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CLAMPING UNITS

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FIG. 1.

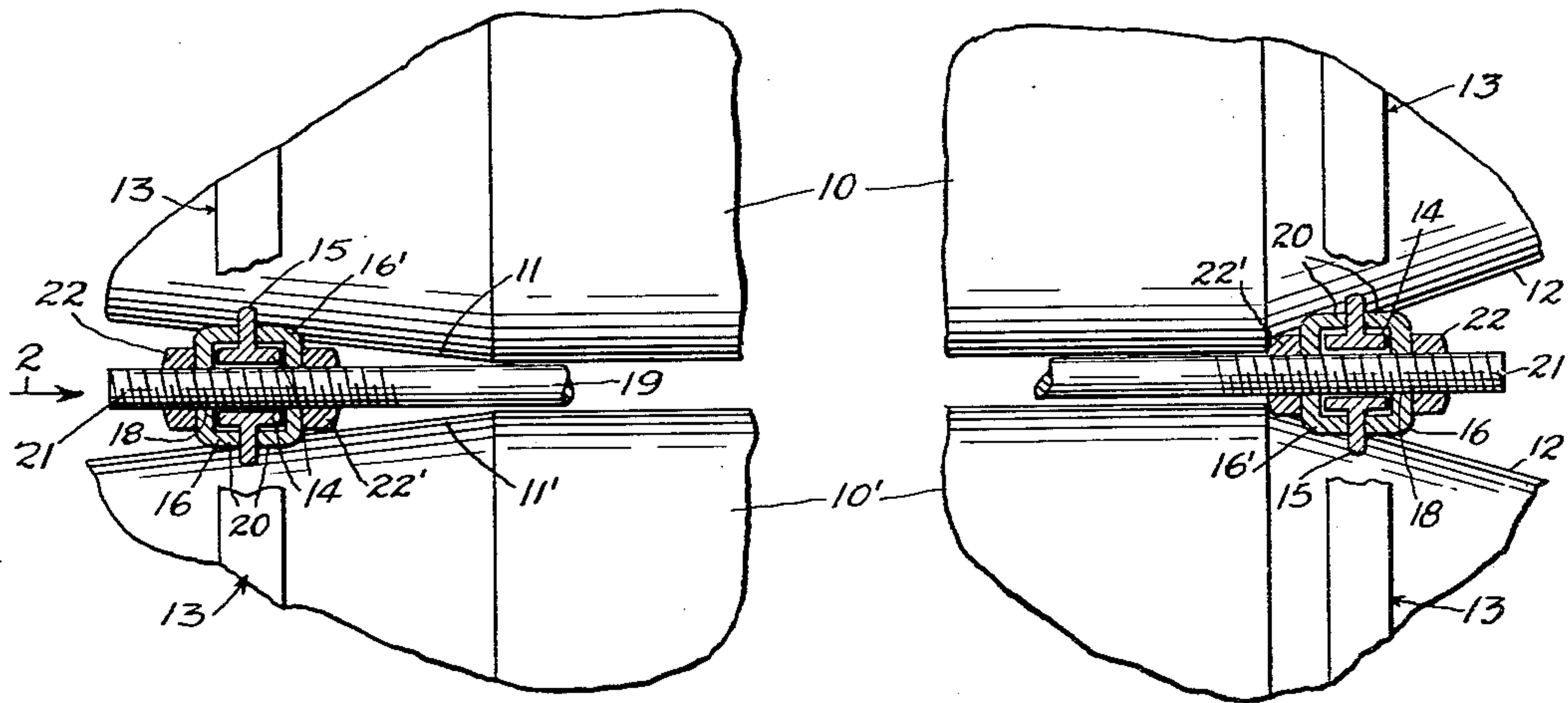
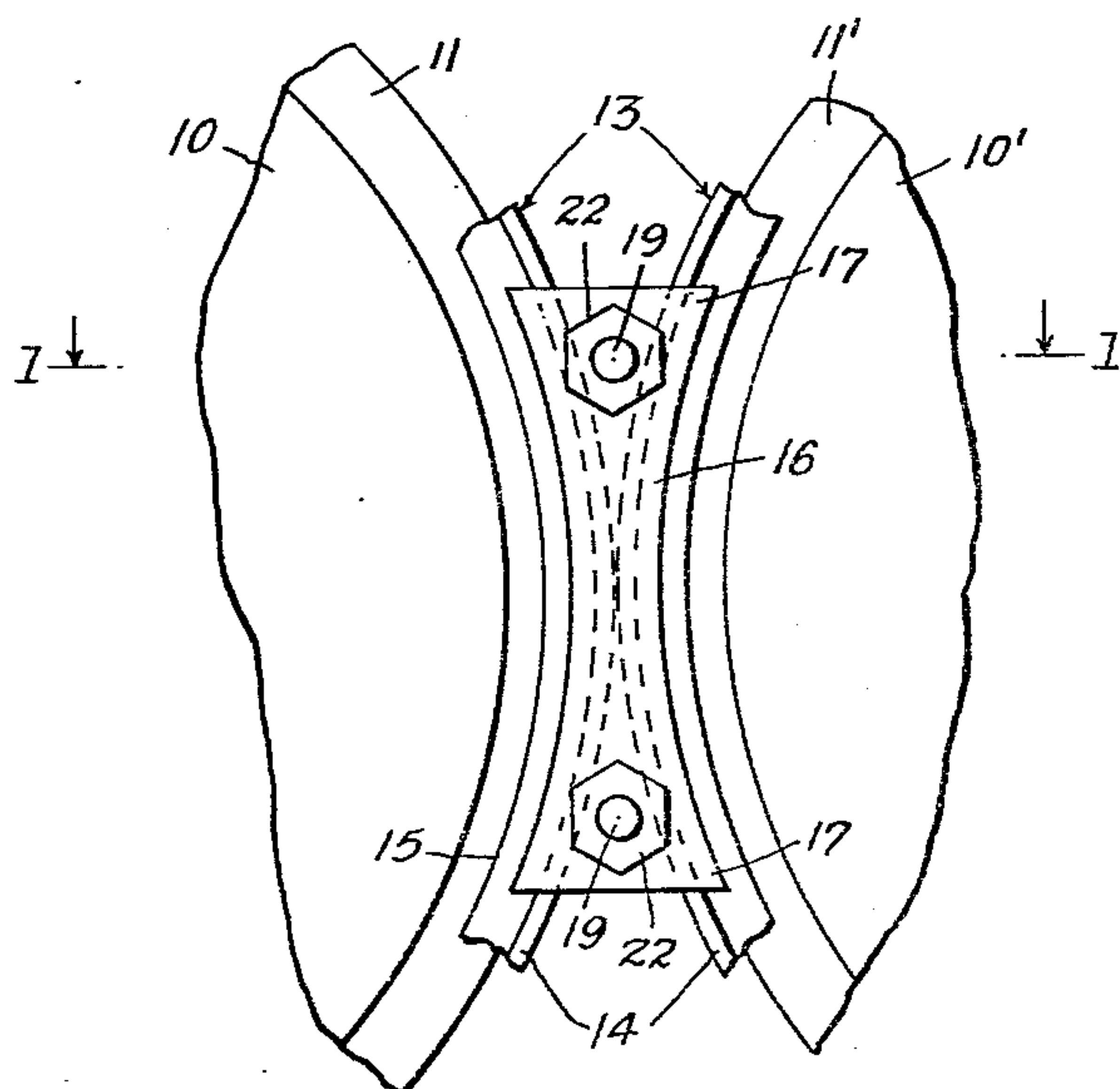


FIG. 2.



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CLAMPING UNITS

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2 Claims. (Cl. 24-81)

This invention relates to clamping units for use in securely coupling two or more products, articles or packages to facilitate group handling and storage thereof. More particularly, the invention deals with a unit comprising a pair of rings shaped to engage end portions of the articles to be coupled and pairs of clamp plates engaging adjacent rings of adjacent articles with a pair of bolts or rods extending between the rings at end portions of the articles and means, adjustable on the bolts or rods, for definitely aligning the rings of adjacent articles and for securely coupling the bolts or rods with the plates in coupling said articles.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a diagrammatic side view of portions of opposed ends of a pair of similar articles, showing one of my improved coupling units attached thereto, the unit being shown partially in elevation and part in section, the section being substantially on the line 1-1 of FIG. 2; and

FIG. 2 is a view looking in the direction of the arrow 2 of FIG. 1, showing only a portion of adjacent articles and showing the rings broken away beyond end portions of the clamp plates of the unit.

While my improved units are adaptable for use in conjunction with various types and kinds of products, articles or packages, to illustrate one adaptation and use of the invention, I have diagrammatically illustrated, at 10, 10', a pair of cylindrical-type articles, having slightly contracted ends 11, 11' and more abruptly contracted ends 12, 12'.

My improved unit comprises two pairs of similar rings 13 which, in the construction shown, are T-shaped in cross-sectional form, as clearly noted in FIG. 1, the crossheads of the T being illustrated at 14 and being disposed outwardly of and in spaced relation to the contracted ends 11, 11'; 12, 12'.

The center web 15 of the rings is adapted to be positioned in close proximity to the contracted ends at a position which will have common diameters of the rings located on said contracted end portion. In this connection, it will appear that the rings 13 on the contracted ends 11, 11' are spaced further from the central common diameter of the articles 10, 10' than are the rings 13 disposed on the more abrupt contracted ends 12, 12', as clearly noted in FIG. 1 of the drawing.

At this time, it should be pointed out that, in the grouped packaging or coupling of a multiplicity of common articles, for example, in the grouping of four, six or even greater numbers of the common article, the rings of units will be arranged on each of the articles and, at times, three or four pairs of outer clamp plates 16 and inner clamp plates 16' will engage single rings of one article, these plates being positioned substantially at 90° to each other. However, it is sufficient to clearly illustrate my invention to show, in the accompanying drawing, one pair of the clamp plates engaging the rings 13 of a pair of adjacent articles.

The clamp plates 16, 16' are of common construction. Therefore, the brief description of one clamp plate will apply to both.

Considering FIG. 2, it will appear that each clamp

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plate has diverging or flared end portions 17 apertured, as seen at 18 in FIG. 1, to receive a pair of coupling bolts or rods 19. The clamp plates have inwardly turned or flanged side edges 20, which are adapted to bear upon the center webs 15 of the rings 13 in definitely positioning the rings at end portions of the unit one with respect to the other on the coupling bolts or rods 19.

End portions of the bolts or rods 19 have long threaded portions 21, upon which are arranged outer lock nuts 22 and inner lock nuts 22', these nuts bearing upon the plates 16, 16', respectively, in support of these plates in firm engagement with the rings 13.

In the assemblage of a large number of the articles in question, it is important that the rings of each unit be spaced equidistances on the pairs of bolts or rods 19. Thus, in the assemblage, the inner nuts 22' will be spaced a predetermined distance apart on the bolts; after which, the inner plates 16' are mounted in position. Then the pairs of rings 13 are applied to the end portions of the articles 10, 10', after which, the outer plates 16 are spaced in position and, then, the nuts 22 are applied and securely moved into position to fixedly clamp the pairs of rings 13 between the plates 16, 16'. In this way, all of the rings 13 will be in alignment with each other and, in many instances, these rings or the webs 15 thereof will be in close proximity to the walls of the article, but not necessarily binding thereon. The assemblage will care for any slight irregularities that might prevail in the wall structures of the articles. It has been found from experience that slight movement of the articles with respect to the rings is not detrimental. It will be understood, however, that, where it is essential to securely grip the rings with the end portions of articles, then the inner nuts 22' will be adjusted, so as to accomplish this result.

By reason of the long threaded end portions on the rods or bolts, a wide range of adjustment is provided, so that bolts and plates of a unit with predetermined bolt lengths can be utilized in conjunction with a relatively wide range of devices, articles or packages to be clamped thereby. By this procedure, the number of different rod or bolt lengths can be minimized.

It will be understood that the rings of the clamp unit can be changed in diameter, contour, as well as cross-sectional form, to adapt them for use on articles of different types and kinds.

It will also be understood that, in some instances, the general shape of the clamp plates will be modified to suit the structure and contour of the rings. In this connection, it will be understood that it is desirable to have the side flanges 20 of the clamp plates conform generally to the contour of the crossheads 14 of the rings, slight clearances being provided, as indicated in FIG. 1, to care for variations that may prevail in the rings.

Considering FIG. 2, it will appear that the central portions of the articles are preferably brought into close proximity to each other and the pairs of bolts or rods of each unit are positioned in the valleys formed between the spreading of the walls of the articles.

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

1. A clamp unit for coupling groups of articles in group handling thereof, said unit comprising two pairs of rings independent of and arranged on end portions of a pair of adjacent articles to be coupled together, a pair of inner and outer clamp plates engaging each pair of rings, a pair of bolts having threaded portions at each end, one threaded end portion of each of said bolts being arranged in one pair of clamp plates, the other threaded end portions of said bolts extending to and being arranged in the other pair of clamp plates, and a pair of nuts adjustable on each threaded end portion of said

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bolts and operatively engaging said pairs of clamp plates for adjusting the inner clamp plates in definitely positioning the pair of rings at one end portion of the article with the pair of rings at the other end portion of the articles and in securely gripping the other outer clamp plates with adjacent rings of said articles.

2. A clamp unit for coupling groups of articles in group handling thereof, said unit comprising two pairs of rings independent of and arranged on end portions of a pair of adjacent articles to be coupled together, a pair of inner and outer clamp plates engaging each pair of rings, a pair of bolts having threaded portions at each end, one threaded end portion of each of said bolts being arranged in one pair of clamp plates, the other threaded end portions of said bolts extending to and being arranged in the other pair of clamp plates, a pair of nuts adjustable on each threaded end portion of said bolts and op-

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eratively engaging said pair of clamp plates for adjusting the inner clamp plates in definitely positioning the pair of rings at one end portion of the article with the pair of rings at the other end portion of the articles and in securely gripping the other outer clamp plates with adjacent rings of said articles, the plates in each pair having flanged sides, and the rings having crossheads, at their outer ends, arranged within the flanged sides of said clamp plates.

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