Dec. 7, 1954 L. DENSEN 2,696,322

SUPPORTING AND PACKAGING MEANS

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Fig. 1

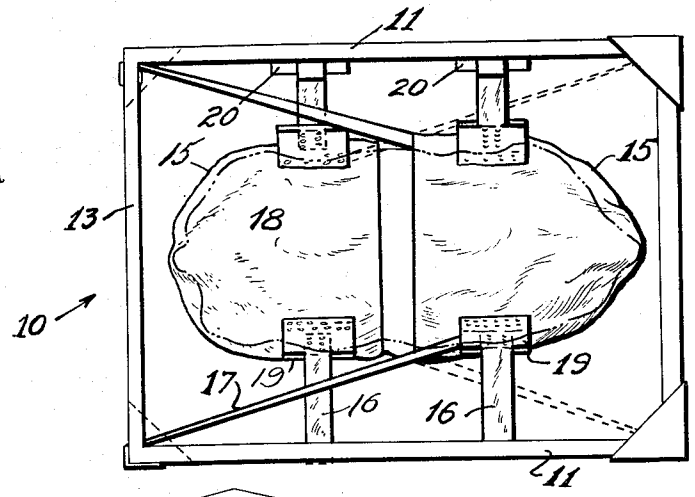
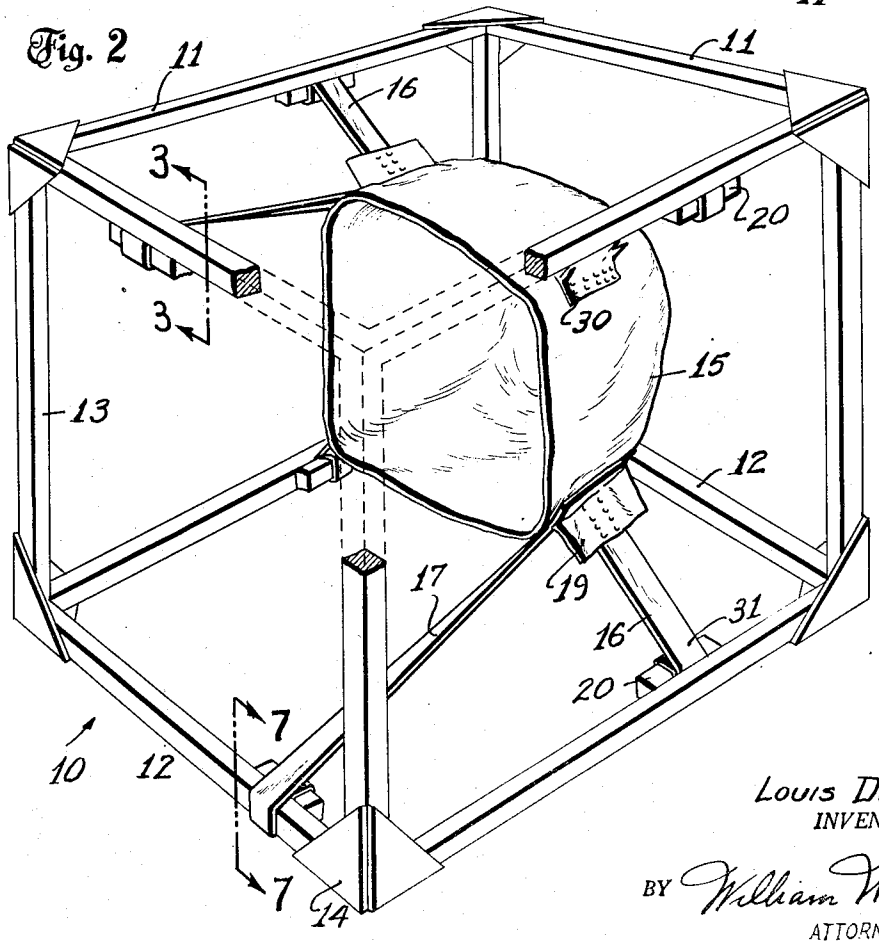


Fig. 2



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Fig. 3

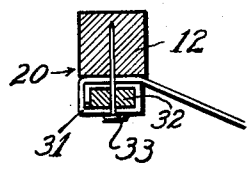


Fig. 4

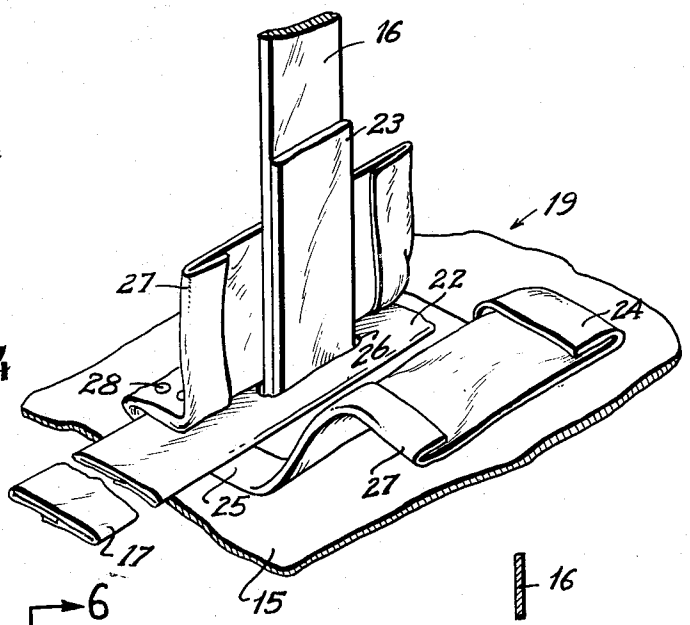
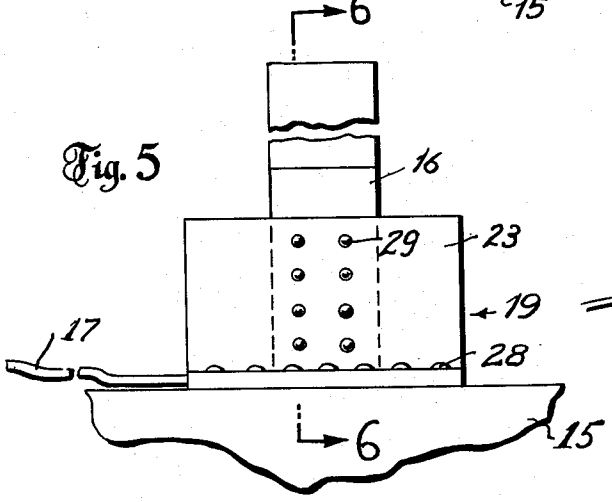


Fig. 5



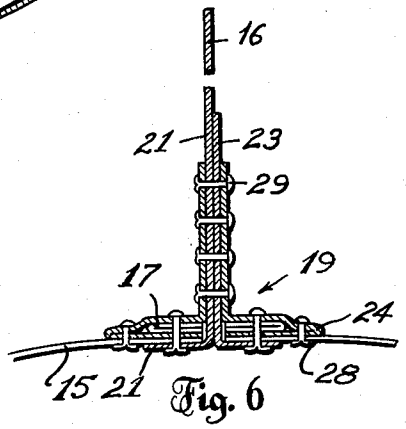


Fig. 6

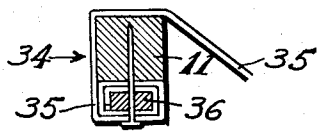


Fig. 7

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SUPPORTING AND PACKAGING MEANS

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Application October 9, 1951, Serial No. 250,461

2 Claims. (Cl. 217—52)

My invention relates to packaging bulky and fragile articles and more particularly to a suspension securing means for supporting articles.

The packaging of cumbersome and heavy yet fragile articles which has always been a difficult problem, now is rendered increasingly difficult due to the expense and scarcity of packaging materials, of labor, and the high freight rates and the necessity of not overstraining our transportation facilities with excess poundage.

Fragile articles of average size heretofore have been packaged for shipment either by being wrapped in cotton or corrugated cardboard or rested upon cardboard or other supports, and heavier articles have been tightly wedged into a closely fitting framework.

These methods of packaging or packing are expensive in that they either involve the use of expensive space fillers which add to the weight and increase the shipping cost or require the services of skilled framers and involve the use of wood or other crating materials. In addition, these methods of packaging do not always guarantee protection for the packed articles as filler materials are compressible and movable and articles packaged by the framework method are quite susceptible to shock and rough handling.

Therefore, an object of this invention is to provide means of packaging without the use of filling material which will retain and support the article to be packaged free from shock or disturbance.

A further object is to devise a carrying means for holding, supporting and retaining an article in an immovable, suspended position within a framework or container free from shock or disturbance by means of material having tensile strength only.

Another object is to provide an article holder or supporter of tensile strength only which can be simply and easily secured in a container and which will retain the article to be supported free from shock or disturbance.

Another object of the invention is to provide an inexpensive method of packaging which can be advantageously and successfully utilized by unskilled packagers.

A further object is to devise a simple, inexpensive, and extremely strong joint or connection for uniting a strap or piece of material having tensile strength only such as canvas webbing or plastic to a second piece of flexible material of the same general category.

Another object is to devise a method for and a means of pulling tight or tightening and securing a strap end.

I accomplish these and other objects by providing a supporting and retaining device comprised of a flexible close fitting bag or envelope having a plurality of firmly secured opposingly positioned straplike tension elements and encasing the article to be supported within the bag or within a plurality of bags opposingly positioned, and securing the bag or bags by its tension elements within and to a plurality of opposite sides or bars of a case or framework.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description, the accompanying drawings and to the appended claims in which the various novel features of the invention are more particularly set forth.

On the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a plan view looking down upon an article encased in my suspending means and carried in a framework.

Fig. 2 is a perspective view of the suspending means and framework of one of the bags shown in Fig. 1.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of a joint or connection between elements of the suspending means shown in Fig. 1.

Fig. 5 is a side view of the joint shown in Fig. 4.

Fig. 6 is a sectional view along the ilne 6—6 of Fig. 5.

Fig. 7 is a sectional view along the line 7—7 of Fig. 2.

In the drawing and in the specifications in which like numerals indicate similar elements, a supporting and retaining device **10**, is shown suspended from and between upper and lower cross members **11** and **12**, respectively, of a common rectangular framework **13**. The framework is provided with strengthening corner plates **14** which also function as bases and cause the lower cross members **12** to rest spaced above the floor or bearing surface.

If desired, the framework can be made into a packing crate or other closed container by positioning boards, tarpaulin or other material about the cross members.

The supporting and retaining device **10** is shown formed of two similar close fitting bags or envelopes **15**, each provided with a plurality of side and forward extending strap or tension elements **16** and **17**, respectively. The bags are opposingly positioned about the ends and sides of the article **18**, which is to be supported, while the tension elements **16** are pulled taut and securely fastened to the side cross members of the frame, and the corresponding forward extending elements **17** of the bags cross each other and are secured to opposite end frame members. Thus the article **18** is held suspended and immovable by the tension members or straps within the framework and cannot be the recipient of blows or concussions to the frame or crate.

The present type of packaging, although suitable for general usage, is intended presently for use in connection with extremely heavy articles such as machinery and airplane parts. Thus, each of the straps, the connections or joints **19** which transfer the weight from the bag to the straps, and the anchors **20** which transfer the weight from the straps to the frame members, are each subjected to great stress and must, therefore, be exceptionally strong.

The connections or joints **19** (Figs. 4, 5 and 6) are each formed of strap ends **21** and **22**, of straps **16** and **17**, respectively, and auxiliary strap piece **23**, and a stress spreader **24**. The central part **25** of the stress spreader is positioned immediately below the strap end **22** and against the outer face of the bag material at the location desired for the joint, and a slot **26** is made through both the bag material, spreader **24** and strap end **22**. The strap end **21** and auxiliary strap piece are passed through the slots and are positioned against the under face of the bag material, but extend in opposite directions. The end parts **27** of the spreader are turned over and back upon the strap end **22** and then along the strap **16** and the auxiliary strap piece. Rivets **28** are then forced through and secure together the several thicknesses of material of the strap end **21** or auxiliary strap piece, bag material, central part of the spreader, strap end **22** and end parts **27** of the spreader. Rivets **29** are forced through and secure together the two end parts of the spreader with the strap end **21** and auxiliary strap piece. Thus, the stress in the strap **16** is distributed partially to the auxiliary strap and spreader ends and then transferred by these elements to the bag material. The stress of the strap **17** is distributed through the spreader strap end **21** and auxiliary strap piece to the bag material. The added auxiliary strap piece and spreader permit a better spacing of and the use of a greater number of rivets and result in a wider and more even distribution of the stress and tend to increase greatly the carrying power and lengthen the life of the device.

The connections or joints **30** are formed similar to joints **19**, but are not provided with straps **17** and strap ends **22** as a lesser number of straps are needed to prevent lateral movement than for vertical support.

Although I have shown the joints or connections **19** and **30** held together only by rivets, it is possible for sewing, gluing or other binding means to be used to secure the elements together without departing from the scope of the present invention.

The anchors **20** (see Fig. 3) are each formed of an end **31** of either strap **16** or **17**, a core piece **32** and a nail **33**. The end **31** of the strap is wound around the core piece **32** and pulled tight and then the core piece and end are secured to the frame by the nail, screw, bolt or like means. The use of the core piece permits the strap end to be tightened easily and the nailing of the core piece to the frame grips the strap end securely. The grip of the strap end by and between the core and frame member materially increases the holding power of the anchor above that of the nail by itself, and prevents the strap end from being torn away from the nail.

An anchor **34** (Fig. 7), which is a slight variation of the anchor **20**, is shown securing a strap end **35** to the frame. In the present case the strap end is wound around a core **36** and also extends about the frame member. As the frame member is spaced above the bearing surface, the strap end can be easily wrapped about the member and there is no danger of abrasion against the bearing surface upon which the frame rests.

The device **10** provides a fine means of packaging as it does not use filler material and it retains the article to be carried held by suspension means only and so is free from harm by shock or blow by its supporting members.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in any or all of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. A joinder of a flexible plane element and a flexible strap element, comprised of said plane and strap elements, and in addition an auxiliary strap, a stress spreader, and securing means, said stress spreader positioned on the plane element and having therewith a slot therethrough, said auxiliary strap secured to the strap and both extending through the slot in the spreader and plane element and resting against the plane element and extending in opposing directions, the ends of said stress spreader lying back on its center portion and along the strap and auxiliary strap and the securing means holding adjacent elements together, whereby the stress in the strap is spread over and to a large area of the plane and its unit effect is lessened.

2. A supporting and retaining device comprised of a bag portion, a plurality of strap elements and a joinder means, said strap elements positioned opposing one another and secured to the bag by the joinder means, said joinder means being formed of an auxiliary strap, a stress spreader and securing means, said stress spreader positioned on the bag and having therewith a slot therethrough, said auxiliary strap secured to the strap, and both extending through the slot in the spreader and bag and resting against the under face of the bag and extending in opposing directions, the ends of the stress spreader lying back on its center portion and along the strap and auxiliary strap, and the securing means holding adjacent elements together whereby the stress in the strap is spread over a large area of the bag and its effect is lessened.

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