

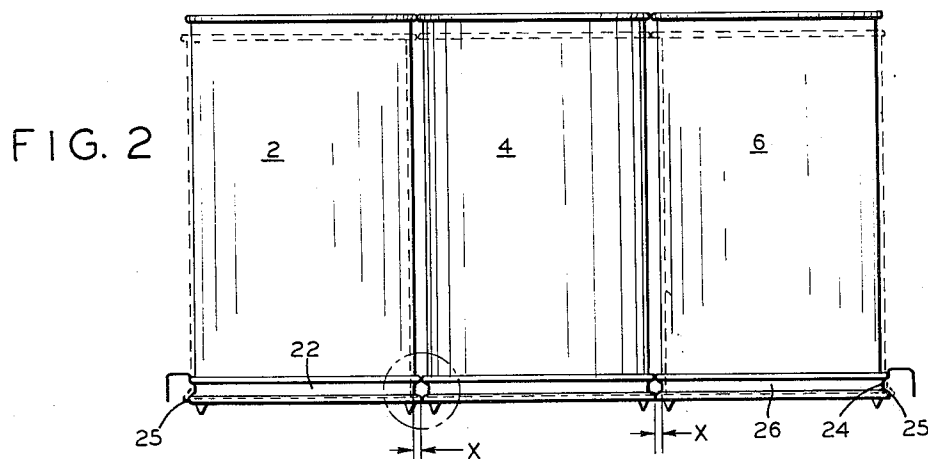
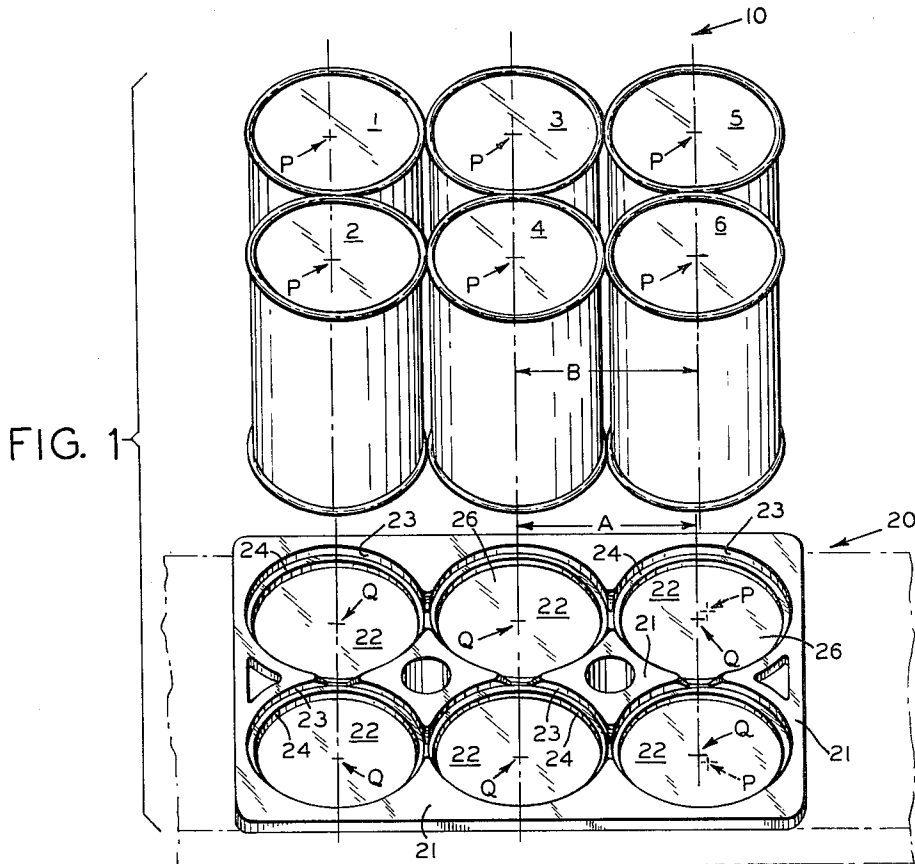
March 29, 1966

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METHOD OF ASSEMBLING A PLURALITY OF CONTAINERS
WITH A RESILIENT CONSTRICTED
BAND PACKAGING DEVICE

3,242,631

Filed Dec. 28, 1962

2 Sheets-Sheet 1



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FIG. 3

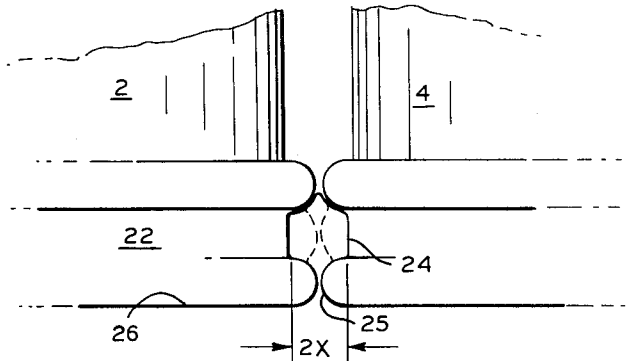
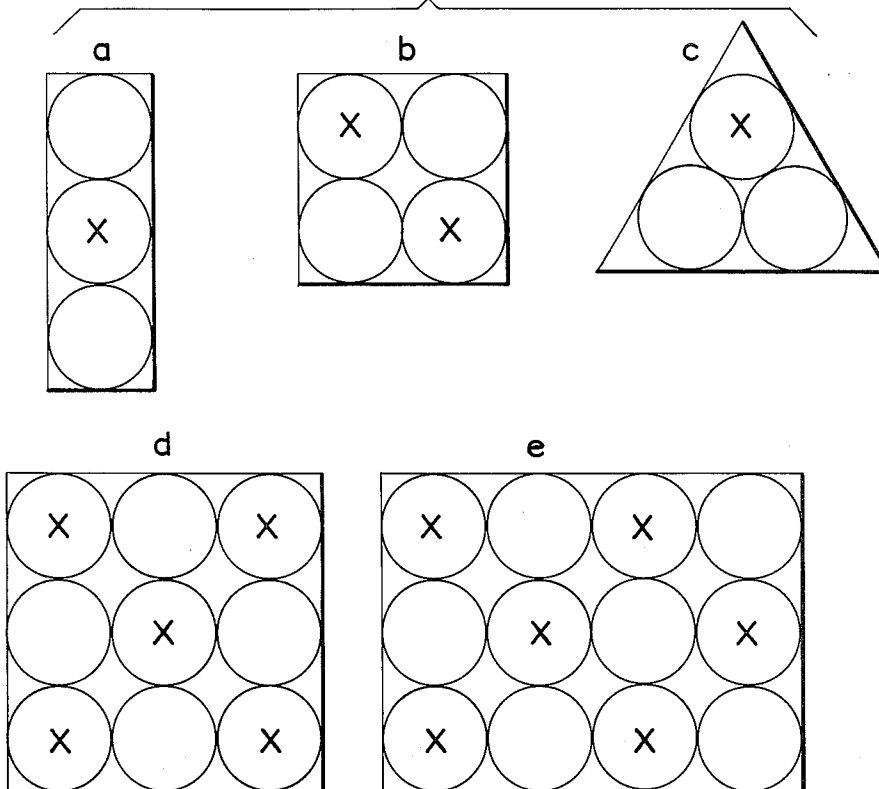


FIG. 4



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METHOD OF ASSEMBLING A PLURALITY OF CONTAINERS WITH A RESILIENT CONSTRICTED BAND PACKAGING DEVICE

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Filed Dec. 28, 1962, Ser. No. 247,920

12 Claims. (Cl. 53—35)

This invention relates to a method of assembling a plurality of chined or bead type containers with a resilient thermoplastic carrier-packaging device of the type described in my pending application Serial No. 861,015 filed December 12, 1959.

The thermoplastic carrier-packaging device of the above identified application comprises a conformed sheet of thermoplastic material having a plurality of discrete, shallow, container-receiving-receptacles projecting from one side of a web means. The package formed by the carrier-packaging device is assembled by inserting one end of a container into each of the shallow receptacles. Thus, one end of the packaged containers is telescoped within the shallow receptacles of the packaging device and the remaining portion of the containers project freely therefrom. To removably secure the containers within the packaging device a constricted band is incorporated in each pocket defining said receptacles. The constricted band is of the same configuration as the container, i.e., circular, rectangular or oval, but of a smaller peripheral dimension. As the containers are inserted within the receptacles the constricted band is stretched and placed in tension about the container. Thus, each container is removably secured within its respective receptacle and suspended from the web means which is provided with finger grips or handle means whereby the plurality of containers are carried. In order to obtain the most compact package, and one which is also very rigid, it is necessary that the containers be packaged so that they are held in forced abutment, whereby the rigidity of the containers is imparted to the package. Thus, the resilient packaging device must be placed in tension once the containers are assembled therewith. To this end, the center to center distance between adjacent container-receiving-receptacles of the packaging device is made no greater than, and preferably slightly less than the distance between centers of abutting containers to be telescoped within corresponding adjacent shallow receptacles of the packaging device. Thus the resilient packaging device is placed in tension and this tension in turn forces one container against the adjacent containers.

In view of the foregoing it will be obvious that the material defining the receptacles, and particularly the discrete tension bands, are substantially in contact at the points of adjacency. As a result it is difficult, if not impossible, to force two containers simultaneously into adjacent receptacles because the material therebetween is pinched between the enlarged chines or beads of abutting containers. As a result the packaging device must be pre-stretched to open up and separate the receptacles to facilitate assembly or according to this invention as hereinafter fully described it is also possible to make the assembly without pre-stretching the packaging device or sacrificing rigidity and compactness.

As stated above, the necessity for stretching the packaging device is to allow the containers to be spaced apart during assembly to prevent binding of the material of the packaging device between the beads of adjacent containers. I have discovered that the same effect can be obtained, without pre-stretching the packaging device to allow spaced assembly of the containers, by dividing the

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plurality of clustered containers to be packaged into at least two groups wherein each container of the group is remote from, or spaced from, each other container of that group. For example, to assemble three containers with a carrier-packaging device having a row of three constricted receptacles, which are on equal or slightly smaller center to center distances than the three correspondingly arranged containers, the two end containers of the row (the remote or non-contiguous containers), are inserted into their respective receptacles prior to the insertion of the center container or vice-versa. To assemble four containers with a carrier-packaging device having two parallel rows containing two constricted receptacles which are on equal or smaller center to center distances than the correspondingly clustered containers, the containers defining diagonally opposed corners of the cluster (the remote or non-contiguous containers), are inserted into their respective pockets prior to the assembly of the remaining pair of containers.

By dividing the clustered containers to be packaged into groups of spaced containers which are simultaneously telescoped within their respective spaced receptacles the material defining the container-receiving receptacles into which the first group of containers is assembled is allowed to freely expand or stretch without interfering with the simultaneously expanding material of an adjacent receptacle also receiving a container.

Therefore a general object of this invention is to provide a novel method of assembling a plurality of clustered containers with a resilient, thermoplastic, constricted band packaging device, in which the center to center distance between adjacent receptacles of the packaging device is not substantially greater than the corresponding center to center distance between adjacent clustered containers, wherein predetermined groups of containers within said cluster are assembled prior to the remaining containers of said cluster or wherein each group are moved into assembly simultaneously with one group leading the other. That is, both groups are moved into assembly simultaneously but one group is fully socketed or telescoped into its respective receptacles prior to the other.

A more particular object of the invention is to provide a method of assembling a plurality of beaded or chined cans with a constricted band packaging device having a like plurality of can receiving receptacles on a slightly smaller center to center distance than the center to center distance between adjacent abutting cans.

Additional objects and advantages of the method according to this invention will be readily apparent from the following detailed description of the annexed schematic drawings illustrating the invention wherein:

FIG. 1 is a partly expanded schematic view of six clustered containers corresponding with the clustered receptacles of a carrier-packaging device wherein the center to center distance between the receptacles of the carrying device are no greater than the distance between centers of the correspondingly clustered containers when in bead to bead engagement;

FIG. 2 is a diagrammatic view illustrating the co-action between cans whereby the packaging device is stretched or placed in tension upon complete assembly of the package according to the method of the invention;

FIG. 3 is a detailed or enlarged view of the encircled area of FIG. 2;

FIG. 4 diagrammatically illustrates the method according to this invention in assembling packages other than previously illustrated.

FIG. 1 of the drawings is a generally schematic view of the elements of a package to be assembled according to this invention. For purposes of illustration the package elements are inverted relative to their normal

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position, however, the containers 1 to 6 of container cluster 10 may be lifted upwardly into assembled relation with the packaging device generally designated 20, as well as being pushed downwardly as shown. The cluster of cans 10 comprises 2 parallel rows, each containing 3 cans numbered 1, 3, 5 and 2, 4, 6. Immediately beneath the clustered cans 10 is shown a carrier-packaging device 20 of the type fully described in my copending application Serial No. 861,015. As noted above, the packaging device 20 comprises a web 21 and a plurality of container receiving receptacles 22 projecting from one side thereof. Each receptacle 22 is defined by an entrance portion 23, a cylindrical constricted tension band 24, an annular bead receiving recess 25 (best seen in FIGS. 2 and 3) and a disk-shaped end wall or cover portion 26. As noted hereinabove the constricted tension band 24 is made slightly smaller in diameter than the diameter of the side wall of the cans and appreciably less than the outside diameter of a can bead.

As previously noted and illustrated in FIG. 1 the center to center distance A between receptacle centers Q of packaging device 20 is preferably slightly less than the corresponding center to center distance B between the centers P of adjacent abutting cans within the cluster 10. However, the distances may be made equal with only a slight sacrifice of rigidity.

Only the difference in center to center distances measured along the longitudinal axis of the package is illustrated in FIG. 1, however, it should be understood that the center to center distances measured along the traverse axis of the package may also be equal or slightly less as discussed above. That is, the center to center distance between adjacent abutting container, say 5 and 6, is equal to or slightly greater than the center to center distance between their respective receptacles measured across the packaging device 20.

According to the improved method of this invention, it is not necessary to pre-stretch packaging device 20 to assemble the package since the non-contiguous containers within the cluster 10, i.e. grouped containers numbered 1, 4, 5 or 2, 3, 6 are separately and successively assembled with the packaging device 20. In other words, non-contiguous grouped containers 1, 4, 5 are first socketed within their respective receptacles of the packaging device 20 and grouped containers 2, 3, 6 are thereafter also socketed within their respective receptacles. It should be noted however that the first group of containers need not be fully inserted prior to the second group. It is only necessary that the first group lead the other slightly but not appreciably more than the width of a can bead, i.e. measured in a vertical plane.

It will be obvious from an examination of FIGS. 2 and 3 that if adjacent containers are simultaneously forced into the receptacles 22, the portion of the constricted band 24 between two adjacent pockets will interfere or be pinched by the contiguous portion of the beads of the containers and possibly rupture the band 24. As a result the containers would not be properly socketed within receptacles 22, or at best would be correctly inserted only by chance and at relatively great pressure. To eliminate the above mentioned interference, it will be obvious that if one container is first fully socketed within its respective receptacle that the resilient thermoplastic material of the packaging device 20 will have room to deform and flex before the adjacent container is socketed within its receptacle. The area into which the plastic is allowed to deform is approximately equal to the difference between the radius of the side wall of the can and the radius of the can bead as illustrated by the space X shown in FIGS. 2 and 3, the distance X being essentially equal to $\frac{1}{2}$ of the difference between the outside diameter of the bead and the outside diameter of the can side wall.

The dotted lines of FIG. 2 illustrate the relative overall expanded or stretched position of the packaging device 20 when each of the receptacles thereof has received

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a container fully socketed therein, stretching of device 20 being accomplished by the camming action of the can beads. The packaging device 20 is stretched by the camming action of adjacent can beads coming into abutment through a double thickness of plastic defining the annular bead recess 25 of each receptacle. The solid lines of FIG. 2 represent the unstretched device 20 or such device prior to being filled. For example, assume the central container 4 is forced downwardly between the end containers 2 and 6 which are socketed in their respective receptacles. The beads of the 3 cans are brought into contact at the bead annulus 25 and the end containers are cammed or forced outwardly as indicated by the dotted lines representing the assembled containers. Thus, if the end containers in FIG. 3 were socketed within a receptacle 22 of a carrier-packaging device 20, the device will be placed in tension as the end cans are forced outwardly by the downward movement of the central container.

For purposes of further illustrating the method according to this invention FIG. 4 illustrates various packages comprising a plurality of containers supported in a carrier-packaging device of the type described hereinabove. In each of the views of FIG. 4 the encircled X indicates the remote containers of the cluster which are assembled as a group and the remaining circular representations of containers illustrate a second group of remote containers also assembled as a unit. Obviously either group of containers may be moved toward or into their respective receptacles just ahead or leading the other group. Since the essential spacing along the longitudinal axis of the containers required to prevent binding and pinching of the receptacle sidewalls between the beads of the containers is the width of a can bead (approximately 0.109 inch taken along the said longitudinal axis) the total number of containers is substantially simultaneously assembled and the time required to assemble all containers simultaneously due to the differences in distance travelled is insignificantly increased by the width of a can bead.

It should be noted with reference to FIG. 4C that in assembling the clustered containers shown, they must be divided into three groups or stated another way, that only one container can be socketed into its respective receptacle at a time.

It will be apparent from the foregoing that the method of assembling a plurality of containers with a restricted band type of packaging device, one example of which is disclosed herein and forms the subject matter of my copending application Serial Number 861,015, according to the above described invention can be accomplished rapidly with a minimum of simple operations and while pre-stretching of the packaging device, or the discrete containers receptacles prior to assembly is quite adequate, the above described method eliminates the need for pre-stretching entirely.

The foregoing description is given by way of example and illustration and is not intended in any limiting sense with respect to the appended claims.

I claim:

1. A method of assembling a plurality of containers with a carrier-packaging device of the type comprising a generally planar sheet having a cluster of container-receiving-receptacles integral therewith and having a center to center spacing no greater than the center to center spacing between abutting correspondingly clustered containers to be packaged thereby; each of the container receiving receptacles comprising a cup-like pocket having a restricted band forming a side wall thereof, said method comprising assembling a plurality of cylindrical containers in a cluster corresponding with said receptacle cluster wherein said containers are in substantial abutment, the axes of said containers being generally perpendicular to the plane of said carrier packaging device, moving a non-contiguous first group of containers within said container cluster in a direction generally parallel to their axes and into corresponding receptacles of said receptacle cluster

and thereafter moving the remaining grouped containers of said container cluster generally parallel to their axes and into their corresponding receptacles, wherein said remaining grouped containers are laggingly spaced from said first grouped containers.

2. The method according to claim 1 wherein said cluster comprises at least two rows of containers wherein each row contains a plurality of said containers and said device comprises a like cluster of said receptacles, the steps comprising moving remotely spaced containers in one row and the alternate containers in the next adjacent rows of containers into their respective receptacles as a group and moving the remaining containers of said cluster into their respective receptacles as a group.

3. The method according to claim 1 wherein said cluster comprises two parallel rows of containers, each row having three containers therein and said device having a corresponding cluster of receptacles, the steps comprising moving the end containers of one row simultaneously with the center container of the other row into their respective receptacles as a group and then moving the remaining containers within said cluster into their respective receptacles as a group.

4. The method according to the method of claim 1 wherein said cluster comprises two parallel rows of containers having two containers in each row and said packaging device having a corresponding cluster of receptacles therein, the steps comprising moving a pair of diametrically opposed containers into their respective receptacles and then moving the remaining containers of said cluster into their respective receptacles.

5. The method according to claim 1 wherein said cluster of containers comprises one row having three containers therein and said packaging device having a corresponding cluster of receptacles, the steps comprising inserting the end pair of containers into their respective pockets and then moving the remaining container of said cluster into their respective pockets.

6. The method according to claim 5 wherein the central container of said cluster is inserted into the corresponding receptacle of said device prior to assembly of the remaining containers of said cluster.

7. A method of assembling a plurality of cylindrical beaded cans in a carrier-packaging device of the type comprising a generally planar sheet having a cluster of can receiving receptacles, each receptacle being defined by a constricted band means integral with a web means, said device characterized by the distance between centers of said receptacles being not substantially greater than the distance between centers of adjacent cans in bead to bead abutment; said method comprising assembling said cans in a cluster corresponding with the receptacle cluster of said packaging device, placing said clustered cans in juxtaposition with said packaging device, the axes of said cans being substantially perpendicular to said planar sheet, effecting relative movement between said carrier packaging device and said containers in a direction parallel to the axes of said containers to assemble non-contiguous containers within said cluster with the corresponding receptacles of said device and then moving the remaining containers into their respective receptacles following said non-contiguous containers.

8. A method of assembling a plurality of cylindrical beaded cans in a carrier-packaging device of the type comprising a generally planar sheet having a cluster of can receiving receptacles, each receptacle being defined by a constricted band means integral with a web means, said device characterized by the distance between centers of said receptacles being not substantially greater than the distance between centers of adjacent cans in bead to bead abutment; said method comprising the steps of assembling said cans in a cluster corresponding with the receptacle cluster of said packaging device, the axes of said cans being substantially perpendicular to said planar sheet, moving at least one can within said cluster relative to the

cans contiguous therewith and generally perpendicular to said sheet to socket said one can within a corresponding receptacle of said packaging device, and subsequently moving said contiguous cans in a direction substantially perpendicular to the plane of said sheet into their corresponding receptacles whereby interference between the beads of said clustered cans entering said receptacles is eliminated and said packaging device is placed in tension upon completion of the assembly of said packaging device and the clustered cans.

9. A method of assembling a plurality of cylindrical beaded cans in a carrier-packaging device of the type comprising a generally planar sheet having a cluster of can receiving receptacles, each receptacle being defined by a constricted band means integral with a web means, said device characterized by the distance between centers of said receptacles being no greater than the distance between centers of adjacent cans in bead to bead abutment; said method comprising the steps of assembling said cans in a cluster corresponding with the receptacle cluster of said packaging device, the axes of said cans being substantially perpendicular to said planar sheet, moving each can within said cluster having a pair of cans contiguous thereto toward said sheet and socketing said cans within corresponding receptacles, and thereafter moving the remaining cans within said cluster toward said sheet and socketing said remaining cans into the remaining corresponding receptacles following said first socketed cans.

10. A method of assembling a plurality of cylindrical containers with a carrier-packaging device of the type comprising a generally planar sheet having a cluster of container receiving means integral therewith and having a center to center measurement no greater than the distance between centers of adjacent abutting containers when assembled in a cluster corresponding with said means cluster; each of the container receiving means comprising a cup-like pocket having the restricted band forming a side wall thereof, said method comprising assembling a plurality of containers in a cluster corresponding with said container receiving cluster, moving non-contiguous containers of said assembly toward said sheet, the axes of said containers being generally perpendicular to said sheet and initially restraining movement of the remaining containers of said assembly such that the first group of non-contiguous containers are secured within their respective pockets closely followed by the remaining containers.

11. A method of assembling a plurality of cylindrical containers with a carrier-packaging device of the type comprising a generally planar sheet having a cluster of container receiving means defining container receptacles having a center to center measurement no greater than the center to center measurement between abutting containers when assembled in a cluster corresponding with said receptacle cluster; each of the container receiving receptacles comprising a cup-like pocket having the restricted band forming a side wall thereof, said method comprising assembling a plurality of containers in a cluster in substantial abutment and in a position to facilitate assembly, moving non-contiguous containers within said container cluster toward said sheet and into the corresponding receptacles, and thereafter moving the remaining containers toward said sheet and into their corresponding receptacles following said first moved containers.

12. A method of assembling a plurality of cylindrical containers with a carrier packaging device of the type comprising a generally planar sheet having a cluster of container receiving means integral therewith, each of the container receiving means comprising a cup-like pocket having the restricted band forming a side wall thereof, assembling a plurality of containers in a cluster corresponding with said cluster of container receiving means and in substantial alignment therewith, moving said device and said clustered containers relatively toward one another in a direction generally parallel to the axes of said

containers movably supporting non-contiguous containers within said cluster of containers until said remaining containers are socketed within the corresponding container receptive means and thereafter immovably supporting said non-contiguous containers while simultaneously movably supporting said remaining containers, and effecting relative movement between said remaining containers and said device to seat said remaining containers.

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