Dec. 18, 1945. H. K. DICKERMAN 2,391,230

AMMUNITION CARTON

Filed Jan. 28, 1942 2 Sheets-Sheet 1

Fig. 1.

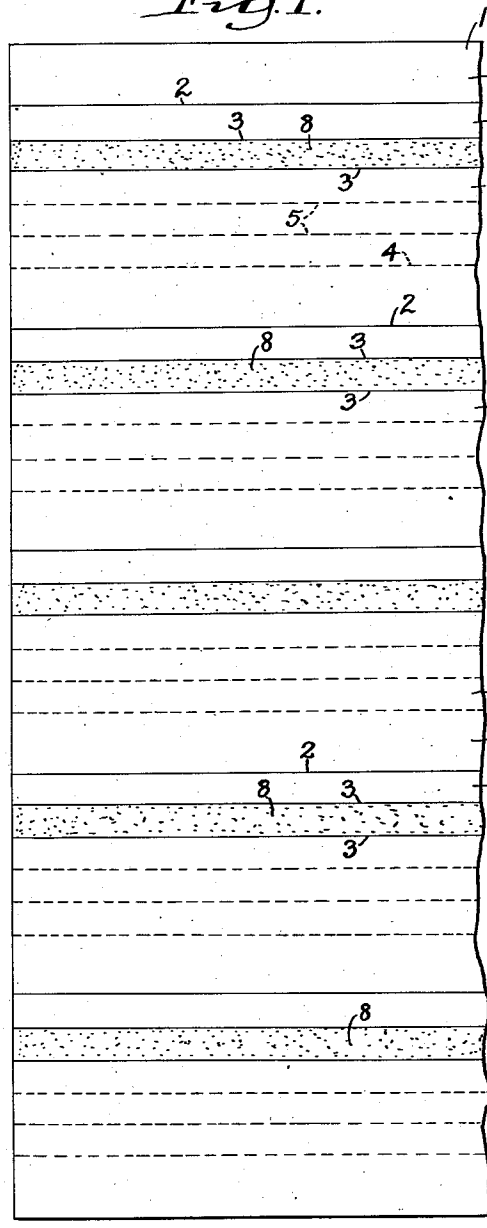
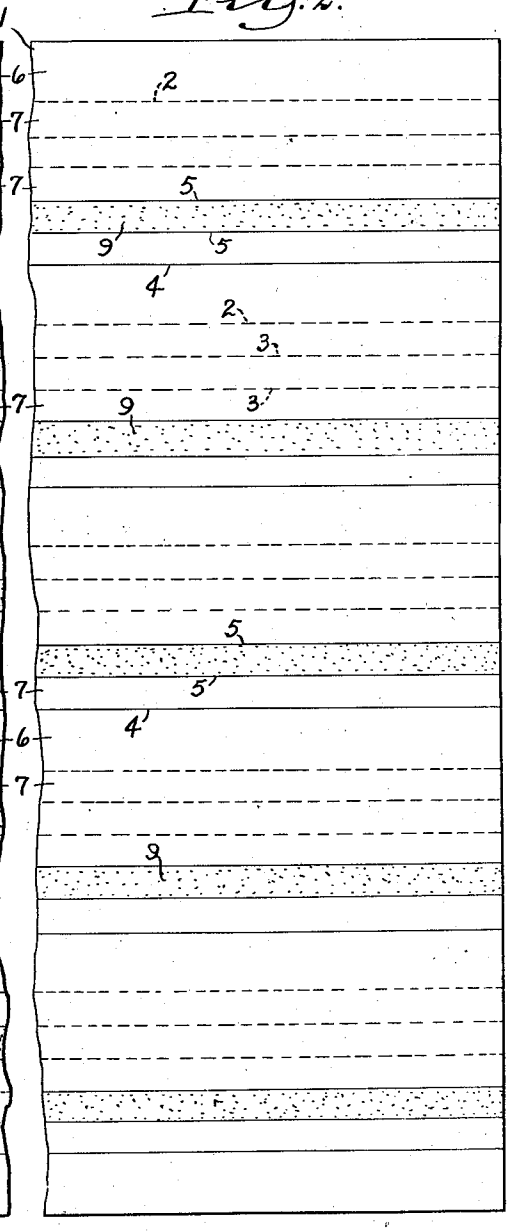


Fig. 2.



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Fig. 3.

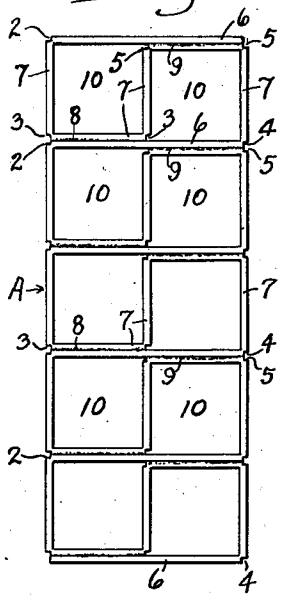


Fig. 4.

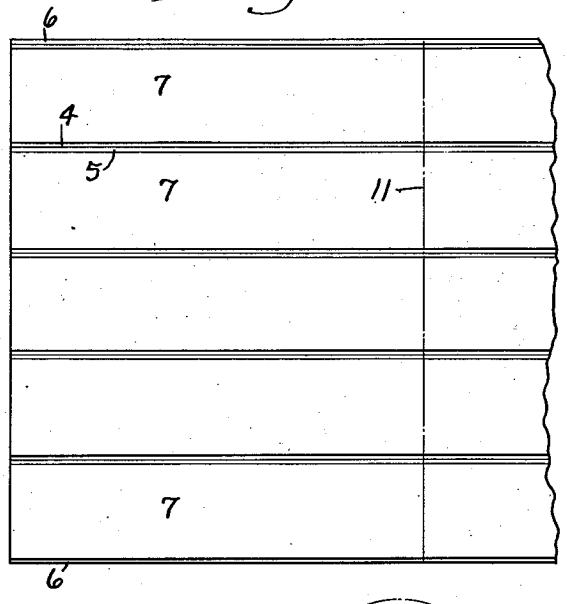


Fig. 5

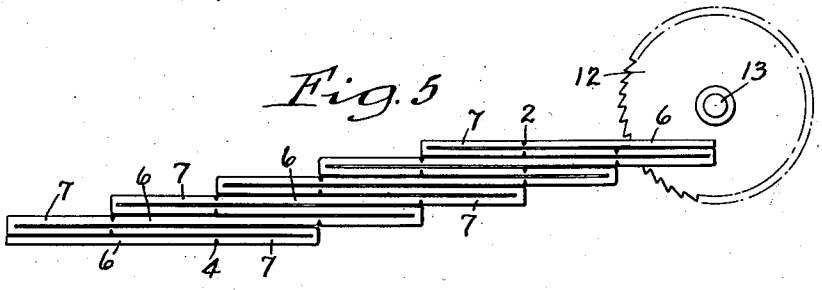


Fig. 7.

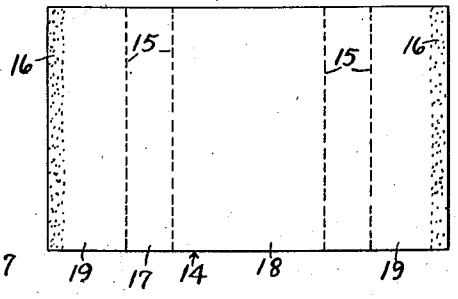
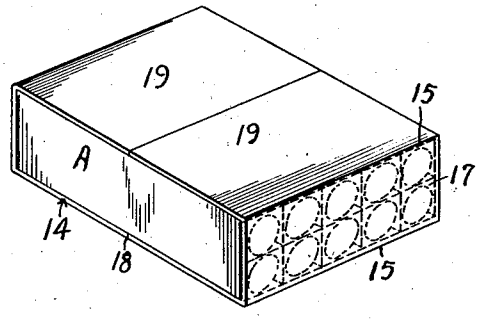


Fig. 6.



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Patented Dec. 18, 1945 2,391,230

UNITED STATES PATENT OFFICE

2,391,230

AMMUNITION CARTON

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Application January 28, 1942, Serial No. 428,593

13 Claims. (Cl. 93—37)

This invention relates to improvements in multicellular containers or cartons, and more particularly to such cartons having a multiplicity of small compartments or cells for receiving ammunition cartridges or similar small articles so as to provide a simple and practical means for protecting the cartridges during handling, shipment, etc.

It is a general object of the invention to provide an improved multicellular carton of the type mentioned that can be made rapidly and inexpensively in large quantity production from sheet stock, such as cardboard or similar fiberboard, and to provide an improved construction and arrangement adapting the carton for manufacture by automatic machinery.

A further object of the invention is to provide a multicellular container part or partition that can be made of a single integral sheet bent or folded reversely on scored or weakened lines into assembled or collated condition to provide a multiplicity of compartments or cells for receiving the cartridges or other articles, and attached in collated position so as to be reinforced by the folded or collated sheet sections, and at the same time arranged so that container part can be easily collapsed into substantially flat condition thus conserving space during shipment in empty condition, and for storage and other purposes.

A further object of the invention is to provide an improved multicellular carton of the class mentioned that can be made in two parts including a collapsible multicellular part, and a reinforcing and enclosing cover part that can be applied to complete the container after the cartridges or other articles have been inserted into the receiving compartment or cells.

It is a further object of the invention to provide an improved method whereby the improved multicellular carton can be inexpensively manufactured from a sheet or continuous web of cardboard or the like, either by hand, or when large quantity production is required, by means of automatic machinery.

Other objects of the invention will be in part pointed out in the following detailed description of an illustrative but preferred embodiment of the invention, and will be in part obvious as the disclosure proceeds.

The invention accordingly comprises an article of manufacture having the features, properties and relation of elements, and also comprises the several steps and the relation of one or more of such steps to each of the others, which will be exemplified in the article and method hereinafter disclosed, and the scope of the application of which will be indicated in the claims.

For a more comprehensive disclosure of the nature, objects and advantages of the invention, reference is had to the following detailed description of the illustrative embodiment, and to the accompanying drawings in which:

Fig. 1 is a face view of one side of a fragment of a sheet or strip of cardboard, fiberboard, or the like, showing the strip formation preparatory to making the improved carton;

Fig. 2 is a view similar to Fig. 1 showing the opposite face of the strip;

Fig. 3 is an enlarged end elevation of a multicellular unit or partition of the carton;

Fig. 4 is a side elevation of an end portion of the unit shown in Fig. 3;

Fig. 5 is a partially diagrammatic view showing the multicellular carton unit in collapsed condition;

Fig. 6 is a perspective view of the completed carton, and

Fig. 7 is an inner face view of the carton cover.

Referring to the drawings for a detailed description of the illustrative embodiment of the invention there shown, a sheet or long continuous strip 1 of cardboard, fiberboard or similar material, is provided as stock from which the carton is to be made. This stock may be in the form of a large sheet of appropriate length and breadth to form any desired number of cartons, or it may be in the form of a long continuous strip wound into a supply roll or like supply package. If the stock is in the form of a long continuous strip in a supply roll, the strip may be of any convenient longitudinal extent to form a large number of cartons, and it may be of a width equal to the combined lengths of a plurality of carton units. If the stock is supplied in sheet form, this is advantageous in some cases, because advantage can be taken of the grain of the fiber sheet so as to have the grain extend in the desired direction for best results in the completed carton.

As shown in Figs. 1 and 2, the stock sheets 1 are for illustrative purposes only and in actual practice these sheets may be increased in size both in length and breadth to any desired extent to form the desired large number of carton units. This stock sheet is weakened along lines 2 and 3 extending transversely of the sheet at one surface thereof, and along similar lines 4 and 5 on the opposite surface. This weakening of the stock along these lines of each of the groups of lines 2, 3, and 4, 5 may be accomplished in any

desired manner as by creasing or scoring the sheet material. But the most satisfactory method at present known is to score the sheets along these lines by means of an appropriate scoring or cutting tool that cuts into the surfaces of the material a short distance so as to weaken the sheet to bending along these lines, but at the same time leaving sufficient uncut material at each line to provide the necessary strength for the walls of the carton. These score lines may be made either by means of hand tools or by automatic machinery.

As shown, the scored lines 2 and 4 are spaced a greater distance from the adjacent score lines than the spacing of the lines 3 and 5. This arrangement provides panels or sections 6 of greater width than the panels or sections 7. Each panel 7 is just wide enough to form a wall section for one side of one of the receiving compartments or cells of the completed carton unit, while the panels 6 are of sufficient width to extend approximately the distance across two of these cells. The purpose of this arrangement is more fully described below.

When the stock sheet 1 has been scored at its opposite surface as described, an adhesive material is applied along certain of the panels at the opposite sides or surfaces of the sheet. Thus, as shown in Figs. 1 and 2, a band of adhesive 8 is applied along longitudinally spaced panels at one side of the sheet and similar bands of adhesive 9 are applied at the opposite surface of the sheet. These bands of adhesive are for the purpose of attaching together the adjacent or contacting panels of the carton when the sheet is bent or collated to form the multicellular carton unit indicated generally at A. The bands of adhesive are applied in spaced relation at the opposite surface of the sheet so as to be properly positioned for attaching the contacting sections or panels together in the completed carton unit. The adhesive material may be either in the form of an adhesive gum that needs moistening or heating to render it adhesive to effect adhesive attachment, or it may be applied in wet or undried form just before the sheet is bent or collated to form the carton unit. While this adhesive attaching means is the best form at present known for forming the carton, it will be understood that different attaching means may be utilized such, for example, as light wire staples, or fasteners, or the like, adapted to extend transversely through the contacting wall parts.

When the stock sheet has been prepared, as above described, it is collated or bent in opposite directions along the transverse lines 2, 3, 4 and 5 of each of the groups of scored or weakened lines into the form indicated in Figs. 3 and 4. This bending of the sheet may be effected by manual means or by means of automatic machinery. Thus, considering the top of the carton unit shown in Figs. 3 and 4, the stock sheet will be bent in one direction along the weakened score lines 2 and 3 on one surface, and in the opposite direction along the weakened score lines 4 and 5 on the opposite surface. This reverse bending of the stock sheet brings the long panels or sections 6 into position to extend transversely of the carton unit substantially across or in spanning or overlapping relation with two adjacent receiving compartments or cells indicated at 10. The receiving cells 10 of the carton unit are thus formed in two adjacent courses or series, and as many cells as desired may be formed in each course. Also, the short panels or sections 7 extend along the sides of the cells and are substantially equal to the dimensions of the cells so that each panel forms a complete side wall at one side of a cell, while a plurality of such wall panels form the different side walls of the cells. When thus collated certain of the sections or panels 7 are positioned in contacting relation with opposite sides of the wide panels 6 at opposite surfaces of the latter, and spaced or offset at different parts thereof. Thus, as seen in Fig. 3, one panel 7 contacts with one end portion of the panel 6 at one side thereof, and another panel 7 contacts with the opposite end portion of the same panel 6 at the opposite side thereof. Also, it will be noticed that the contacting surfaces of the panel 7 are coated with the bands of adhesive 8 and 9 so as to secure these contacting parts together. This arrangement of the short and long sections or panels with the attachments thereof are multiplied throughout the extent of the multicellular carton unit A, or of a longer or shorter collated section.

While the carton unit A shown in Fig. 3 forms compartments or cells for ten cartridges, it is to be understood that this multicellular unit may be continued to any desired extent so as to have a much larger number of cartridge cells or a smaller number as desired. A preferred method of manufacture is to make a multicellular member or section of indefinite extent from top to bottom of Figs. 3 and 4, and of long indefinite extent from left to right in Fig. 4, these dimensions being dependent upon the size of the stock sheet 1. This collated member or section will be of exact multiple dimensions of the completed multicellular carton unit A, both longitudinally and transversely so as to avoid wastage. When thus assembled this collated member is then severed into unit lengths as, for example, along the broken line 11 of Fig. 4 to provide units of the desired length, and will be severed along lines at right angles to the line 11 to form units A having the desired number of receiving cells 10. It will be noticed that the stock sheet 1 extends continuously throughout each carton unit A, thus avoiding seams and forming a smooth rigid structure.

It will be noted that the receiving cells 10 are arranged in two adjacent courses or series parallel to each other, and that the wide panels or sections 6 extend substantially across these two series in a substantially spanning or overlapping relation therewith so as to bind the opposite sides of the carton firmly together, thus forming a reinforced stout structure capable of satisfactorily carrying the heavy load occasioned by the cartridges or other articles. It will also be noted that the weakened or scored lines 2, 3, 4 and 5 are positioned at diagonally opposite corners of each cell 10 and that these score lines are similarly positioned in each of the two series of cells. This arrangement provides a structure that is easily collapsible by bending the sheet material along these diagonally disposed weakened lines. By this means the extended carton unit shown in Figs. 3 and 4 of a larger section of the collated sheet can be easily collapsed into substantially flat condition, as shown in Fig. 5. When thus collapsed, a multiplicity of these units can be assembled in a compact package for shipping, storage, etc. It will be understood that the disclosure of Fig. 5 and other figures is partially diagrammatic, the stock thickness being enlarged for clearness of disclosure. In actual practice the stock is thinner so as to collapse in compact sheet like formation.

As shown in Fig. 5, it is desirable to collapse the collated sheet, as described above, before severing this unit along the lines 11. For this purpose a rotary severing unit 12 rotatable upon an axis 13 may be utilized for this purpose, as diagrammatically shown. The severing unit 12 may be a toothed saw or a cutting disc of known form, or even a cutting knife capable of being held in the hand.

When the multicellular carton unit A is assembled, as above described, the cartridges or other articles may be inserted into the receiving cells 10 which are proportioned for the reception of one cartridge in each cell. In order to complete the carton with its assembled contents, a reinforcing and finishing cover strip 14 is secured in position on the outside of the unit as shown in Figs. 6 and 7. This cover member 14 may be in the form of a sheet of cardboard or fiberboard, or similar fibrous material scored or weakened along transverse lines 15 so as to be easily applied in position as shown in Fig. 6. This cover strip is also preferably provided with bands of adhesive material 16, whereby the strip is firmly secured in closing position on the outside of the carton. The sections 17 of the cover strip function as closure members for the opposite open ends of the cells 10, while the bottom section 18 and the end sections 19 overlap the opposite sides of the multicellular unit to function as a reinforcement. The weakened lines 15 at one end of the carton as, for example, the front end shown in Fig. 6, are preferably formed by perforating or otherwise weakening the sheet material so that the closure section 17 may be readily removed by severance along these weakened lines 15. Thus, a compact strong carton is provided that is susceptible of rapid quantity production and is particularly useful for the reception and protection of cartridges.

Ordinarily the multicellular units A such as indicated in Fig. 3 will be fabricated at the factory along with the cover strips 14. The multicellular units will then be collapsed as described above and packaged together with the cover units and forwarded to the arsenal, whereupon the cartridges will be inserted into the cells and the cover strips applied as described. This provides a convenient and satisfactory method of packing and shipping the cartridges.

Since certain changes in carrying out the above method, and certain modifications in the product which embody the invention may be made without departing from its scope, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent along substantially parallel spaced lines to form enclosing wall sections for a multiplicity of article receiving cells arranged in a plurality of series, each said series of cells including opposite end cells and at least one intermediate cell, the spacing of certain of said lines being greater than that of others so as to form transverse unbent wall sections overlapping a plurality of said series of cells, sections of said cell walls of the different series of cells being positioned at opposite sides of the respective unbent transverse wall sections and respectively attached to the latter at longitudinally spaced parts thereof.

2. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent along substantially parallel spaced lines to form enclosing wall sections for a multiplicity of article receiving cells arranged in a plurality of series, each said series of cells including opposite end cells and at least one intermediate cell, the spacing of certain of said lines being greater than that of others so as to form relatively wide transverse unbent wall sections overlapping a plurality of said series of cells, and said line spacing also forming relatively narrow wall sections certain of which are respectively positioned adjacent to said relatively wide transverse wall sections at opposite sides and at longitudinally offset parts thereof and respectively attached thereto.

3. A method of making a multicellular carton, including: weakening a sheet of material to bending along substantially parallel lines, certain of which are spaced apart a greater distance than others, bending the sheets thus weakened along said weakened lines to bring sheet sections between adjacent weakened lines into position to form cell walls of cells arranged in a plurality of series, and to bring certain of said sheet sections into contacting relation with each other, each of said cell series having opposite end cells and at least one intermediate cell and said bending of the sheet being in one direction for said cells of one series and in the opposite direction for the cells of another series, the sheet being bent on said weakened lines with greater spacing to bring the sheet sections of greater width therebetween into position to extend transversely across said plurality of series of cells and intermediate adjacent cells of the series at a plurality of points spaced at substantially cell-width intervals along the carton part and securing said contacting sections together, including those of greater width.

4. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent to form a series of side wall panels forming a multiplicity of article receiving cells, certain of said side wall panels being in contacting relation with each other and attached together, said continuous bent sheet having at one extremity thereof at the outside of said container part and at each of a plurality of points spaced therefrom, one of said side wall panels which is of a width substantially equal to the combined widths of a plurality of said cells and substantially overlapping the same, all of said overlapping wall panels being spaced apart along said continuous sheet and being spaced from each other in said carton part at substantially cell-width intervals, and said continuous bent sheet also having at parts thereof respectively positioned adjacent to each of said overlapping wall panels, a series of said panels of widths substantially the same as the cells and positioned to form cell walls, certain of said last mentioned series of panels being respectively in contacting relation with said overlapping wall panels at longitudinally offset parts of the latter and attached thereto.

5. A method of making a multicellular carton, including: bending a continuous sheet along spaced lines to bring wall panels for carton cells into position to form cell walls for said cells which are arranged in a plurality of adjacent series each of which has opposite end cells and at least one intermediate cell, the said bending

of the sheet being in one direction for said cells of one series and in the opposite direction for the cells of the adjacent series, positioning one of said wall panels in substantially transverse overlapping relation with said plurality of cell series between adjacent cells thereof at a plurality of longitudinally spaced points at substantially cell-width intervals along the cell series so as to form a carton part of any desired length, and securing certain of said wall panels together.

6. A method of making a multicellular carton, including: bending a continuous sheet along spaced lines to bring wall panels for carton cells into position to form cell walls for said cells which are arranged in a plurality of adjacent series each of which has opposite end cells and at least one intermediate cell, the said bending of the sheet being in one direction for said cells of one series and in the opposite direction for the cells of the adjacent series, positioning one of said wall panels in substantially transverse overlapping relation with said plurality of cell series between adjacent cells thereof at a plurality of longitudinally spaced points at substantially cell-width intervals along the cell series so as to form a carton part of any desired length, securing certain of said wall panels together, and dividing said carton part into a plurality of carton units.

7. A method of making a multicellular carton, including: bending a continuous sheet along spaced lines to bring wall panels for carton cells into position to form cell walls for said cells which are arranged in a plurality of adjacent series each of which has opposite end cells and at least one intermediate cell, the said bending of the sheet being in one direction for said cells of one series and in the opposite direction for the cells of the adjacent series, positioning one of said wall panels in substantially transverse overlapping relation with said plurality of cell series between adjacent cells thereof at a plurality of longitudinally spaced points at substantially cell-width intervals along the cell series so as to form a carton part of any desired length, securing certain of said wall panels together, collapsing the cells of said carton part into substantially flat condition, and dividing said collapsed carton part into a plurality of carton units.

8. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent to form a series of wall panels for a multiplicity of article-receiving cells, means for holding said wall panels in position to form said cells, said cells being arranged in a plurality of adjacent series, each said series of cells including opposite end cells and at least one intermediate cell, and certain of said wall panels being wider than others and extending transversely of the carton part in overlapping relation with a plurality of said cell series and positioned respectively between adjacent cells of said series at a plurality of points spaced at substantially the width of the cells.

9. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent to form a series of wall panels for a multiplicity of article-receiving cells, said cells being arranged in a plurality of adjacent series, each said series of cells including opposite end cells and at least one intermediate cell, and certain of said wall panels being wider than others and extending transversely of the carton part in overlapping relation with a plurality of said cell series and positioned respectively between adjacent cells of said series at a plurality of points spaced at substantially the width of the cells, certain of said wall panels being in contacting relation with one of said transversely extending wider panels at opposite sides thereof and at offset points therealong and respectively attached thereto to hold the wall panels in position.

10. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent along substantially parallel spaced lines to form a multiplicity of article-receiving cells arranged in a plurality of series, each said series of cells including opposite end cells and at least one intermediate cell, the spacing of certain of said lines being greater than that of others so as to form transverse unbent wall sections overlapping a plurality of said series of cells, said transverse unbent wall sections being respectively positioned between adjacent cells of said series at a plurality of points spaced therealong at opposite sides of intervening cells and also at opposite extremities of the carton part.

11. In a carton, in combination, a multicellular carton part including in its construction a continuous sheet bent along substantially parallel spaced lines to form a multiplicity of article-receiving cells arranged in a plurality of series, each said series of cells including opposite end cells and at least one intermediate cell, the spacing of certain of said lines being greater than that of others so as to form transverse unbent wall sections overlapping a plurality of said series of cells, certain of said transverse unbent wall sections being respectively positioned between adjacent cells of said series at a plurality of points spaced therealong at opposite sides of intervening cells, and others of said transverse unbent wall sections being positioned respectively at the opposite extremities of said continuous sheet at the opposite ends of said carton part.

12. A method of making a multicellular carton unit from a continuous sheet, including: bending the continuous sheet a plurality of times in one direction along spaced lines to form enclosing wall sections for a cell positioned in one course in the unit; bending the continuous sheet a plurality of times in the opposite direction along spaced lines to form enclosing wall sections for a cell positioned in a different course adjacent to said first mentioned course; bending the continuous sheet along a plurality of spaced lines in the direction of the first mentioned bending to form wall sections of a second cell in the first mentioned cell course, the first bend for which is along a line spaced at such a distance from the last bend for the said cell in the second mentioned course as to form a transverse wall section in overlapping relation with cells in each of said courses; and progressively continuing the bending of the continuous sheet in the manner above outlined to form a cell unit having a required number of cells arranged in a plurality of courses.

13. A method of making a multicellular carton unit from a continuous sheet including: scoring the continuous sheet along a plurality of spaced lines in spaced groups at opposite surfaces of the sheet; bending the continuous sheet a plurality of times in one direction along said spaced scored lines of one of said groups at one surface of the sheet to form enclosing wall sections for a cell positioned in one course in the unit, bending the continuous sheet a plurality of times in the opposite direction along said spaced scored lines

of another of said groups at the opposite surface of the sheet to form enclosing wall sections for a cell positioned in a different course adjacent to said first mentioned course; bending the continuous sheet along a plurality of said spaced scored lines at said one surface of the sheet in the direction of the first mentioned bending to form wall sections of a second cell in the first mentioned cell course, the first bend for said second cell being along one of said scored lines spaced at such a distance from the last bend for the said cell in the second mentioned course as to form a transverse wall section in overlapping relation with cells in each of said courses; and progressively continuing the bending of the continuous sheet along the said scored lines in the manner above outlined to form a cell unit having a required number of cells arranged in a plurality of courses.

HARRY K. DICKERMAN.