(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 March 2003 (06.03.2003)

PCT

(10) International Publication Number
WO 03/019487 A2

(51) International Patent Classification[7]: G07G 1/00

(21) International Application Number: PCT/IE02/00122

(22) International Filing Date: 26 August 2002 (26.08.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
S010789 27 August 2001 (27.08.2001) IE

(71) Applicant and
(72) Inventor: **BURKE, Mark, Anthony** [IE/IE]; 4 Beverly Avenue, Beverly Court, Templeogue, Knocklyon, Dublin 16 (IE).

(74) Agent: **ANNE RYAN & CO.**; 60 Northumberland Road, Ballsbridge, Dublin 4 (IE).

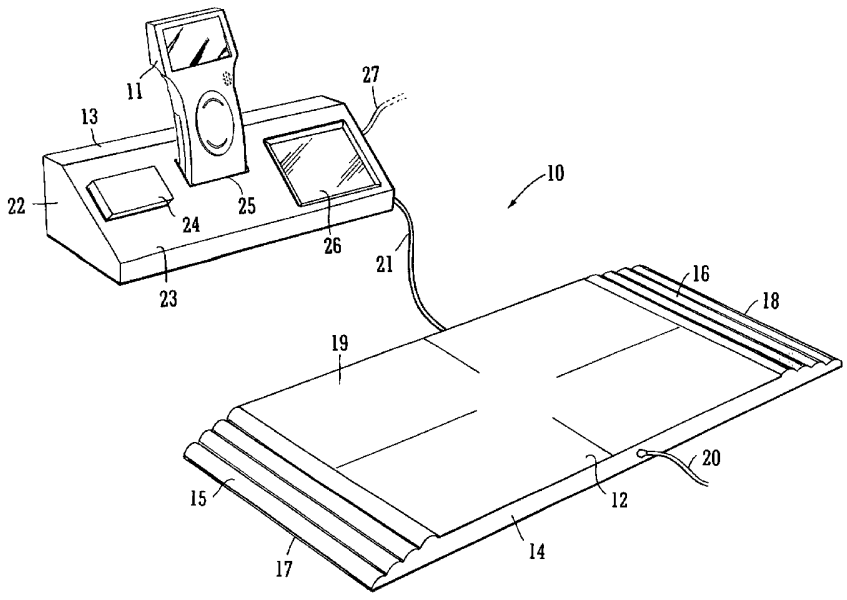
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A SHOPPING CHECKOUT SYSTEM



(57) Abstract: A shopping checkout system (10) for verifying the contents of a loaded shopping trolley has a barcode scanner (11), a weighing mat (12) and a verification unit (13). The scanner (11), in use, scans each shopping item as it is placed in the trolley and records, amongst other parameters, the weight of the item. The weighing mat (12), in use, weighs the loaded trolley and the readings from both the scanner (11) and the weighing mat (12) are fed to the verification unit (13), where the total weight of items from each source is compared in order to verify the contents of the loaded trolley.

WO 03/019487 A2

A shopping checkout system

Technical Field

This invention relates to a shopping checkout system and, in particular, to a system for validating the contents of a loaded shopping trolley.

Background Art

The use of barcode scanners at shop checkouts is commonplace. The scanner, whether hand-held or mounted in the checkout desk, is connected to the till, and provides sufficient information for the generation of an itemised bill.

A further development of the barcode system in retail stores is the use of a scanner by the customer himself. A system is known wherein the customer signs into the store computer and selects a designated hand-held scanner from a scanner dispenser, with which he scans each shopping item before placing it into his shopping bag. The scanner provides the customer with a running total of his shopping bill as he proceeds around the store.

When the customer has completed his shopping he returns the scanner to the scanner dispenser, which produces a slip for presentation at a checkout. A normal itemised bill is then produced and the customer pays the total.

The system is based on trust and its use speeds up the checkout procedure. However, built into the system program is a feature, which will randomly select a customer so that his shopping can be rechecked.

A disadvantage of the system is that it is open to abuse as only the contents of a small proportion of the loaded trolleys can be checked. Errors can arise when barcode labels are attached to items, such as fruit and vegetables, which the customer must weigh himself. Errors can also arise when an item is placed in the customer's shopping bag without having first been scanned.

It is an object of the present invention to overcome the disadvantages of the system hereinbefore described.

Disclosure of Invention

Thus, the invention provides a shopping checkout system for verifying the contents of a loaded shopping trolley, comprising a barcode scanner, a weighing mat and a verification unit, the scanner, in use, scanning each shopping item as it is placed in the trolley recording the weight of the item, the weighing mat weighing the loaded trolley and the readings from both the scanner and the weighing mat being fed to the verification unit, where the total weight of items from each source is compared in order to verify the contents of the loaded trolley.

An advantage of the system is that every loaded trolley is checked and its contents verified, whether the contents are bagged or loose, as

opposed to the prior art system, which only verifies the contents of randomly selected trolleys.

The scanner not only records the weight of each item but also other parameters, which are encoded in the barcode such as the identity, the quantity, the country of origin etc., of the item.

Preferably, the scanner can be held in a customer's hand in use.

The scanner may be attachable to the trolley with each item being passed over it as the item is placed in the trolley.

Alternately, the scanner may be held in the customer's hand during shopping. With a hand-held scanner the barcodes on bulky items can be more easily scanned.

Further, preferably, the scanner is powered by a rechargeable battery.

The use of a rechargeable battery in the scanner, which may be recharged between customer usages, means that the scanner is always ready for use.

Preferably, the weighing mat includes retractable stops mounted on an upper surface thereof, the stops in use being raised to prevent the trolley from the being removed from the weighing mat until the verification procedure has been completed.

Thus, in use, the loaded trolley is pushed on to the weighing mat until the front wheels abut the stops. The weights are compared in the verification unit and if all is in order the customer pays the bill, the stops are released by the shop assistant and the customer is free to push the trolley off the weighing mat and out of the shop.

Preferably, the verification unit has means for receiving the scanner, such that the information recorded therein can be accessed.

Thus, the scanner, at the end of a shopping session, is placed in the verification unit and the accumulated readings are downloaded for further analysis.

Further, preferably, the verification unit has means for clearing the recorded data from the scanner following the verification procedure in readiness for use by the next shopper.

Once the scanner readings have been downloaded and analysed they can be cleared for further use.

In one embodiment the verification unit has a screen for displaying the results of the verification procedure.

The display could provide the shop assistant with instructions and also the results of the verification procedure.

Preferably, the verification unit is connectable to a shop till.

By connecting the verification unit to a shop till itemised bills can be rapidly generated and the checkout cleared for the next customer.

Brief Description of the Drawings

The invention will be further illustrated by the following description of embodiments thereof, given by way of example only with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a shopping checkout system according to the invention;

Fig. 2 is a perspective view of the scanner of Fig.1;

Fig. 3 is a view from below of the scanner of Fig, 2;

Fig. 4 is a perspective view of a trolley attachment clip for the scanner of Fig. 2;

Fig. 5 is a perspective view of a trolley with the clip of Fig. 4 attached thereto: and

Fig. 6 is a perspective view of a second embodiment of a weighing mat according to the invention.

Modes for Carrying Out the Invention

Referring to Fig.1 there is illustrated, generally at 10, a shopping checkout system for verifying the contents of a loaded shopping trolley

(not shown), the system 10 having a barcode scanner 11, a weighing mat 12 and a verification unit 13. The scanner 11, in use scans each shopping item as it is placed in the trolley and records, amongst other parameters, the weight of the item. The weighing mat 12, in use, weighs the loaded trolley and the readings from both the scanner 11 and the weighing mat 12 are fed to the verification unit 13, where the total weight of items from each source is compared in order to verify the contents of the loaded trolley.

The weighing mat 12 is suitably placed at a checkout station at ground level. The weighing mat 12 has a rectangular base 14 with two ramps 15, 16 at opposing short sides 17, 18, respectively. A weighing platform 19 is located between the ramps 15, 16. The weighing mat 12 is connectable to a power source by a cable 20.

The weighing mat 12 is also connected to the verification unit 13 by means of a cable 21.

The verification unit 13 has a wedge shaped body 22 with a sloping front panel 23. The panel 23 has a control button 24 mounted therein. A receiving slot 25 in the panel 23 is adapted for temporarily housing the scanner 11. A display screen 26 is also mounted in the panel 23. The verification unit 13 is connectable to a shop till by means of a cable 27.

Referring to Figs. 2 and 3 the scanner 11 is shown in more detail. The scanner 11 has a generally rectangular shaped body 28, which is

curved along its length. A screen 29 is mounted at one end 30 of the body 28, and also mounted near that end is a speaker 31 through which audible sounds emanate, in use. A scanner module 32 is located further along the body 28. A connector 33 is located at the other end 34 of the scanner 28, the connector 33 being adapted for connection of the scanner 12 to the verification unit 13 by means of a cooperating connector (not shown) in the slot 25 thereof.

A set of grooves 35 in the body 28 makes it easier for the scanner 11 to be held in the hand. A rechargeable battery 36 is mounted in the under surface 37 of the scanner 11.

Referring to Figs. 3 to 5 a clip 38 for attaching the scanner 11 to a trolley is located on the under surface 37 of the scanner 11. The clip 38 incorporates a plug-in connector 39. The clip 38 and plug-in connector 39 cooperate with an attachment unit 40 (Fig. 4) located on a handle 41 of a trolley 42 (Fig. 5). The plug-in connector 39 engages with a corresponding connector 43 on the attachment unit 41. The scanner 11 can be secured to the attachment unit 40 by engaging the plug-in connector 39 in the corresponding connector 43 and locking them together using a key (not shown).

Referring to Fig. 6 an alternative embodiment of a weighing mat in accordance with the invention to that depicted in Fig. 1 is illustrated generally at 50 and wherein like features are indicated by the same reference numerals. In this embodiment a pair of retractable stops 51 is located to one end 52 of a weighing platform 19.

In use, a loaded trolley is pushed onto the weighing platform 19 *via* the ramp 15, until the wheels of the trolley (not shown) abut the stops 51 which should be in the raised position. At the end of the verification process the shop assistant retracts the stops 51 and the customer can push the trolley off the weighing mat 50 down the ramp 16.

A pair of adjustable legs 53 engages the floor surface and helps prevent the weighing mat 50 from shifting during use.

Claims: -

1. A shopping checkout system for verifying the contents of a loaded shopping trolley, comprising a barcode scanner, a weighing mat and a verification unit, the scanner, in use, scanning each shopping item as it is placed in the trolley recording the weight of the item, the weighing mat weighing the loaded trolley and the readings from both the scanner and the weighing mat being fed to the verification unit, where the total weight of items from each source is compared in order to verify the contents of the loaded trolley.

2. A shopping checkout system according to Claim 1, wherein the scanner can be held in a customer's hand in use.

3. A shopping checkout system according to Claim 1 or 2, wherein the scanner is powered by a rechargeable battery.

4. A shopping checkout system according to any preceding claim, wherein the weighing mat includes retractable stops mounted on an upper surface thereof, the stops in use being raised to prevent the trolley from the being removed from the weighing mat until the verification procedure has been completed.

5. A shopping checkout system according to any preceding claim, wherein the verification unit has means for receiving the scanner, such that the information recorded therein can be accessed.

6. A shopping checkout system according to Claim 5, wherein the verification unit has means for clearing the recorded data from the scanner following the verification procedure in readiness for use by the next shopper.

7. A shopping checkout system according to any preceding claim, wherein the verification unit has a screen for displaying the results of the verification procedure.

8. A shopping checkout system according to any preceding claim, wherein the verification unit is connectable to a shop till.

9. A shopping checkout system according to Claim 1 for verifying the contents of a loaded shopping trolley, substantially as hereinbefore described with particular reference to and as illustrated in Figs. 1-5, and 6 of the accompanying drawings.

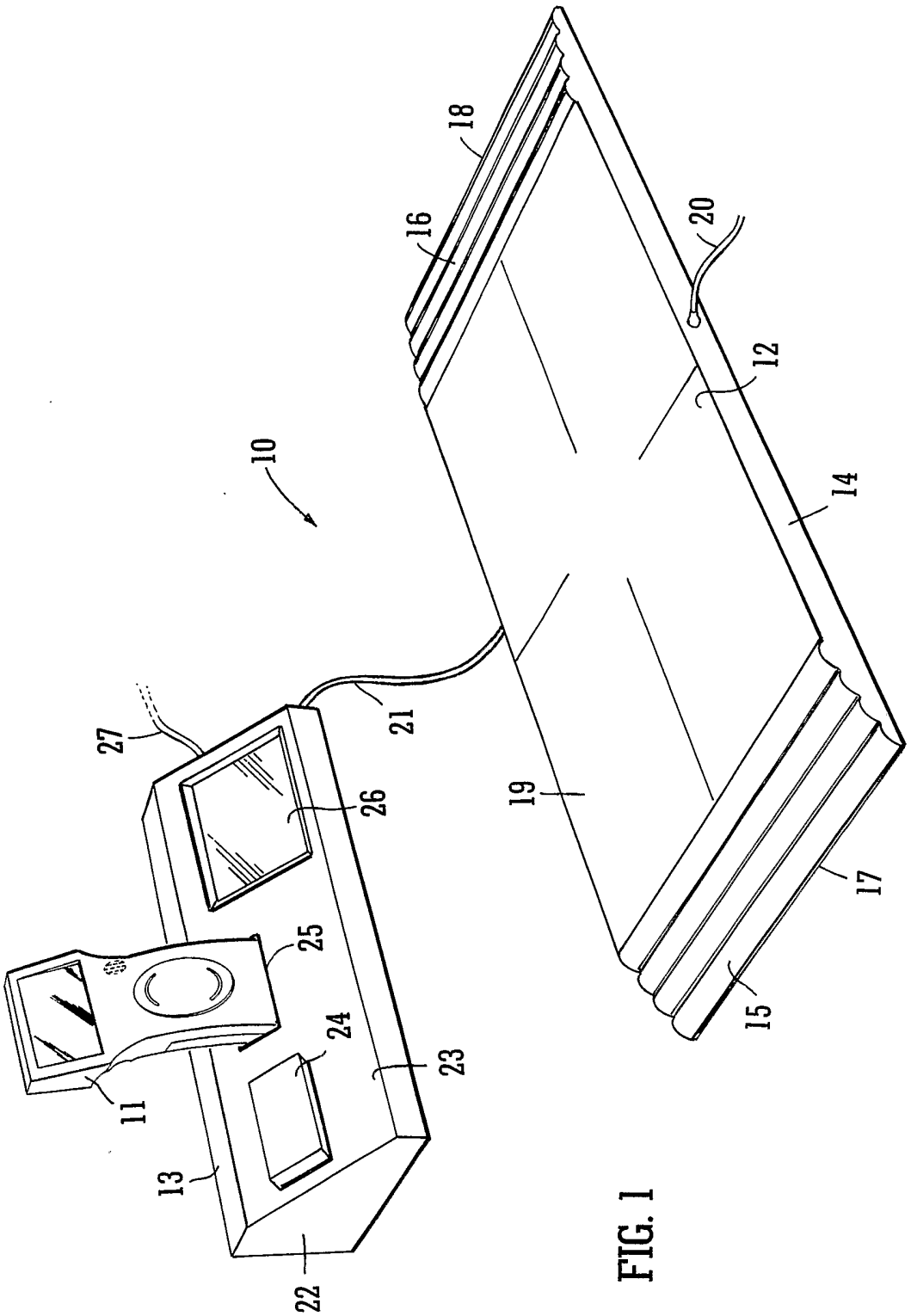


FIG. 1

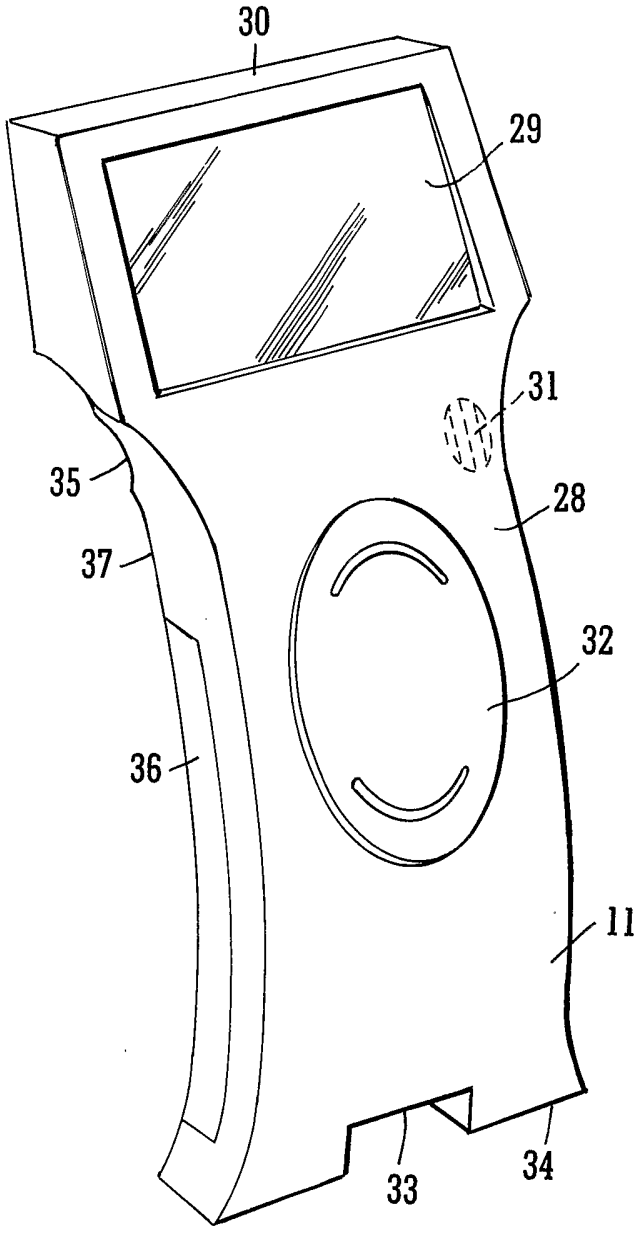


FIG. 2

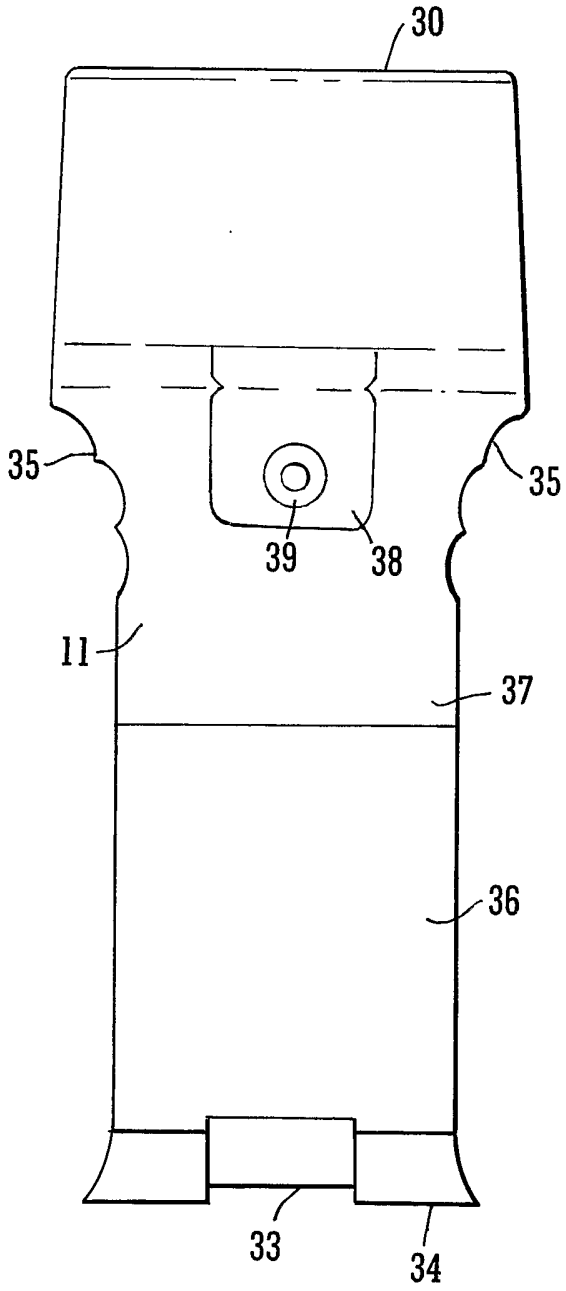


FIG. 3

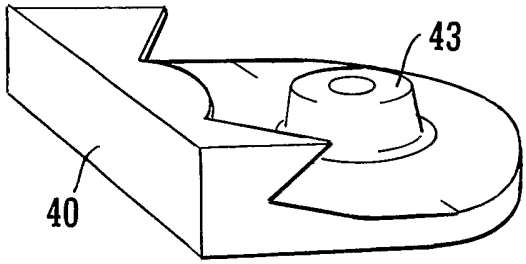


FIG. 4

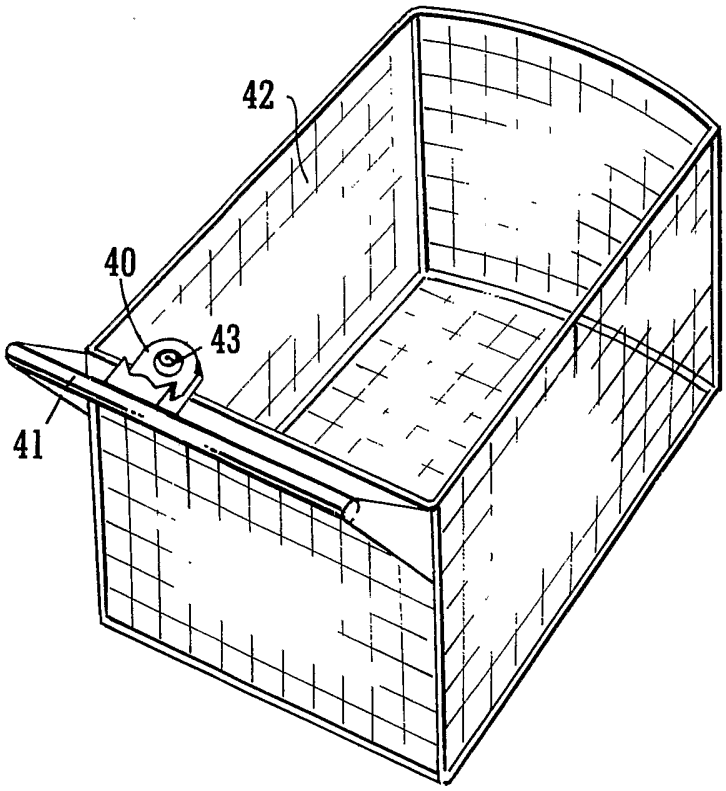


FIG. 5

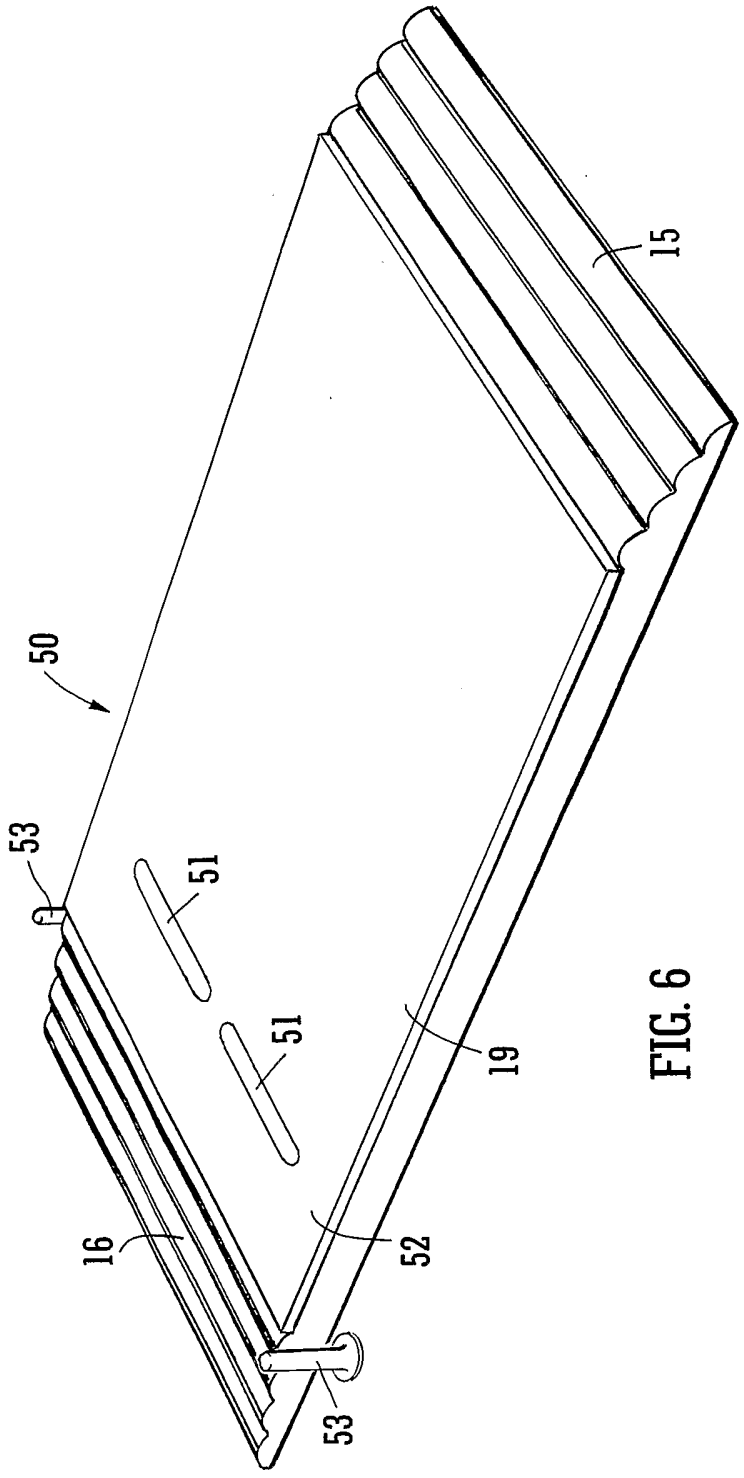


FIG. 6