March 5, 1968 W. C. SCHLAGER ETAL 3,371,840

RECEPTACLE SPACER

Filed May 9, 1966

Fig. 1.

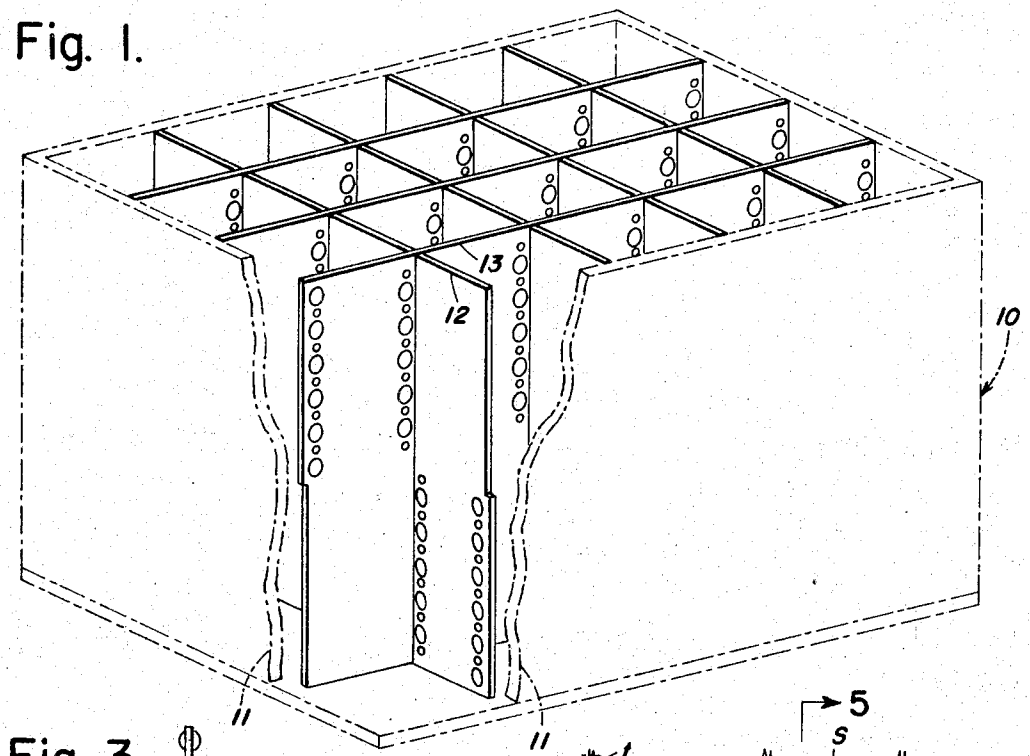


Fig. 3.

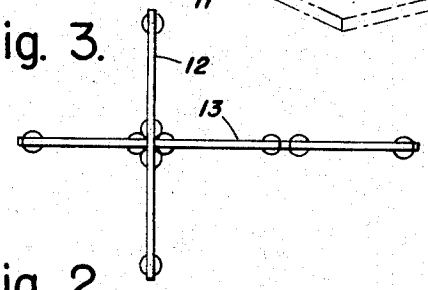
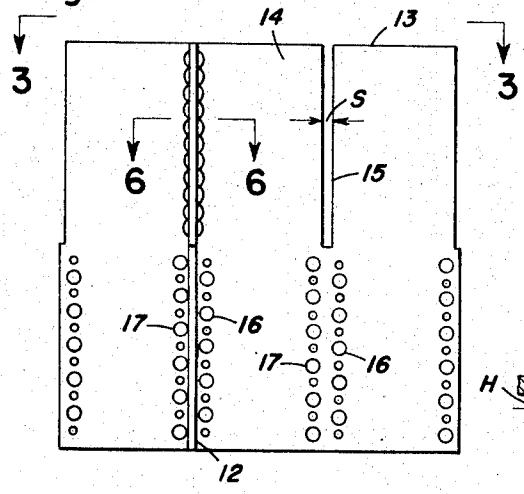


Fig. 2.



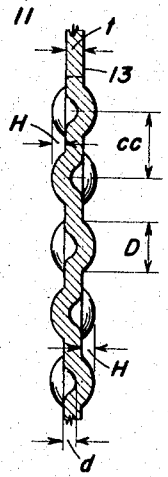


Fig. 5.

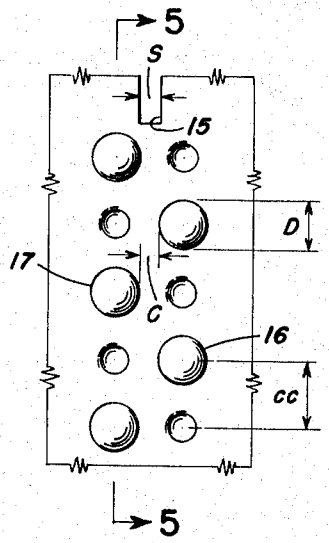


Fig. 4.

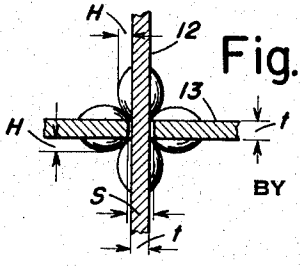


Fig. 6.

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RECEPTACLE SPACER

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9 Claims. (Cl. 229—15)

ABSTRACT OF THE DISCLOSURE

An interlocking cell-forming receptacle spacer of the type having partition members each provided with a plurality of parallel slots extending about half-way in from one edge to permit inverted transverse interfitting. The partition members are made of plastic material and each is provided on both surfaces, by means of suitable forming techniques, with a plurality of pairs of parallel columns of dome-shaped surface projections, each such pair of columns being located between the opposite edge of the partition member and the innermost end of an associated slot and being substantially tangentially aligned with the respective opposite side boundaries of the associated slot. Upon interfitting of the partition members, each slot boundary-defining portion of each such member is received and laterally confined between respective backed-up pairs of columns of such surface projections of a transverse partition member.

This invention relates to receptacle spacers and, more particularly, to interlocking receptacle spacers which may be of plastic material, for example, an acrylonitrile butadiene styrene rubber-resin composition, polyvinyl chloride, or styrene.

Receptacle spacers for shipping cartons for heavy articles have ordinarily been made of metal, plywood or the like to provide necessary strength. Thermoplastic material has not generally been suitable because thicker walls were then required to resist flexing. Moreover, one prior spacer of plastic material utilizes a loosely fitting construction.

It is an object of the present invention, therefore, to provide a new and improved interlocking receptacle spacer which avoids one or more of the abovementioned disadvantages of prior spacers.

It is another object of the invention to provide a new and improved interlocking receptacle spacer of relatively thin plastic material but of high strength and which resists flexing.

It is another object of the present invention to provide a new and improved interlocking receptacle spacer of simple, inexpensive but tightly interlocking wall construction.

In accordance with the invention, an interlocking receptacle spacer comprises a plurality of similar partition walls, each wall having a substantially planar surface with a longitudinally extending slot of approximately one-half the height of the wall. Each wall has longitudinally extending columns of transverse projections aligned with the boundaries of the slot and extending approximately along the remaining one-half height of the wall. Each wall is adapted to interlock with another similar wall by engagement of the slot of one wall with the longitudinal columns of the other wall.

Referring now to the drawing:

FIG. 1 is a perspective view of a receptacle, with outer walls represented in broken-line construction and partly broken away, utilizing an interlocking receptacle spacer constructed in accordance with the invention;

FIG. 2 is an elevational view of a portion of the receptacle spacer of the FIG. 1 embodiment;

FIG. 3 is an end view of interlocking walls of FIG. 2, taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary elevational view to an enlarged scale of a wall portion of FIG. 2;

FIG. 5 is a sectional view of a wall portion taken along line 5—5 of FIG. 4; and

FIG. 6 is a fragmentary sectional view to an enlarged scale of interlocking walls of FIG. 2, taken along line 6—6 of FIG. 2.

Referring now more particularly to FIG. 1 of the drawing, there is represented a receptacle **10** with outer walls **11** partly broken away. The receptacle **10** has positioned therein an interlocking receptacle spacer constructed in accordance with the invention. The spacer comprises a plurality of similar partition walls **12**, **13** with each wall having a substantially planar surface **14**, as may be seen in FIG. 2. A longitudinally extending slot **15** extends approximately one-half of the height of the wall. Each wall has longitudinally extending columns **16**, **17** of transverse projections aligned with the boundaries of the slot **15** and extending along approximately the remaining one-half height of the wall. Each wall is adapted to interlock with another similar partition wall by engagement of the slot of one wall with the longitudinal columns of the other wall, as also represented in FIG. 3.

Referring now more particularly to FIGS. 4, 5 and 6, it will be seen that the width of each slot is approximately equal to the thickness of each wall. Each slot is a straight slot in which the transverse projections extend alternately on both sides of the slot. The transverse projections **16**, **17** and the slots may be formed in the sheet by any suitable method, such as by calendering a continuous sheet, cutting to desired width, die-punching and forming. It may be observed from the alignment of the slots and the transverse projections that the spacers may be fitted together with relatively tightly interlocking surfaces. The transverse projections add to the strength of the walls and also are effective as locking guides for the wall which fits between the projections and interlocks therewith. The transverse projections are formed so that the greater areas of projection are on alternate sides of the wall to provide gripping edges for the interlocking wall on both sides of the wall. Any suitable pattern of transverse projections with projections extending on both sides of the slot may be utilized in lieu of the alternating pattern represented. For example, two adjacent projections could extend from the same side of the wall.

While applicants' invention is not limited to a receptacle spacer of particular dimensions and end use, the following dimensions have been selected as an example of a receptacle spacer of acrylonitrile butadiene styrene rubber-resin composition for use in transporting articles such as, for example, fragile or delicately machined engine parts, fragile glass containers, or fragile ceramic parts. Suitable granular packing material may be utilized to fill voids in the carton if fragile articles are being transported. One example of suitable dimensions is as follows:

Thickness of sheet—t=.062 inch=t
Width of slot—S=.078 inch=$\frac{5}{4}$ t
Clearance between projections—C=.078 inch=$\frac{5}{4}$ t
Height of projections—H=0.62 inch=t
Diameter of projections—D=.203 inch=$1\frac{3}{4}$ t
Depth of dimple—d=.078 inch=$\frac{5}{4}$ t
Center-to-Center of dimples—cc=.281 inch=$\frac{9}{2}$ t

From the foregoing description it will be seen that a receptacle spacer constructed in accordance with the invention has the advantage that a relatively thin sheet of plastic material may be utilized for each partition wall and that a tight interlocking structure is formed. The plastic sheet with slots and projections therein can be stored

in roll form and spacers of different lengths may be cut therefrom as desired.

While there has been described what is at present believed to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. An interlocking receptacle spacer, comprising a plurality of similar partition walls, each of said walls having at least one elongated slot extending in from one edge of the said wall and approximately halfway over the height of the latter, each of said walls further having at least one pair of narrow columns of surface projections located only in the remaining approximate half of the said wall intermediate the opposite edge thereof and the innermost end of the said slot, and the gap between the two columns of surface projections of each pair being approximately the same as the width of the said slot and being aligned with the latter, each such partition wall being separably interlocked with another similar partition wall by inverted transverse interfitting of the respective slotted regions thereof so as to dispose and laterally confine the slot boundary-defining portion of each partition wall between those paired columns of surface projections of the other partition wall associated with the interfitted slot.

2. A receptacle spacer according to claim 1, wherein the individual surface projections in each column are staggered with respect to the surface projections of the paired column.

3. A receptacle spacer according to claim 1, wherein a pair of parallel columns of such surface projections is provided on each surface of each partition wall.

4. A receptacle spacer according to claim 3, wherein the individual surface projections in each column on each surface are staggered with respect to the surface projections of the respective paired column on the same surface.

5. A receptacle spacer according to claim 1, wherein said surface projections are dome-shaped and are substantially tangentially aligned with the opposite sides of the said slot.

6. A receptacle spacer according to claim 5, wherein a pair of columns of such dome-shaped surface projections is provided on each surface of each partition wall, with each column on either surface being in back to back relation with a respective column on the other surface.

7. A receptacle spacer according to claim 6, wherein the individual surface projections in each column on each surface are staggered with respect to the surface projections of the paired column on the same surface.

8. A receptacle spacer according to claim 7, wherein the individual dome-shaped surface projections constituting each column thereof on one surface of each partition wall are arranged out of back to back relation with the individual dome-shaped surface projections constituting the respective backed-up column thereof on the other surface.

9. A receptacle spacer according to claim 8, wherein the individual dome-shaped surface projections of each two backed-up columns thereof are arranged in an alternating sequence with respect to each other.

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