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A PLASTIC BAG DISPENSER AND A PLASTIC BAG FOR USE IN SAID DISPENSER

The present invention relates to a plastic bag dispenser of the type comprising a box adapted to hold a roll which is freely rotatable in horizontal position in the box, said roll consisting of a string of continuous, finished gusset bags of a flexible plastics material, each bag being provided with two lateral handles placed on either side of a central recess in the bag, which bags are connected by a separation line between the bottom of one bag and the handles of said bag, and wherein the upper side of the box is constituted by a substantially horizontal carrier plate with a front edge and a rear edge, and designed with an outlet opening for each of the bags pulled out from the dispenser, as well as means adapted to make it possible to suspend the two handles of the pulled out bag.

An arrangement of this type for dispensing plastic bags one by one is known from patent application DK 1620/88, corresponding to EP-A-286 498. Fig. 1 of this publication also shows rolled up strings of continuous plastic bags of the type having lateral handles.

This known arrangement, wherein under a counter at a cash register two rolls of continuous plastic bags are arranged, has two bag outlets each with a toothed aperture, through which a bag is taken out and pulled free of the next bag. A drawback of this solution is that the bag, which is pulled out by the customer, is crumpled up, which forces the customer to flatten it before opening.

At the exit from for instance a supermarket normally at least one cash desk is present, said cash desk including a running belt, on which the customer places his gods, the cash register itself with a price reading equipment and an exit belt or a slide or just a counter like in the above publication.

Often the carrier bags (perhaps against payment) are handed over by the staff, following which the customer must

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take care of opening the bag himself and fill it with the goods.

These various operations may be timeconsuming both for the desk staff and for the customer.

EP-A2-0381 914 describes an automatic plastic bag dispenser arranged at the exit end of the counter, in which a complicated mechanism is provided with means for pneumatic opening of the leading plastic bag of a rolled up string of plastic bags of the type described above, and with bars which are firstly inserted into the handle of the bag and which then move to separate the bag from the succeeding bag and to open these bag handles and keep the bag open ready for use at the end of the counter.

A drawback of this known system is that the required mechanism is rather complicated, which of course entails a comparatively high price per unit, for which reason the system presumably is better suited for bigger shops than smaller ones, in which there are for instance only one, two or maybe three cash desks.

SE-B 351 559 describes a plastic bag dispenser, in which the plastic bags of the string are connected at a longitudinal lateral edge and at the top are provided with two oblong apertures, which the customer may use for carrying the bag. The leading bag of the string of bags is pulled out manually and positioned vertically in a box-like exit space, following which the two handles of the bag are rolled over two protrusions on top of the box such that the bag is kept upright and open in the box.

From French Patent No. 2 558 704 a device for dispensing bags of a flexible material is known, in particular bags with lateral handles, which are torn from a roll. This device has a number of holders which the customer may use for suspension of a plastic bag which the device by means of air being blow out delivers in open state.

A drawback of such a device is to be seen in that it is space demanding, both behind the goods delivery counter

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and above this counter, and in that at least some of said holders are present on the exit side of the device.

According to the invention a plastic bag dispenser differs from the type stated by way of introduction in that the outlet opening for the bags is constituted by an elongate aperture extending substantially in the axial direction of the roll and below the carrier plate means are provided for controlling the movement of a bag being pulled out in such a way that the handles of the individual bags are the first to appear through the aperture at the ends thereof.

A plastic bag dispenser of this type offers a number of advantages.

As will be seen in detail from the detailed description, the box with the roll of bags arranged therein may form an independent unit, which may be made exchangeable such that the staff, when a roll of bags is used, quickly may exchange the box by a new box with a roll of bags.

The bags are pulled up one by one by their handles through the aperture and may at once be arranged over the carrier plate. The controlled movement of the bag being pulled out has the effect that the bag is not crumpled and consequently easier to put into use.

According to a preferable embodiment the plastic bag dispenser may be characteristic in that the elongate aperture is profiled in such a way that it curves inwards towards the front edge of the carrier plate and that it has a central, substantially circular arc-shaped lobe facing the rear edge of the carrier plate, and in that the control means below the carrier plate are constituted by at least one roller which is parallel with the axis of the roll of bags and the carrier plate, said roller being displaced in a direction towards the front edge of the carrier plate relative to the longitudinal axis of the aperture. In this embodiment the bag which is about to be pulled out through the aperture in the carrier plate is controlled by the

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roller, whereby a crumpling of the bag is prevented, and on account of the guide roller being placed closer to the front edge of the carrier plate than the aperture itself, the lobe will during the pulling out of the bag engage the central aperture of the succeeding bag, whereby the bag to be pulled up is separated under continued pull from the succeeding bag. Simultaneously, the special profiling of the aperture of the carrier plate has the effect that the lateral edges of the bag distribute evenly towards the ends of the aperture of the carrier plate.

According to a further preferred embodiment the plastic bag dispenser may be characteristic in that the control means are a number of counter-rotating rollers, preferably coated with friction material and pairwise touching each other through their generators, said rollers being journalled freely rotatably in two end flanges below the carrier plate.

The counter-rotating rollers ensure an even more precise controlling of the movement of the bag. On account of these rollers and the frictional effect obtained by their friction material it turns out that a bag may be pulled evenly out of the dispenser merely by pulling one handle of the bag.

According to a further embodiment of the invention the bag dispenser according to the invention may be characteristic in that the box substantially has the shape of a suitcase with a bottom portion and with a cover, that one side of the bottom portion is a part of said substantially horizontal carrier plate, that said elongate cutting is provided along the longitudinal edges of said one side of the bottom portion of the suitcase and the cover, that the shaft of the roll of plastic bags and rollers parallel therewith are pivotally journalled in the end walls of the bottom portion of the suitcase, that on the inner side of the cover relative to the inner compartment of the box a rotatable roller is mounted, said roller being parallel with said shaft and said rollers, and

that pressure springs press the latter roller in a direction away from the cover into contact with the remaining rollers in the bottom part of the suitcase, when the cover is closed.

This embodiment makes it particularly easy for the shop's staff after opening of the cover to arrange a new roll of plastic bags in the box and to manually lead the handles of the leading bag of the roll upwards and place them in the aperture and then close the cover again.

In addition to the previously mentioned, time-consuming operations (the desk staff distributes the carrier bags manually or the customer takes himself a carrier bag from a supply close to the cash register) it is also annoying to the customer that the carrier bag is normally to be held open with one hand and that goods, in particular foodstuff which is wrapped in a thin plastic film, does not easily "slip" into the carrier bag.

By rolling each of the handles of the bags over a holder, the customer may now much more easily use both hands for filling the bag with goods, as the bag is held open.

According to another embodiment of the invention the plastic bag dispenser may be characteristic in that above the carrier plate a profiled plate is provided, one part of which extends towards the front edge of the carrier plate, and that said holders are mounted on top of this plate and are positioned above the area of the carrier plate between its aperture and its front edge.

The advantage of such a profiled plate which carries the holders is that the customer pulling a bag up is forced to do so in an upwards direction towards himself, which makes the separation of the bag from the succeeding bag easy and even.

The holders are preferably placed substantially above a respective end of the aperture of the carrier plate.

It may, however, be difficult for the customer to free the handles of a filled, heavy carrier bag from such

bag suspension means.

With a view to this, a preferable embodiment of the bag dispenser according to the invention may be characteristic in that each holder is constituted by a carrier arm mountable on the plate and by two branches mutually articulately connected and connected with the end of the carrier arm facing away from the plate, said branches forming an annular handle, and that at the end of the carrier arm and at the corresponding end of at least one of the two branches spring means are provided which tend to make the two branches meet, but which may yield to allow the two branches to open for free passage of a hand and the corresponding handles of the bag during an upwards movement for lifting of the bag from the carrier plate.

In this embodiment the customer does no longer have to try to free the handles of a filled, heavy carrier bag from the holder. The customer just has to insert his hand or hands into the handles and lift the bag. The two branches of the holder will then open and give free passage for the hand or hands, and will then automatically return to a closed position, in which the two branches once more form an annular handle.

According to a further embodiment of the invention the plastic bag dispenser may be characteristic in that the box has means for detachable suspension of the box on a vertical wall, and that each holder consists of two mutually articulate branches forming together an annular handle, one branch of which is fixedly mounted on the wall, and the other branch of which by means of spring means is prestressed for tilting in a direction towards said one branch for closing of the annular handle.

Advantageously, the biggest cross-sectional dimension of the holder from the outer side of one branch to the opposite outer side of the second branch may be bigger than the biggest dimension of the opening in the handle of the bag.

The invention also relates to a plastic bag for use

in the plastic bag dispenser according to the invention. Such a plastic bag which is part of a string of continuous string of coherent, finished gusset bags of plastics material, said bag having two laterally disposed handles placed on either side of a central recess in the bag, and which in the string of bags are connected with the another bag by a separation line between the bottom welded seam of that bag and the handles of said bag, may according got the invention be characteristic in that the gussets of the bag each have a width (f) of approx. 1/3 of the width of the bag (B), that the recess has a depth (d) of approx. 1/4 of the height dimension of the bag, that the recess at its lower edge has a width (n) bigger than the width (m) at the top of the recess between the handles), that the width (m) at the bottom of the recess is bigger than 1/3 of the width (B) of the bag, and that the parts of the two bag gussets are each folded and welded or glued along the folding line thus created through a line which from a point at the bottom welded seam extends obliquely upwards to the corresponding side edge of the bag.

The advantage of such a plastic bag is that after having been pulled out from the dispenser it is easy to suspend by means of the two handles in the holder, and to be folded completely out at the bottom, the bottom getting the same shape as a cardboard box or a paper carrier bag, whereby it becomes easier for the customer to fill the bag with goods.

The invention will now be explained in detail with reference to the schematic drawing, which shows an example of an embodiment of the plastic bag dispenser according to the invention, and in which

Fig. 1 is a perspective view of the essential parts of the plastic bag dispenser according to the invention,

Fig. 2 shows the plastic bag dispenser according to Fig. 1 seen from the end,

Fig. 3 is a partial view seen from above of the dispenser mechanism shown in Fig. 1,

Fig. 4 is a sectional view of a string of continuous gusset bags,

Figs 5a to 5d illustrate the use of the bag dispenser from the time where a bag has been pulled out to the time, where the bag is filled with goods,

Figs 6 and 7 are perspective views of a suitcase-like box with closed and open cover, respectively,

Fig. 8 shows another embodiment of a bag dispenser according to the invention,

Fig. 9 shows another embodiment of a part of the bag dispenser shown in Fig. 8,

Fig. 10 shows an embodiment in detail of a bag according to the invention,

Fig. 11 shows - along the sectional line 147 in Fig. 10 - the profile of the bag in somewhat distended state, and

Fig. 12 is a perspective view of the bag according to the invention in nearly completely distended state.

Fig. 1 shows in perspective and seen from above a part of the bag dispenser according to the invention. In Fig. 1 the cabinet of sheet material, for instance metal, in which the bag dispenser is built in, has been omitted for the sake of clarity. This cabinet is shown by 1 in Fig. 2.

A for instance rectangular carrier plate 2, which in position ready for use (Fig. 2) will be substantially horizontal, carries on its underside two vertical, mutually parallel flanges 3, 4. Between these two flanges 3 and 4 a detachable carrier shaft 5 for a roll of plastic bags of the previously described type may be provided in a manner known per se. The shaft 5 extends parallel with the plate 2 and is rotatable relative to the flanges 3 and 4.

On top of the carrier plate 2 an especially profiled plate 7 is present which may constitute a part of the cabinet 1 of the bag dispenser, see Fig. 2.

As will be seen from Fig. 2, which pictures a construction according to Fig. 1 seen from the end, the

plate 7 is practically S-shaped. The purpose of this particular profiling of the plate 7 will be explained in the following in detail.

In the carrier plate 2 and in the profiled plate 7 an aperture 9 has been provided, the particular shape of which appears more detailed from Fig. 3.

On top of the plate 7 two carrier bag holders 10 and 11 are positioned suitably spaced above the carrier plate 2.

Fig. 2 shows the device shown in Fig. 1 seen from the end. Below the carrier plate 2 three rollers 20, 21, 22 are provided. These rollers are mounted freely rotatable relative to the flanges 3 and 4 and extend parallel with the carrier 2 and the carrier shaft 5 of the plastic bag roll 6.

The three rollers 20, 21, 22 are preferably coated with a layer of friction material, for instance rubber.

Two spring 23 and 24 between stops 25 and 26, respectively on the flanges and the shafts of the respective rollers 21 and 22 force the rollers 21 and 22, respectively, to abut the roller 20, but are, however, sufficiently resilient for in view of introducing the leading bag of a roll of bags 6 between the two rollers 21 and 22 in the sequence shown in Fig. 2 to allow the two rollers 21 and 22 to be pressed slightly away from the roller 20. When this bag has been placed between the rollers, the springs 23 and 24 will again press the two rollers 21 and 22 into abutment against the roller 20, whereby the bag is snapped between and guided by the rollers. The respective turning directions for the rollers 20, 21, and 22 are indicated by the arrows.

Fig. 3 shows the device according to Fig. 1 seen from above. For the sake of clarity the profiled plate 7 and the two holders 10 and 11 have, however, been omitted from Fig. 3. Likewise for the sake of clarity indication by dotted lines has been omitted in respect of the parts of the rollers 20, 21, and 22, which in the set up shown in Fig.

2 are positioned below the plate 2.

Fig. 3 thus shows the carrier plate 2, the two flanges 3 and 4, the aperture 9, the three rollers 20, 21, and 22 with associated stops 25, 26 and springs 23, 24 - the stops and the springs at the right side of Fig. 3 having the same design, for which reason reference numerals have not been given - and the roll of plastic bags 6 positioned below the carrier plate 2 and the rollers 20, 21, 22. The double arrows in the left and the right hand side of Fig. 3 indicate the effect of the springs mentioned above.

The aperture 9 in the embodiment shown in Figs. 1 and 3 has substantially the shape of a bill, i.e. like the blade of a broad axe. One edge 30 of the aperture may have a circular profile, whereas the opposite edge of the aperture has a profile consisting of three arc-shaped portions, viz. two outer portions 31 and 32 and a centrally arc-shaped portion 33. The central part 33 form a lobe pointing towards the edge 30 of the aperture.

It should be noted that the profiled plate 7 shown in Fig. 1, a part of which 7a is positioned horizontally on top of the carrier plate 2, also is provided with the same kind of aperture.

Reference is once more made to Fig. 1 and in particular Fig. 2. The two holders 10 and 11 are carried by respective carrier arms 12 and 13 which have been mounted fixedly on the plate 7 at its upper edge and at a suitable distance above the carrier plate 2.

Each holder 10, 11 consist of two branches 14, 15 which are articulate with their respective carrier arm 12, 13 at a joint connection point 16, and by means of not shown spring means built into the branches 14, 15 and in the associated carrier arm 12, 13 these two branches 14, 15 may - with a view to the following purpose - be opened in a direction away from each other against the action of the spring means and, under influence of the spring means, snap back towards each other again. This possibility of mutual

movement of the two branches 14, 15 of each holder is indicated by the double arrow in Fig. 2.

Fig. 4 shows schematically a part of a string of socalled gusset bags 40, 41,.... Such bags of plastics material, for instance polyethylene or the like, are made in a manner known per se, such that each bag is provided with a recess 42 and is only coherent with the next bag in the edge areas 40a, 40b, 41a, 41b, etc.... The recess 42 in the individual bag is broad enough for providing, when a bag is separated from the next one, two handles 43, 44 which the customer may use for carrying the bag.

Fig. 5 illustrates the use of a bag pulled out from the device. Fig. 5a shows that the bag 40 has been pulled out of the device and is ready for being positioned vertically. Fig. 5b shows that the handles of the bag 43 and 44 are now on level with the holders. Fig. 5c shows that the handles 43 and 44 have now been rolled over their respective holders, the bag is folded out and is open. Fig. 5d shows that the customer, now by use of both hands, may fill the bag with goods.

Figs 6 and 7 shows another embodiment, in which the box is now shaped like a suitcase 60 with a suitcase bottom part 61 and cover 62 For the sake of clarity the end walls of the suitcase bottom part are not shown in Fig. 6, and Fig. 7 only shows the end wall 64 farthest away from the viewer.

The suitcase bottom part 61 holds the roll of bags 6 on its carrier shaft 7 as well as two rollers 20, 21 parallel with this shaft and preferably coated with a layer of friction material. As will be seen from Fig. 7 the inner side of the cover 62 carries a roller 22 parallel with the shaft 5 of the roll of bags, which roller may likewise have a coating of friction material and which by springs 65 is prestressed in direction away from the cover 62.

In Fig. 7 the cover 62 is open and the staff may easily insert a new roll and arrange the handles of the first bag of the roll at the longitudinal edge of the

suitcase bottom part 61 and the cover 62, respectively, following which the cover is closed, cf. Fig. 6.

In this position the rollers 20, 21, 22 will be pairwise in contact (20, 22,; 21,22) along their generator and thus be in drive engagement with the bag. For the sake of clarity, the interspace between the roller 20 and the roller 22, the roller 21 and the roller 22, respectively, has been shown somewhat bigger than is normally the case. Actually these rollers will as said above pairwise be in contact with each other.

Such a suitcase-like box 60 may be equipped with means (not shown) for suspension of the box on a wall, preferably below two accompanying bag holders.

As to these holders it should be noted that their biggest cross-dimension from the outer side of one branch to the opposite outer side of the second branch should be bigger than the biggest dimension of the opening in the bag handle. Hereby the handles are prevented from being advanced further down to the carrier arms 12 of the bag holders.

If the dispenser has the embodiment, in which a suitcase-like box is used, the bag holders may advantageously be provided such that one branch thereof is fixedly connected with the wall carrying the box, whereas it is only the other branch facing away from the wall which is angularly movable and is prestressed in a direction towards the fixedly mounted branch.

The functioning of the bag dispenser described here is now to be explained in detail.

It is to supposed that the bag dispenser is placed at a cash desk in a supermarket or in a similar shop.

The staff has provided a roll 6 of bags in the device and inserted the handles of the first bag between the rollers 20, 21, 22, such that the handles of the bag are accessible just above the aperture 9.

A customer wanting to pull out a bag from the dispenser just has to pull one handle upwards relative to

the device.

The special shape of the profiled plate 7 (cf. Fig 2) forces the customer to pull the bag (at one handle or both) obliquely upwards in the direction indicated by the arrow P, i.e. slightly away from the device.

During this movement the lobe 33 enters the recess 42 of the next bag, said bag coming to a halt, whereas the pulled out bag is separated from the handles of the next bag, which already at that time has been inserted between the rollers 20, 21, 22 and is now ready for being pulled up from the aperture 9.

The particular shape of the dispenser aperture 9 relative to the straight rollers 20, 21, 22 and the advantageous placing of said rollers relative to the dispenser aperture 9 causes the bags to distribute evenly over the whole extension of this dispenser aperture and makes the handles of the bag automatically arrange themselves at the ends of this aperture, even though actually only one handle of the bag is pulled.

When one bag has been pulled out of the dispenser, it may be used as already explained with reference to Fig. 5.

As long as the bag is empty, it is very easy for the customer to roll the handles 43, 44 of the bag over the holders 10 and 11, cf. Fig. 5c.

When the bag has been filled, it may, however, be difficult to roll the handles of the bag 43, 44 back to free the holders 10 and 11.

Therefore, it is according to the invention advantageous to design the holders 10 and 11 as already described before, i.e. with spring means.

The customer does not have to try to roll back the handles, he just need to put the hands under the handles of the bag (Fig. 5d) and lift the bag. Then the hands of the user will freely pass between the two branches 14, 15, whereby they are forced to open and then on account of the spring means of the holder to return again to their normal position (closed branches 14, 15).

As previously mentioned, the box comprising the carrier plate 2, the flanges 3, 4, the rollers 20, 21, 22 and the remaining parts of the mechanism, including the shaft of the roll of bags, may be designed as a unit exchangeable in the cabinet 1 of the bag dispenser. This makes it possible for the staff to keep a store of one or more re- filled boxes, such than when a roll of bags has been used, then a new box with a new roll of bags may quickly be arranged in the dispenser.

It should be noted that the particularly profiled plate 7 not necessarily have to be of S-shape as shown in Figs 1 and 2, in which the lower part 7a of the plate 7 covers the upper side of the carrier plate 2. The plate 7 might also from the middle of the S-shaped arc extend directly down towards the carrier plate, provided that the general shape of the plate 7 and the position of the holders 10, 11 have the effect that the customer is forced to pull the bag upwards in the direction indicated by the arrow P in Fig. 2.

It should further be noted that the aperture 9 in the carrier plate 2 does not necessarily have to be of the special embodiment shown in Figs 1 and 3. For instance the aperture in the carrier plate 2 may just be a rectangular aperture, while the horizontal part 7a of the plate 7 has a corresponding aperture of the shape herein described.

It should further be noted that instead of rectilinear guide rollers two or more pairs of counter-rotating rollers might be used, said rollers being arranged approximately in accordance with the profile of the aperture 9.

It should further be noted that the bag dispenser in a manner known per se might be equipped with a photocell arrangement for detecting the position of the aperture of a succeeding bag relative to the aperture 9 in the carrier plate 2 and for a possible electric brake of at least one of the guide rollers 20, 21, 11 and/or for providing the cash register with a signal indicating that a bag has been

pulled and that, if so, a charge has to be made for this bag.

Fig. 8 shows yet another embodiment of the bag dispenser according to the invention.

The dispenser 60 itself in the embodiment described with reference to Figs 6 and 7 is placed below a box 70 consisting of a rear plate 71 and two side plates 72 and 73, which are perpendicular or substantially perpendicular to the rear plate. Here the rear plate 70 and the side plates 71 and 72 extend down to the upper edge of the suitcase 60, but they may also, in an amended embodiment, extend for instance so far as to the floor, along the opposite sides of the suitcase, such that the suitcase will be placed within the box 70.

On top of the side plate 72 a holder 74 is provided for suspension of one handle 43 of the bag. On top of the opposite side plate 73 a corresponding holder 75 is provided for suspension of the second handle 44 of the bag.

The holder 74 has substantially the shape of an upright spoon or cockleshell, which seen in the direction of the arrow A is concave. This concave shape makes it possible for the consumer by an upward movement to place one hand in the concave space and behind the suspended handle of the bag and by continued movement upwards to free the handle of the bag from the holder 74. The opposite holder 75 is designed in the same way, but reverted relative to the holder 74, i.e. concave, seen in the direction of the arrow B.

These two spoon-shaped holders 73 and 74 may be arranged integral with at least the side plates 72 and 73, for instance by casting from an impact-proof material. These two holders, may, however, also be constructed as separate parts from a suitable material and mounted fixedly on top of their respective side plates.

Fig. 9 shows yet another embodiment of the box 70. In the upper edge of the two side plates 92 and 93 two spoon- or cockleshell-shaped recesses 94 95, respectively, are

provided which are concave in the direction of arrow C respectively D, said recesses ending at the two upper corners of each side plate, 92 and 93, respectively, in two horn-shaped protrusions 96, 97 and 98, 99, respectively. These pairs of protrusion serve each to hold one handle of a bag and the recesses 94, 95 gives the user a possibility, like described with reference to Fig. 8, of freeing the handles from the protrusions.

The bag is made from a sleeve of a plastics material and in addition to the well-known lines of weakening at the edges 40a, 40b, 41a, 41b, by means of which a bag may be separated from the next one, each individual bag has, as also shown in Fig. 10 in respect of the bag according to the invention, welded seams 145 as indicated by xxxx at the top of the handles 43, 44 and a welded seam 146 as indicated by xxxx at the bottom of the bag.

The bag according to the invention, Fig. 10, has a gusset width f somewhat bigger than the width shown i Fig. 1, for instance a gusset width of approx. 1/3 of the width of the bag B.

Fig. 11 shows the profile of the bag, for instance the bag 40, in somewhat extended condition, for instance at the sectional line 147 in Fig. 10. Each gusset 150, 151 in a bag has two parts 152, 153 and 154, 155, respectively. The inner edge (point) of the gusset 150 is shown by 150' and the inner edge (point) of the gusset 151 is shown by 151'.

The recess in a bag, for instance the bag 40, Fig. 10 has a depth d which may for instance be 1/4 of the height of the bag. Moreover, the width m of the recess 42 at the top, i.e. between the handles 43, 44, is somewhat smaller than the width n of the recess 42 at its lower edge, for instance 5-6% smaller. Moreover, the width n at the bottom of the recess 42 is bigger than 1/3 of the width of the bag B.

Fig. 12 shows perspectively a bag according to the invention, for instance the bag 40, in nearly distended

position.

From a point p on the lower welded seam 146 of the bag, Fig. 10, preferably the point, in which the inner edge of the gusset meets the welded seam 146, one part 152 of the gusset 150 is folded together and fold edge-welded or -glued to itself along a line 156 extending obliquely upwards - cf. Fig. 10 - to the side edge of the bag 40.

From the same point p the other part 153 of the gusset 150 is likewise folded together and fold edge-welded to itself along a line 157 likewise extending obliquely upwards - cf. Fig. 10 - to the side edge of the bag 40.

At the other side edge of the bag 40, i.e. in respect of the gusset 151, the situation is the same.

From a point p' on the lower welded seam 146 of the bag - this is shown in Fig. 10, but not in Fig. 11 - one part 154 of the gusset 151 is folded together and fold edge-welded to itself along a line extending obliquely upwards - cf. Fig. 10 - to the other side edge of the bag 40.

From the same point p' the second part 155 of the gusset 151 is likewise folded together and fold-edge-welded to itself along a line 158, likewise extending obliquely upwards - cf. Fig. 10 - to the second side edge of the bag 40.

In this particular embodiment of a bag according to the invention the essential advantage is obtained, namely that the bag, when placed on a carrier surface, for instance the carrier surface 2 on the dispenser, cf. Fig. 2, and folded out during the suspension of the handles 43, 44 over suited holders 10, 11, the bottom of the bag will get the shape of a cardboard box or a paper carrier bag of the kind available in a supermarket. I.e. a bag which on account of the presence of said fold-welded seams 156, 157, 158 .. will unfold into a rectangular form at a folding line as indicated by 159a in Fig. 10 and by a second transversal folding line as indicated by 159b in Fig. 11.

Through this an easier and better filling of the bag

is obtained compared to commonly available carrier bags of plastics material. The box-shaped bottom of the bag also allows a better weight distribution of the goods in the bag. It should further be noted, that the presence of said fold-welded seams 156, 157, 158 do not give rise to any substantial local increase of the thickness of the bag, when during its manufacture the string of bags is coiled into a roll for use in a dispenser according to the invention.

C L A I M S

1. A plastic bag dispenser of the type comprising a box adapted to hold a roll (6) which is freely rotatable in horizontal position in the box, said roll (6) consisting of a string of continuous, finished gusset bags of a flexible plastics material, each bag being provided with two lateral handles (43, 44) placed on either side of a central recess (42) in the bag (40), which bags are connected by a separation line between the bottom of one bag and the handles of said bag, and wherein the upper side of the box is constituted by a substantially horizontal carrier plate (2) with a front edge (2a) and a rear edge (2b), and designed with an outlet opening for each of the bag pulled out from the dispenser, as well as means (10, 11) adapted to make it possible to suspend the two handles of the pulled out bag,

c h a r a c t e r i z e d in that

- the outlet opening for the bags is constituted by an elongate aperture (9) extending substantially in the axial direction of the roll (6), and
- below the carrier plate (2) means are provided for controlling the movement of a bag being pulled out in such a way that the handles of the individual bags are the first to appear through the aperture at the ends thereof.

2. Bag dispenser according to claim 1,

c h a r a c t e r i z e d in that the elongate aperture (9) is profiled in such a way that it curves inwards towards the front edge (2) of the carrier plate (2) and that it has a central, substantially circular arc-shaped lobe (33) facing the rear edge (2b) of the carrier plate, and in that the control means below the carrier plate (2) are constituted by at least one roller (22) which is parallel with the axis of the roll of bags and the carrier plate, said roller being displaced in a direction towards the front edge (2a) of the carrier plate (2) relative to

the longitudinal axis of the aperture.

3. A bag dispenser according to claim 2, c h a r a c t e r i z e d in that the control means are a number of counter-rotating rollers (20, 21, 22) preferably coated with friction material and pairwise touching each other through their generators, said rollers being journalled freely rotatably in the two end flanges (3, 4) below the carrier plate (2).

4. A bag dispenser according to claim 2, c h a r a c t e r i z e d in that

- that the box (60) substantially has the shape of a suitcase with a bottom portion (61) and with a cover (62),
- that one side of the bottom portion is a part of said substantially horizontal carrier plate (2),
- that said elongate cutting (9) is provided along the longitudinal edges of said one side of the bottom portion of the suitcase and the cover (62),
- that the shaft (5) of the roll (6) of plastic bags and rollers (20, 21) parallel therewith are pivotally journalled in the end walls of the bottom portion (61) of the suitcase,
- that on the inner side of the cover (2) relative to the inner compartment of the box (60) a rotatable roller (22) is mounted, said roller being parallel with said shaft (5) and said rollers (20, 21), and
- that pressure springs (65) press the latter roller (22) in a direction away from the cover (22) into contact with the remaining rollers (20, 21)) in the bottom part (61) of the suitcase, when the cover is closed.

5. A bag dispenser according to any of the preceding claims, c h a r a c t e r i z e d in that the holders (10, 11) are placed substantially above each end of the aperture (9) of the carrier plate (2).

6. A bag dispenser according to claim 5, c h a r a c t e r i z e d in that above the bag dispensing

box and substantially above the end surfaces of the box two substantially mutually parallel, substantially vertical plats (72, 73) are provided, said plates forming together with a substantially vertical rear plate (71) a box (70) adapted to accommodate at least the upper part of the bag dispenser box (60), that said two plates (74, 75) each carries on their top a holder (74, 75) for suspension of each their bag handle (43, 44), and that each holder (74, 75) seen from the outside and in the direction (arrow A, arrow B) towards the interior of the box is concave.

7. A bag dispenser according to claim 5, c h a r a c t e r i z e d in that above the carrier plate (2) a profiled plate (7) is provided, one part of which (7a) extends towards the front edge (2a) of the carrier plate (2), and that said holders (10, 11) are mounted on top of this plate (7) and are positioned above the area of the carrier plate (1) between its cutting (9) and its front edge (2a).

8. A bag dispenser according to claim 7, c h a r a c t e r i z e d in that each holder (10, 11) is constituted by a carrier arm (12) mountable on the plate (7) and by two branches mutually articulately connected and connected with the end (16) of the carrier arm (12) facing away from the plate (7), said branches forming an annular handle, and that at the end (16) of the carrier arm (12) and at the corresponding end of at least one of the two branches (14, 15) spring means are provided which tend to make the two branches meet, but which may yield to allow the two branches to open for free passage of a hand and the corresponding handles of the bag during an upwards movement for lifting of the bag from the carrier plate (2).

9. A bag dispenser according to claim 4, c h a r a c t e r i z e d in that the box (60) has means for detachable suspension of the box (60) on a vertical wall, and that each holder (10, 11) consists of two mutually articulate branches (14, 15) forming together an annular handle, one branch of which (14) is fixedly mounted

on the wall, and the other branch of which (15) by means of spring means is prestressed for tilting in a direction towards said one branch (14) for closing of the annular handle.

10. A bag dispenser according to claims 8 or 9, c h a r a c t e r i z e d in that the biggest cross-sectional dimension of the holder (10, 11) from the outer side of one branch (10) to the opposite outer side of the second branch (11) is bigger than the biggest dimension of the opening in the handle of the bag.

11. A plastic bag for use in a plastic bag dispenser according to any of the preceding claims, which bag is part of a length of coherent, finished gusset bags of plastics material, said bag having two laterally disposed handles (43, 44) placed on either side of a central recess (42) in the bag (40), and which in the string of bags are connected with the another bag by a separation line (40a, 40b) between the bottom welded seam of that bag and the handles of said bag (40),

c h a r a c t e r i z e d in that the gussets (50, 51) of the bag each have a width (f) of approx. 1/3 of the width of the bag (B),

that the recess (42) has a depth (d) of approx. 1/4 of the height dimension of the bag,

that the recess (42) at its lower edge has a width (n) bigger than the width (m) at the top of the recess (42) between the handles (43, 44),

that the width (m) at the bottom of the recess (42) is bigger than 1/3 of the width (B) of the bag, and

that the parts (52, 53; 54, 55) of the two bag gussets are each folded and welded or glued along the folding line thus created through a line (56, 57, 58) which from a point (p, p') at the bottom welded seam (46) extends obliquely upwards to the corresponding side edge of the bag.

12. A plastic bag according to claim 11, c h a r a c t e r i z e d in that the point (p, p') at the

bottom welded seam (46) of the bag, from where each fold edge-welded seam (56, 57, 58) extends obliquely upwards to the corresponding side edge of the bag, is substantially positioned where the innermost edge line (50', 51') of each gusset meets the bottom welded seam (46).

13. A plastic bag according to claim 12, c h a r a c t e r i z e d in that each fold edge-welded seam (56, 57, 58) extends under an angle of approx. 45° relative to the bottom welded seam (46).