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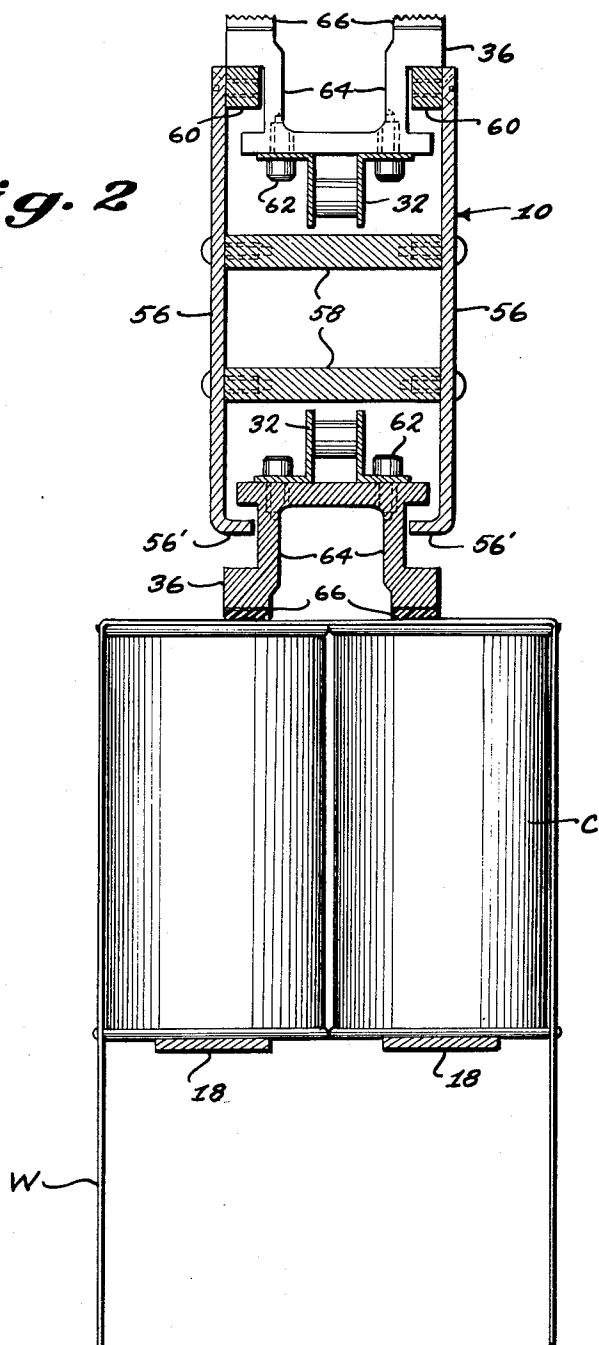
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MEANS FOR POSITIONING OBJECTS WHILE TRAVELING
CONTINUOUSLY DURING PACKAGING

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Fig. 2



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MEANS FOR POSITIONING OBJECTS WHILE TRAVELING CONTINUOUSLY DURING PACKAGING

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This invention relates in general to packaging operations, and more particularly to an improved means for positioning objects during packaging operations in which the objects are maintained continuously traveling.

U.S. Patents No. 2,751,730 and No. 2,809,484, for example, disclose continuously operating apparatus for packaging objects in open-ended paperboard wrappers which, briefly described, comprises means for supporting the objects while maintaining them traveling continuously in package groups and while folding aligned wrapper blanks downwardly about and overlapping and securing them beneath each package group.

The present invention provides means by which an endless series of relatively heavy positioning blocks may be disposed for riding in weighting relation on the aligned wrapper blanks and package groups of objects in such apparatus while traveling at a corresponding rate of speed so as to position the blanks and objects in a particularly effective manner during the packaging operation.

This arrangement of the positioning means provided according to the present invention is described in further detail below in connection with the accompanying drawings, in which:

FIG. 1 is a fragmentary side elevation of representative packaging apparatus incorporating positioning means embodying the present invention; and

FIG. 2 is an enlarged transverse sectional detail further illustrating the packaging means arrangement.

Referring now in detail to the drawings, FIG. 1 shows in elevation a portion of packaging apparatus such as is disclosed in the above noted prior patents, but modified to incorporate a positioning means arranged according to the present invention as indicated generally by the reference numeral 10. The packaging apparatus illustrated comprises a suitable frame structure 12 arranged to carry means for supporting objects or articles, such as cans, to be packaged, while maintaining continuous travel of the objects in package group and folding and securing an aligned wrapper blank about each package group.

The objects to be packaged travel from left to right through the packaging apparatus as seen in FIG. 1, and the objects are initially separated into package groups by means of separating plungers as indicated at 14 that are carried on sprocket chains 16 at each side of the apparatus for extension transversely to effect the package group separation and to maintain the separated package groups traveling continuously at the driven speed of the sprocket chains 16; the objects being supported at the same time on a feed belt or belts 18 that are driven to travel continuously over a suitable supporting surface therefor arranged on the frame structure 12. The foregoing package group separation is also effected in relation to means for feeding and aligning a wrapper blank transversely across the top of each separated package group and maintaining the wrapper blanks in traveling alignment therewith, as is also disclosed fully in the above noted prior patents.

The separated package groups and aligned wrapper blanks are then released by the separating plungers 14 to pass through a folding means at 20, by which the wrapper blanks are folded downwardly at the sides of the package groups; and are then delivered to a second series of sep-

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arating plungers 22 carried on sprocket chains 24 for transfer from the feed belts 18 to a bottom folding station at 26, at which the wrapper blanks are further overlapped beneath the package groups; and the package groups enclosed by the wrapper blanks folded thereabout are then finally transferred to a securing station at 28, at which the overlapped portions of the folded wrapper blanks are secured to complete the packaging operation, while having maintained the objects to be packaged traveling continuously.

In order to maintain the continuously traveling objects properly positioned while they are packaged in the above noted manner, the separated package groups and aligned wrapper blanks pass under the previously mentioned positioning means 10 before being released by the first group of separating plungers 14, and the positioning means 10 maintains the package groups of objects and aligned wrapper blanks properly arranged as they pass through the folding means 20 and are in turn delivered to the bottom folding station 26 and finally to the securing station 28.

For this purpose, the positioning means comprises a sprocket chain 30 extended between a pair of sprocket wheels at 32 and 34, and fitted with a series of positioning blocks 36 carried in regularly spaced relation thereon. The sprocket wheel 32 provided for carrying the sprocket chain 30 at the entrance end of the positioning means 10 (to the left in FIG. 1) is carried at a fixed operating position on a shaft at 38 journaled in a bridge portion 40 forming part of the frame structure 12. The journal bearings (not shown) for the sprocket wheel shaft 38 may be suitably arranged on the bridge portion 40 for vertical adjustment in accordance with the size of the objects being packaged, but upon setting to the size of the objects, the sprocket wheel shaft 38 is maintained at a fixed operating position just sufficient to allow the objects supported on the feed belts 18 to pass under the positioning means 10 at its entrance end. The sprocket wheel shaft 38 is further arranged to be driven through a suitable driving connection as indicated at 42 from the main drive means for the apparatus as illustrated at 44, so as to cause linear travel of the sprocket chain 30 and positioning blocks 38 thereon at the same rate at which the package groups of articles and aligned wrapper blanks are caused to travel through the apparatus.

The other sprocket wheel 34 at the discharge end of the positioning means 10 (to the right in FIG. 1) is carried on an idler shaft 46 journaled in a bracket structure 48 that is arranged on slide members 50 for floating disposition on the frame structure 12, the lower ends of the slide members 50 being fitted with rack elements 52 for engagement by a suitable crank and pinion means at 54 through which the slide members 50 may be moved upwardly to raise the delivery end of the positioning means 10 about the fixed position of its entrance end at the sprocket wheel shaft 38 for allowing access to the separated groups of objects being packaged for correcting any jamming or other difficulty that may occur during the packaging operation, but otherwise allowing the slide members 50 to float downwardly on the frame structure 12.

Between the sprocket wheel shafts 38 and 46, framing plates 56 are arranged at each side of the positioning means 10, with spacing bars 58 secured therebetween, and with slide bars 60 arranged at the upper edges thereof to support the return reach of the sprocket chain 30 and positioning blocks 36 thereon, while the lower edges of the framing plates 56 are flanged inwardly at 56' to provide a downward limiting support for the lower reach of the sprocket chain 30 and positioning bar 36, but allowing this lower reach to float freely thereof. The positioning blocks 36 are individually formed for attachment to the

sprocket chain 30 by some suitable fastening means, such as is illustrated at 62 in FIG. 2, and are preferably formed of metal so as to be relatively heavy.

The particular configuration of the positioning blocks 36 will depend upon the type of objects being packaged, FIG. 2 showing a suitable form for use in packaging flat top cans C in double row packages, the positioning blocks 36 being formed in this instance with a yoke shape providing spaced leg portions 64 to ride each row of the cans C, with friction facings of rubber or the like at the contacting end surfaces of these leg portions 64 for improving the positioning action with respect to the aligned wrapper blanks W and also avoiding any marring thereby of the packages being handled. The spacing of the leg portions 64 in the FIG. 2 form of positioning block 36 is such as also to be adapted for use in handling a single row of the cans C for packaging, and the yoke shape of the positioning blocks 36 adapt them further for handling a single row of screw top cans (not shown) as clearance for the screw top neck portions of such cans would be provided between the leg portions 64. If it were desired to handle screw top cans similarly for double row packaging, two chains of positioning blocks 36 might be provided so that one chain would be available for each row, or the particular shape of the positioning blocks might be modified to spread the leg portion spacing sufficiently to straddle the neck portions of both rows of cans with a third intermediate leg portion preferably provided for riding the rows of cans between the neck portions thereof.

The result of the foregoing arrangement is to render the positioning means 10 self-adjusting for weighting the traveling package groups of cans C or the like and aligned wrapper blanks W securely in position during packaging, while providing a substantially individual weighting action at the successive package groups that accommodates readily the normally encountered minor variations from package group to package group without lessening the positioning effect on any one group.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

I claim:

1. Means for positioning objects while traveling continuously during packaging, said means comprising a sprocket chain arranged with a reach extending over the traveling path along which said objects are to be positioned, a series of relatively heavy positioning blocks fixed in regularly spaced relation on said sprocket chain, downward limiting support means for supporting said extending reach with the positioning blocks thereat free for floating upwardly of said support means in weighting relation on said objects, and means for driving said sprocket chain

at a linear rate corresponding to the linear rate of travel of said objects.

2. Means as defined in claim 1 and further characterized in that said sprocket chain is arranged between a pair of sprocket wheels, the first of which sprocket wheels is carried on a fixed driven shaft, and the other of which is carried on a floating shaft.

3. Means as defined in claim 1 and further characterized in that said positioning blocks have friction facings at the object contacting surfaces thereof.

4. In apparatus for packaging objects in open-ended paperboard wrappers and comprising means for supporting said objects while maintaining continuous travel of said objects in package groups and while folding an aligned wrapper blank downwardly about and overlapping and securing it beneath each package group, the improvement which comprises a sprocket chain arranged above and longitudinally of the path of travel of said objects between a pair of sprocket wheels, the sprocket wheel of said pair under which said objects enter to pass beneath said sprocket chain being carried on a fixed shaft and being driven at a rate causing linear travel of said sprocket chain at a rate corresponding to the linear rate at which said objects travel, the other of said sprocket wheels being carried on a floating shaft, and a series of relatively heavy positioning blocks fixed in regularly spaced relation on said sprocket chain, the lower reach of said sprocket chain above the path of travel of said objects being disposed in relation to means providing a downward limiting support therefor while leaving the positioning blocks thereat free to float upwardly of said support and thereby dispose said positioning blocks in weighting relation on said aligned wrapper blanks and package groups of objects for positioning them during packaging.

5. Means for positioning objects while traveling continuously during packaging, said means comprising conveyor means, an endless series of relatively heavy positioning blocks mounted on said conveyor means and arranged in regularly spaced relation and disposed for riding in aligned weighting relation on said objects while traveling at a corresponding rate, said positioning blocks and conveyor means being disposed in relation to means providing a downward limiting support therefor with the positioning blocks and conveyor means free to float upwardly of said means.

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