

May 10, 1966

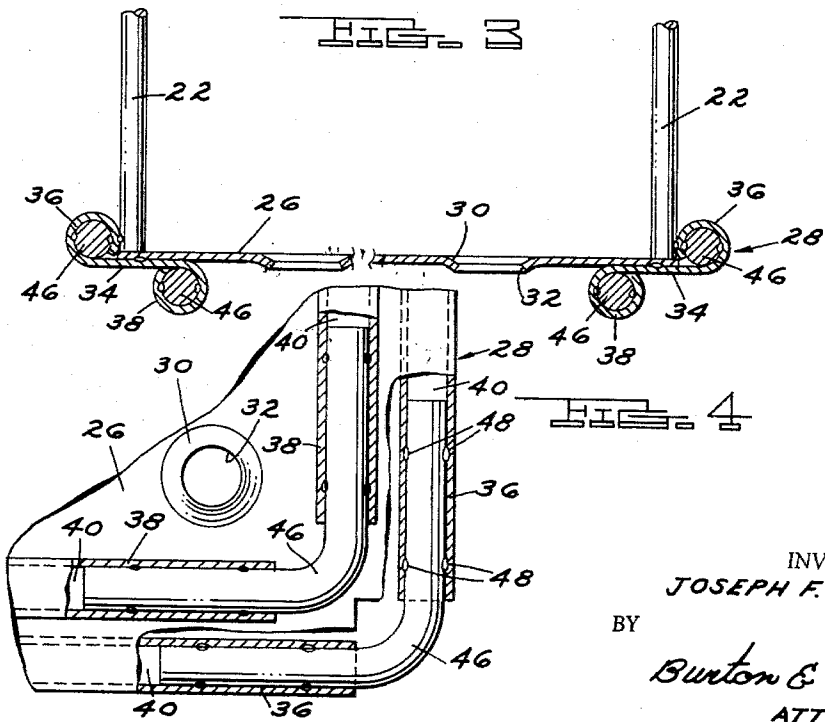
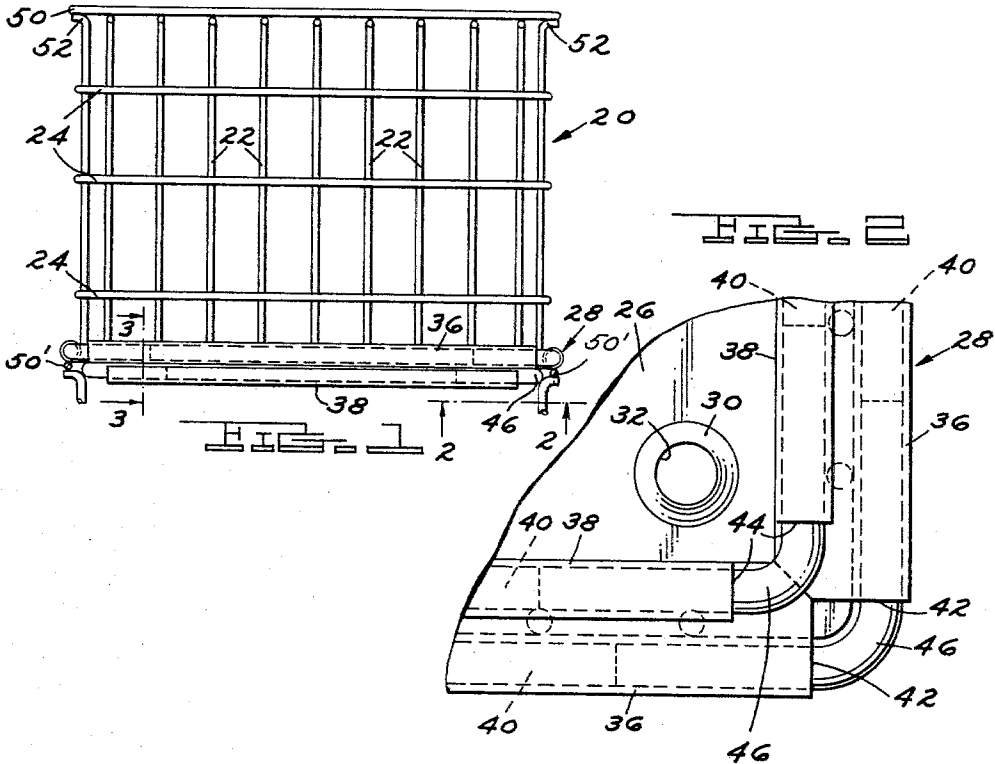
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3,250,430

CASE BOTTOM CONSTRUCTION

Filed May 7, 1963

2 Sheets-Sheet 1



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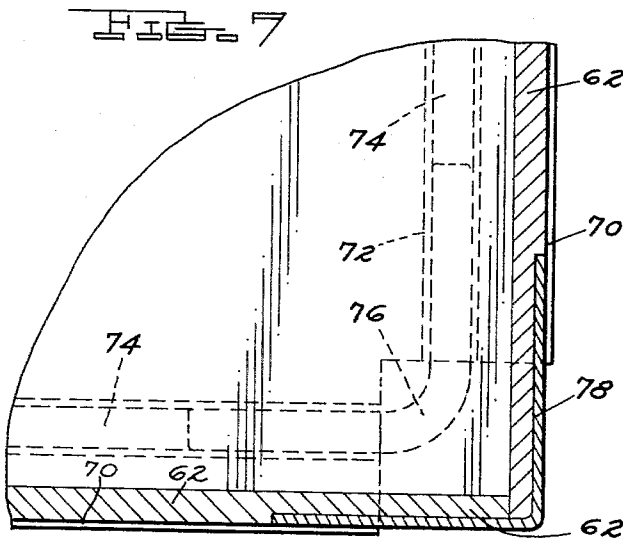
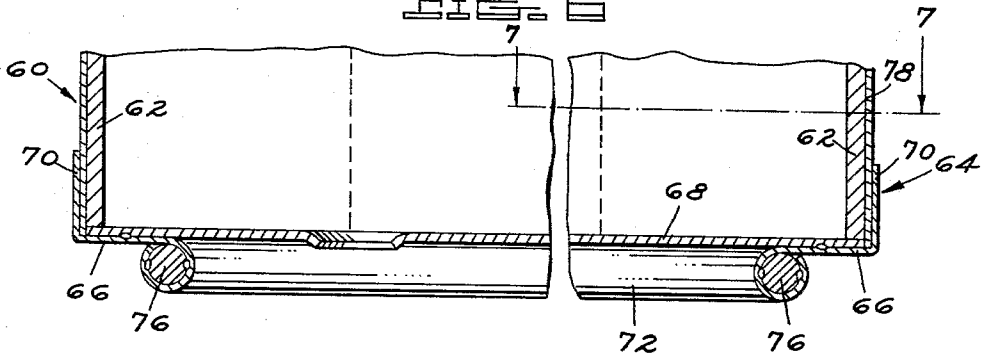
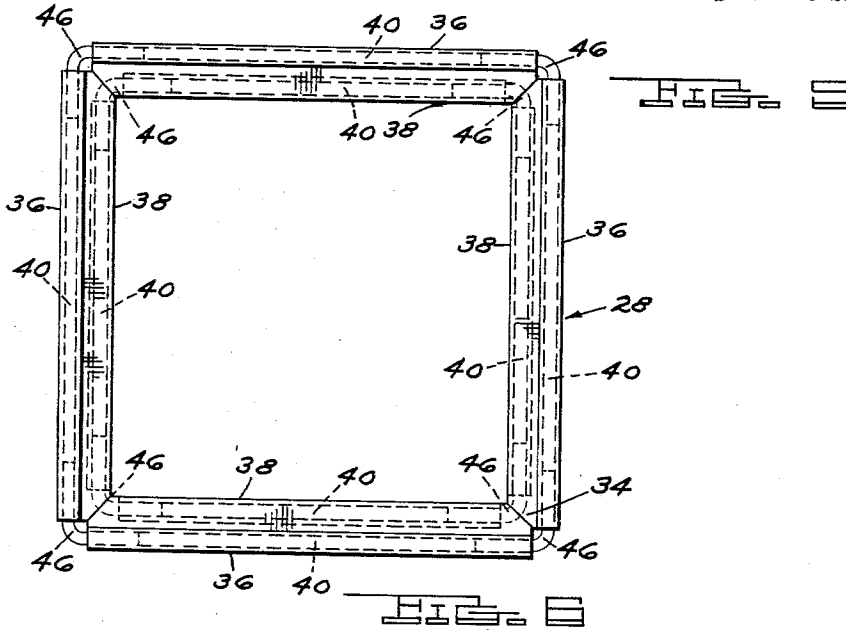
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2 Sheets-Sheet 2



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**CASE BOTTOM CONSTRUCTION**

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4 Claims. (Cl. 220-73)

This invention relates to carrying cases, and more particularly to a new and improved bottom construction for carrying cases designed primarily for carrying milk bottles, cardboard milk cartons and other dairy products. Although the invention will be described herein with emphasis on satisfying the requirements of the dairy industry, it will be apparent that the invention may be utilized for many other applications.

With the advent of equipment in the dairy industry such as automatic casing machines, case stackers and unstackers, in-floor conveyors and the like, the necessity of providing carrying cases embodying certain features enabling the more efficient utilization of such equipment has become apparent. Sanitation is of course of prime importance in handling any product for human consumption, so a case construction must be provided which may be easily and thoroughly cleaned. In addition, the cases must be rugged and able to withstand rough handling, severe variations in temperature and moisture conditions, etc. without damage or deterioration.

When using an automatic casing machine to fill the carrying cases with bottles, cartons or the like, the cases must be of proper dimensions or the machine cannot operate properly to deposit the articles therein. Dimensional stability is equally important when the cases are to be handled by stackers which stack the filled cases in tiers five, six or more cases high. The stacked and filled cases are dragged or conveyed by in-floor conveyors along concrete dairy floors, rough surfaced metal platforms and the like. The entire weight of the stack of cases is borne by the stacking frame or ring of the bottom case, and the abrasive wear on the stacking frame of such cases as they are slid over rough concrete floors or metal platforms is tremendous.

As these carrying cases are usually stacked one on top of the other and transported while in stacked relation, some means must be provided to prevent substantial relative movement of the stacked cases. Otherwise the cases may slide over each other and topple to the floor. While various structures have been proposed to solve this problem, the most satisfactory construction incorporates a stacking element or ring extending from the bottom of the case and spaced inwardly from the periphery of the bottom to be received within the upper end of a corresponding subjacent case. Such a stacking element not only serves to prevent substantial relative lateral shifting of the stacked cases, but also serves as a support member upon which the case rests and which slides easily over rough surfaces when the case is dragged over the dairy floor or the like.

One of the chief objections to prior carrying case constructions embodying a so-called stacking ring extending from the bottom of the case is that the rings frequently become deformed and/or actually break away from the case during use. As such rings have been made out of metal drill rod or the like, they are subject to substantial bending and twisting during the rough handling normally encountered in everyday use in the dairy. Further, these rings are generally secured to the metal plate or wire case bottom members by welding, and as the rings are of circular cross section, the area of contact between the ring and the case bottom, and hence the area of the weld, is comparatively small. Thus the welds are frequently broken, and the ring bent out of shape or torn away from the case.

Another problem encountered with presently available case constructions is that they frequently become deformed "out of square" when subjected to the blows and strains of normal use. When the cases assume a shape other than rectangular, the deposit of milk bottles or cartons therein is rendered more difficult, if not impossible, when automatic casing machines are used. Therefore, the cases should be sufficiently rugged and rigid enough to withstand deformation.

It is thus a general object of the invention to provide a carrying case having the characteristics of ruggedness and dependability necessary to satisfy the needs of the dairy industry, which case may be simply and easily manufactured and which is provided with a novel bottom construction incorporating a stacking element or ring for preventing relative lateral shifting of stacked cases.

Another object of the invention is the provision in such a carrying case of a bottom construction including a peripheral frame having a stacking element or ring formed integrally with the frame, whereby the case bottom and side walls may be secured to the frame to provide a rugged, substantially non-deformable case.

A further object of the invention is the provision in a carrying case of a bottom peripheral frame construction including a stacking ring, which frame may be manufactured separately from the remaining parts of the case, with the bottom and side walls of the case being subsequently secured to such frame, whereby various bottom and side wall case constructions may be provided as desired, with a single frame being adapted to all of the different constructions.

Another object of the invention is the provision in a carrying case of a tacking element or ring comprising a strip of sheet metal wound tightly around a reinforcing rod or dowel, with a portion of the metal strip underlying the marginal edges of the case bottom and other portions of the strip embracing the lower marginal edges of the case side walls, said bottom and side walls being secured to the respective portions of the strip to provide a rugged case.

Another object of the invention is the provision of a carrying case having an article-supporting bottom and side walls of open wire work construction, and a perimetrical sheet metal frame member underlying and secured to the bottom, with one linear edge of the frame member wound about a reinforcing dowel to provide a stacking ring underlying the case bottom, and an opposite linear edge of the frame member being wound about a second reinforcing dowel engaging the lower end of the side wall wire members and secured thereto, the sheet metal frame member serving to rigidly connect the bottom and side walls of the case to provide a unitary structure.

A further object is the provision of a unitary bottom construction for a carrying case wherein the case bottom may be easily and conveniently detached from the case side walls and a new bottom installed in the event the bottom becomes damaged or broken.

Other objects, advantages and meritorious features will more fully appear from the following specification, claims and accompanying drawings, wherein:

FIG. 1 is a side elevation of a carrying case having side walls of wire construction and a bottom construction embodying the invention;

FIG. 2 is a partial view of a bottom corner of the carrying case taken along line 2-2 of FIG. 1;

FIG. 3 is a cross-sectional view through the carrying case bottom, partly broken away, taken on line 3-3 of FIG. 1;

FIG. 4 is a view similar to FIG. 2, but with certain portions being broken away to show details of the bottom corner construction;

FIG. 5 is a top plan view of the perimeter frame structure for the bottom of the case shown in FIGS. 1-4;

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FIG. 6 is a cross-sectional view similar to FIG. 3 but showing a bottom construction for a case having panel side wall members; and

FIG. 7 is a partial cross-sectional view through a corner of the case of FIG. 6, taken along line 7—7 of FIG. 6.

Referring more particularly to the drawings, there is shown in FIG. 1 a carrying case 20 having upstanding sides and ends made out of vertical wires 22 and horizontal wires 24 interconnected as by welding or the like. The case bottom comprises an article-supporting floor 26 and a bottom perimeter frame shown generally at 28 and described more fully herebelow. The floor 26 may be formed of a sheet metal plate, as shown, in which case the plate is provided with a plurality of spaced embossments such as at 30 projecting downwardly out of the plane of the plate, each embossment having a central aperture 32 therethrough to permit water, milk or other liquids to drain from the case. While the drawings show a sheet metal floor, it will be obvious to one skilled in the art that various other floor structures could be utilized, as for example a series of wires or an expanded metal sheet extending across the lower end of the case.

The frame 28 comprises a peripheral strip of sheet metal 34 formed to define tubular beads 36 and 38 about all four sides of the case. Each hollow bead 36 and 38 has a wood reinforcing rod or dowel 40 disposed therewithin. Each outer linear edge of the strip 34 is tightly wound around a respective wood dowel 40, the strip being bent upwardly and inwardly back upon itself to provide a substantially closed tube 36 with the dowel embraced therewithin. Similarly, the inner linear edges of strip 34 are tightly wound about similar dowels 40, but the strip is bent downwardly and outwardly back upon itself to provide tube 38 embracing the dowel. As shown most clearly in FIG. 3, the intermediate portion of strip 34 underlies the case bottom or floor member 26 and is secured thereto. The outer bead 36 projects upwardly beyond the bottom and engages the outer lower marginal edges of the vertical wires 22, with each wire being secured to the bead as by welding, brazing or the like. The floor 26 may also be secured to the strip 34 by welding, brazing or the like, and if the floor is of sheet metal, as shown in the drawings, it could equally as advantageously be secured to the strip by means of rivets or the like.

Preferably, the corner portions of the strip 34 are cut out as at 42 so that the beads 36 terminate short of the corner (see FIGS. 2 and 4). The beads 38 are likewise cut off short of forming a sharp corner as shown at 44. L-shaped corner members 46 are then provided, which are made of heavy metal wire, drill rod or the like. The wood rods 40 have their opposite ends spaced inwardly from the open ends of the beads 36 and 38, and the ends of the corner members 46 are embraced within the beads. Although the gripping engagement of the sheet metal about the corner members is generally sufficient to retain the corner members, such are usually spot welded or brazed as shown at 48 in FIG. 4 to provide positive assurance against dislodgement of the corners.

As shown in FIG. 5, the frame 28 comprising the strip 34, wood rods 40 and corner members 46 may be constructed to provide a rugged support for the case bottom and side walls, which may be then conveniently positioned on the frame 28 and secured thereto as by welding, brazing or the like to complete the case. Preferably the marginal edge of the bottom plate 26 underlies the vertical wires 22, and so the plate 26 is first positioned on the frame and then the side and end walls are positioned with the lower ends of the vertical wires 22 juxtaposing the plate 26 (see FIG. 3). Generally the wires 22 and 24 will be welded or brazed together to form the walls, and then the completed wall structure will be placed in position and secured to the bead 36 of strip 34.

As can be seen by reference to FIG. 1, the upper end of the case 20 is defined by a top perimeter frame wire 50, and the vertical wires 22 terminate at their upper

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ends below the upper surface of the frame wire 50. When the cases are stacked one on top of the other, the top perimeter frame wire 50 of the subjacent case supports the upper case. With the cases stacked, the stacking element or ring comprising the bead 38 and corner members 46 prevents substantial relative lateral shifting of the stacked cases. As will be obvious from a consideration of FIG. 3, the top perimeter frame wire of the subjacent case may be in register with the outer bead 36 or it may lie spaced inwardly therefrom underlying the strip 34 immediately adjacent the inner bead 38. Thus there is provided some latitude in the dimensions of the top wire 50, and such could be slightly smaller than as shown in FIG. 1, wherein the vertical wires 22 are flared slightly outwardly as at 52 for securement to the top wire 50. The construction shown in FIG. 1, however, facilitates the deposit of bottles, cartons or other articles within the case, as the top opening of the case is slightly outwardly flared.

In addition to providing a construction which permits easy assembling of the elements going to make up the completed case, the outer peripheral bead 36 (including the corners 46) serves effectively to prevent damage to the wires 22, 24 and 50 which form the side and end walls of the case. In the event two of the cases resting on a floor are banged against each other, the beads 36, projecting beyond the side wire members, will strike each other and absorb the shock of the impact, and the walls of the case will not be bent out of shape. Similarly, if a stack of cases is pushed against a wall or other abutment, the beads or bumpers 36 will contact the wall and absorb the shock of impact, preventing damage to the case 20.

The stacking element or ring 38, in addition to preventing lateral shifting of stacked cases, serves equally as a case-supporting member when the case is resting on the floor. When the case is slid along the dairy floor or other surface, the stacking ring 38 is the only part of the case in contact with such surface, permitting the case to slide quite easily, even over rough and uneven surfaces. Although the elements 36 and 38 may be of any desired cross-sectional shape, they are preferably circular, and so are the wood rods 40 and metal corner members 46. This facilitates fabrication of the entire frame 28, and also permits the case to be more easily slid along the floor on the stacking ring 38.

In FIGS. 6 and 7 there is shown a bottom construction for a carrying case 60 having vertical walls 62 made out of panels as opposed to the wire construction shown particularly in FIG. 1. The walls 60 may be wood, plastic, sheet metal, or any other suitable material. Wood panels have been used with excellent results. A bottom perimeter frame 64, generally similar to the frame 28 previously described, extends completely about the bottom of the case. Frame 64 comprises a sheet metal strip 66 underlying the case bottom or floor 68 and having an outer linear edge portion upturned to provide a flange 70 overlying the lower marginal edge of the vertical walls 62. The inner linear edges of strip 66 are formed to provide a depending stacking ring 72 identical in construction to the ring 38 of FIGS. 1-5 described hereinabove. Stacking ring 72 has wood reinforcing rods 74 and metal corner rods 76 corresponding to rods 40 and 46 of ring 38.

Case floor 68 may be made of sheet metal, as shown, or of spaced apart wires, expanded metal, or other suitable material. In any event strip 66 underlies the marginal edges of floor 68 and is secured thereto in any convenient fashion, as by welding or brazing. Flange 70 embraces the lower edge of the walls 62 and is secured thereto in any convenient fashion. In the event walls 62 are made out of wood, as is preferable, flange 70 may be conveniently secured by means of rivets or screws. In addition, there are provided corner strips 78 which extend around each corner of the case con-

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necting the walls 62 and providing reinforced corners for the case. As shown in FIGS. 6 and 7, wall members 62 may be notched to provide a recess within which the corner members 78 are set to provide a smooth outer surface, and the members 78 are fastened to the walls by rivets or the like. Flange 70 of strip 66 overlies a portion of the members 78 and may be welded thereto.

The structural features above described and shown in the drawings provide a carrying case far superior to those presently available to the dairy industry. One definite advantage of the instant carrying case lies in the provision of the bottom perimeter frame having the novel stacking ring as an integral part thereof. As pointed out above, the frame may be constructed entirely separately from the floor and side walls, and these latter parts may be fabricated and then easily and conveniently secured to the frame to provide a completed case. The frame imparts ruggedness and dimensional stability to the case, thus assuring longer case life. The sheet-metal-wrapped wood rods shown and described have been found to be much more durable than previously available designs. The wood reinforcing rods serve to impart strength and rigidity, not only to the stacking ring and/or bumper ring, but also to the entire bottom frame of the case. Wood alone would not be sufficiently durable for such use, but with sheet metal wound around the wood there is presented a structure combining the superior wear qualities of metal plus the advantages of wood. For example, a solid metal wire stacking ring may become bent and deformed from sharp blows, whereas the wood-reinforced ring is substantially rigid and non-deformable.

Furthermore, when a circular metal wire stacking ring is welded to the bottom wires or metal plate forming the case floor, the area of contact between the two members is quite small, and hence the weld may be broken and the wire bent from a fairly light blow against the ring. With the present construction, on the other hand, the area of contact between the member defining the stacking ring and the case floor is quite large, and the two may be secured together to provide a very strong unitary structure. The rod-like metal corner members with opposite ends secured within the sheet metal tubes or beads considerably simplify the construction of the case bottom and provide an almost indestructible corner. As these members are comparatively short, and L-shaped, they are very hard to deform, and will absorb a heavy blow without substantial damage.

There is thus disclosed herein a novel bottom construction for a carrying case which is rugged, wear-resistant, substantially non-deformable, and practically indestructible.

I claim:

1. In a rectangular carrying case having an article-

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supporting bottom and vertical side walls and open at the top, a perimetrical sheet metal strip underlying the outer peripheral edge of said bottom and secured to the bottom and having upwardly extending outer marginal edge portions overlying the lower marginal edges of said side walls and secured thereto, said strip having inner linear edge portions each formed into a tubular bead displaced downwardly out of the plane of the strip with each bead terminating in open opposite ends spaced from the ends of adjacent beads, a wood reinforcing dowel grippingly secured within each bead having opposite ends spaced from the ends of the bead, a metal corner dowel having opposite end portions secured within each adjacent pair of bead ends, said beads and corner members defining a stacking element spaced inwardly from the periphery of the case bottom to be received within the upper end of a corresponding subjacent case to prevent substantial relative lateral shifting of the stacked cases.

2. The invention as defined in claim 1 characterized in that said case side walls are of panel construction, and said outer marginal edge portions of the strip define vertical flanges overlying the lower marginal edges of said panel side walls and secured thereto.

3. The invention as defined in claim 2 characterized in that said case side walls of the case include sheet metal angle members overlying the corner intersections of said panel side walls, said sheet metal angle members being secured to the panel side members and said vertical flange portions of said perimetrical strip embracing the lower marginal edge of said angle members and secured thereto.

4. The invention as defined in claim 1 characterized in that said case side walls are of open wire-work construction, and said outer marginal edge portions of the strip define tubular beads displaced upwardly out of the plane of the strip and secured to the lower marginal edges of said wire side walls.

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