for aiding movement of the carriage means.

Said guide means is preferably arranged to be inclined. It is preferably of channel cross-section. It is preferably made out of a plastics material.

Said carriage means preferably comprises a body and said rotatable member. At its forward end, said body preferably comprises a product contact means for contacting a product to urge it forward. Said contact means is preferably inclined, suitably rearwardly, preferably at an angle in the range 30° to 75°. Said product contact means may comprise a substantially planar member for contacting at least a part of the product.

Said carriage means preferably includes axle support means for supporting axles of said rotatable member. Said axle support means preferably comprise depending members each of which suitably includes means for retaining an axle. Said means may comprise an opening which is suitably arranged to receive an axle. Said axle support means is preferably resilient for allowing axles of said rotatable member to be engaged therewith.

Said product contact means is preferably a unitary part of a base part of said body which body preferably includes said axle support means which are also preferably a unitary part of said body. Said base part preferably extends across substantially the whole width of said carriage means.

Said rotatable member may comprise one or more wheels and/or rollers. Where the rotatable member comprises a roller, said roller may have a width which is greater than 50%, preferably 60%, more preferably 70%, especially 80% of the width of the carriage.

Said rotatable member is preferably a roller. It is preferably made out of a plastics material. It preferably includes axles at each end which are suitably arranged in openings in the body of the carriage means. Said body preferably includes at least two, preferably at least three, more preferably at least four openings in which axles of one or more rotatable members are retained.

Said carriage means preferably includes at least two rotatable members of the type described. Said rotatable member(s) is/are preferably arranged on opposing sides of the centre of gravity of the carriage means.

Extension means may be provided for increasing the width of a forward end of the carriage means, preferably a product contact means thereof. The width of said forward end may suitably be increased with the width of said body and/or the distance between said axle support members suitably remaining the same. This may suitably allow a carriage of one width to be used in a guide means of a larger width. Said extension means may be releasably securable to the carriage means.

Said carriage means may include containment means for containing product. For example, said containment means may comprise spaced apart uprights between which product can be placed.

Preferably, the width of said body and/or the distance between said axle support members is at least 5cm, preferably at least 8cm, more preferably at least 10cm, especially at least 12cm. The width may be less than 40cm, preferably less than 30cm, especially less than 20cm.

According to a second aspect of the present invention, there is provided a novel carriage means for a dispensing apparatus as described in any statement herein.

According to a third aspect of the present invention, there is provided a method of manufacturing a carriage means for a dispensing apparatus, the method comprising forming a member into a channel section and retaining a rotatable member within said section.

Said member formed into a channel section is preferably made of plastics. Said channel section is preferably downwardly open.

Said method may include the step of forming said member into a portion which is inclined relative to said channel section.

Said method may include the step of providing openings in said channel section and engaging portions of said rotatable member in said openings.

According to a fourth aspect, there is provided a kit comprising a guide means for receiving a product and carriage means as described in any statement herein.

According to a fifth aspect, there is provided a method of dispensing a product comprising placing the product in an inclined guide means and arranging a carriage

means which includes a rotatable member upstream of the product.

The product dispensed may be a food or non-food item. It may have a width in the range 2cm to 40cm, preferably 5cm to 30cm, more preferably 5cm to 15cm.

Any feature of any aspect of any invention or embodiment described herein may be combined with any feature of any other aspect of any invention or embodiment described herein.

Specific embodiments of the invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a schematic side view of a dispensing apparatus comprising a chute in which a carriage is arranged;

Figure 2 is a schematic top view of the apparatus of figure 1;

Figure 3 is a side elevation of a carriage;

Figure 4 is a front view of the carriage;

Figure 5 is a top view of the carriage;

Figure 6 is side perspective view of the carriage;

Figure 7 is a front view of a roller of the carriage;

Figure 8 is a front perspective view of another carriage of a dispensing apparatus, partly in exploded view;

Figure 9 is a side view, in cross-section, of the carriage of figure 8; and

Figure 10 is an exploded perspective view of a roller of a dispensing apparatus.

In the figures, the same of similar parts are annotated with the same reference numerals.

Referring to figures 1 and 2, a dispensing apparatus 2 comprises an inclined chute 4 which comprises a channel cross-section plastics member of a suitable size to accommodate a product 6 to be dispensed. A carriage 8 is provided upstream of the product and is arranged to urge the product downwardly towards front end 10 of the chute so that, if the forward-most item 6a is removed from the chute the remaining items 6 are shunted forward so that item 6b becomes the forward-most item.

Referring to figures 3 to 7, carriage 8 comprises a transparent plastics body having a horizontally extending portion 11, from which side members 12 depend. At their forward ends, the side members define angled nose portions 14. A pusher plate 16 comprising a planar member is inclined upwardly from a forward end of portion 10 at the same angle as that defined by said nose portions.

Two rollers 20 are mounted between the side members 12 with their axes extending parallel to one another. The rollers include stub axles 9 at opposite ends which are a unitary part of the rollers. For example the rollers may be made from a single cylindrical piece of plastics material by removing annular bands of material from each end to define the axles.

The stub axles 19 are rotatable within openings drilled in the side members 12.

In use, products are placed in the chute 4 and carriage 8 is placed in the chute upstream of the products. The weight of the carriage (due to a not insignificant degree to the density of the rollers 20) and the low friction between it and the chute is such that the carriage rolls forward under gravity to apply a reasonable force behind the product thereby ensuring that product is always at the front of the chute.

The arrangement of nose portions 14 and pusher plate 16 may be changed depending on the nature of the product being dispensed. For example, if packets of crisps are being dispensed, the gap defined below the pusher plate 16 may be made narrower to prevent the packets being caught up in the gap.

The carriage shown in the figures may easily be adapted to fit wider chutes. For example, the pusher plate 16 may be made wider or, alternative, an extension piece may be secured to an existing pusher plate.

Manufacture of the carriage can be very straightforward. The body of the carriage may be made out of a single piece of plastics material by bending the material to define the side members 12 and pusher plate 16. Polyester glycol (PETG) material is preferred since it has high impact, low moisture absorption and can withstand temperatures of down to -50°C without becoming appreciable brittle. Rollers 20 may be manufactured as described above and are preferably made from natural acetal which is relatively dense and suitable for use in cold storage applications. The rollers may be secured to the body by slightly urging side members 72 apart and engaging stub axles 22 in openings drilled in the side members.

Referring now to figures 8 to 10, a carriage 40 comprise a plastics injection moulded body 42 which has downwardly open slots 44 for receiving a pair of rollers 46. A roller 46 is shown in figure 10 and it comprises a tubular body 48 in which steel rods (not shown) are inserted for ballast purposes. A pair of end caps 50 which incorporate stub axles 19 are secured within respective ends of the tubes.

The body 42 includes a front pair 54 and a rear pair 56 of slots which are arranged to engage respective pairs of projections 58 which depend from respective uprights 60 for securing the uprights to the body 42. When in position, the uprights define a gap into which additional products may be placed, thereby to maximise the amount of product stored in the chute 4 of the appa-

ratus. The front upright 60 includes lugs 62 for retaining merchandising tickets (or the like).

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

Claims

1. Dispensing apparatus comprising a guide means for receiving a product to be dispensed and a carriage means movable within the guide means, said carriage means including a rotatable member for aiding movement of the carriage means.

2. Apparatus according to Claim 1, wherein said guide means is of channel cross-section.

3. Apparatus according to Claim 1 or Claim 2, wherein said carriage means comprises a body and said rotatable member wherein, at its forward end, said body comprises a product contact means for contacting a product to urge it forward.

4. Apparatus according to any preceding claim, wherein said carriage means includes axle support means for supporting axles of said rotatable member.

5. Apparatus according to Claim 3 or Claim 4, wherein said product contact means is a unitary part of a base part of said body which body incorporates axle support means which are also a unitary part thereof.

6. Apparatus according to any preceding claim, wherein said rotatable member comprises one or more wheels and/or rollers.

7. Apparatus according to any preceding claim, wherein the rotatable member comprises a roller having a width which is greater than 50% of the width of the carriage.

8. Apparatus according to Claim 7, wherein said roller is made out of a plastics material.

9. Apparatus according to any preceding claim, wherein extension means is provided for increasing the width of a forward end of the carriage means.

10. Apparatus according to any preceding claim, wherein said carriage means includes containment means for containing a product.

11. A novel carriage means for a dispensing apparatus as described in any of claims 1 to 10.

12. A kit comprising a guide means for receiving a product and a carriage means as described in any of claims 1 to 10.

13. A method of dispensing a product comprising placing the product in an inclined guide means and arranging a carriage means which includes a rotatable member upstream of the product.

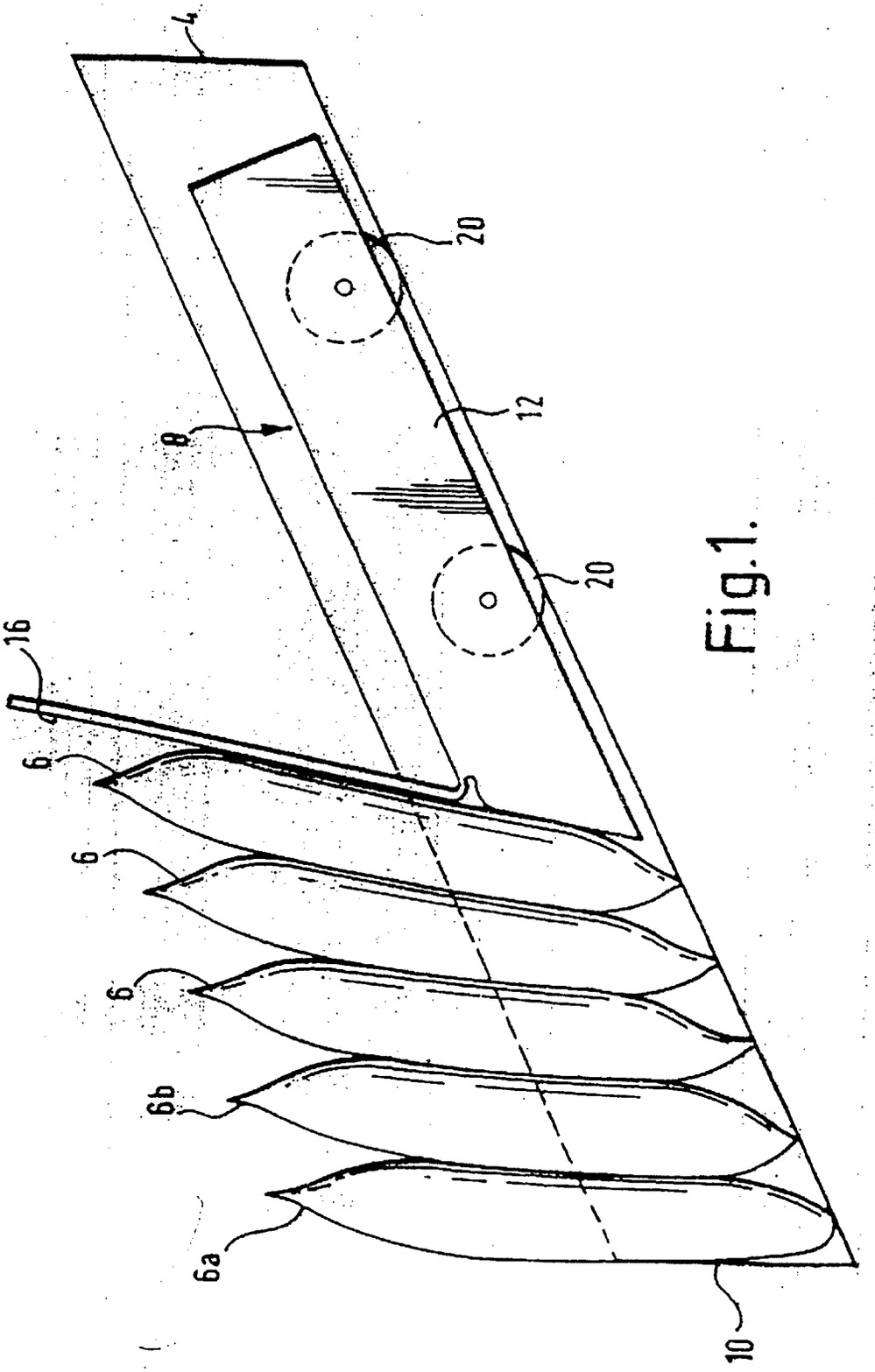

Fig.1.

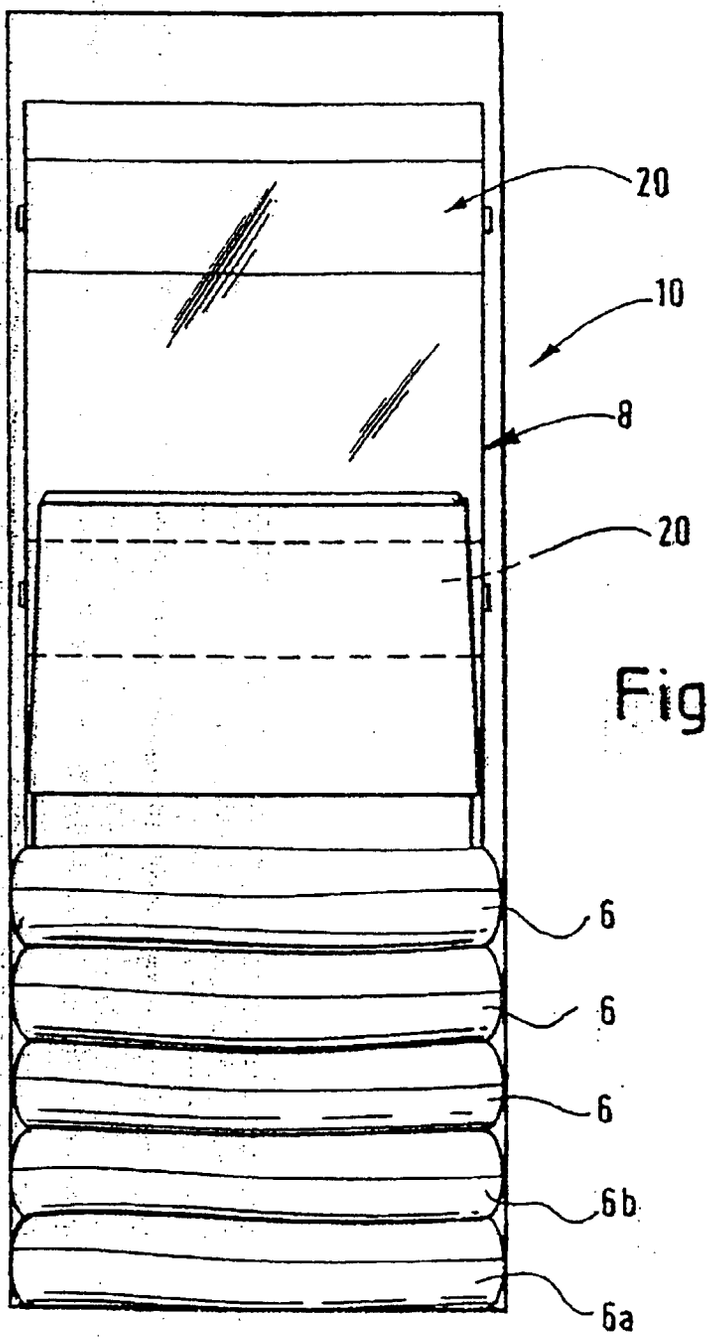

Fig.2.

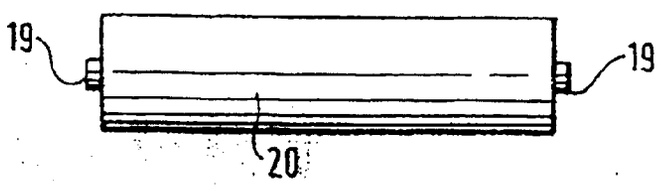

Fig.7.

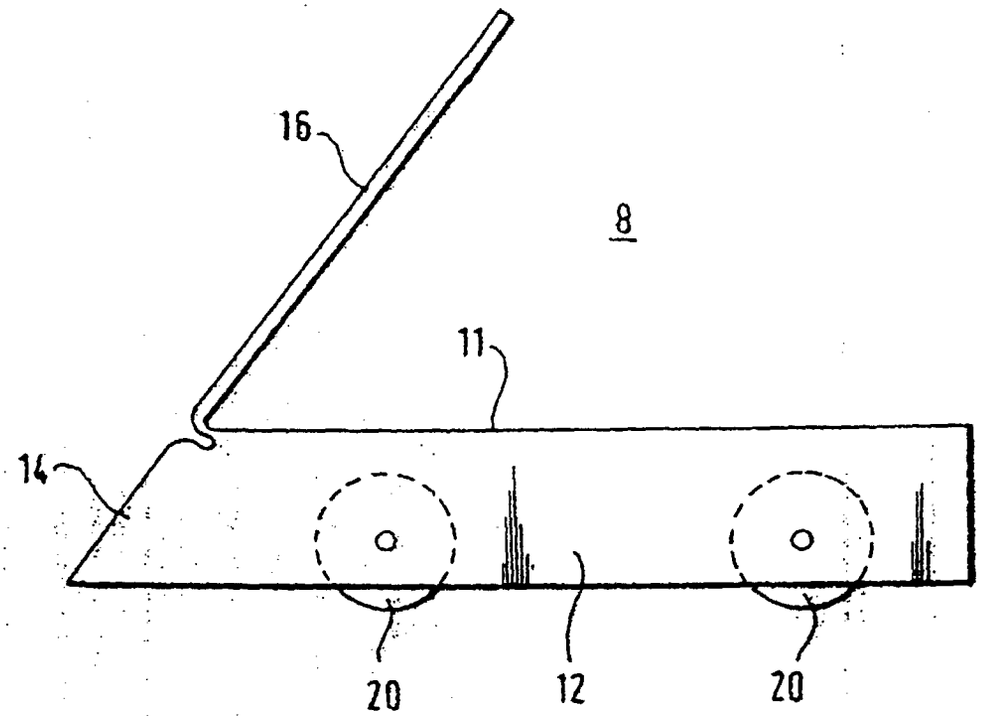

Fig. 3.

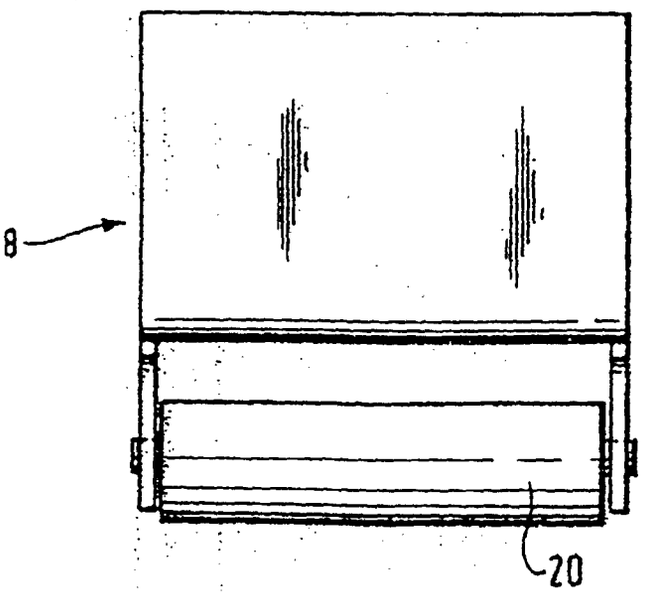

Fig. 4.

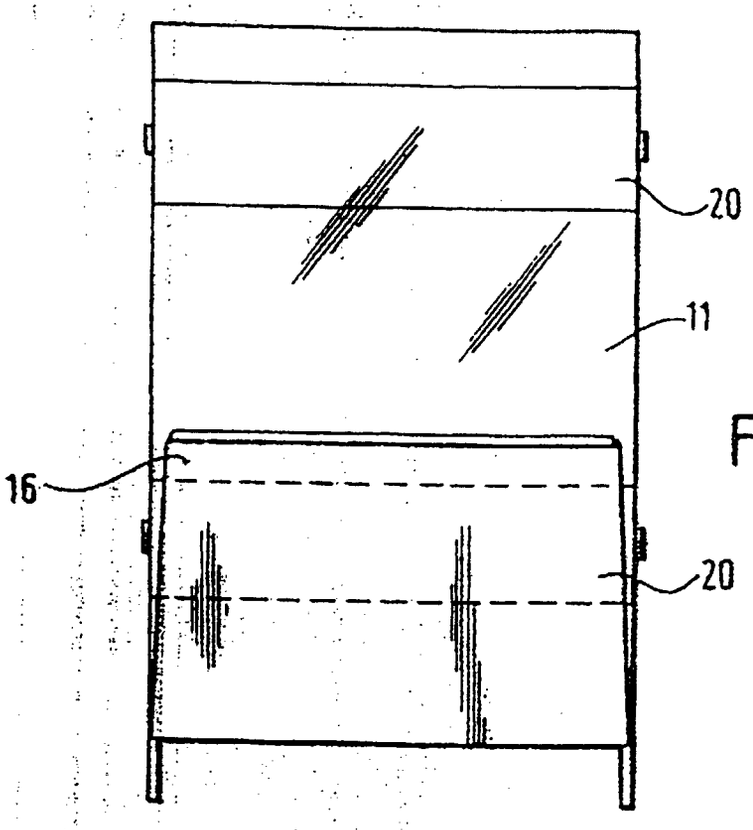

Fig.5.

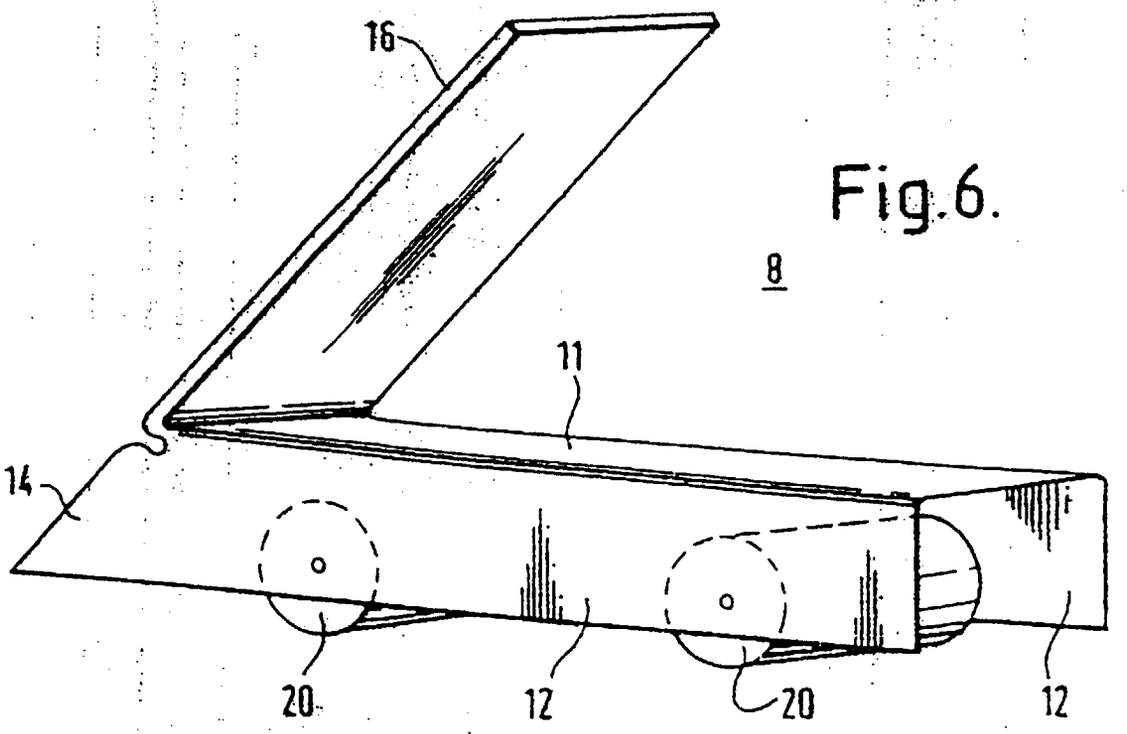

Fig.6.

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Fig.8.

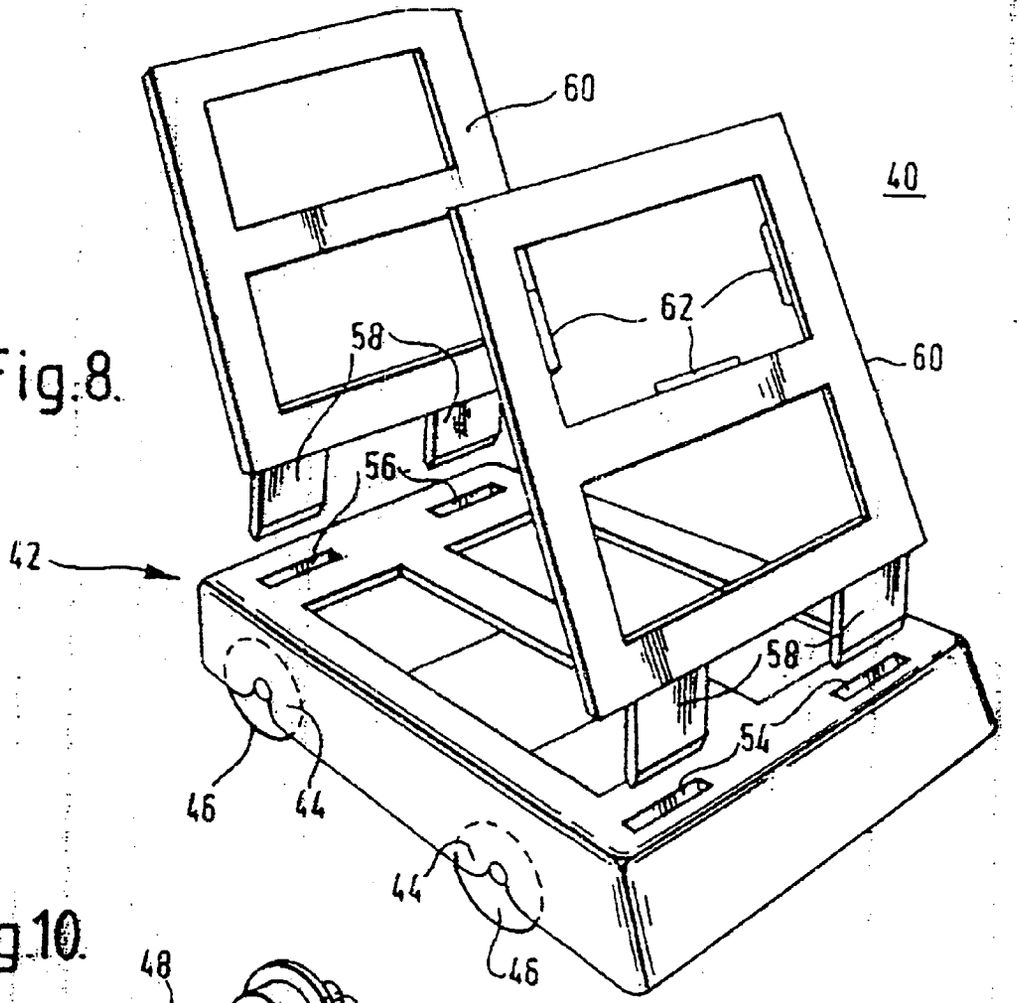


Fig.10.

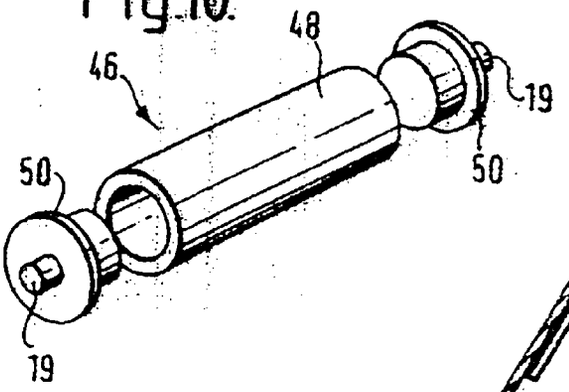
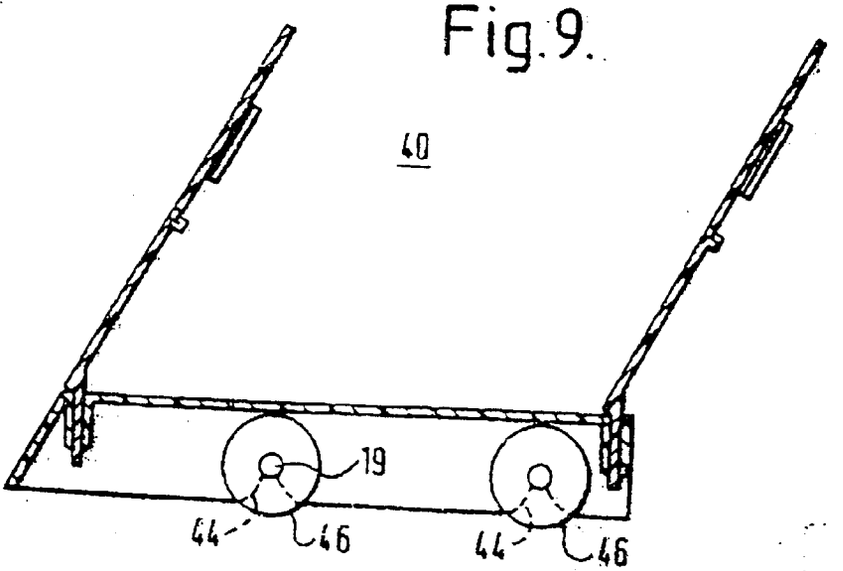


Fig.9.



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EUROPEAN SEARCH REPORT

Application Number
EP 98 30 3912

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB 1 037 805 A (PARKES) 3 August 1966 * the whole document *	1-7,13	A47F1/12
X	FR 2 578 734 A (DOLLFUS MIEG ET CIE) 19 September 1986 * page 2, line 9 - page 3, line 10; figures 1,2 *	1-3,5,6, 11-13	
X	DE 15 29 741 A (CONTINENTAL GUMMI-WERKE AG) 9 July 1970 * page 3, line 21 - page 5, line 16; figure 1 *	1,2,4,6, 10	
X	EP 0 038 032 A (KIMNACH ALLIT PLASTIK) 21 October 1981 * page 10, line 20 - page 18, line 18; figures 1,3 *	1,11-13	
X	EP 0 685 192 A (CADDIE ATEL REUNIS) 6 December 1995 * column 5, line 14 - line 33; figures 1-4 *	1-7, 10-13	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 August 1998	De Groot, R

CATEGORY OF CITED DOCUMENTS

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