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MEANS FOR RETAINING PACKAGES IN STACKED RELATIONSHIP

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FIG. 1

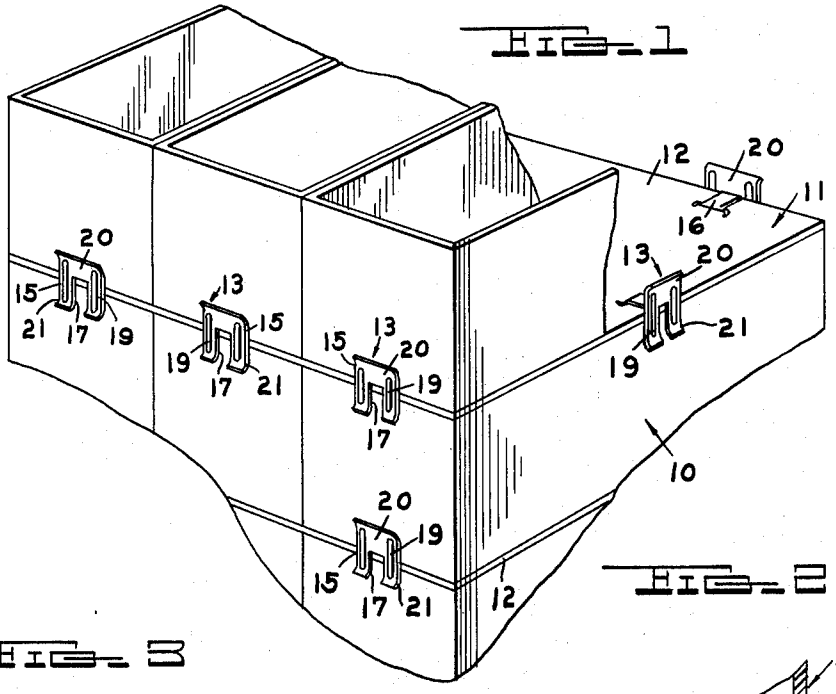
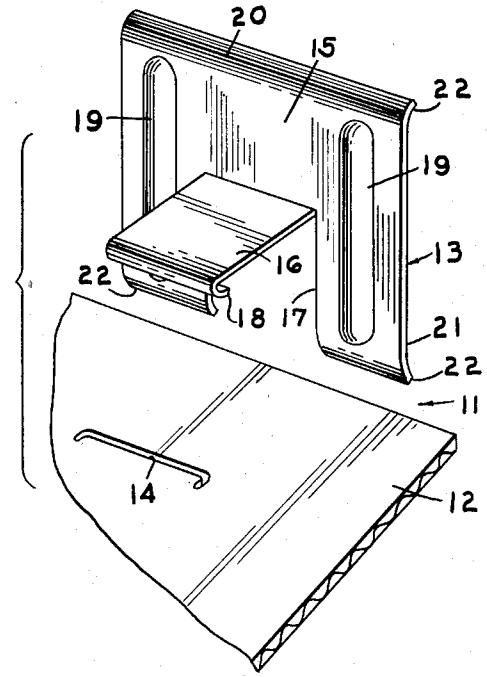


FIG. 2

FIG. 3



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MEANS FOR RETAINING PACKAGES IN STACKED RELATIONSHIP

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4 Claims. (Cl. 220—97)

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This invention relates to means for retaining packaging frames in position while being transported by material handling equipment.

One method used for shipping or transporting small miscellaneous parts comprises introducing the parts into different frames or bins open at the top and bottom. A plurality of frames are usually positioned on a single spacing sheet with adjacent side walls in contact and are ordinarily arranged in stacked relationship. A flat spacing sheet is interposed between adjacent superposed frames in a manner such that the lowermost sheet for one group of frames provides a bottom wall for all of the frames in this group and provides a top wall for the frames supported immediately below the top group of frames.

With packaging means of the above general type, some means must necessarily be provided for holding the frames against lateral shifting movement relative to the spacing sheets and it is one of the objects of this invention to provide retaining clips on the spacing sheets for accomplishing this result.

A more detailed object of this invention is to provide the clips with vertical plates having tongues which extend laterally from the respective plates intermediate the ends and intermediate the top and bottom edges thereof. The tongues are attachable to the flat spacing sheets in such a manner that the plates assume positions beyond the marginal edges of the sheets and form abutments for engaging the adjacent walls of the frames at opposite sides of the sheets. In practice clips are attached to opposite side edges of a flat spacing sheet for respectively engaging opposite end walls of the frames positioned at opposite sides of the sheet and are also attached to the opposite end edges of the sheet for engagement with the adjacent side walls of the end frames at opposite sides of the sheet.

Still another object of this invention is to provide open return bent portions at the free ends of the tongues attachable to the flat sheet by projecting through slots formed in the sheet adjacent the marginal edges thereof.

A further object of this invention is to provide a one piece clip having a vertical abutment plate and having a tongue projecting laterally from the plate intermediate the ends of the latter and intermediate the top and bottom edges thereof.

A still further feature of this invention is to provide retaining means of the above general type capable of being conveniently returned to the source of reuse.

The foregoing as well as other objects will be

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made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a fragmentary perspective view showing stacks of frames or bins held against lateral shifting movement relative to one another by retaining means embodying the features of this invention;

Figure 2 is a fragmentary sectional view showing the retaining means in relation to adjacent superposed packages; and

Figure 3 is a fragmentary perspective view of the retaining means.

For the purpose of illustrating this invention, I have shown in Figure 1 of the drawing a plurality of tiers or stacks of frames or bins 10 open at the top and bottom. The frames are rectangular in shape and are all preferably of the same size. During transportation or handling, the frames are arranged in groups with one group superposed on the other and the frames in each group are retained in this relationship by retainers 11. The retainers 11 comprise a flat sheet 12 and a series of clips 13. The flat sheet 12 corresponds in size to the area occupied by one group of frames when the latter are positioned with the side walls in engagement as shown in Figure 1 of the drawing. Thus the flat spacing sheet 12 between superposed groups of frames serves as a bottom wall for the top group of frames and as a top wall for the bottom group of frames.

The sheets 12 may be formed of practically any inexpensive rigid or semirigid material, such for example, as heavy paper or cardboard, and are formed with suitable slots 14 adjacent the marginal edges thereof for removably receiving the clips 13. In the present instance each sheet 12 is slotted to enable attaching clips 13 to opposite longitudinal edge portions in positions to respectively engage opposite end walls of the frames at opposite sides of the sheet, and is slotted to permit attaching clips 13 to the transverse or end edge portions in positions to respectively engage the outer side walls of the end frames at opposite sides of the sheet.

The clips 13 are of one piece construction and may be formed of any suitable material possessing the requisite rigidity, such for example, as sheet steel or plastic. Each clip 13 comprises a plate 15 and a tongue 16 projecting laterally from the plate intermediate the ends and intermediate opposite side edges thereof. In the event the clip is fashioned by stamping the same from a sheet of material, the tongue 16 is preferably struck

laterally inwardly from the plate 15 providing a recess 17 at one side edge thereof. In any case the free end of the tongue 16 is formed with an open return bent portion 18 and the portions of the plate 15 at opposite sides of the tongue may be embossed laterally outwardly to provide transverse reinforcing ribs 19, if desired.

The tongues 16 on the clips are adapted to rest on the top face of the sheet 12 adjacent the respective slots 14, and the return bent ends 18 of the tongues are adapted to project downwardly through the adjacent slots 14 in the manner clearly shown in Figure 2 of the drawing. Thus the clips are, in effect, hooked on the sheet against accidental displacement, but may be readily removed when desired. The effective length of the tongues 16 is so determined with respect to the distance between the slots 14 and adjacent marginal edge of the sheet that the plates 15 are located beyond the latter marginal edge in positions to form abutments for the frames 10 at opposite sides of the sheet. Referring again to Figure 2 of the drawing, it will be noted that the top portions 20 of the plates engage the adjacent walls of the frames 10 seated on the top of the flat sheet 12, and the bottom portions 21 of the plates at opposite sides of the recess 17 engage the adjacent walls of the frames located immediately below the sheet.

In use the clips 13 are assembled in the above manner on the flat sheet 12 and the latter is supported on the top of the lowermost group of frames with the portions 21 of the clips engaging adjacent walls of these frames. The frames in the next adjacent group are then placed on the top of the sheet 12 directly above the frames in the lowermost group, and are engaged by the portions 20 of the clips 13. This procedure is repeated until the desired number of groups of frames are supported in superposed relationship, and upon completion of this stacking operation, the frames may be handled as a unit without the danger of adjacent frames shifting relative to one another. In order to facilitate stacking the frames, the top and bottom edges of the plates 15 may be curled laterally outwardly as at 22, to in effect, guide the frames into position relative to the sheets 12.

The foregoing arrangement is such that the individual frames may be quickly removed from the sheets 12 by merely lifting the same sufficiently to clear the top portions 20 of the plates, and the sheets 12 may be readily disengaged from the frames directly beneath the same in a similar manner. The clips 13 may then be quickly removed from the sheets 12 and may be readily packaged for return with the sheets to the shipper.

What I claim as my invention is:

1. Means for retaining packaging frames in a stacked position comprising a flat sheet adapted to be positioned between adjacent superposed frames and having a slot adjacent one marginal edge thereof, a clip having a vertical plate and having a tongue extending laterally from the plate intermediate the top and bottom edges of the plate, said tongue engageable with one face of the sheet and having an open return bent portion at the free end extending through the slot in the sheet, the length of the tongue being so determined with respect to the distance between the slot and adjacent marginal edge of the sheet to locate the plate beyond said marginal edge in a position to form an abutment for frames at opposite sides of the sheet.

2. Means for retaining packaging frames in a stacked position comprising a flat sheet adapted to be positioned between adjacent superposed frames and having slots therethrough spaced inwardly from the marginal edges thereof, clips having vertical plates provided with recesses in one side edge portion intermediate opposite ends thereof and having tongues respectively projecting laterally from the base portions of the recesses to occupy positions intermediate the top and bottom edges of the plates, said tongues engageable with one face of the sheet and respectively having open return bent portions at the free edges thereof respectively extending through the slots in said sheet, the length of the tongues being so determined with respect to the distance between the slots and adjacent marginal edges of the sheet to locate the plates beyond said marginal edges in positions to form abutments for frames at opposite sides of the sheet.

3. Means for retaining packaging frames in a stacked position comprising a flat sheet adapted to be positioned between adjacent superposed frames, a clip of one piece construction having a vertical plate and having a tongue projecting laterally from the plate intermediate the ends of the plate and intermediate the top and bottom edges thereof, said tongue engageable with one face of the sheet and having an open return bent portion at the free end projecting through a slot in the sheet to locate the clip with said plate positioned beyond one marginal edge of the sheet where it provides abutments for frames at opposite sides of the sheets.

4. Means for retaining packaging frames which are open at the top and bottom in stacked position comprising a flat sheet adapted to be positioned between superposed groups of frames to provide a common bottom wall for the frames in the top group and to provide a common top wall for the frames in the bottom group, means carried by the sheet and engageable with the frames at opposite sides of the sheet to hold said frames against shifting movement relative to the sheet, said means comprising clips each having a vertical plate and a tongue projecting laterally from the plate intermediate the top and bottom edges of the plate, said tongues overlying the top face of the sheet and the portions of the plates at opposite sides of the tongues respectively engage the outer sides of the frames positioned at opposite sides of the sheet, and hook portions at the free ends of the tongues respectively engageable in slots formed in the sheet to hold said clips against shifting movement relative to the sheet.

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