D. BALE.

COLLAPSIBLE SPACING FRAME.

APPLICATION FILED APR. 26, 1915.

1,154,688.

Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

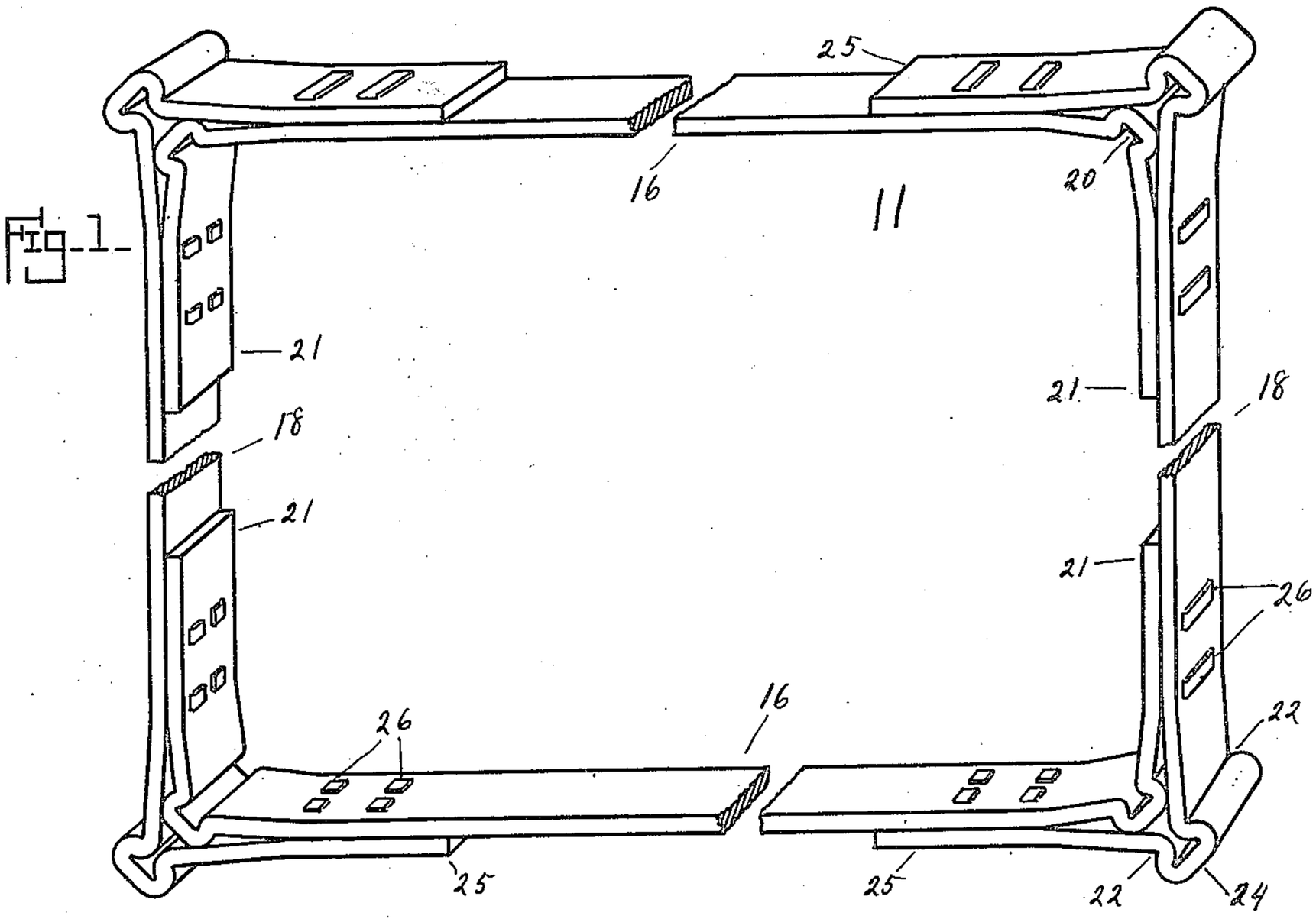



Fig. 5.

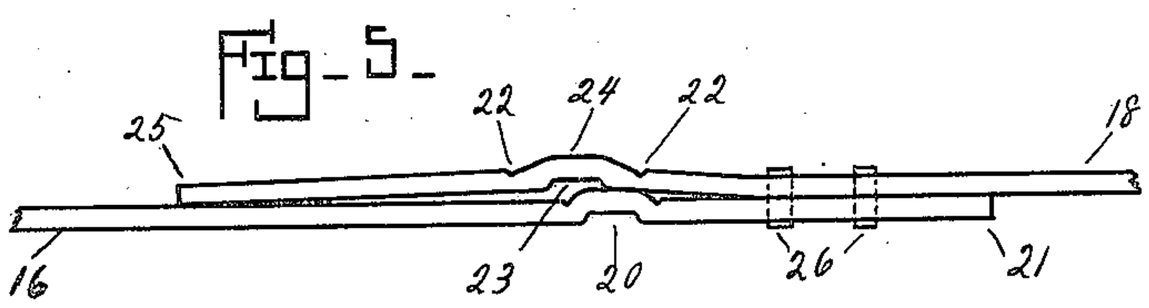



Fig. 6.

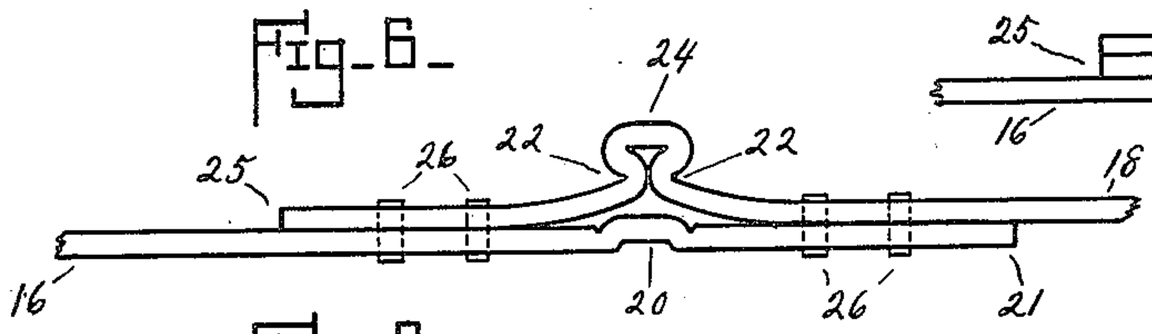



Fig. 7.

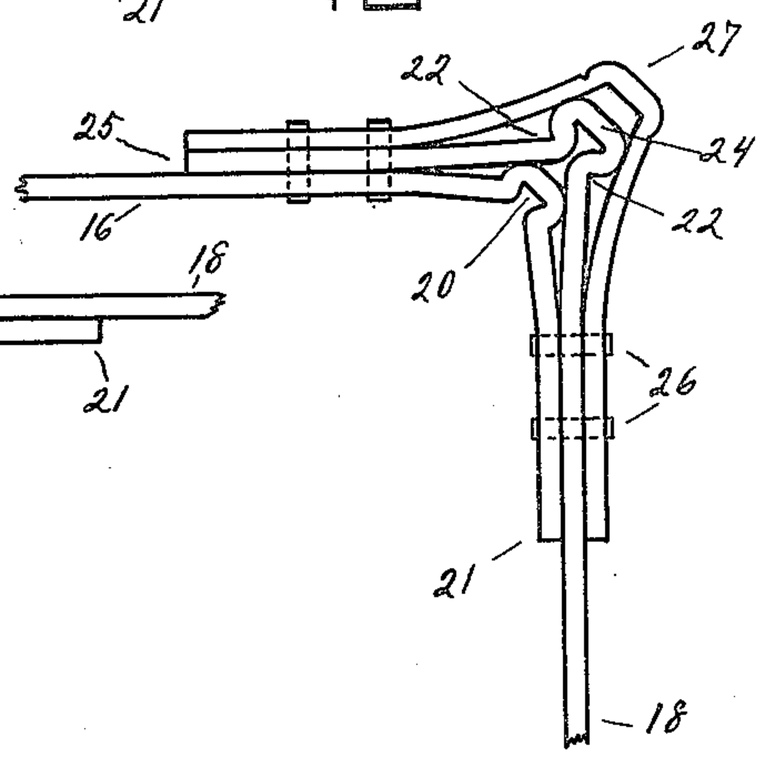
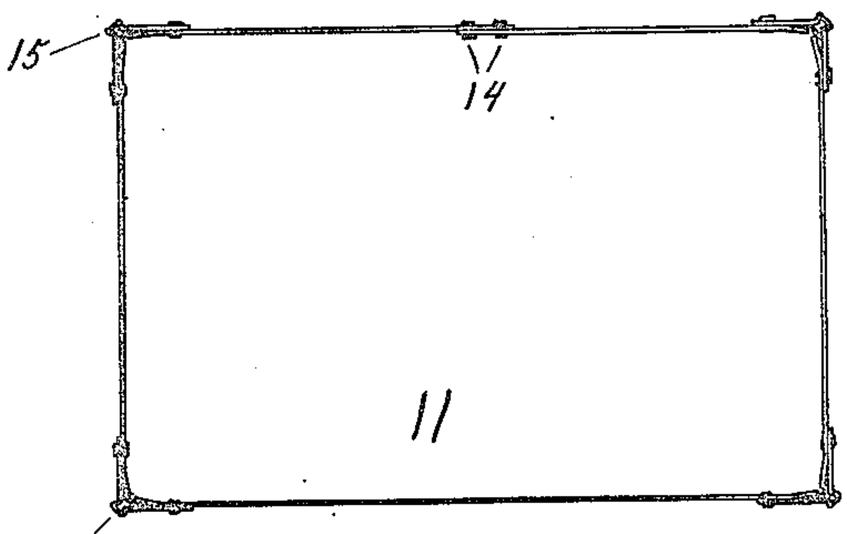



Fig. 8.

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2 SHEETS—SHEET 2.

FIG. 3.

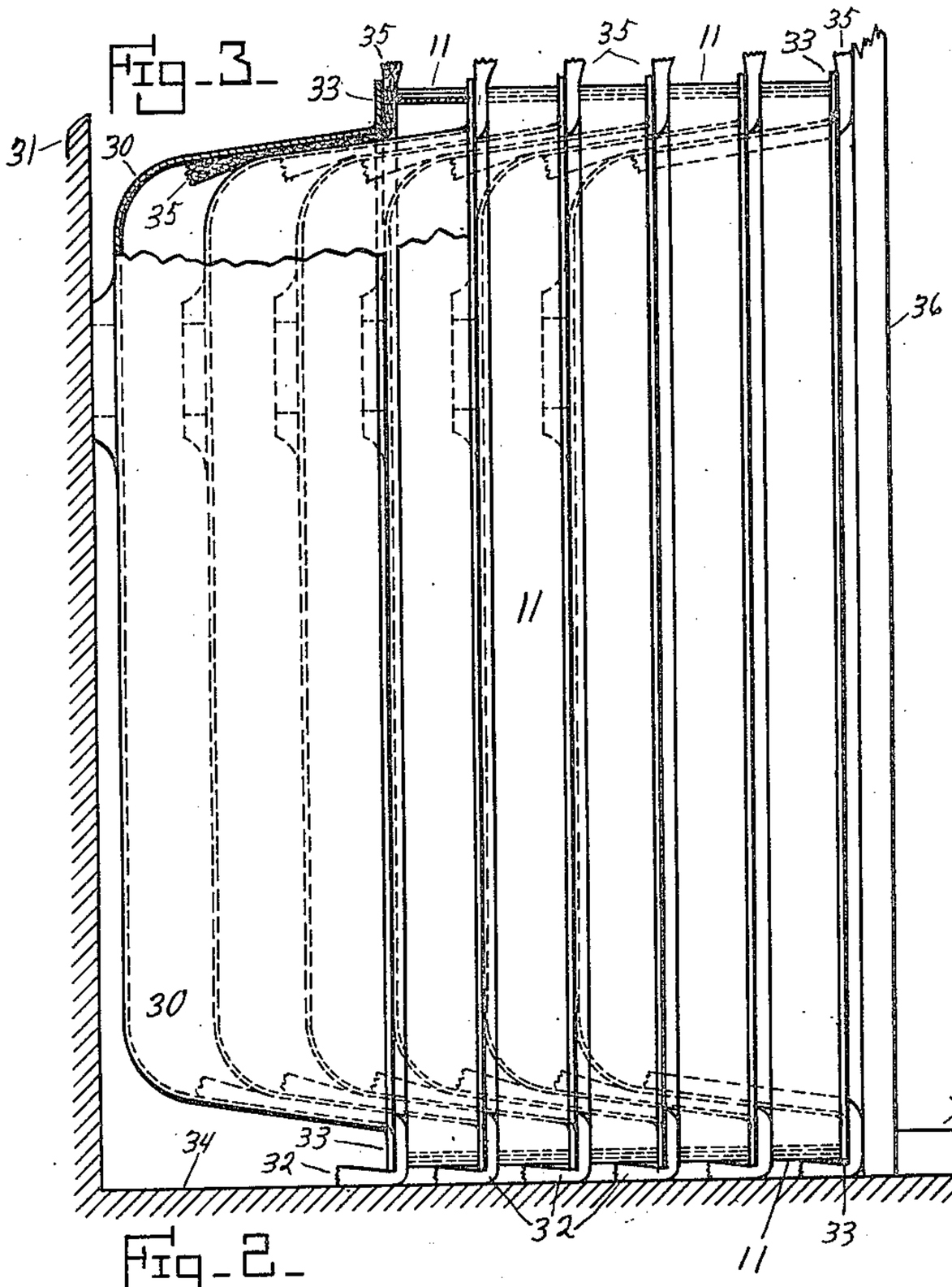



FIG. 2.

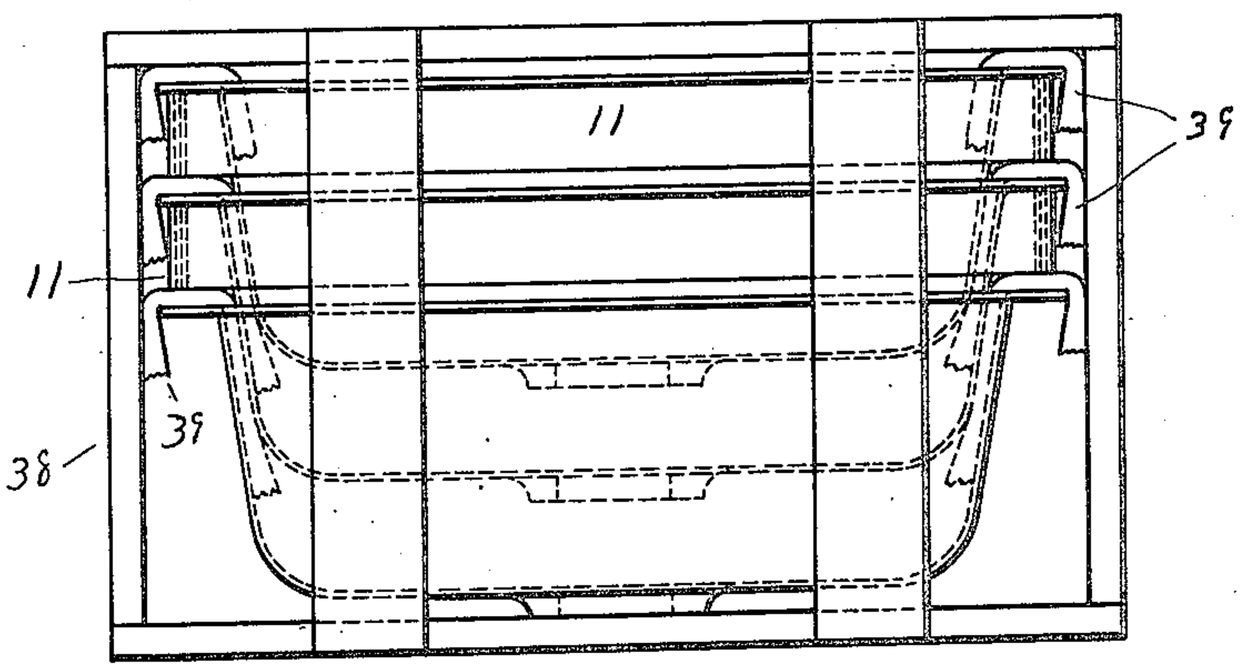



FIG. 9.

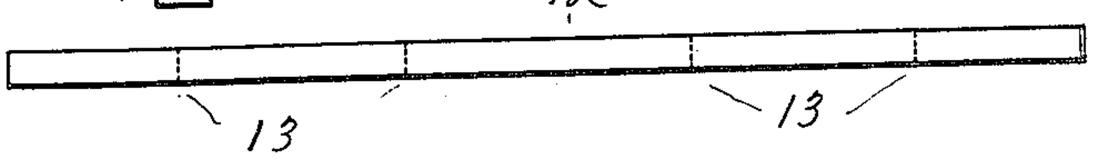
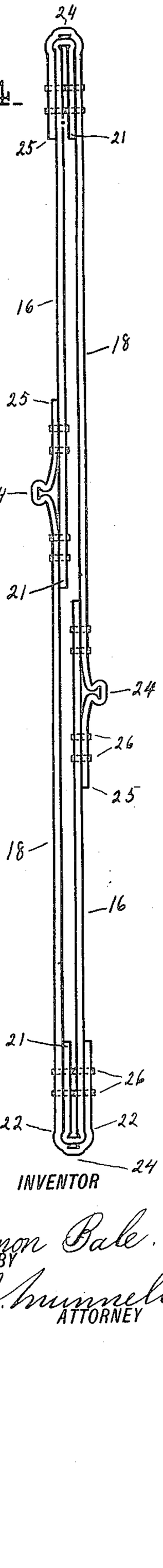



FIG. 4.

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# UNITED STATES PATENT OFFICE.

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## COLLAPSIBLE SPACING-FRAME.

1,154,688. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed April 26, 1915. Serial No. 24,008.

*To all whom it may concern:*

Be it known that I, DAMON BALE, a citizen of the United States, residing in the city of Louisville, county of Jefferson, and State of Kentucky, have invented a certain new and useful Improvement in Collapsible Spacing-Frames, of which the following is a specification.

This invention relates to spacing frames adapted to be used in packing, or crating, angular articles of various classes, but more especially applicable to articles, such as cast iron enameled sinks, having lateral peripheral flanges extended from bodies which may be nested. The finish of which, usually on the interior only, is such that it would be marred by contact with adjacent articles. In packing articles of this character, a band, or frame is disposed about the body of a sink before it is set within a previously placed one, and is of such width, that contacting with the flanges it serves to maintain them at such a distance apart that the bottom thereof will not come in contact. Small shipments of articles are crated, but large shipments are packed directly in railway cars. The present practice is to use rigid wooden frames for this purpose, but they are objectionable from the standpoint of cost as well as the storage space required therefor, both before and after service.

An object of this invention is to provide an article of the class described which will be economical of construction, efficient in service and which will require a minimum of storage space when not in use.

With the foregoing and other objects in view, the invention consists of the novel construction illustrated in the accompanying drawing which forms a part of this specification, wherein is set forth an embodiment of the invention, but it is to be understood that such changes and modifications may be resorted to as come within the scope of the appended claim.

Referring to the drawings, wherein similar reference characters designate like parts in the several views; Figure 1, is a perspective view of an embodiment of the invention; Fig. 2, an end elevation of a crate containing a number of sinks, my frame being used to separate them; Fig. 3, a sectional elevation of a portion of a freight car showing a number of flat rim sinks packed therein with my improved device interposed between them; Fig. 4, a plan of the frame collapsed for storage; Fig. 5, a side elevation showing the first step in connecting the members which compose the device; Fig. 6, a side elevation showing the connection completed and the reinforcing corner formed; Fig. 7, a side elevation of a modification, showing an additional reinforcing corner member; Fig. 8, a plan of a modification; Fig. 9, a plan of the blank from which the modification shown in Fig. 8 is formed.

Referring to the drawings the reference numeral —11— indicates a collapsible quadrangular frame formed of any suitable material, but preferably of fiber board, or pulp board of commerce, such as is commonly used in the art of making cartons. It may be formed of a rectilinear strip —12— (Fig. 9), folded on creased, or scored lines —13— and the ends overlapped and secured together by suitable means such as an adhesive or by staples —14—. Reinforcing members —15— are secured on, or about the corners of the frame by suitable means. For economy in the use of material, *i. e.* the utilization of shorter pieces of material the frame may be formed of a plurality of strips, or sections —16 and 18— secured together by approximate means.

The strips 16 are provided near each end with a transverse creased folding lines —20— thereby forming a hinged terminal flap —21— at each end thereof. The strips —18— are provided, on one side, near each end with a pair of spaced transverse folding lines —22— and on the other side with a single creased folding line —23— positioned intermediate said pair, thereby forming a hinged terminal flap —25— on each end of the strip. The arrangement being such that pressure exerted longitudinally on the strip, will cause the part —24— lying between the lines —22— to bulge up forming a protuberance which owing to the cross section presented will be capable of withstanding very great lateral pressure. In assembling, an end of a strip 18, is lapped over on, an end of a strip 16, with the crease 23 in parallel alinement with the crease 20 (see Fig. 5). The two strips are then secured in this position by suitable means such as staples —26— driven through the body 18 and the flap 21. Pressure is then exerted

on the end of the flap 25 bending the strip upward on the crease 23 whereby the creases 22 are caused to approach each other, and the part 24, therebetween, forced above the plane of the strip assuming a substantially elliptical shape, staples are then driven through the flap 25 and the body of the strip 16, this is repeated for each corner. The gibbous part 24 forms a reinforcement for the angle of the frame enabling it to withstand great lateral pressure. Where the frame is to be used in packing very heavy articles, it may be found advisable to place an additional reinforcement 27 about the corners of the frame.

When packed in bulk, articles of the nature illustrated, are placed directly in railway cars, being stood on edge with the bottom of the body —30— of the first placed against the side —31— of the car (see Fig. 3). Pads —32— of any suitable nature, but usually excelsior wrapped in paper, are interposed between the flanges —33— and the floor —34— of the car. These pads are brought up over the flanges and laid along the inner surfaces of the articles and serve to prevent the outer surface of a succeeding article from contacting with the finished surface of a previously placed article. Before placing the second and subsequent articles in position, my improved spacing band 11 is disposed about the body of the article, bearing against the flange thereof, the body is then nested within the previously placed article, pads —35— being interposed between the bodies of the respective articles. When the requisite number of articles have been thus placed, a strip —36— is placed against the face of the outmost one and suitably secured as by a cleat —37—. It will be observed that the pads take up any vertical or longitudinal strains, while the frames take care of any lateral stress. The frames, being made of fiber, will yield slightly under stress wherefore there will be a smaller percentage of broken articles when my bands are used than when rigid wooden frames are used. In packing articles of this nature in a crate, as —38, pads —39— are placed over the flanges and depend exteriorly and interiorly thereof, the spacing band 11 being disposed about the bodies of and between the flanges of the superimposed articles. (See Fig. 2.)

Having thus described my invention so that any one skilled in the art pertaining thereto may make and use the same, I claim:

A collapsible spacing frame comprising a plurality of rectilinear members, each of said members having a transverse crease near each end thereof forming a terminal flap which may be flexed on said creased line, the ends of certain of said members being overlapped on the ends of the others and said flaps secured to the opposing members in such relationship that the creases of said lapped members will register, and the overlapped member having an expanded portion over said line of flexure forming a lateral reinforcement.

DAMON BALE.