

-1-

A stackable bottle case

This invention relates to a stackable bottle case according to the preamble of claim 1.

Bottle cases are known in different constructions up to now. These bottle cases have in common a formation of side walls, bottom areas for receiving bottles and some device for promoting stacking of the cases. For example, European patent EP 838 383 has upwardly protruding pillars disposed at the sides and in the middle between the bottles to be received in the bottom area of the bottle case thereabove. However, the vertical arrangement of these pillars and the strictly vertical walls thereof, and the groove thereof disposed partly on the pillars for better stacking make it necessary to push the bottle cases placed above back and forth several times to permit different bottle cases to lock in or be stacked. In addition, the bottles are disposed with superfluous spaces therebetween due to the form of the bottle case altogether and in particular the individual pillars.

In addition, the bottle case according to this European patent is not produced in keeping with the requirements of saving material and space, i.e. is not optimized.

When the bottle cases are full, the individual stacked bottle cases rest on the bottle heads of the bottles therebelow with the underside of the bottom, a small central step being intended to permit better locking of the bottle case above. However, during long transports this causes the cap of each bottle to be considerably loaded, which can cause gas to escape from the bottle. It should be considered that the caps are often curved upward under pressure.

Therefore it is the problem of the invention to provide a stackable bottle case which permits simple and fast stacking and fixing of the stacked bottle cases, a space-saving arrangement of several bottle cases, and fast and simplified production thereof.

This problem is solved according to the features of the characterizing parts of claims 1 and 2, expedient developments being characterized by the features contained in the subclaims.

The invention is characterized mainly in that a stackable bottle case with side surfaces divided into side walls running around the bottom and supporting pillars protruding upward beyond the side walls, and a bottom for receiving the bottles, comprises supporting pillars in the area of the case sides which extend with their outside surfaces in essentially directly flush continuation of the side wall outside surface from there upward and on a slightly inward slant. This results not only in a compact exterior but also in smooth outside surfaces of the side surfaces which firstly avoid a danger of injury during handling of the cases and secondly permit easy cleaning of the bottle case.

The slight inward slant of these pillars permits uncomplicated engagement of the stacked bottle cases when they contain no bottles. In addition, this inward slant permits fast stacking because when a bottle case is placed above it is automatically centered on the bottle case below by the inward slanting pillars on all sides and then mounted in centered fashion. It is thus unnecessary to slide the bottle case above back and forth several times for fixing this bottle case on the bottle case below.

The stackable bottle case, which is preferably made of plastic, can comprise these inward running supporting pillars shaped as tapered supporting pillars, i.e. each supporting pillar is centered running upward. This permits fast, uncomplicated and centered stacking of the individual bottle cases.

The inward slanting pillars in conjunction with a very low side wall in comparison to the bottle disposed therein ensures a fast, material-saving and cost-saving production method, and results in a compact exterior of this bottle case in conjunction with good stiffness. The low side walls can be formed with a greater height in the load-critical areas of the case, preferably in the area of the case corners, in order to ensure an additional increase in stiffness.

Stable stacking of bottle cases is facilitated in addition by the bottom area on the underside of each bottle case which is formed for receiving the bottle caps of the cases stacked below. This one- or multistepped bottom area into which the bottle caps of the case stacked below easily fit serves to align the bottle case above with the bottle caps below, which is improved by a bulge and an opening in the center of each receiving place for a bottle cap. This bulge prevents pres-

sure on the soft part of the cap to stop gas (e.g. the carbonic acid) from escaping from the bottle during any transport-related vibrations and shocks. Further, an opening is provided in the center of each supported bottom receiving area for further promoting the advantage of the bulge. The slopes disposed on the individual steps of the bottom area serve to laterally stabilize the bottle case thereabove, facilitate removal of the bottle case thereabove, and to transfer the load as directly as possible to the bottleneck and facilitate centering during automatic palletizing.

The receiving areas for the bottle caps of the cases stacked below disposed in the area below the bottle receiving means in the bottom area are preferably designed so as to permit offset stacking. This makes it possible to dispense with shrink wrapping or hoop winding of the palette in many cases since the stacks are much more stable.

The supporting pillars located in the area of the case sides can preferably be provided optionally with slots for receiving any bottom ribs passing through upon stacking of the different bottle cases and thereby reducing the so-called box height (empties), on the one hand, and to ensure the use of any small packages, on the other hand.

Optimal utilization of space on the palettes is permitted by the bottle cases according to the invention due to the very close arrangement of the individual bottles within the case. With bottle cases according to the prior art, for example, one can dispose at most 80 bottles on one level of a palette, whereas the bottle case of the invention permits up to 120 bottles to be disposed on one level of a palette.

In the following, preferred embodiments of the invention will be described with reference to the drawings.

Figure 1 shows a side view along the longitudinal axis of a stackable bottle case according to the invention;

Figure 2 shows a side view along the transverse axis of the bottle case according to the invention;

Figure 3 shows a plan view of the bottle case according to the invention;

Figure 4 shows a partial cross section of the bottle case according to the invention;

Figure 5 shows two stackable bottle cases according to the invention in stacked form; and

Figure 6 shows the arrangement of several bottle cases according to the invention on one level of a palette.

Figure 1 shows a stackable bottle case made of plastic whose side surfaces 1 are composed of side walls 2 running around the bottom and supporting pillars 3 protruding upward on the edge side and spaced apart circumferentially, and which has a bottom serving to receive bottles limited inside the case by web walls and/or supporting sleeves. Supporting pillars 3 located on the case sides slant upward and slightly inward in this stackable bottle case with the outside surface directly flush in continuation of the side wall outside surface, thereby permitting fast centering of the bottle case above on the bottle case below in the empty state. Fast and uncomplicated stacking of empty bottle cases is thus possible according to the invention.

As evident from Figures 1, 2 and 5, upwardly protruding supporting pillars 3 are formed in one embodiment as tapered supporting pillars 3. The advantage of this becomes evident from Figure 5 showing two stacked bottle cases which can be stacked quickly and simply due to the special form of supporting pillars 3.

Figure 1 likewise indicates the shaping of handle 5 on the two long and two broad sides of the bottle case.

Between supporting pillars 3 side wall 2 is shaped as strip 6 which has a low height, being reduced essentially to strictly a supporting function since supporting pillars 3 on the edge side mainly contribute to holding the bottles, and which extends essentially not beyond the area of the bottom of the bottle placed in the case. Strip 6 is preferably formed with a near-bottom height. However, strip 6 can be shaped higher in the load-critical areas, i.e. in particular the corner areas, in order to ensure increased stiffness or stability of the bottle case in this area. A preferred height of side walls 2 located in these corner areas is half the height of supporting pillars 3 which rise above side walls 2.

Supporting pillars 7 can additionally be shaped in the corner areas, said pillars having a height such that their topmost edge is in a plane with the upper edge of supporting pillars 3. However, it is also within the scope of the invention for corner supporting pillars 7 to have a low height.

Figure 2 shows a side view along the transverse axis of the bottle case according to the invention, wherein supporting pillars 7 disposed in the case corners are offset inward at a distance of about one side wall thickness for the purpose of case stacking in the empty state. This embodiment thus permits easier and faster stacking of the bottle cases. Supporting pillars 7 can be slanted inward with their outside surfaces like supporting pillars 3. One can also provide a stepless connection of supporting pillars 7 with the side wall like the formation of supporting pillars 3.

Side walls 2 shown in Figures 1 and 2 are furthermore formed as single-webbed side walls.

Supporting pillars 3 can optionally be provided with stacking slots (not shown) for receiving bottom ribs passing through the interlocking stack on the cases stacked thereabove, in particular in offset stacking.

With consideration of the shaping of handles 5 in the bottle case above, supporting pillar 3 located directly below handle 5 in the bottle case below can be provided with notches or gaps 9 to permit handle 5 in the bottle case above to be received well by the bottle case below.

Figure 3 shows a plan view of the bottle case according to the invention. This plan view makes clear that the bottle case according to the invention permits a very space-saving arrangement of bottles, as illustrated by the single-webbed side walls between the individual bottles. This permits a great number of cases to be accommodated on one palette.

The supporting pillars can in addition have steps (not shown) which limit the height in the stacking of different bottle cases in order to prevent the cases from being damaged by excessive compression of the stacked cases.

At the same time, Figure 3 in conjunction with Figure 4 make clear that in the bottom area of the bottle case in the area below the bottle receiving means on the underside of the case there are receiving areas 10 having one or more

steps, thereby permitting the cap of the bottle therebelow to be received. Areas 10 are aligned with the caps of the bottles therebelow and bulge upward. This prevents the case stacked above from being supported on the middle of the cap and damaging it during transport. Since the stepped areas are connected by slopes, the case stacked above can also be removed quickly and safely. The multistep design further ensures that different-sized bottle caps can be used for one and the same case.

In addition one can form tabs, bars or tongues protruding from the web walls or sleeve walls inside the case in the corners of the receiving compartments for bottles 11, which are springy and act as retaining springs to prevent the bottles from rotating during transport and thus protect the bottles. These retaining springs are not shown in the drawing but hold the bottles in the case secure from rotation.

Figure 5 indicates how two stacked bottle cases engage in the empty state. Supporting pillars 3 located below handle 5 of the bottle case above engage via handle 5 the supporting pillar of the upper bottle case. The other supporting pillars are received in gaps on the underside of the supporting pillars above, which are expediently formed as hollow sections.

Figure 6 shows possible arrangements of a plurality of bottle cases on one level of a palette, thus making clear that, in contrast to conventional bottle cases according to the prior art, one can for the first time dispose up to 120 bottles on a pallet level conforming to standards, whose dimensions are given in Fig. 6 merely by way of example.



1. A stackable bottle case made of plastic whose side surfaces (1) are formed by side walls (2) running around the bottom and supporting pillars (3, 7) protruding upward beyond the side wall and disposed on the edge side spaced apart circumferentially, and whose bottom (4) has receiving means for bottles limited inside the case by web walls and/or supporting sleeves, characterized in that the supporting pillars (3) located in the area of the case sides (1) extend with their outside surfaces in essentially directly flush continuation of the side wall outside surface from there upward and on a slightly inward slant.

2. The stackable bottle case made of plastic whose side surfaces (1) are formed by side walls (2) running around the bottom and supporting pillars (3, 7) protruding upward beyond the side wall and disposed on the edge side spaced apart circumferentially, and whose bottom (4) has receiving means for bottles limited inside the case by web walls and/or supporting sleeves, in particular according to claim 1, characterized in that the side walls (2) are formed by a strip (6) running all around with a low, preferably near-bottom, height, i.e. a height extending not essentially beyond the area of the bottom of the bottle to be received in the case, and the side walls (2) are formed with greater height, preferably a height corresponding essentially to half the height of the supporting pillars (3), only in the load-critical areas of the case, preferably in the area of the case corners, for the purpose of stiffening the case.

3. The case of either of the above claims, characterized in that the supporting pillars (7) provided in the corner areas of the cases are offset inward by about one side wall thickness for the purpose of stacking cases in the empty state.

4. The case of any of the above claims, characterized in that the supporting pillars (7) located in the side area and optionally also those located in the corners extend on an inward slant from the strip (6) running all around for the purpose of stacking cases in the empty state.

5. The case of any of the above claims, characterized in that the side walls (2) are of single-webbed design.



This Sheet Has Been Replaced



- 8 -



6. The case of any of the above claims, characterized in that the supporting pillars (3) on the edge side are provided with stacking slots for receiving bottom ribs passing through the interlocking stack in the case stacked above.

7. The case of any of the above claims, characterized in that the bottom area has one or more steps on the underside of the case in the area below the bottle receiving means for receiving the caps of the bottles in the case stacked below, the part (10) of the case bottom aligned with the bottle cap preferably bulging upward.

8. The case of any of the above claims, characterized in that an opening (12) is disposed in the center of the bulge.

9. The case of any of the above claims, characterized in that the stepped bottom areas are connected with slopes in order to permit easy removal of stacked cases.

10. The case of any of the above claims, characterized in that the sleeves located inside the case in the corners of the receiving compartments (11) have a lower height than the supporting pillars (3), being formed in particular with a near-bottom height.

11. The case of any of the above claims, characterized in that the supporting pillars (3) and sleeves have flexible tongues protruding inward in the direction of the bottle receiving compartments for holding the bottles received in the case secure from rotation, the flexible tongues preferably protruding from the top to the bottom toward the interior of the receiving compartment.

12. The case of any of the above claims, characterized in that an essentially central handle (5) is provided on opposite sides, preferably on each side of the case, being formed by a recess in the side wall from the bottom area of the case.



* C L M S *