May 29, 1956 R. M. BERGSTEIN 2,747,767

REINFORCED SINGLE ROW CARRIER

Filed Aug. 27, 1953 2 Sheets-Sheet 1

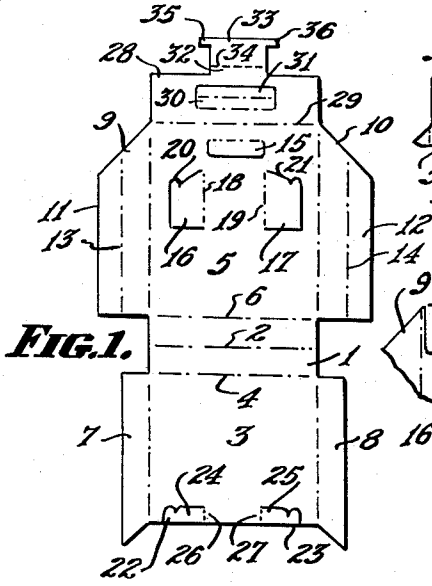


FIG. 1.

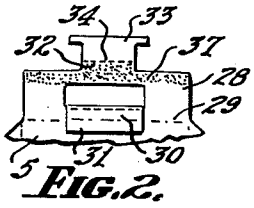


FIG. 2.

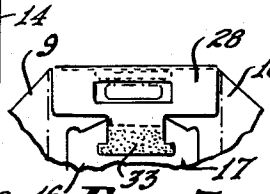


FIG. 3.

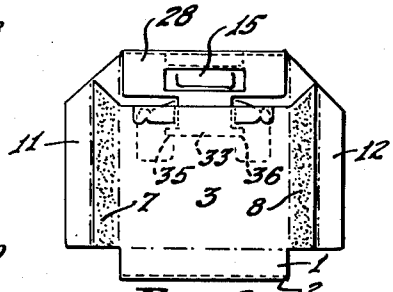


FIG. 4.

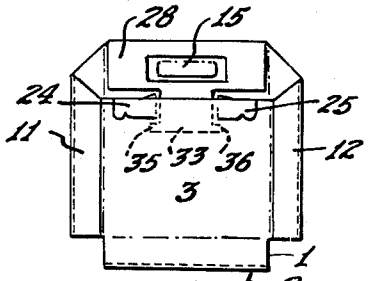


FIG. 5.

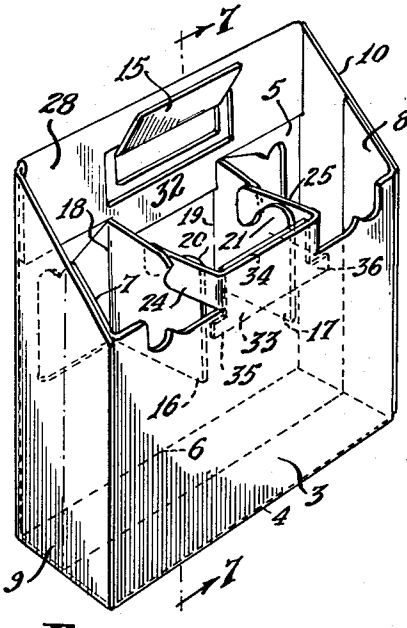


FIG. 6.

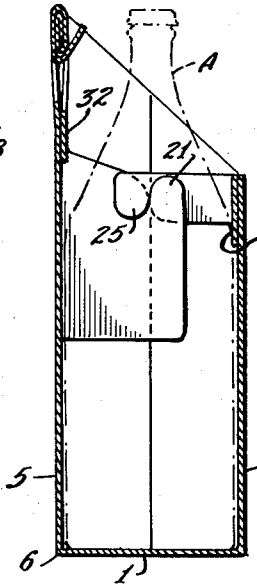


FIG. 7.

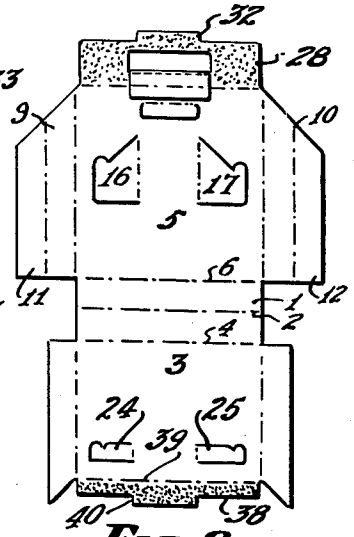


FIG. 8.

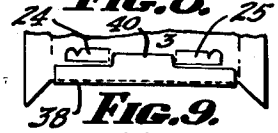


FIG. 9.

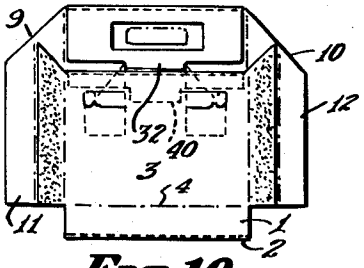


FIG. 10.

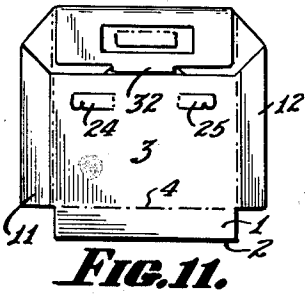


FIG. 11.

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REINFORCED SINGLE ROW CARRIER

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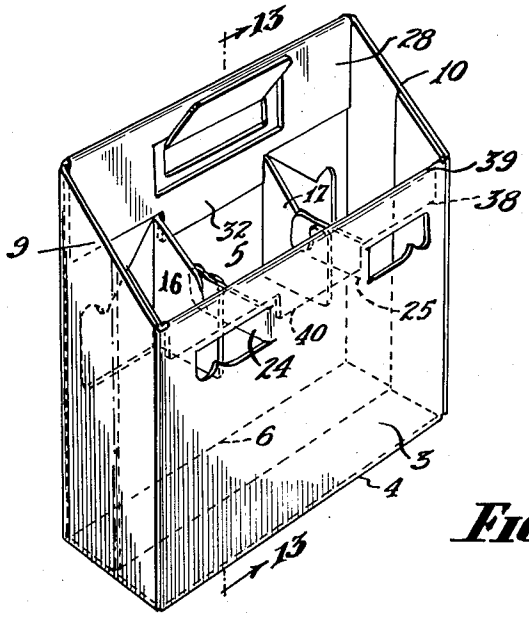


FIG. 12.

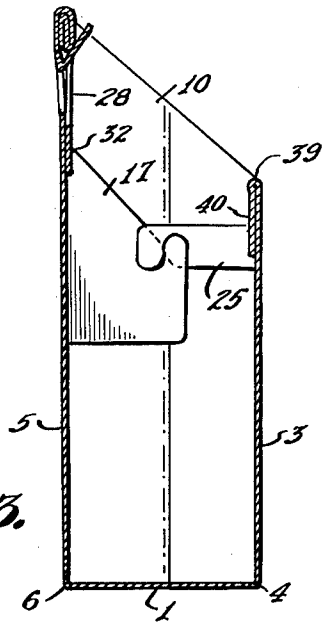


FIG. 13.

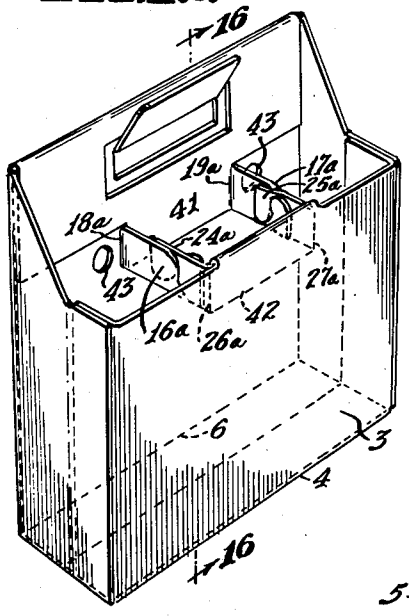


FIG. 15.

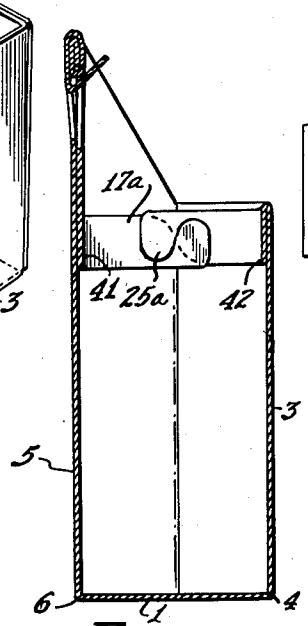


FIG. 16.

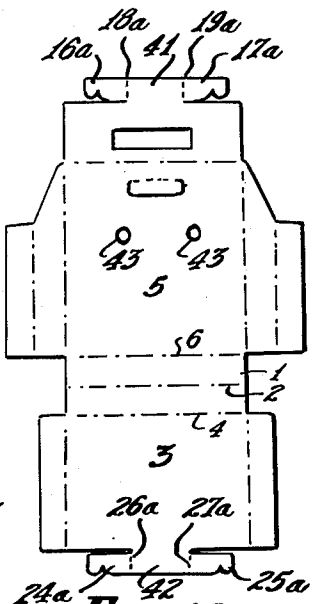


FIG. 14.

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2,747,767

REINFORCED SINGLE ROW CARRIER

Robert M. Bergstein, Wyoming, Ohio, assignor to The Bergstein Packaging Trust, a trust composed of Robert M. Bergstein and Frank D. Bergstein, trustees

Application August 27, 1953, Serial No. 376,795

4 Claims. (Cl. 220—113)

In my copending application Serial No. 326,536, filed December 17, 1952 and entitled Single Row Carrier, I have taught a single row bottle carrier suitable for the packaging and transportation of larger bottles, such as quart-sized bottles, in which three such bottles are placed in a carrier structure having a carrying handle extending upwardly from one of the side walls thereof.

In my single row carrier, the bottles are effectively separated from each other by means of partial transverse partition elements struck from the opposite side walls of the carrier, the partition elements being provided with interengaging means for securing them together to span the width of the erected carrier. In use, particularly where the carriers are subjected to rough handling, I have found that the transverse partition elements tend to tear away from the side walls to which they are articulated, thereby weakening the carrier laterally as well as destroying the partitioning function of the transverse partition elements.

It is, therefore, a principal object of my invention to provide a single row carrier in which reinforcement is provided to strengthen the transverse partition elements by preventing them from tearing away from the carrier side walls.

It is a further object of my invention to provide reinforced transverse partition elements for a carrier of the character described in which the reinforcement means comprise an integral part of the carton blank and may be folded and glued during the normal folding and gluing of the blank.

It is a further object of my invention to provide reinforcement means of the character described which utilize very little additional board in their formation and hence do not materially add to the cost of the carriers, and which do not require special equipment for their folding and gluing, the entire carrier structure being capable of being assembled on conventional equipment found in the average box manufacturer's plant.

These and other objects of my invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by that construction and arrangement of parts of which I shall now describe certain exemplary embodiments.

Reference is now made to the accompanying drawings wherein:

Figure 1 is a plan view of a blank incorporating my novel reinforcement means.

Figure 2 is a partial plan view illustrating the initial application of adhesive to the blank of Figure 1.

Figure 3 is a partial plan view illustrating an initial folding step in the formation of my carrier structure.

Figure 4 is a plan view illustrating a successive step in the folding and gluing of the carrier structure.

Figure 5 is a plan view of the completely assembled-knocked-down carton structure.

Figure 6 is a perspective view of the carrier structure in erected condition.

Figure 7 is a sectional view taken along the line 7—7 of Figure 6.

Figure 8 is a plan view of a modified blank construction.

Figure 9 is a partial plan view of an initial folding and gluing step of the blank of Figure 8.

Figure 10 shows a successive step in the folding and gluing of the blank of Figure 8.

Figure 11 is a plan view illustrating the blank of Figure 8 in the fully assembled, knocked-down condition.

Figure 12 is a perspective view of the carrier of Figure 11 in the erected condition.

Figure 13 is a sectional view taken along the line 13—13 of Figure 12.

Figure 14 is a plan view of still another modification of my blank.

Figure 15 is a perspective view illustrating the blank of Figure 14 in fully assembled, erected condition.

Figure 16 is a sectional view taken along the line 16—16 of Figure 15.

Referring now to Figure 1 of the drawings, I have therein illustrated a carrier blank formed from boxboard or paperboard die-cut and scored to provide a bottom panel 1 divided by a medial score line 2. A side wall panel 3 is articulated to one edge of the bottom panel along the line of articulation 4 and similarly the side wall panel 5 is articulated to the opposite side edge of the bottom panel along the line of articulation 6. The dimensioning of the parts is such that the side wall panels are of substantially equal width, but the side wall panel 5 is of a depth substantially greater than the depth of side wall panel 3 so as to extend thereabove in the erected carrier.

Partial end wall panels 7 and 8 are articulated to the opposite side edges of side wall panel 3, and cooperating partial end wall panels 9 and 10 are articulated to the opposite side edges of the side wall panel 5. Attachment flaps 11 and 12 are articulated to the partial end wall panels 9 and 10, respectively, along the score lines 13 and 14.

A hand-hole forming tab 15 is formed in the side wall panel 5 spaced from the upper edge thereof, in the manner illustrated; and the transverse partition elements 16 and 17 are also formed in the side wall panel 5 below the hand-hole opening, the transverse partition elements being articulated to the side wall along the vertically disposed score lines 18 and 19. The partition elements 16 and 17 have tongues 20 and 21 formed therein for engagement with the tongues 22 and 23, respectively, of the transverse partition elements 24 and 25 formed in side wall panel 3 adjacent the top edge thereof and articulated to the said side wall panel along the vertically disposed score lines 26 and 27. The relative positions of the transverse partition elements are such that their top edges will coincide in the erected carrier, with their respective tongue elements in interlocking engagement. The dimensioning of the parts is such that the portion of the side wall 5 lying beyond the top edges of the transverse partition elements 16 and 17 will extend above the top edges of side wall panel 3, thereby permitting ready access to the hand-hole opening 15 by the user of the carrier.

At the top edge of the side wall panel 5, I provide a reinforcing panel 28 articulated to the side wall panel along a line of articulation 29. The reinforcing panel 28 is provided with reinforcing portions 30 and 31 in accordance with the teachings of my copending application Serial No. 293,530, filed June 14, 1952, and entitled Bottle Carrier With Reinforced Handle and Method of Making It, the portion 30 being articulated to the panel 28 and the reinforcing portion 31 articulated to the portion 30.

The reinforcing panel **28** is provided with a reinforcing neck **32** to which is secured a reinforcing member **33** detachably secured to the neck along the line for severance **34**. The reinforcing member **33** is preferably T-shaped, being provided with projections **35** and **36**.

In assembling the blank just described into a knocked-down carrier structure, the blank may be folded by hand, if desired; but preferably it will be folded and glued using automatic folding and gluing machinery. The construction of the blank is such that the carrier may be formed on a conventional right-angle folding and gluing machine, or it may be formed on a straight-line gluer such as a Staude Master Gluer.

The first step in the folding and gluing of the blank comprises the infolding of the reinforcing portions **30** and **31** in the manner illustrated in Figure 2, together with the application of adhesive to the panel **28** and the reinforcing neck **32**, as indicated by the shaded area **37**.

The blank is next folded along the score lines **29** to bring it to the condition illustrated in Figure 3. The infolding of the parts along the score line **29** results in the juxtaposition of the reinforcing portions **30** and **31** in the area immediately above the hand-hole opening **15** and brings the panel **28** into adhesive engagement with the side wall panel **5**. The reinforcing neck, it will be noted, is juxtaposed to the area of side wall panel **5** lying intermediate the transverse partition elements **16** and **17**, the reinforcing neck thereby serving to reinforce the side wall panel in the areas adjacent the upper edges of the lines of articulation **18** and **19**, which areas have been found readily susceptible to being torn. The reinforcing member **33** extends freely beyond the neck **32** and remains unsecured to the underlying portions of the side wall panel **5**.

Adhesive is next applied to the reinforcing member **33**, as indicated by the shaded area in Figure 3, whereupon the blank is folded along the medial score line **2** in the bottom panel to bring the parts to the condition illustrated in Figure 4. When in this position, the area of side wall panel **3** lying intermediate the transverse partition elements **24** and **25** is juxtaposed to the reinforcing member **33**, and the two parts are adhesively secured together. The dimensions of the reinforcing member **33** are such that the projecting ends **35** and **36** thereof underlie the transverse partition elements **24** and **25** in the manner illustrated, thereby serving to reinforce the side wall panel **3** in those areas wherein the transverse partition elements are most likely to be torn from the side wall. The attachment flaps **11** and **12** are next infolded to overlie the partial end wall panels **7** and **8** with the interposition of adhesive therebetween, as indicated by the shaded areas in Figure 4, thereby bringing the carrier structure to the position illustrated in Figure 5, which is the knocked-down condition of the carrier.

The carrier just described may be conveniently shipped to the user in the knocked-down or flat-folded condition, and is erected by applying inwardly directed pressure against the end walls of the carrier and moving the side wall panels away from each other. Movement of the side wall panels away from each other will result in the severance of the reinforcing member **33** from the reinforcing neck **32** along the line for severance **34**, thereby effectively reinforcing portions of both the side wall panels **3** and **5** by means of reinforcement members initially carried as extensions of the reinforcing panel **28**. Upon erection of the carrier body walls, the transverse partition elements are infolded along their respective score lines and the tongue portions thereof brought into interlocking engagement to bring the carrier to the condition illustrated in Figures 6 and 7 of the drawings, which is the completely erected condition of the carrier. As will be evident from these figures, a bottle A placed in the carrier will be effectively supported against longitudinal displacement by the interlocking transverse partition elements, and the transverse partition elements in turn will be reinforced and prevented from tearing away from the side wall of the carrier by means of the reinforcing neck **32** and the reinforcing member **33**, both of which have edges which substantially coincide with the lines of articulation between the transverse partition elements and the side wall panels in those areas where a tearing action has been found most likely to occur.

In Figure 8 of the drawings I have illustrated a modified carrier blank wherein like parts have been given like reference numerals. In this embodiment the reinforcing member **33** has been replaced by a reinforcing strip **38** articulated to the outer edge of the side wall panel **3** along the score line **39**. The strip **38** is provided with a projecting neck **40** corresponding to the projecting neck **32** of reinforcing panel **28**. In addition the transverse partition elements **24** and **25** are spaced inwardly from the outer edge of the side wall panel **33** by a distance substantially equal to the width of the reinforcing strip **38**.

In this embodiment the reinforcing panel **28** and portions **30** and **31** are infolded as before; and adhesive is additionally applied to the reinforcing strip **38** and neck **40** whereupon the portions are infolded along the score lines **39** so as to assume the position illustrated in Figure 9. The application of adhesive and infolding of the strip **38** may be performed simultaneously with like operations on the reinforcing panel **28**, or the parts may be infolded and secured successively, as desired. From Figure 9 it will be apparent that the reinforcing strip **38** and neck **40** serve, as did the reinforcing member **33**, to reinforce the side wall panel **3** in those areas wherein tearing away of the transverse partition elements is most likely to occur. The strip **38** in the embodiment illustrated has a length equal to the length of the side wall panel **3** and therefore additionally serves to reinforce and strengthen the entire upper edge of the side wall panel.

Subsequent to the infolding and adhesive attachment of the reinforcing strip **38** and neck **40**, the assembly of the blank proceeds in the manner illustrated in Figures 10 and 11 of the drawings, corresponding to the folding and gluing steps performed on the blank of Figure 1 hereinbefore described; and the erected carrier structure is clearly shown in Figures 12 and 13 wherein it will be apparent that the reinforcing neck **32**, the strip **38** and neck **40** serve to reinforce the side wall panels in their areas of greatest weakness.

In Figure 14 I have illustrated yet another modification of my invention wherein the transverse partition elements are removed from the side walls of the structure and formed as extensions carried, respectively, by the reinforcing panel **28** and an extension on the outer edge of the side wall panel **3**. I have thus provided extension **41** articulated to the outer edge of reinforcing panel **41**, the transverse partition elements **16***a* and **17***a* being articulated to opposite side edges of the extension **41** along the score lines **18***a* and **19***a*. Similarly, an extension **42** is articulated to the outer side edge of side wall panel **3** to the ends of which are articulated transverse partition elements **24***a* and **25***a*. These transverse partition elements are articulated to the extension **42** along the score lines **26***a* and **27***a*.

This blank is folded and glued in much the same manner as the blank illustrated in Figure 8, excepting that the application of adhesive is limited to the extensions **41** and **42** so that the transverse partition elements will be free of attachment to the side wall panels in their infolded condition. I have found it preferable to provide openings **43** in the side wall panel **5** underlying the transverse partition elements **16***a* and **17***a* so that those elements may be readily displaced from the planar position by the user projecting a finger through the opening. While I have only shown such openings in the side wall panel **5**, it will be understood that similar open-

ings may be provided in the side wall panel 3, although they are not as necessary here since the transverse partition elements coincide with the top edges of the side wall panel where the user may more easily grasp them to fold them inwardly.

All of the constructions described above result in a carrier in which three quart-sized bottles may be conveniently transported and adequately protected. While it would be possible to form the carriers with side wall panels of equal height, I prefer the arrangement illustrated wherein one side wall is considerably longer than the other with the end wall panels having their upper edges inclined. This construction enables me to form the hand-hole opening at a height at which it may be more conveniently gripped by the user and also enables the user to interconnect the transverse partition elements with much less difficulty. I have also found that the offset relation of the side walls provides the best carrying condition for the bottles placed therein as well as provides for better display of the bottles on the dealer's shelves. It will be evident, however, that the configuration of the carrier may be varied. For example, in the modification illustrated in Figure 14, the end wall panels taper downwardly to the median lines of fold therein and thereafter extend horizontally outwardly to the opposite wall of the carrier. It will also be evident that two of the carriers may be placed back-to-back so as to bring the handle members into juxtaposition and the two carriers transported as a single unit.

Other modifications may be made in my invention without departing from the spirit of it. For example, while I described my invention as it applies to a carrier for three bottles, it will be apparent that the teachings will be equally applicable to carriers for a greater or lesser number of bottles to be aligned in a single row.

Having, however, described my invention in several exemplary embodiments, what I desire to protect and secure by Letters Patent is:

1. In a knocked-down carrier structure, juxtaposed side wall panels connected to each other along three edges by panels collapsed on medial lines of fold, one of said side wall panels extending above the other to define a carrying handle, a handle reinforcing panel secured to the inner surface of the extending portion of said last named side wall panel, transverse partition elements formed in said side wall panels and articulated thereto along spaced apart, vertically disposed score lines, said reinforcing panel including a projecting neck portion extending downwardly between the transverse partition elements formed in said first named side wall panel, said projecting neck having a width substantially equal to the distance between the score lines connecting said transverse partition elements to the said side wall panel, said projecting neck being adhesively secured to the said side wall panel, an extension connected to the lower edge of said projecting neck along a line for severance, said extension being adhesively secured to the other of said side wall panels between the spaced apart score lines therein, whereby to reinforce the said last named side wall panel adjacent the line of articulation of the said transverse partition element thereto, said extension being adapted to be separated from said projecting neck portion along the said line for severance upon erection of the carrier.

2. The structure claimed in claim 1 wherein said extension is of generally T-shape, having outwardly extending projections adapted to underlie the bottom ends of the score lines in the side wall panel to which it is secured.

3. In a knock-down carrier structure, opposed side wall panels connected to each other along three edges by panels collapsing on medial lines of fold, one of said side wall panels extending above the other and having a hand hole opening formed in the extending portion thereof, a reinforcing member secured to said last named side wall panel along a line of articulation defining the top edge of said last named side wall panel, a line for severance dividing said reinforcing member into two parts, said reinforcing member lying in infolded condition with the part thereof adjacent said line of articulation being adhesively secured to the inner surface of the side wall panel to which it is articulated, the remaining part of said reinforcing member being adhesively secured to the other of said side wall panels, whereby when said side wall panels are moved apart during the erection of said carrier said reinforcing member will be separated along said line for severance and will thereby serve to reinforce both of said side wall panels, the first named part of said reinforcing member having a hand hole opening therein mating with the hand hole opening in said extending side wall panel.

4. The structure claimed in claim 3 wherein transverse partition elements are struck from each of said side wall panels and are articulated thereto along spaced apart score lines, and wherein the parts of said reinforcing member are adhesively secured to the inner surfaces of said side wall panels between the spaced apart score lines.

References Cited in the file of this patent

UNITED STATES PATENTS

1,077,322	Ward	Nov. 4, 1913
2,400,759	Katz	May 21, 1946
2,418,350	Holy	Apr. 1, 1947
2,430,755	Bergstein	Nov. 11, 1947
2,575,654	Casler	Nov. 20, 1951
2,644,631	Petter	July 7, 1953
2,668,653	Arneson	Feb. 9, 1954