

Aug. 24, 1965

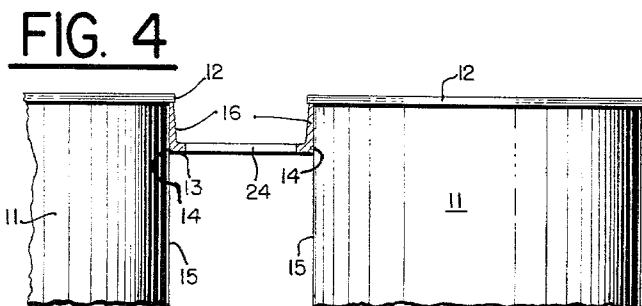
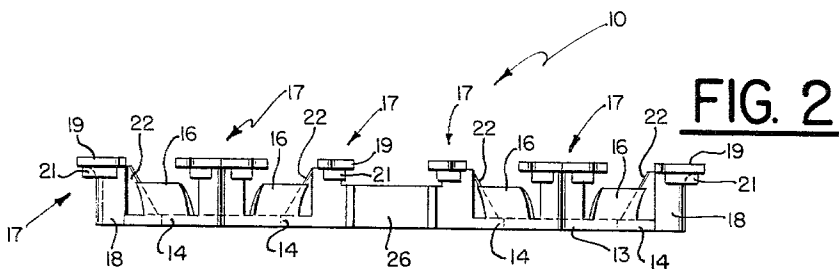
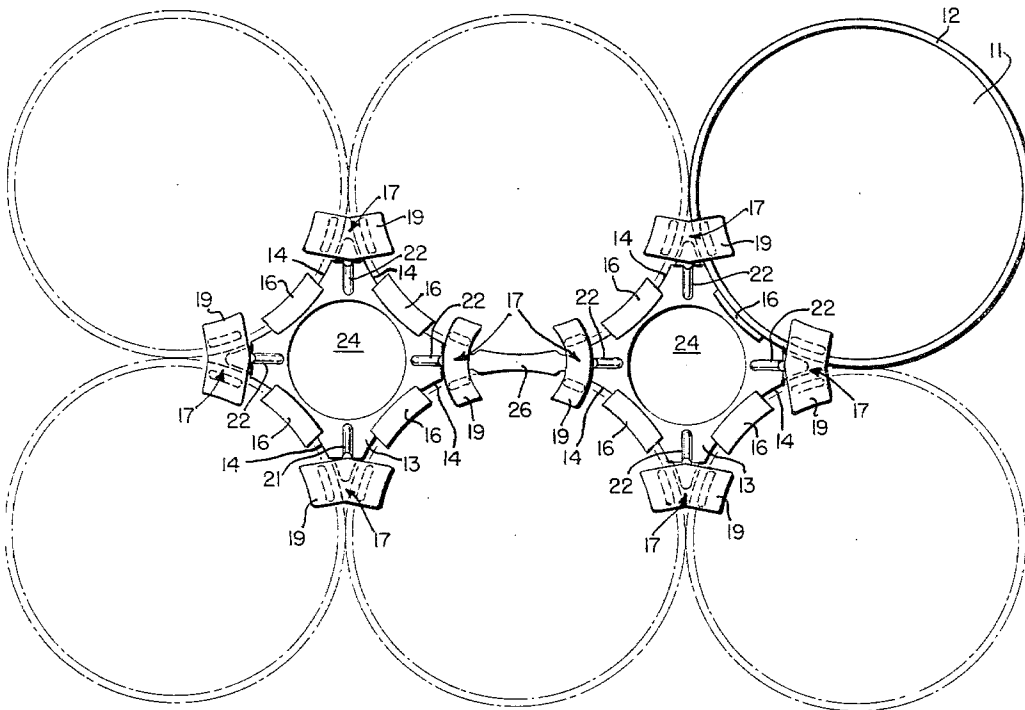
R. E. WHALEY ET AL

3,202,447

CAN HOLDING DEVICE

Filed Oct. 29, 1962

3 Sheets-Sheet 1



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FIG. 6

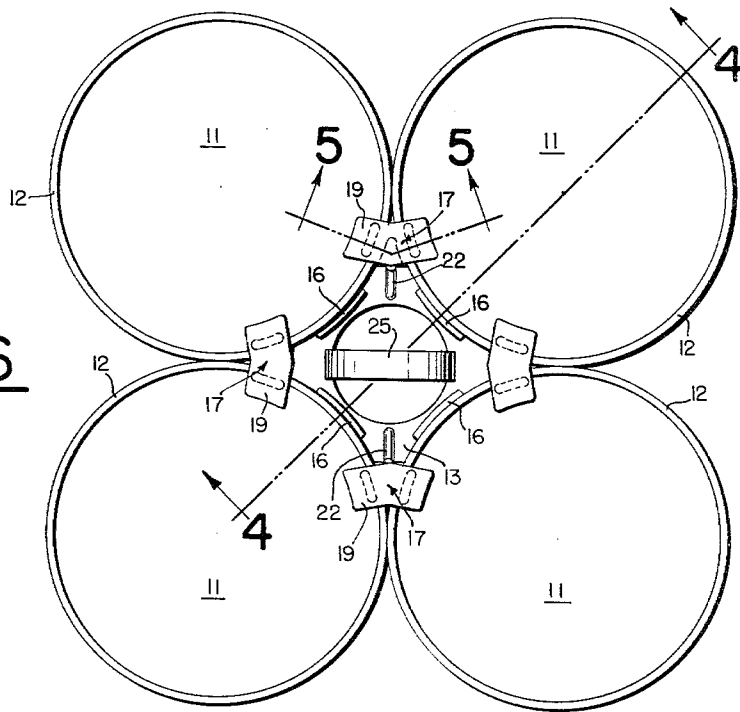


FIG. 7

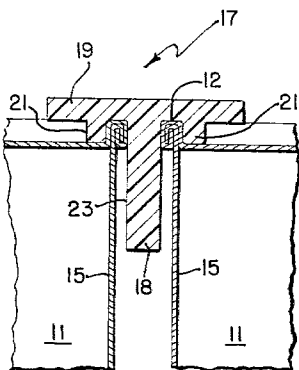
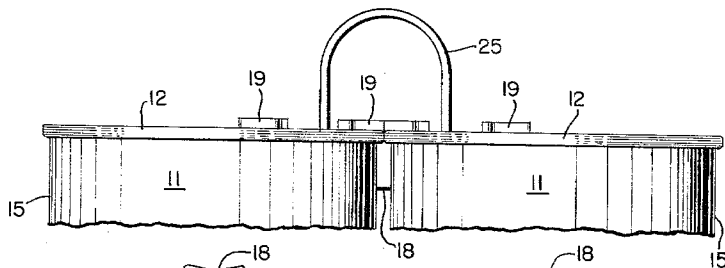


FIG. 5

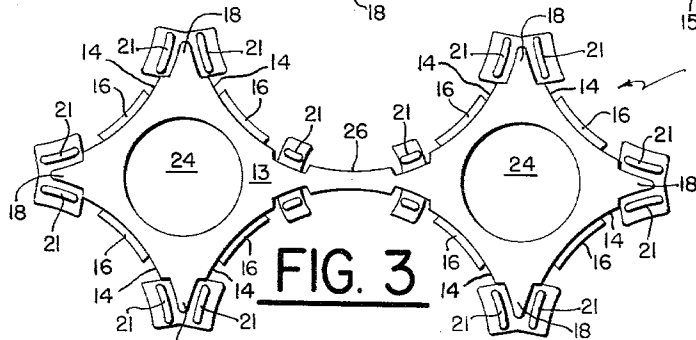


FIG. 3

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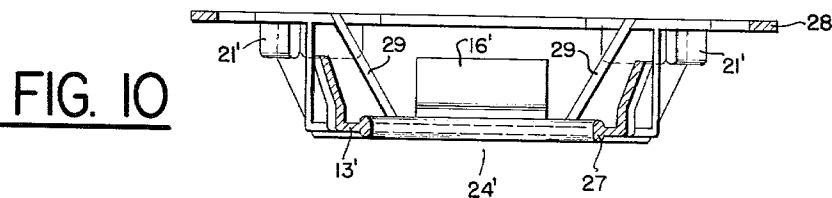
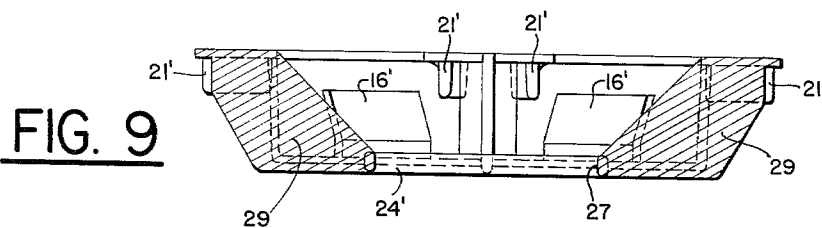
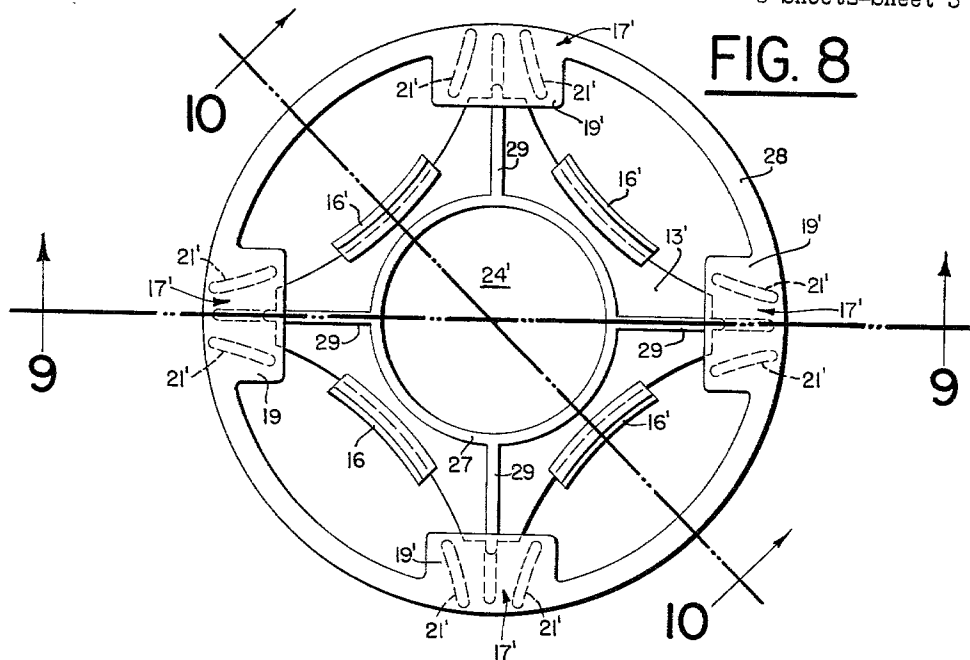
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CAN HOLDING DEVICE

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3 Sheets-Sheet 3



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3,202,447

CAN HOLDING DEVICE

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8 Claims. (Cl. 294—87.2)

This invention relates to a device for holding a plurality of cans in a compact package, and more particularly to an easily insertable clip device for holding a plurality of cans together in side-by-side relationship forming a retail package.

It has become customary when selling canned items that are normally purchased in multiple quantities, especially beer, and carbonated beverages in cans, although frequently also such other items as canned milk, dog food and frozen fruit juices, to prepackage a number of cans, usually six, although sometimes four or eight, in single packages so that the plurality of cans can be handled at the retail level and by the customer as a single unit. Most frequently the carrier for a multiple number of cans, referred to usually by such terms as a six-pack or carry home package or the like, consists of a cardboard or paperboard overwrap or box provided with open ends and with cut away or cut and folded portions for retaining the cans. Because of the elaborate printing, dieing and folding operations required to make such carriers they are relatively expensive to produce and because of the necessity that the can be inserted in the carrier and the carrier be sealed they are relatively expensive to fill.

As a replacement for such cardboard or paperboard carriers a variety of metal or plastic clip elements have been proposed. As far as we know all such plastic or metal clips that have been proposed heretofore require some sort of special handling for inserting the cans to be held. In some the individual cans have to be inserted separately into the clip or holder. In others a clip is required both at the top and at the bottom of an assembly of cans thus requiring that the assembly of cans be inverted. In still others it is necessary to crimp or bend a portion of the clip after it has been placed in position on the assembly of cans.

It is an object of this invention to provide a clip element that will hold a plurality of cans in a rigid package and yet can be inserted or snapped into position relative to the assembly of cans merely by being pressed into place.

It is a further object of this invention to provide a clip for retaining a plurality of cans in a compact, rigid package which utilizes the can itself as the major structural element in the package.

Other objects and advantages will become apparent from the drawings and the description that follows.

In the drawings:

FIG. 1 is a top view of a six pack unit;

FIG. 2 is a side view of FIG. 1;

FIG. 3 is a bottom view of FIG. 1;

FIG. 4 is a side view along line 4—4 of FIG. 6 showing in detail the action of the locking blade;

FIG. 5 is a side view along line 5—5 of FIG. 6 showing in detail the cooperation of the keeper element with the double seam area of the can;

FIG. 6 is a top view of a variation of the clip element shown in FIG. 4 designed for a four can pack and provided with an optional handle element;

FIG. 7 is a side view of FIG. 6;

FIG. 8 is a top view of a variation of the clip element shown in FIG. 6 provided with a ring element for further stabilizing the structure and for easy removal of individual cans from the package;

FIG. 9 is a section along line 9—9 of FIG. 8; and

FIG. 10 is a section along line 10—10 of FIG. 8.

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The clip of the present invention is intended to be used with the type of can known generally as the sanitary can. The sanitary can, the type of can in by far the most widespread use, can be identified by the structure of the junction between the can end and the can body. In a sanitary can this junction is a double seam formed by a two stage interfolding of the metal of the can body and the metal of the can end.

This double seam is formed in the following way in the seamer on the packaging line. The open end of the can body is provided with an outwardly extending flange at its upper end. The can end is provided with a flat center panel, an upstanding shoulder at the edge of the panel, a gasket retaining skirt outwardly of the shoulder and a downwardly extending flange at the edge of the skirt. The shoulder is designed to fit closely into the diameter of the can and the skirt is designed to extend over the flange on the end of the can body. After the can is filled the end is placed on top and the seam in the first stage is rolled sufficiently to engage the flange at the edge of the skirt with the edge of the flange at the end of the can body. In the second stage of seaming the out-standing interlocked edge is rolled back on itself to result in the structure (as shown in cross section in FIG. 5) known in the art as the hook.

Of importance to the present invention is the fact that the shoulder on the can end is always at least as long as the hook in order that full and direct pressure can be applied between the backing roller and the seaming rollers in the double seaming machine; that the double seam provides a rim at the end of the can that extends outwardly at least three times the thickness of the metal of the can body; that since it comprises in total five thicknesses of metal the double seam is the strongest portion of the can structure and that since the proper hooking and interlocking of the can end and the can body is the key to the proper sealing of the can, the dimensions of the hook both as to height and width is controlled within the closest possible tolerance limits.

The holding device of the present invention is designed to engage with, cooperate with and interact with the double seam of each of a plurality of cans relying on the strength and the rigidity of the double seam to provide a rigid, strong package of cans.

Can holding device 10 is designed to lock an array of cans 11 together, with double seam or bead 12 of adjoining cans 11 in direct contact with one another. Device 10 comprises a substantially flat frame 13 intended to be inserted in the space left between adjoining cans 11. Each side edge 14 of frame 13 is rounded and is designed to rest against the body 15 of the can 11 that it abuts. Each side 14 is provided with an upstanding flexible locking blade 16 substantially centered thereon and each intersection of sides 14 is provided with an upstanding bead engaging element or keeper 17.

Each locking blade 16 extends upwardly from frame 13 a distance of at least one-quarter of an inch and is preferably tapered from bottom to top having its widest section at the base. The outer edge of blade 16 is flush with the side 14 of frame 13 is curved similarly to side 14 and extends outwardly towards its upper end at an angle of about 20° from the vertical so that blade 16 can exert a substantial pressure against body 15 of can 11. The upper end of blade 16 is designed to engage the underside of bead 12 of can 11 (as shown in FIG. 4).

Each keeper 17 comprises an upstanding post 18 which supports transverse bridge or span element 19. Transverse bridge element 19 extends on both sides of post 18 and is designed to rest against the top of bead 12 of can 11. The underside of bridge 19 is provided with a pair of downwardly extending tabs 21, one on each end, de-

signed to engage the inner edge or shoulder portion of bead 12. Post 18 is arranged as close to the point of intersection of beads 12 of adjoining cans 11 as reasonably possible. Post 18 is normally provided with a thickened cross section for maximum strength and is also provided with a rearwardly extending reinforcing rib 22 which engages frame 13 for maximum stability. The sides 23 of each of posts 18 are designed to rest against the outer edge of beads 12 of cans 11. The relation of post 18, bridge element 19 and tabs 21 of keeper 17 with beads 12 is shown in detail in FIG. 5. Keeper 17 and blade 16 in each instance are not connected with each other except through frame 13. The exact dimension of each part except as otherwise specified is determined solely by the dimensions of the particular can 11 with which it is to be used.

As shown in the drawing the cans are arranged in a square array, i.e. the center of revolution of each can is arranged on the corner of a square. In such case each holding device unit would hold four cans and its sides would be equal length as shown. Even though not shown it is obvious that the same principle of operation would hold for a triangular array of cans in which case the holding device unit would have three equal length sides, and would hold three cans. Intermediate arrays of cans i.e. arrays in which the cans are arranged on an equilateral parallelogram can also be accommodated merely by revising the dimensions of the holding device unit by lengthening in a four-sided unit one opposite pair of sides, and by reducing the length of the other opposite pair of sides.

When the cans 11 are arranged in square array, or in a substantially square array, the center portion of frame 13 may be cut away to provide a finger hole 24 as shown in FIGS. 1, 3 and 4. If desired an upstanding loop 25 may be provided between a pair of opposing posts 18 to provide a convenient carrying handle as shown in FIGS. 6 and 7.

The basic four can unit is shown in FIG. 6. Six cans can be held in a single package by means of the use of two of such units; eight cans with three, etc. If desired, however, single units can be connected as shown in FIGS. 1, 2 and 3 by means of a connecting rib 26 extending from a post 18 in one unit to a post 18 of the adjoining unit between the body portions 15 of adjoining cans and beneath the abutting bead portions 12. In FIG. 1 only one can 11 is shown in locked position, the other five cans 11 are indicated only in phantom with the respective locking blade 16 in each instance in a released position.

A variant of the basic four can holding unit is shown in FIGS. 8, 9 and 10. Functionally this unit is the same as those shown in the other figures having a frame 13', flexible locking blades 16' and keepers 17' each having a bridge element 19' and downwardly extending bead engaging tabs 21'. The major differences with this variation is that the walls of finger hole 24' are provided with an upstanding bead 27 and bridges 19' are connected by means of ring 28 which extends over the tops of the cans. Both of these added elements are designed to increase the stability of the unit making it possible to merge upstanding posts 18 and reinforcing rib 22 into a single rib element 29. Ring 28 serves a secondary purpose in providing means for disengaging the individual locking blades 16' when the ring 29 is raised adjacent a locking blade 16' thus facilitating the removal of single cans from a multi-can unit.

The can holding device of the present invention can be fabricated readily by conventional plastic molding techniques from any suitable thermoplastic resinous material. Any strong non-brittle thermoplastic material, such as high impact polystyrene, polypropylene, linear polyethylene or linear polyamide, such as nylon, may be used. The choice of a suitable thermoplastic material is well within the skill of any experienced plastics molder.

A particular advantage of our can holding device is that it can be inserted readily into a preexisting array of

filled cans without requiring any special equipment for handling the cans. The unit snaps into place readily upon being pressed downwardly from above and once in place holds the units of cans securely without requiring a similar holding device at the other end of the unit or requiring any secondary holding means, such as a band or tape surrounding the cans. However, it is desirable especially if a strong package that can be handled roughly or can be inverted is required to apply our can holding device on both ends.

An important feature of the invention is the fact that locking blade 16 is physically separated from keeper 17, that it is curved similarly to side 14 and that it extends at a small angle between about 15° and 25° and preferably 20° to 22° from the vertical toward the can body. The distortion of locking blade 16 when a unit is placed on a can forces the inner side of bead 12 securely against tabs 21 and ensures engaging contact of the blade 16 against the underside of bead 12. Any outward pull caused by the weight of the contents of can 11 pressing against tabs 21 tends to distort posts 18 outwardly which in turn tends to distort frame 13. This distortion of frame 13 increases the pressure of curved locking blade 16 against body 15 and bead 12 of can 11. Thus the more pressure that is applied the more firmly does the holding unit hold the can. As a result the holding unit itself need not be rigid since the effectiveness of its gripping action does not depend upon its own strength but rather upon the strength and rigidity of the bead area of the can being held.

Because locking blade 16 lies substantially flat against the rounded side of can 11, and because like side 14 it is rounded similarly to the side of can 11, there is very little, if any, tendency for locking blade 16 to buckle or bend under pressures exerted downwardly. Since blade 16 is so rigid with respect to downward forces it is permissible especially if it is desired to produce a unit that can be inserted directly into an array of cans having direct bead to bead contact to proportion frame 13 so that sides 14 just clear the outer radius of bead 12. In this case side 14 will be curved similarly about the side of the body of can 11, but upon being inserted will clear the side by approximately the difference in radius of the can body and the can bead. The term "adjacent" used in the claims is intended to include both those instances where side 14 is dimensioned to contact directly the side of the body of can 11 and those instances where side 14 is dimensioned when inserted to clear the body by substantially the difference between the bead and body radius.

While the device has been described in terms of an array of cans in which the beads of the cans are in direct contact it is desirable in some instances to separate the cans slightly so that there is no possibility of the cans banging together while being transported. This may be accomplished readily by extending rib element 29 for example so that it passes between the beads of otherwise abutting cans. If such a spacer piece is employed it is contemplated that both beads would be in direct contact with the spacer piece and that therefore the combination would be the mechanical equivalent of direct bead to bead contact. The term "bead to bead contact between abutting cans" should be read to include the provision of a thin piece of material against which both beads of otherwise abutting cans rest as a full equivalent.

In addition to being connected by a connecting rib 26 that passes between body portions 15 of adjoining cans and beneath abutting bead portions 12 it is obvious that a plurality of units can be connected by spacer pieces as discussed in the preceding paragraph or by connectors that extend from unit to unit across the top of the cans.

The scope of the utility of this invention should not be limited merely to the formation of units 4, 6 or 8 cans. For example, an entire layer of a case of cans may be interconnected by means of a plurality of such connecting devices so that the entire layer of cans may be trans-

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ferred from the case to a store shelf in a single operation. For such use it is desirable to provide a mat of holding devices interconnected by span means extending from device to device over the top of the cans.

We claim:

1. Means for holding a plurality of cans of the type having an outstanding bead at the junction of the can end and the can body and for forming a rigid package therefrom when the cans are arranged in a regular array with bead to bead contact between abutting cans, said means comprising a frame member adapted to be inserted in the void between abutting cans and to rest adjacent the body of each such abutting can; a plurality of horizontal span members supported by said frame, each such span member adapted to pass over the bead portions of two such abutting cans near the point of contact therebetween; a downwardly depending vertical tab on each side of each such span member adapted to lie against the inside edge of the corresponding bead and a plurality of locking blades extending upwardly at the sides of said frame, each said locking blade adapted to lie against the body of one such abutting can and to engage with and cooperate with the underside of the outer edge of the bead of such can, each said span member located at the junction of two sides of said frame and each said locking blade being centered on the corresponding side of said frame intermediate said junctions.

2. A can holding device as claimed in claim 1 wherein each said locking blade extends at least one quarter inch above the top of said frame.

3. A can holding device as claimed in claim 1 wherein each said locking blade extends outwardly at an angle

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of about 20° from the vertical whereby pressure is exerted against the abutting can to force the bead of such can into firm contact with said downwardly extending tab.

4. A can holding device as claimed in claim 1 adapted to hold cans arranged in a quadrilateral array wherein the frame of said device is provided with four sides, four locking blades each intermediate on one of said sides and four span members each located at a junction of two of said sides.

5. An assembly of a plurality of can holding devices of the type claimed in claim 1 wherein said devices are connected one to another by a span extending from a junction of the sides of one such device to a junction of the sides of another such device.

6. A can holding device as claimed in claim 1 wherein all of said span members are interconnected by a circular member adapted to extend over the top of the cans.

7. A can holding device as claimed in claim 4 wherein the center portion of said frame removed from the sides is provided with an aperture.

8. A can holding device as claimed in claim 4 wherein an upstanding handle is provided mounted between two opposing spans.

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