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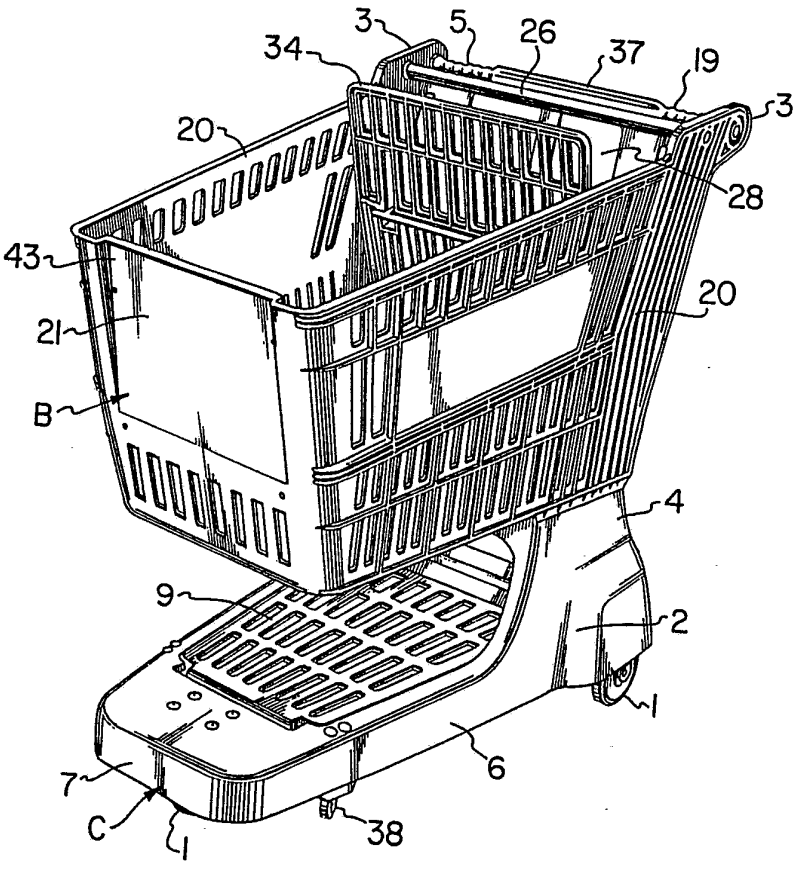
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(54) Title: SHOPPING CART

(57) Abstract

A shopping cart is disclosed which comprises a chassis module (C), a basket module (B) secured to said chassis module and supported thereby, and a plurality of wheels (1) mounted on the underside of said chassis module, said modules being formed of a moulded thermoset plastic material.



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SHOPPING CART

DESCRIPTION

TECHNICAL FIELD

The present invention relates to an improved, substantially plastic, shopping cart.

BACKGROUND ART

Traditionally, grocery stores, supermarkets and the like provide their customers with wheeled shopping carts which consist of an upper basket portion, supported by a four-wheeled chassis. These carts are typically made out of metal in a mesh construction.

Carts of this type present numerous problems to the shopping customers, in that they are awkward to manoeuvre and are noisy. Moreover, they frequently present a hazard to the customer in that jagged or broken portions of the metal mesh snag clothing and/or cause harm to the customer or the children who frequently accompany their parents on shopping expeditions and either ride in the cart or hold onto the cart as it is wheeled about the store.

Carts of this type also present many disadvantages to the retailers as well in that they are costly to manufacture, and are extremely vulnerable to wear and tear in the usual shopping environment. The carts are easily dented and damaged upon impact with other carts, shelves, or cars. Moreover, shopping carts are frequently stored outside and/or left outside the store by the customers. Exposure to the outdoor environment frequently results in the metal carts cracking, rusting, flaking or deforming in some manner.

Moreover, dirt, debris and other contaminants adhere to the metal carts, and contribute to a rapid decline in their aesthetic appearance. Frequent and costly maintenance is required to keep the metal carts in an acceptable condition.

Shopping carts made largely of injection moulded plastic components were developed to overcome the

aforementioned disadvantages associated with the conventional metal shopping carts. For example, Canadian Patent No. 1,225,677, Silzer, which issued August 18, 1987, discloses a shopping cart including a chassis module, a basket module secured to said chassis module and supported thereby, and a plurality of wheels mounted on the underside of the chassis module. The chassis module includes a pair of side members, each side member having an upwardly and rearwardly extending arm adapted for attachment to the sides of the basket module, to support same, and a downwardly and rearwardly extending leg serving as the mounting for a wheel. The arms are connected by a transversely extending handle. The side members also have a forwardly extending portion, with the forwardly extending portions connected together and spaced apart by a transversely extending cross-member integral therewith and serving as the mounting for at least one additional wheel, and as a load-bearing member, the side members also being connected together and spaced apart by a transversely extending load-bearing beam integral therewith, located substantially adjacent to the junction of each of the arms and its associated leg.

However it has been found that the aforementioned plastic shopping cart disclosed in Canadian Patent No. 1,225,677 has several disadvantages.

DISCLOSURE OF THE INVENTION

First, the shopping cart which is the subject of the present invention is now made up of fewer pieces than that in Canadian Patent No. 1,225,667. The fact that fewer pieces are now needed greatly reduces the cost involved in manufacturing the improved shopping cart, as well as making the manufacturing process simpler and more efficient. Fewer pieces mean that fewer moulds are required, and therefore the cost is reduced. In addition, the cart shown in Canadian Patent No. 1,225,677 included upwardly and

rearwardly extending arms on the chassis module. This made the manufacture of that module more complicated and thus more costly to mould, and made interconnection of this module with the basket module time consuming and expensive. In addition, the number of bolts required to attach the components together in Canadian Patent No. 1,225,677 increased the labour element of cost of manufacture, as well as increasing the possibility of damage to the modules during the manufacturing and assembling process. Since the basket module in Canadian Patent No. 1,225,677 was supported primarily by the upwardly and rearwardly extending arms of the chassis module, the stability of the cart was affected. Additionally, the strength of the connections which fixed the chassis module to the basket module could be affected when the cart was fully loaded with heavy material.

The cart disclosed in the present invention does not have the upwardly and rearwardly extending arms integral with the chassis module. Rather, these components are integral with the basket module. The chassis module has an underlying beam portion which supports the basket module from beneath. In fact, it is this portion of the chassis module which is bolted to the basket module. Fewer bolts are necessary because of the design. Additionally, it has been found that the cart, when so assembled, is more stable and handles full loads in a more acceptable manner. Because fewer components are required to be moulded and connected together, the cost of manufacturing the components, and the labour element of the cost required for the assembly of the components is reduced. Additionally, fewer components provide for greater ease of manufacture and assembly and decrease the likelihood of errors in the assembly process.

The cart disclosed in Canadian Patent No. 1,225,677 did not provide for an advertising frame located

on the front wall of the basket module. The cart disclosed in the present invention does provide for an advertising panel to be located on both the inside and the outside front wall of the basket module.

Additionally, it has been found that the stability and manoeuvrability of the assembled cart is related to the location of the auxiliary wheels beneath the chassis module. It has been found that a more precise positioning of the auxiliary wheels, such as disclosed in the present invention, gives the cart of the present invention more stability and manoeuvrability, thus enhancing consumer acceptance of the product. This is especially true when the cart is operated under full load conditions.

Additionally, the present invention provides an integrally moulded divider in the basket module.

In accordance with the present invention there is provided a shopping cart including a chassis module, a basket module secured to said chassis module and supported thereby, and a plurality of wheels mounted on the underside of said chassis module, said modules being formed of a moulded thermoset plastic material.

Preferably said chassis module comprises at least a pair of side members connected together and adapted to attach to the basket module to support same.

Preferably said side members each having an upwardly and rearwardly extending leg and a lower and forwardly extending portion.

Preferably said upwardly and rearwardly extending legs are connected together and spaced apart by a beam member.

Preferably said lower and forwardly extending portions are connected together and spaced apart by a transversely extending cross-member.

Said side members, beam and transversely extending cross-member may be integral.

Preferably said basket module includes a rear gate, and interconnected side and front walls and a bottom, said rear gate being pivotally mounted adjacent its upper end between said side walls and capable of pivotal movement into the interior of said basket module.

Said basket module may include a divider which may be moulded integrally with said basket module.

Preferably said basket module also comprises at least one shelf hingedly connected to the said rear gate which may, in use, overlay said shelf.

In the inoperative position, said seat is substantially parallel with said rear wall and occludes at least one cut-out formed in said rear wall.

The exterior face of said front wall may be recessed to accommodate the frame of a display panel.

Preferably said thermoset plastic material is a high density polyethylene formulated for utilization in injection moulding equipment. The thermoset plastic material forming the moulded basket module may be reflective.

Preferably said chassis module is supported by at least three wheels which are arranged with one wheel at the front of the chassis module, and two wheels at the rear of the chassis module, one of said two rear wheels being located more forwardly than the other. Moulded wheel skirts may be provided around said wheels. Moreover, auxiliary wheels may also be provided rearwardly of the forwardmost of the said three wheels, and further located outward from the mid-portion of the chassis module. The wheels may be mounted on casters.

In a further embodiment of the present invention there is provided a toy, comprising a miniature version of the said shopping cart.

BRIEF DESCRIPTION OF THE DRAWINGS

In drawings which illustrate embodiments of the invention:

Figure 1 is a front perspective view of a shopping cart embodying the present invention;

Figure 2 is a front elevational view of the cart of Figure 1;

Figure 3 is a rear elevational view of the cart of Figure 1, with reference numerals added;

Figure 4 is a top plan view of the cart of Figure 1;

Figure 5 is a bottom plan view of the cart of Figure 1; and

Figure 6 is a side view of the cart of Figure 1.

BEST MODE FOR CARRYING OUT THE INVENTION

CHASSIS C

The plastic shopping cart illustrated comprises two major injection moulded components; a basket, indicated generally at B, which is connected to and supported by a chassis, indicated generally at C.

The chassis module C has a plurality of wheels 1 mounted on its underside and includes a pair of side members indicated generally at 2 each having an upwardly and rearwardly extending leg 4 serving as the mounting for a said wheel 1.

Each said side member 2 also has a lower and forwardly extending portion 6 and the pair of forwardly extending portions 6 are integrally connected together and spaced apart by a transversely extending cross-member 7 which serves as the mounting for at least one centrally disposed third wheel 1.

The pair of side members 2 are also integrally connected together and spaced apart by a front transversely extending load-bearing beam member indicated generally at 10 (Figure 3). The ends of beam member 10 are integrally

connected with the tops of the upwardly and rearwardly extending legs 4.

Set within the pair of side members 2 and the cross-member 7 is a bottom carrier 9, upon which bulky goods such as cases of soft drinks may be transported. The front of the bottom carrier is hinged to the inner portion of the transverse cross-member 7. The rear portion of the bottom carrier rests upon at least one flange at the rear of the chassis module C. In storage, the shopping carts nest together such that the rear portion of the bottom carrier 9 of the forward cart raises upwardly to accommodate the bottom of the chassis of the cart behind.

BASKET MODULE B

The basket module B includes an integrally connected front wall 21, and side walls 20, a rear gate 27 (Figure 3), and a bottom 22 (Figure 4), and is detachably secured to the chassis module C by means of bolts (not illustrated) passing through said bottom 22 and the upper surface of the load-bearing beam member 10.

Extending rearwardly and upwardly from the side walls 20 are arms 3 connected together and spaced apart by a transversely extending handle 5. The outward portions of the handle 5 may terminate in hand grips 19. The central portion of the handle 5 may incorporate an advertising display 37 which may be electronic.

Each side wall 20 of the basket module B, adjacent the rearward end of its uppermost edge, serves as the mounting for a rod 26 extending from one said side wall to the remaining said side wall. The rod serves as the mounting for the upper portion of the rear gate 27 of said basket module B which is pivoted thereto and which gate, adjacent its upper edge, is provided with at least one cut-out 28 capable of reception of a child's legs. The gate 27 is also capable of pivotal movement towards the interior of the basket. The rear gate 27 of the basket is prevented

from pivoting outwardly towards the user of the shopping cart owing to the provision of flange 12.

The inner central portion of the front wall 21 of the basket module B may accommodate a frame 43 for displaying advertising or promotional materials.

The basket module B also includes at least one shelf 33 (Figure 4) which is pivotally mounted at 30 to the rear gate 27 and which, when in use, is capable of extending outwardly therefrom. Moreover, a seat panel 31 may also be provided and this, too, is pivotally mounted to the rear gate 27 at 30 and is capable, when in use, of overlying the shelf 33. When the seat panel 31 is not in use, it is capable of occluding the cut-out 28.

The basket module B also includes at least one shelf back panel 34 which, adjacent its lower end, is pivotally mounted to the pivoted rear gate 27 of the basket at 35 (Figure 3). The pivots 30 and 35 may be moulded piano hinges.

A divider 37 (Figure 4) may be provided in the basket module B to assist a shopper in separating the goods selected from the store.

If desired, the two rear wheels 1 of the cart are offset with respect to one another, so that when the basket is pointed in a forwardly direction, the two wheels will not be co-axial. With such an arrangement, as the cart is turned to negotiate the very narrow aisles in a supermarket, there is greater stability and ease of turning.

Moreover, and also if desired, the cart of the present invention may be further improved by the use of two small auxiliary wheels 38 (Figures 1 and 5), to provide additional support to the front of the cart. The use of these small auxiliary wheels, however, will not result in steering oscillation, as these wheels do not support the bulk of the load in the cart, and are used primarily as

auxiliary wheels, to improve support and stability during cornering. In such an embodiment, non-offset wheels may be used, with very good results, as the support occasioned by offsetting the rear wheels is compensated for by the use of auxiliary wheels. It has been found that the auxiliary wheels 38 should be positioned as wide apart as possible, and at least 6 inches closer to the rear of the cart than the forwardmost wheel.

It will also be appreciated that the thermoset plastic material in the manufacture of the chassis also permits the formation of wheel guards disposed about the wheels, to protect both the wheels and the feet of shoppers.

The thermoset plastic material employed in the moulding of modules B and C may be selected from a group of polyethylenes, preferably high density polyethylenes, especially formulated for utilization in injection moulding equipment.

Preferably the thermoset plastic material is highly reflective so that it will easily reflect traffic lights, and therefore provide a measure of safety both to the motorist bearing down upon it in a darkened parking-lot, and to a person propelling it through such a parking-lot. Moreover, it will be seen that through the use of a one-piece moulded basket module, all of the exposed edges of the basket portion are rounded, thus obviating any hazardous edges on which clothing might snag, or other injury might be occasioned.

It is contemplated that a miniature toy version of the shopping cart of the present invention having a unitary chassis module with three wheels supporting a unitary basket module substantially as described herein can be made for children.

CLAIMS:

1. A shopping cart including a chassis module, a basket module secured to said chassis module and supported thereby, and a plurality of wheels mounted on the underside of said chassis module, said modules being formed of a moulded thermoset plastic material.

2. A shopping cart as claimed in claim 1 wherein said chassis module comprises at least a pair of side members connected together and adapted to attach to the basket module to support same.

3. A shopping cart as claimed in claim 1 wherein said chassis module comprises at least a pair of side members each having an upwardly and rearwardly extending leg and a lower and forwardly extending portion.

4. A shopping cart as claimed in claim 3 wherein said upwardly and rearwardly extending legs are connected together and spaced apart by a beam member.

5. A shopping cart as claimed in claim 3 wherein said lower and forwardly extending portions are connected together and spaced apart by a transversely extending cross-member.

6. A shopping cart as claimed in claim 4 wherein said extending legs are integral with said beam member.

7. A shopping cart as claimed in claim 5 wherein said forwardly extending portions are integral with said transversely extending cross-member.

8. A shopping cart as claimed in claims 3, 4 or 5 wherein said side members, said beam and said transversely extending cross-member are integral.

9. A shopping cart as claimed in claim 2 wherein said basket module includes a rear gate, and interconnected side and front walls and a bottom, said rear gate being pivotally mounted adjacent its upper end between said side walls and capable of pivotal movement into the interior of said basket module.

10. A shopping cart as claimed in claim 9 wherein said basket module includes a divider.

11. A shopping cart as claimed in claim 9 wherein said basket module includes a divider moulded integrally with said basket module.

12. A shopping cart as claimed in claim 9 wherein said basket module also comprises at least one shelf hingedly connected to the said rear gate.

13. A shopping cart as claimed in claim 12 including a seat panel hingedly connected to said rear gate and, when in use, overlying said shelf.

14. A shopping cart as claimed in claim 13 wherein said seat, when in an inoperative position, is substantially parallel with said rear wall and occludes at least one cut-out formed in said rear wall.

15. A shopping cart as claimed in claim 9, wherein said exterior face of said front wall is recessed to accommodate a frame of a display panel.

16. A shopping cart as claimed in any of the previous claims, wherein said thermoset plastic material is a polyethylene formulated for utilization in injection moulding equipment.

17. A shopping cart as claimed in any of the previous claims, wherein said thermoset plastic material is a high density polyethylene formulated for utilization in injection moulding equipment.

18. A shopping cart as claimed in any of the previous claims, wherein said chassis module is supported by at least three wheels.

19. A shopping cart as claimed in claim 18, wherein said wheels are arranged with one wheel at the front of the chassis module, and two wheels at the rear of the chassis module, one of said two rear wheels being located more forwardly than the other.

20. A shopping cart as claimed in claim 19, wherein said chassis module includes moulded wheel skirts around said wheels.

21. A shopping cart as claimed in claims 18, 19 or 20, including two auxiliary wheels, said auxiliary wheels located rearwardly of the forwardmost of said three wheels, and further located outward from the mid portion of the chassis module.

22. A shopping cart as claimed in claims 18 or 19 wherein said wheels are mounted on casters.

23. A shopping cart as claimed in any of the preceding claims, wherein said thermoset plastic material forming the moulded basket module is reflective.

24. A toy, comprising a miniature version of the shopping cart as claimed in any of the preceding claims.

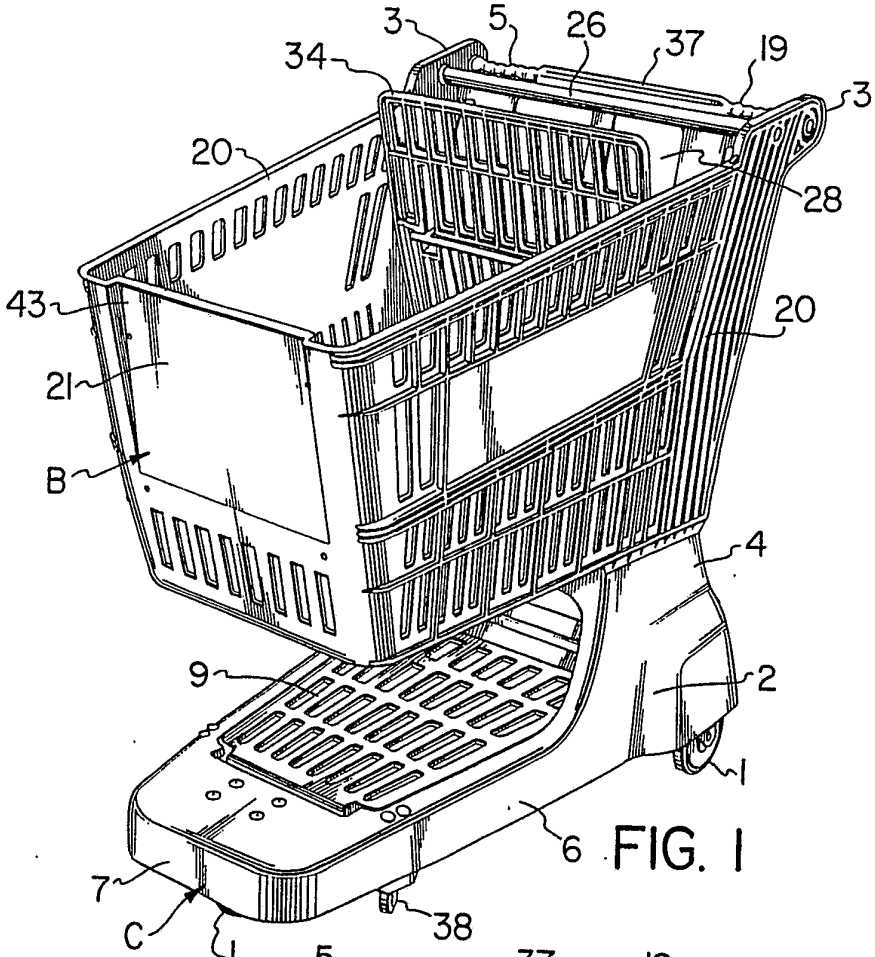


FIG. 1

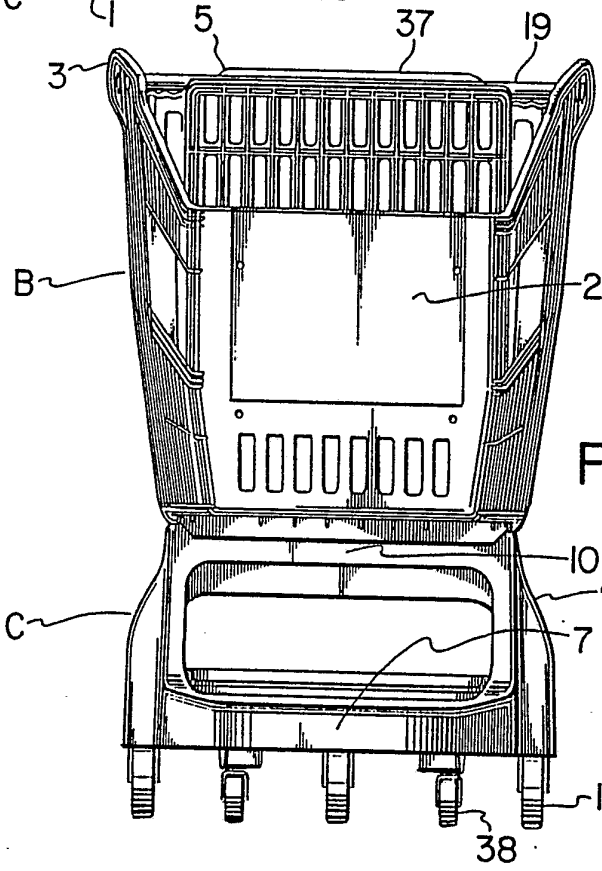


FIG. 2

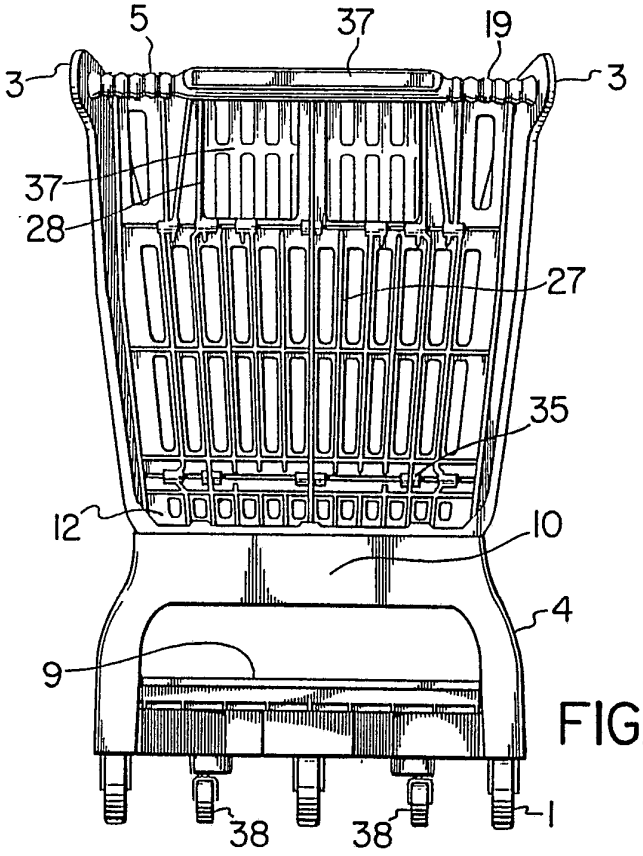

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FIG. 3

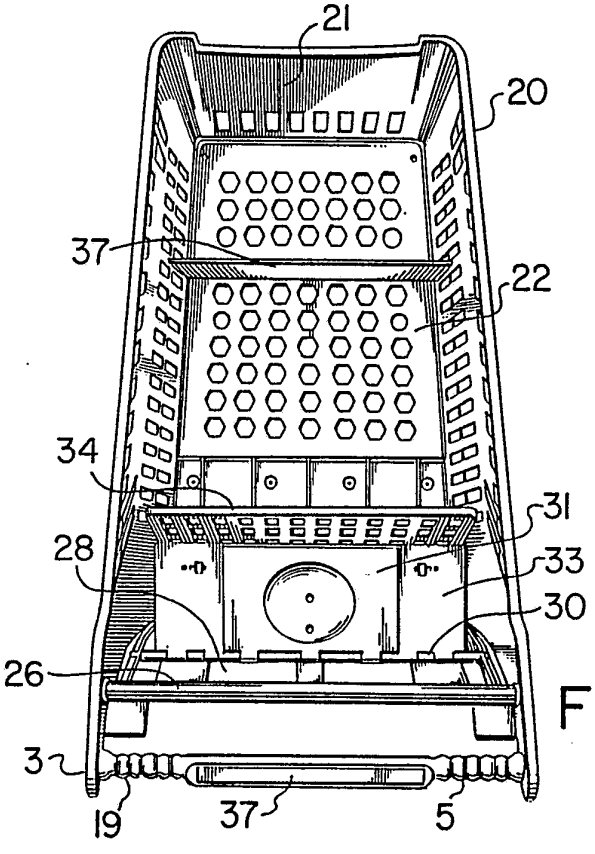

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FIG. 4

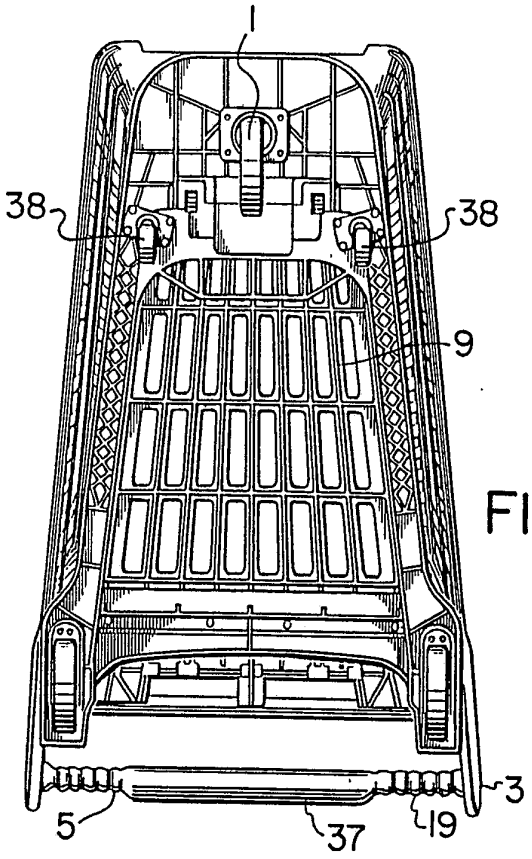


FIG. 5

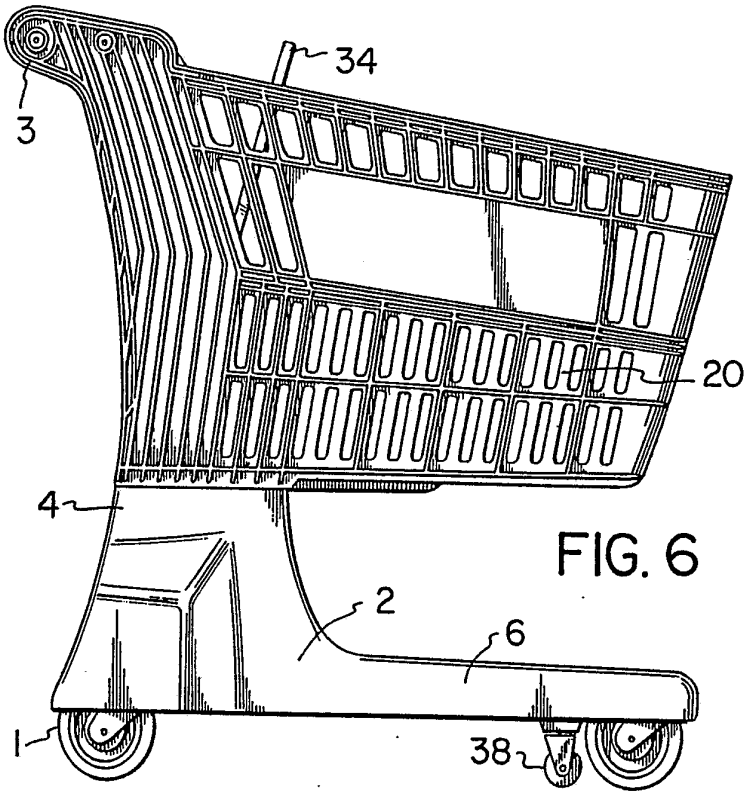


FIG. 6

INTERNATIONAL SEARCH REPORT

PCT/CA 92/00319

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 B62B3/10

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	B62B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No.[13]
X	CA,A,1 225 677 (M.SILZER) 18 August 1987 cited in the application see the whole document	1-9, 12-14, 16,18-23
A	---	15,17,24
X	US,A,4 046 394 (W.THOMPSON) 6 September 1977 see the whole document	1-9,12, 18,22
A	---	14,19, 20,24
X	EP,A,0 161 890 (H.REHRIG) 21 November 1985 see the whole document	1-8,18
A	---	24
	-/--	

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
17 NOVEMBER 1992	29. 12. 92
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	CZAJKOWSKI A.R.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. CA 9200319 SA 63925

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 17/11/92
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CA-A-1225677	18-08-87	AU-A- 5650386	09-04-87
		DE-U- 8607739	15-05-86
		EP-A- 0222480	20-05-87
		GB-A- 2181097	15-04-87
		JP-A- 62083245	16-04-87
US-A-4046394	06-09-77	None	
EP-A-0161890	21-11-85	None	
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		GB-A- 2183773	10-06-87