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3,220,558

BOTTLE HOLDER FOR OPEN-TOP STORAGE RECEPTACLE

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3 Sheets-Sheet 1

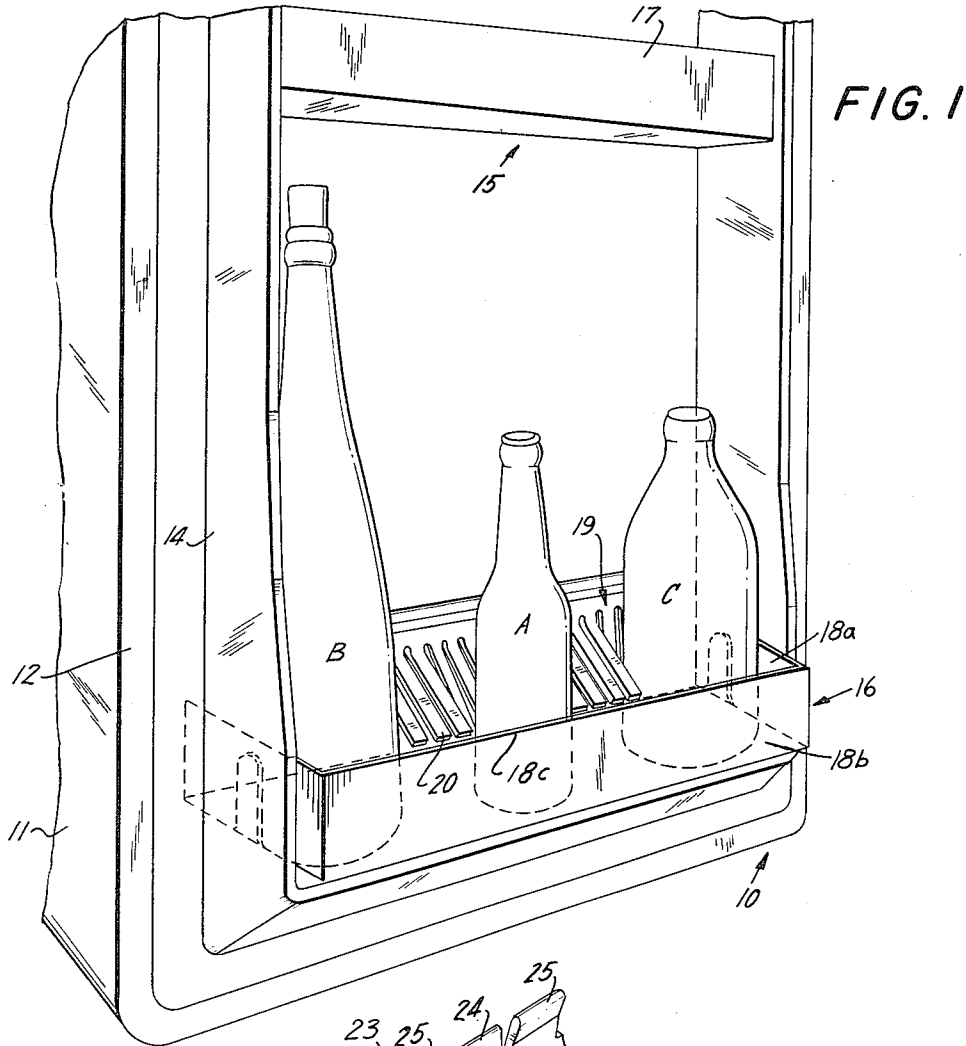


FIG. 1

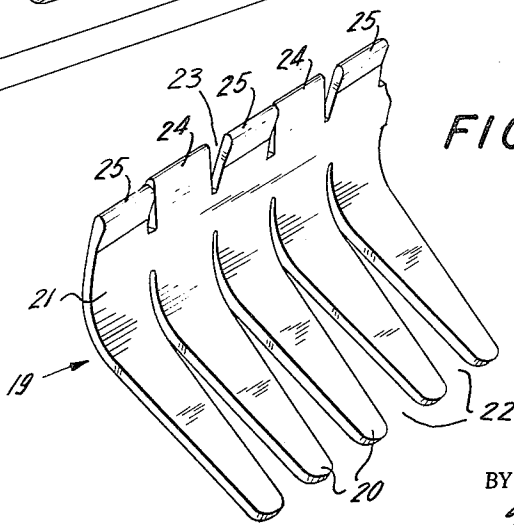


FIG. 3

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FIG. 5

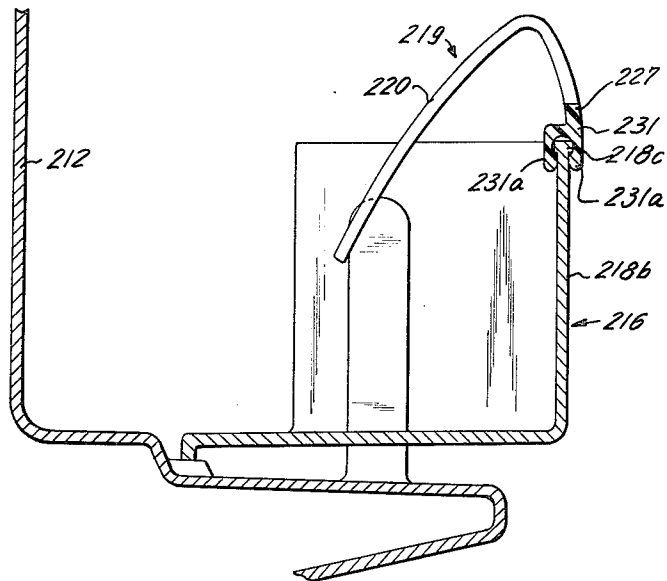
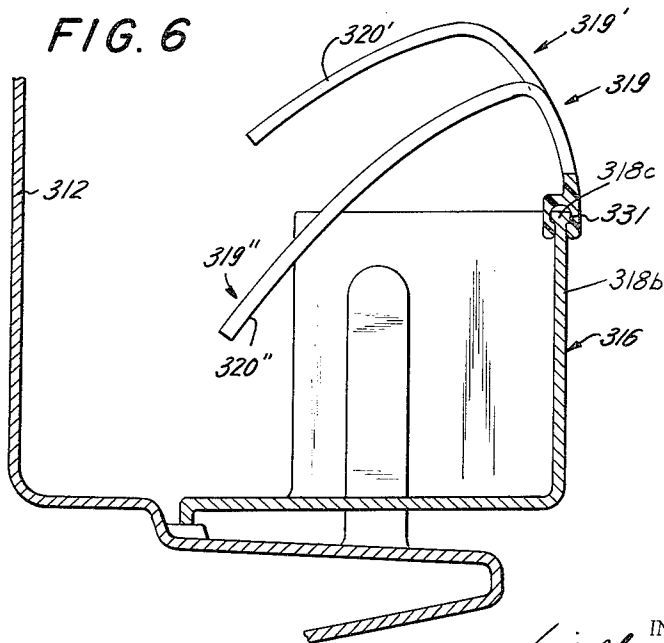


FIG. 6



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BOTTLE HOLDER FOR OPEN-TOP STORAGE RECEPTACLE

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10 Claims. (Cl. 211-74)

My invention relates to a bottle holder for open-top storage receptacle.

In household refrigerators having doors provided with open-top receptacles for storing bottles and other articles, when small bottles have been placed in an open-top receptacle designed to hold large bottles and the open-top receptacles are only partially filled, the bottles often fall over and break when the door is suddenly pulled open or slammed closed.

The object of my invention is to provide an inexpensive bottle holder for holding a plurality of bottles erect in an open-top receptacle when the receptacle is only partially filled or when it is occupied by bottles smaller than the receptacle is designed for.

The above and other objects and advantages of my invention will become apparent from the following description, taken in conjunction with the accompanying drawings forming a part of this specification, and of which FIG. 1 is a perspective view more or less diagrammatically illustrating the interior of the bottom part of a door of a household refrigerator provided with an open-top receptacle having a bottle holder embodying my invention; FIG. 2 is a fragmentary vertical sectional view of the door shown in FIG. 1; FIG. 3 is a perspective view of a part shown in FIGS. 1 and 2 to illustrate details more clearly; and FIGS. 4, 5 and 6 are vertical sectional views similar to FIG. 2 illustrating modifications of the invention.

Referring to FIG. 1, I have shown my invention in connection with a door 10 of a household refrigerator. The door 10 comprises an outer wall 11 and an inner wall or liner 12 having suitable insulation therebetween. A frame 14 having shelves 15 and 16 is fixed to the inner wall 12 in any suitable manner. The shelves 15 and 16 desirably are removably mounted on the frame 14, and the top shelf 15 is adjustable vertically on any suitable manner to provide a vertical space of desired height between the shelves. The top shelf 15, which has upstanding side and front walls 17, is of less depth than the bottom shelf 16 and provides a space for holding and storing articles which are relatively small. The bottom shelf 16, which has upstanding side and front walls 18a and 18b, respectively, and liner 12 cooperating therewith defines an open-top receptacle for storing bottles of different sizes and shapes, such as the bottles A, B and C, for example.

As best shown in FIG. 2, the frame 14 is formed with upright bosses 14a which are in the form of pegs and extend upward from the bottom 14b of the frame at the inner surfaces of the opposing frame sides 14c. The side walls 18a of the bottom shelf 16 are formed with vertical notches 18d which cooperate with the bosses 14a to removably hold the bottom shelf in position on the frame with a downwardly extending lip 16a of the bottom shelf bearing against a shoulder 14d of the frame bottom 14b.

In accordance with my invention, in order to hold the bottles erect in the open-top receptacle defined in part by the bottom shelf 16 even when the shelf is only partly filled, I provide a bottle holder 19 which extends

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lengthwise of the bottom shelf and is formed with flexible fingers 20 which function not only to hold the bottles against the front wall 18b of the shelf but also to hold the bottles in an upright position and prevent them from moving lengthwise of the shelf and falling over. The bottle holder 19 includes a zone or region 21 intermediate its top and bottom edges which is imperforate, the bottom part of the holder being notched at 22 to form the elongated flexible fingers 20 and the top part being notched at 23 to form relatively short stiff fingers 24 and 25. The alternate short fingers 24 and 25 are at an acute angle with respect to one another, the fingers 25 being inclined forward from the fingers 24.

The bottle holder 19 is fixed to the inner wall or liner 12 by an elongated fitting 26 having a first U-shaped portion 26a which extends through a horizontal slot 12a in the door liner and is fixed thereto in any suitable manner, as by riveting, for example. The fitting 26 includes a second U-shaped portion 26b which opens downward and has its closed end, which is wider than its open end fitting snugly against a shoulder or offset portion 12b of the door liner 12.

As seen in FIG. 2, the U-shaped portion 26b of the fitting 26 receives the short fingers 24 and 25 of the bottle holder 19. When successive fingers 24 and 25 are being inserted into the U-shaped portion 26b, the fingers 25 are pushed rearward into alignment with the fingers 24 and the fingers 24 and 25 are moved upward toward the closed end of the U-shaped portion 26b. When the tips of the fingers 24 and 25 reach the closed end of the U-shaped portion 26b, the fingers 25 move forward and assume their forwardly inclined position shown in FIG. 3. When this occurs the alternate fingers 24 and 25 are at an acute angle with respect to one another and press against the opposing side walls of the U-shaped portion 26b, which not only firmly anchors the bottle holder 19 in the fitting 26 but also makes it possible for the holder to be readily removed from the fitting when desired.

The bottle holder 19 is formed of an elastomeric material which may comprise any suitable resilient substance such as natural or synthetic rubber, or plastic such as polyethylene, for example. The bottle holder 19 is of such shape that when it is mounted on the door liner 12, the fingers 20, which are stiff and inflexible lengthwise of the shelf, slope downward and forward toward the front upstanding shelf wall 18b and assume the solid line position *d* in FIG. 2. In this unflexed position the fingers 20 are essentially straight from the imperforate zone 21 to their extreme tips and at an acute angle α to the door liner 12 which serves as the rear wall of the bottom shelf 16. When bottles of the sizes and shapes of the bottles shown in FIG. 1 are positioned on the shelf 16, the fingers 20 acting on the rearward-most parts of the bottles A, B and C will assume the dotted line positions *a*, *b* and *c*, respectively, shown in FIG. 2. In this figure the distances A', B' and C' from the front wall 18b toward the door liner 12 represent the diameters of the bottles A, B and C, respectively, positioned on the bottom shelf 16. From the rearward-most parts to the sides of the bottles, as viewed in FIG. 1, the fingers 20 acting on the different bottles are flexed to positions which are between the unflexed position *d* and the extreme flexed positions *a*, *b* and *c*. Hence, each finger 20 acting on a bottle is effectively employed to exert force on the bottle and functions to resiliently bias the bottle against the front wall 18b of the shelf 16. Further, the fingers 20 at each side of a bottle which do not exert forward thrusts on the bottle and are unflexed and in close proximity to the bottle function to hold it in an upright position and prevent it from

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slipping and falling on its side, especially when the shelf is not completely filled with bottles and the door is suddenly pulled open or slammed closed.

In the embodiment of the invention being described and shown in FIGS. 1 and 2, it will be noted that the bottle holder 19 is fixed to the door liner 12 at a region which is above the top edge 18c of the front wall 18b and the flexible fingers 20 extend downward through a vertical height from a point above the top edge 18c of the front wall 18b to a point below the top edge 18c thereof, at which region the fingers independently act upon bottles stored on the shelf to hold them erect. With this arrangement the flexible fingers 20 can assume any one of the several positions *a*, *b* and *c* shown in FIG. 2 to urge bottles against the front wall 18b in abutting relation therewith and hold them erect. In effect, the forward thrust exerted by the fingers 20 on the bottles includes a component of force acting toward the front shelf wall 18b which is at an angle inclined upward from the horizontal.

In FIG. 4, I have shown another embodiment of my invention in which parts similar to those shown in FIGS. 1 to 3 are designated by the same reference numerals to which 100 has been added. The bottle holder 119 in FIG. 4 is of inverted U- or V-shape having a plurality of flexible fingers 120 alongside one another which are like the fingers 20 in FIG. 3. The fingers 120 collectively form one arm of the bottle holder 119, the other arm 127 of which is fixed at 128 to the closed end 129a of a U-shaped bracket 129 having spaced sides 129b connected by the closed end 129a. The sides 129b of bracket 129 are formed with vertical notches 129c similar to the notches formed in the side walls 118a of the bottom shelf 116. The bosses 114a formed in the sides of frame 114 cooperate not only with the notches at the side walls of the bottom shelf 116 but also with the notches 129c in the sides 129b of the bracket 129 for removably holding in position the shelf 116 and also the bracket 129 upon which the bottle holder 119 is mounted.

In the embodiment of FIG. 4 the notches between adjacent flexible fingers 120 extend from the tips or outer free ends of the fingers to a zone 130 in the arm 127 which is immediately above the imperforate portion of arm 127 fixed to the closed end of the bracket 129. As in the first-described embodiment, the fingers 120 extend downward and are inclined from the vertical toward the front wall 118b of the shelf. Also, the fingers 120 extend through a vertical height from a point above the top edge 118c of the front wall 118b to a lower point below the top edge of the front wall at which region the fingers act upon bottles stored on the shelf to hold them erect.

In FIG. 5, I have shown a further embodiment of my invention in which parts similar to those shown in FIGS. 1 to 3 are designated by the same reference numerals to which 200 has been added. The embodiment of FIG. 5 differs from the previously described embodiments in that the bottle holder 219 is mounted on the front wall 218b of the shelf 216 and the bottles are held against the inner door wall or liner 212. The bottle holder 219 is of inverted V- or U-shape having a plurality of flexible fingers 220 alongside one another which are like the fingers 20 in FIG. 3. The fingers 220 have top and bottom faces or sides, respectively, and collectively form one arm of the bottle holder, the other arm 227 of which includes a hollow mounting bead 231 having an elongated recess and a passage which extends from the open bottom of the bead to the recess and is formed by downwardly extending lip portions 231a of the bead. The top edge 218c of the front wall 218b of the shelf 216 is enlarged and is of such size that it fits snugly within the recess of the mounting bead 231 and is wider than the gap between the spaced lip por-

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tions 231a of the bead. When the bead 231 is being forced downward on the front wall 218b of the shelf, the lip portions 231a spread apart to allow the enlarged top edge 218c of the front wall to pass through the narrow gap between the lip portions. When the enlarged top edge 218c of the front wall 218b is positioned in the recess of the mounting bead 231, the lip portions 231a snap together and frictionally grip the part of the front wall 218b below the enlarged top edge 218c to hold the bottle holder 219 in position. With this construction the bottle holder 219 can be easily attached to and removed from the front shelf wall 218b.

In FIG. 5 the flexible fingers 220 extend downward and are inclined from the vertical toward the rear wall or liner 212 of the door. The fingers 220 in FIG. 5 extend through a vertical height from a point above the top edge 218c to a point below the top wall edge 218c. However, the fingers 220 can be located at a higher level than in the previously described embodiments for the reason that they function to support the bottles against the door liner 212 instead of against the relatively short front wall 218b of the bottom shelf 216. Although the fingers 220 in FIG. 5 desirably should be located as high as possible so that they will hold relatively tall bottles erect, in this location they are not effective to hold relatively small bottles erect. In order that both small and large bottles may be held erect on the same shelf, the flexible fingers may be divided into groups located at different levels. This makes it possible for a bottle to be located according to its size in the position on the shelf where the flexible fingers are at the correct height to exert maximum thrust against its side and hold it erect. Such an embodiment is shown in FIG. 6 in which parts similar to those shown in FIGS. 1 to 3 are designated by the same reference numerals to which 300 has been added. In FIG. 6 the bottle holder 319 includes a first portion 319' which is similar to the bottle holder 219 in FIG. 5 and extends a part of the distance lengthwise of the shelf 316, and a second portion 319'' which is adjacent to the first portion 319' and extends another part of the distance lengthwise of the shelf.

The first and second portions 319' and 319'' of the bottle holder 319 may be formed with a common hollow mounting bead 331 similar to the mounting bead 231 in FIG. 5 for mounting the bottle holder at the top front edge 318c of the front shelf wall 318b of the bottom shelf 316. The fingers 320'' of the portion 319'' of the bottle holder 319 are at a lower level than the fingers 320' of the portion 319' and their extremities are nearer to the inner door liner 312 than the extremities of the fingers 320'. Hence, the flexible fingers 320'' will be most effective to hold small bottles and articles erect on the shelf 316, and the flexible fingers 320' will be most effective to hold large bottles and articles erect on the shelf.

In view of the foregoing, it will now be understood that in the embodiment of FIGS. 1 to 3, for example, the bottom shelf 16 provides an elongated supporting surface and first and second longitudinally extending retaining means 12 and 18b, respectively, are disposed at opposing longitudinal edges thereof. The supporting surface and first and second retaining means 12 and 18b, respectively, together with the end walls 18a, define an open-top receptacle. The one retaining means 18b functions as a retaining wall having a top edge 18c which defines in part the top opening of the receptacle.

The bottle holder is mounted on the first retaining means 12 by an elongated fitting 26 and comprises structure 19 which extends lengthwise of the shelf surface at the first retaining means 12 and includes a row of elongated fingers 20 which are relatively thin like fingers of a comb and substantially inextensible in the direction of their length and perpendicular to the one retaining means 18b. The gaps 22 separate the fingers 20 from one another from the tips or outer free ends thereof toward the first retaining means 12. The separated fingers 20 can

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be individually deflected and are independently movable from unflexed positions, as indicated at *d* in FIG. 2, to flexed positions, as indicated at *a*, *b* and *c* in FIG. 2. The elongated comb-like fingers 20 are independently movable down and up between unflexed and flexed positions, respectively, in adjacent vertical planes which pass lengthwise through the fingers and are substantially perpendicular to the one retaining means 18*b*. The separated fingers 20 in their unflexed positions, as indicated at *d* in FIG. 2, extend across the shelf surface from the first retaining means 12 toward the second retaining means 18*b* and both the top and bottom sides thereof slope downward toward their outer free ends or tips from a first region at one level to a second region at a lower level.

The fingers 20 are positioned so that the outer free ends thereof are removed from the shelf surface and the second retaining means 18*b* in their unflexed and flexed positions, as shown in FIG. 2. Each of the fingers 20, when moved and deflected to a flexed position by the bottles A, B and C positioned in the receptacle adjacent to the second retaining means 18*b*, as shown in FIG. 1, functions to resiliently bias the bottle coacting therewith against the second retaining means. The elongated fingers 20 at the sides of the bottles in FIG. 1 function to hold the bottles in an erect position because the relatively thin comb-like fingers are immovable sideways with respect to one another.

While I have shown and described particular embodiments of my invention, it will be apparent that modifications and changes may be made without departing from the spirit and scope of my invention, as pointed out in the following claims.

I claim:

1. The combination with a member providing an elongated supporting surface and first and second longitudinally extending retaining means at opposing longitudinal edges thereof, means including the supporting surface and the first and second retaining means defining an open-top storage receptacle for bottles, at least one of said retaining means functioning as a retaining wall having a top edge which defines in part the top opening of the receptacle, of a holder for a plurality of bottles, means for mounting said holder on said first retaining means, said holder comprising structure which extends lengthwise of said surface at said first retaining means and includes a row of elongated fingers which are relatively thin like fingers of a comb and substantially inextensible in the direction of their length and substantially perpendicular to said one retaining means, said fingers having top and bottom sides and being separated from one another from the outer free ends thereof toward said first retaining means, said separated fingers being flexible and independently movable from unflexed to flexed positions in adjacent vertical planes which pass lengthwise through said fingers and are substantially perpendicular to said one retaining means, said separated fingers in their unflexed positions extending across the supporting surface from said first retaining means toward said second retaining means and having both the top and bottom sides thereof sloping downward toward their outer free ends from a first region at one level to a second region at a lower level, and said fingers being positioned so that the outer free ends thereof are removed from said supporting surface and said second retaining means in their unflexed and flexed positions, each of said fingers when moved to a flexed position by a bottle positioned in said receptacle adjacent to said second retaining means functioning to resiliently bias the bottle against the latter.

2. The bottle holder set forth in claim 1 in which said elongated comb-like fingers are movable down and up between unflexed and flexed position, respectively, and immovable sideways with respect to one another.

3. A bottle holder as set forth in claim 1 in which the second region at the lower level and to which the outer

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free ends of said fingers slope downward from the first region is below the top edge of said one retaining means.

4. A bottle holder as set forth in claim 1 in which the first region at the one level and from which said fingers slope downward is higher than the top edge of said one retaining means.

5. A bottle holder as set forth in claim 1 in which both the first region at the one level and from which said fingers slope downward and the second region at the lower level and to which the outer free ends of said fingers slope downward from the first region are higher than the top edge of said one retaining means.

6. A bottle holder as set forth in claim 1 in which the first region at the one level and from which said fingers slope downward is higher than the top edge of said one retaining means and the second region at the lower level and to which the outer free ends of said fingers slope downward from the first region is below the top edge of said one retaining means.

7. The combination with a member providing an elongated supporting surface and first and second longitudinally extending retaining means at opposing longitudinal edges thereof, means including the supporting surface and the first and second retaining means defining an open-top storage receptacle for bottles, at least one of said retaining means functioning as a retaining wall having a top edge which defines in part the top opening of the receptacle, of a holder for a plurality of bottles, means for mounting said holder on said first retaining means, said holder comprising structure which extends lengthwise of said surface at said first retaining means and includes a row of elongated fingers which are relatively thin like the fingers of a comb and substantially inextensible in the direction of their length and alongside one another substantially perpendicular to said one retaining means, said fingers having top and bottom sides and being separated from one another from the outer free ends thereof toward said first retaining means, said separated fingers being flexible and independently movable from unflexed to flexed positions in adjacent vertical planes which pass lengthwise through said fingers and are substantially perpendicular to said one retaining means, said separated fingers in their unflexed positions extending across the supporting surface from said first retaining means toward said second retaining means and having both the top and bottom sides thereof sloping downward toward their outer free ends from a first region at one level to a second region at a lower level, and said fingers being positioned so that the outer free ends thereof are removed from said supporting surface and said second retaining means in their unflexed and flexed positions, each of said fingers when moved to a flexed position by a bottle positioned in said receptacle adjacent to said second retaining means functioning to resiliently bias the bottle against the latter.

8. A bottle holder as set forth in claim 7 in which said structure embodies gripping means and said structure mounting means comprises said gripping means for detachably mounting said structure in frictional engagement with said first retaining means.

9. A bottle holder as set forth in claim 7 in which said structure includes elongated first and second parts which are joined to one another and extend lengthwise of said surface at said first retaining means, said first part extending upward at said first retaining means and said second part extending across said surface from said first retaining means toward said second retaining means and having top and bottom sides sloping downward from the region at which said parts are joined to one another, said second part comprising said fingers.

10. A bottle holder as set forth in claim 7 in which said structure includes elongated first and second parts which are joined to one another and extend lengthwise of said surface at said first retaining means, said first part extending upward at said first retaining means and said second part extending across said surface from said first

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retaining means toward said second retaining means and having top and bottom side sloping downward from the region at which said parts are joined to one another, said first and second parts having slots to form said fingers which are separated from one another, said fingers extending from their outer free ends across said second part and terminating in said first part between the region at which said parts are joined to one another and the region at which said first part extends upward from said first retaining means.

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