Oct. 3, 1967 M. H. BEST 3,344,913

CONTAINER FOR MUSICAL REEDS

Filed May 13, 1966

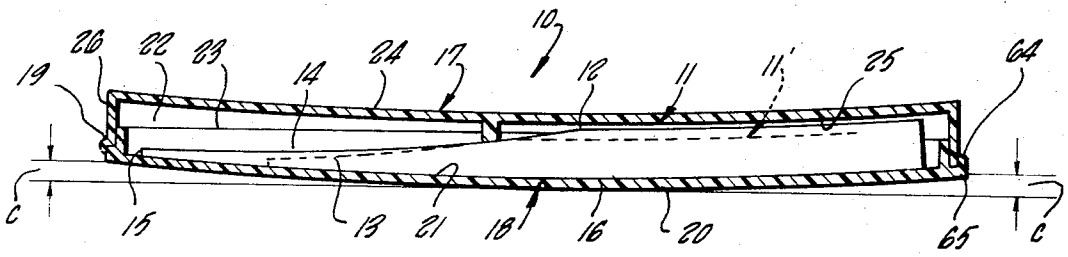

FIG. 1

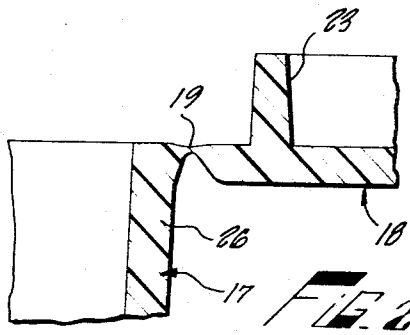

FIG. 2

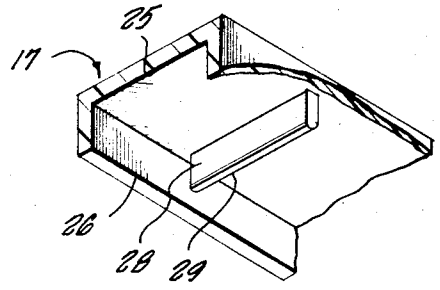

FIG. 3

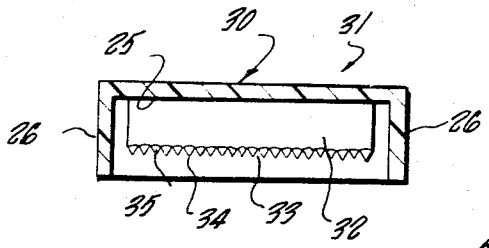

FIG. 4

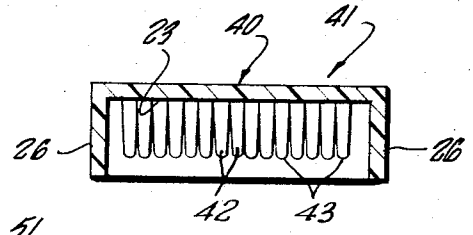

FIG. 5

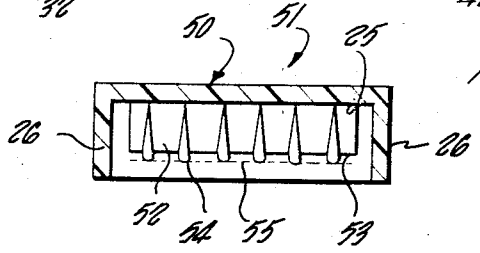

FIG. 6

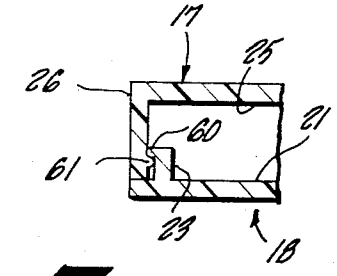

FIG. 7

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United States Patent Office 3,344,913 Patented Oct. 3, 1967

3,344,913

CONTAINER FOR MUSICAL REEDS

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Filed May 13, 1966, Ser. No. 549,947
11 Claims. (Cl. 206—46)

This application is a continuation-in-part application of copending application Ser. No. 512,714 filed Dec. 9, 1965.

This invention relates to containers and, more particularly, to an improved container for musical reeds and the like.

A musical reed, fabricated from cane or bamboo, for use in a woodwind instrument or a saxophone, and having a feather edge at one end, is an extremely fragile article, and the packaging of such articles has long been a troublesome matter. Historically, a musical reed was merely inserted into a box in which the reed was free to slide longitudinally. During shipment and handling of such a packaged reed, the bumping of the feather edge of the reed against an interior end surface of the box often caused the feather edge to be split or otherwise damaged. Unless the feather edge of the reed is maintained in perfect condition, the reed is not usable.

In an effort to provide better protection for a musical reed during shipment and handling of the reed between the time the reed is manufactured and the time it is ultimately used, a reed container like that shown in U.S. Patent 2,910,173 was developed. This package provides better protection for a reed than was provided by a box in which the reed is free to slide. The package is characterized by being molded of rigid plastic to define a one-piece article which encloses five sides of the reed. The package has an open side through which the reed is inserted into and removed from the package. When a reed is disposed in the package, a projection molded into the package engages the vamp of the reed to prevent the reed from moving in the package in such a manner that the reed feather edge bumps an end wall of the package. The projection engages the reed so forcefully that the reed cannot be easily removed from the package. In many cases, the reed is so difficult to remove from the package that the reed is damaged in the attempt. Alternatively, the package may be destroyed before the reed may be removed; in such instances, it is likely that the reed may be damaged before it can be used. Another disadvantage of a package constructed in accordance with this patent is that the reeds must be inserted into the packages very carefully; such packages do not lend themselves to being filled by automatic packaging apparatus if the integrity of the packaged product is to be maintained. Also, such a package cannot conveniently accommodate reeds of differing sizes.

Because musical reeds are made of cane or bamboo, they are subject to undesirable deformation produced by stresses inherently present in such materials. Bamboo is a jointed plant in that circumferential joints, bounding natural partitions across the otherwise hollow bamboo stalk, occur naturally at regular intervals along a bamboo stalk. Proceeding along the stalk from one joint to the next, the outer diameter of a mature bamboo plant decreases, then increases midway between the joints, and then decreases to the next joint. A musical reed made from bamboo has an outer curved surface, to which the vamp surface extends from the reed feather edge, defined by the outer surface of the bamboo stalk. The reed also has a base surface which, during manufacture of the reed, is shaved or planed flat. When the reed is installed on a musical instrument, such as a clarinet or a saxophone, the base surface of the reed is placed against a mouthpiece reed surface which curves slightly convex away

from the reed along its length and along the length of the reed. In order that sound may be produced by operation of the instrument, the reed feather edge must be spaced slightly away from the adjacent edge of the mouthpiece reed surface in order that the musician's breath may pass between the reed and the mouthpiece into the interior of the instrument and cause the reed to vibrate. If the reed feather edge engages the mouthpiece in the relaxed or unactivated state of the reed, no breath can pass the reed and the reed is constrained from vibrating as desired.

The cane or bamboo from which the reed is made is inherently internally stressed as a result of the way in which the cane or bamboo grows in its natural state. This stress is continually dissipated by deformation of the reed. The inherent stress patterns in the cane or bamboo are dissipated only by deformation of the reed such that the reed base surface becomes concave along the length of the reed, and the extent of this concavity increases with the length of time between manufacture and use of the reed. The rate at which the reed base surface becomes concave varies from reed to reed and is not predictable. It frequently happens, therefore, that a reed just removed from a package may be sufficiently concave when mounted on an instrument mouthpiece to be unusable because the reed concavity exceeds the mouthpiece convexity with the result that the reed feather edge engages the mouthpiece. More commonly, the reed concavity is not so extreme. Any departure of the reed base surface from a planar state to a state of concavity, however, produces a corresponding reduction in the useful life of the reed, assuming, of course, the reed does not split before its feather edge moves into contact with the mouthpiece.

The packages heretofore used to house musical reeds between manufacture and sale did little or nothing to offset the tendency of the reed to become concave, and many packages have the characteristic that they aggravate and accelerate deformation of a reed housed therein into a concave condition.

This invention provides a container for a musical reed and the like which does not suffer from the disadvantages above noted. The container is constructed to locate the feather edge of the reed away from an interior surface of the container and to constrain movement of the reed within the container. The container is constructed so that it cannot be closed if a reed is improperly disposed in the container. Accordingly, use of the container assures that a reed packaged therein will reach the ultimate user in perfect condition. Moreover, the container is easy to open and has the feature that a given container may be used to package more than one size of reed. A preferred form of the container is extremely economical to produce and is adapted for use in automatic packaging operations. Also, and not least importantly, the container is constructed so that the reed is maintained with its base surface convex while the reed is in the container, thereby counteracting the tendency of the reed to become concave and extending the useful life of the reed.

Generally speaking, this invention provides a container for a musical reed having a base and a vamp terminating in a feather edge at one end of the reed. The container comprises a pair of mating parts which are movable into and out of closure relation with each other. When the parts are engaged in closure relation, they define a reed receiving chamber having top and bottom surfaces and a length greater than the length of a reed to be received therein. The container part which defines the chamber top surface carries reed vamp engaging means which extend from the chamber top surface to a terminus thereof spaced from the chamber top surface. The vamp engaging means terminus is spaced from the chamber top surface a distance less than the distance between the cham-

ber top and bottom surfaces when the container parts are engaged in closure relation. The reed vamp engaging means is disposed closer to one end of the one container part than to the other end of the part for engaging the vamp of a reed received in the chamber. The vamp engaging means engages the vamp between the base and the feather edge of the reed for preventing the feather edge from engaging an interior end surface of the chamber when the parts of the container are engaged in closure relation with each other around a reed. Preferably the chamber bottom surface is concave toward the chamber top surface along its length.

The above-mentioned and other features of the invention are more fully set forth in the following detailed description which is presented with reference to the accompanying drawings wherein:

FIG. 1 is an enlarged cross-sectional elevation view of a container according to this invention;

FIG. 2 is a further enlarged cross-sectional elevation view of an integral hinge connection between the parts of the container shown in FIG. 1;

FIG. 3 is a perspective view, with parts broken away, of a portion of the container shown in FIG. 1;

FIG. 4 is a cross-sectional elevation view of another container according to this invention;

FIG. 5 is a cross-sectional elevation view of another container in accord with this invention;

FIG. 6 is a cross-sectional elevation view of yet another container according to this invention; and

FIG. 7 is a cross-sectional elevation view showing a latch mechanism of the container shown in FIG. 1.

A container **10** is shown in FIG. 1 engaged around a reed **11** for a saxophone or woodwind instrument. The reed is fabricated from cane or bamboo and has a base portion **12** and a vamp portion **13** having a concave surface **14** which terminates in a feather edge **15** at the end of the reed opposite from the base portion; in transverse cross-section the reed base portion has a configuration resembling a segment of a circle. The reed also has a base surface **16** opposite the reed from the vamp surface. The reed is manufactured so that its base surface is flat when the manufacturing process is completed. The container has mating top and bottom parts **17** and **18** hingeably interconnected by a flexible integral hinge member **19** shown in detail in FIG. 2; container **10** preferably is fabricated of a single molding of polypropylene plastic, although polyethylene or a similar deformable plastic material may be used if desired.

Container bottom part **18** has a base **20**, the upper side of which defines a bottom surface **21** for a container chamber **22** within which the reed is disposed. A wall **23** is raised from surface **21** adjacent to and around the extent of the periphery of the container bottom part. At the opposite ends of the bottom part, the opposing surfaces of wall **23** are spaced apart a distance greater than the length of reed **11**.

Container top part **17** has a base **24**, the underside of which defines a top surface **25** of chamber **22**. A depending wall **26** extends from the base of the container top part around the periphery of the container top part. Wall **26** has a greater height than wall **23** and lies circumferentially outwardly of wall **23** when the container parts are engaged in mating closure relation, as shown in FIG. 1. The dimensions of wall **26** are such that the container top and bottom surfaces are spaced apart a distance greater than the thickness of reed base portion **12**.

As shown in FIG. 1 in greatly exaggerated form (exaggerated to be discernible), chamber bottom surface **21** is concave upwardly of the container bottom part along its length. The extent of this concavity is indicated by dimension "C" in FIG. 1. Similarly, the container top and chamber top surface **25** are convex downwardly substantially the same amount along their lengths. Dimension "C" preferably is about 0.05" for a container having a length of 3⅞ inches.

A reed vamp engaging bridge member **28** is formed integral with the container top part and extends downwardly from chamber top surface to a terminal edge **29**. As shown in FIG. 3, the terminal edge of bridge member **28** is straight and is spaced from the chamber top surface a distance less than the spacing between the chamber top and bottom surfaces of the mated container parts. Further, the lower edge of the bridge member is spaced from the chamber top surface a distance greater than the spacing between the top of reed base portion **12** and the chamber top surface when the container is closed around reed **11**. The lower edge of the bridge is disposed sufficiently below chamber surface **25** that the normally planar base surface of a reed received in the closed container is biased into engagement with chamber surface **21** in response to engagement of the bridge member with the reed vamp surface. The reed therefore deforms so that its base surface becomes convex downwardly along its length. Bridge member **28** extends transversely of the length of the container and the terminal edge of the bridge member engages the inclined surface of the reed vamp.

The bridge member is disposed closer to the hinged end of the container top part than to the opposite end of the part. This position of the bridge member relative to the length of the container assures that the bridge member engages the inclined surface of the vamp when the reed is placed in the container with its flat surface downward and with its feather edge disposed adjacent the hingeable interconnection between the container parts. Accordingly, if a reed is inserted into the container such that the feather edge of the reed is not properly located within the container, the container cannot be closed. This feature of the invention assures that a reed be properly disposed in the container so that the feather edge thereof cannot be damaged by the reed sliding back and forth within the container.

Reed **11**, shown in solid lines in FIG. 1, corresponds to the reed for an alto saxophone. Reed **11'**, shown in dashed lines in FIG. 1, corresponds to the reed for a clarinet. It will be observed that the contour of vamp **13'** for the clarinet reed is congruent to the curvature of the vamp of reed **11** for a portion of the length of reed **11'** notwithstanding the fact that reed **11'** is shorter and thinner than reed **11**. Bridge member **28** is dimensioned and arranged along the length of the container top part so that its lower edge engages the surface **14** of vamp **13** at a point along this surface to which a portion of vamp **13'** is congruent. Accordingly, container **10** is constructed so that it may receive reeds of differing sizes in such a manner that the reed received in the container has its feather edge held out of contact with an interior end surface of chamber **22**.

FIG. 4 is a cross-sectional elevation view through a top part **30** of a container **31** which, except to the extent illustrated in FIG. 4, is identical to container **10**. Surface **25** of container part **31** carries a bridge member **32** which extends transversely of the length of the part **30** between walls **26**. Bridge member **32** has a terminus **33** defined by the aligned points **34** of a plurality of contiguous cones **35** carried by the bridge member. The points facilitate gripping of the reed to prevent damage of the reed feather edge. Preferably, as with container **10**, bridge member **32** is molded integral with container top part **30**. The spacing of terminus **33** from surface **25** corresponds to the depth of bridge member **28**. Preferably, the included angle of cones **35** is between 60° and 90°, inclusive. A large number of cones spaced closely together are provided to prevent ugly marking of the reed.

FIG. 5 shows a top part **40** of a container **41** which, except to the extent illustrated in FIG. 5, is like container **10**. In lieu of a bridge member **28** or **32**, container part **40** is provided with a plurality of fingers **42** which depend from chamber top surface **25**. The fingers are arranged contiguous to one another along a line transversely of

the elongate extent of the container. The fingers preferably are molded integral with the container part, as when the container is molded of polypropylene or polyethylene. The fingers, regardless of the material from which the container top and bottom parts are fabricated, are pliable and have rounded lower ends **43**; the lower ends of the fingers are colinearly aligned and are spaced from chamber top surface **25** a distance slightly greater than the depth of bridge member **28** so that the fingers are deflected by sliding down the vamp as the container is closed around a reed. The fingers, however, are fabricated of an inherently resilient material and act upon a reed to prevent the feather edge of the reed from engaging the adjacent end surface of the container.

FIG. 6 is a cross-sectional elevation view of a top part **50** of a container **51** which, except to the extent illustrated in FIG. 6, is identical to container **10**. Container part **50** carries a bridge member **52** which depends from chamber top surface **25** and extends transversely of the length of the container between walls **26**. The bridge member has a lower edge **53**. A plurality of spaced apart projections **54** extend from the bridge member beyond edge **53** to rounded lower ends **54** which are aligned along a common line **55**. The spacing between line **55** and the underside of the container top part corresponds to the depth of bridge member **28** of container **10**. Preferably, bridge member **52** and projections **54** are molded integral with container part **50**.

As shown in FIG. 7, adjacent the ends of container parts **17** and **18** opposite from integral hinge **19** and along the sides of the container parts, the opposing surfaces of walls **23** and **26** define cooperating projections **60** and **61**, respectively. These projections preferably are formed integral with the walls, as where the container is molded of polypropylene or polyethylene plastic. The projections are arranged relative to one another so that projections **60** lies between chamber top surface **25** and projection **61**. The projections, therefore, define a latch mechanism for maintaining the container parts in closure relation with each other around a reed disposed within the container.

To facilitate opening the closed container, a flange **64** extends outwardly from the base of wall **26** at the end of the container opposite from the integral hinge between the container parts. The flange extends approximately halfway across the width of the container top part from one side of the container. A cooperating flange **65** extends forwardly from the corresponding end of the container bottom part across the remaining portion of the width of the container. When it is desired that the container be opened, flanges **64** and **65** may be manually engaged and moved in opposite directions to apply opening force to the container parts, thereby causing walls **23** and **26** to deform so that lugs **60** and **61** disengage from each other. It is apparent, therefore, that the container is readily opened when desired, but not before, for easy removal of a reed contained therein.

Each of containers **10**, **30**, **40** and **50**, described above, has a chamber bottom surface, toward which the bridge means carried by the container top depends when the container is closed, which is curved concave upward along its length. The bottom surfaces of these containers have substantialy no curvature transversely of their lengths. As noted above, when a musical reed is manufactured it has a planar base surface **16** which becomes concave along its length as the internal stresses in the cane or bamboo from which the reed is made are dissipated and relieved. The disadvantageous results which follow from concavity of a reed base surface have been discussed above. Each of the containers described above is constructed so that, when the container is closed around a reed, the base surface of the reed is forced into engagement with the concave bottom surface of the reed chamber. Accordingly, so long as the reed is housed in a container in accordance with this invention, the reed base surface is maintained in a slightly convex state. As a result, the internal stresses present in the reed cannot dissipate. Thus, when the reed is removed from the container for use, the reed base surface is either planar or slightly convex, but not concave. Reeds marketed in containers in accordance with the foregoing description, therefore, are always usable when removed from the containers. Also, because the reeds exhibit no concavity along their base surface lengths, they have a longer useful life than reeds marketed in containers heretofore used.

When a reed is in use, the reed becomes wet as a result of being engaged in a musician's mouth. When a reed becomes damp, dissipation of the internal stresses in the reed is made easier. It is for this reason that most woodwind instrument musicians carry containers in which damp reeds are held against a flat surface for drying.

A container in accordance with the foregoing description may be used to advantage as a drying press for a musical reed following use thereof. The damp reed is merely placed back into its container and left there to dry. The reed dries while biased into a convex state. As a result, the reed, when both marketed and dried in a container according to the preceding description, has a considerably longer useful life than a reed dried in prior presses, assuming that the reed feather edge does not split before it is worn out.

The upwardly concave curvature of containers according to this invention is an unexpected property of such containers. Initially the dies used to mold such containers were made to produce a container having flat top and bothom surfaces. It was found, however, that containers made by the use of such dies have the curvature characteristics discussed above as a result of the manner in which the plastic from the containers are made deforms during cooling following removal from a molding machine. Both polyethylene and polypropylene containers exhibit the desired curvature, but polypropylene containers have the most desirable curvature characteristics. Accordingly, it is preferred that reed containers according to this invention be made of molded polypropylene.

It will be understood that this invention is not restricted to integrally hinged container parts. The construction described above, however, is preferred since such containers may be fabricated rapidly and cheaply and they lend themselves to use in automatic packaging operations.

The foregoing description has set forth presently preferred embodiments of the invention. It will be understood that the structure described above may be altered or modified without departing from the scope of this invention. Accordingly, the foregoing description is not to considered as limiting the scope of the invention.

What is claimed is:

1. A musical reed having a base, a substantially planar base surface and a vamp terminating in a feather edge at one end of the reed, and a merchandising container for the reed comprising mating top and bottom parts movable bodily relative to each other into and out of closure relation with each other, the parts in closure relation to each other defining an elongate fully enclosed reed receiving chamber having top and bottom surfaces, the reed being disposed in the chamber with the feather edge thereof toward one end of the chamber with the reed base surface supported on the chamber bottom surface, the chamber having a length greater than the length of the reed, the top container part carrying reed vamp engaging means extending from the chamber top surface to a termius spaced from the top surface a distance less than the distance between chamber top and bottom surfaces in said closure relation of the parts, said distance being greater than the distance between the reed base and the chamber top surface in said closure relation of the parts around the reed, the reed vamp engaging means being closer to the other end of the top part than to the one end thereof for engaging the vamp of the reed for

preventing the feather edge thereof from engaging the one end of the chamber when the container parts are disposed in closure relation around the reed.

2. A container according to claim **1** wherein the vamp engaging means comprises a plurality of deformable fingers.

3. A container according to claim **2** wherein said fingers are spaced proximate to each other transversely of said one container part.

4. A container according to claim **1** wherein the vamp engaging means comprises a bridge member depending from and extending transversely of said top surface.

5. A container according to claim **4** wherein the terminus comprises a substantially straight lower edge of the bridge member.

6. A container according to claim **4** wherein the termius of said bridge member forms a serrated lower edge of the bridge member.

7. A container according to claim **6** wherein the serrated edge is defined by a plurality of rounded projections spaced from each other along the bridge member.

8. A container according to claim **6** wherein the serrated edge is defined by a plurality of contiguous projections.

9. A merchandising container for a musical reed made of bamboo and the like and having a planar base surface extending along the length of the reed, a base portion, and a vamp terminating in a feather edge at one end of the reed and having a vamp surface opposite from the reed base surface, the container comprising

(a) a pair of mating parts movable into and out of closure relation to each other and coacting in said closure relation to define a closed reed receiving chamber having top and bottom surfaces, opposite end surfaces, and a length greater than the length of a reed to be received therein,

(b) said chamber bottom surface being a selected amount concave upwardly along its length,

(c) the one container part defining said chamber top surface carrying reed vamp engaging means disposed closer to one end of said one container part than to the other end thereof and extending from said chamber top surface a distance less than the distance between the chamber top and bottom surfaces in said closure relation of the container parts for engaging, between the reed base portion and the feather edge, the vamp surface of a reed received in the chamber with its base surface adjacent the chamber bottom surface for

(i) preventing the feather edge from engaging an interior end surface of the chamber when the parts are in said closure relation around the reed and for

(ii) deforming the reed toward engagement of the reed base surface along its length with the chamber bottom surface, and

(d) releasable means for maintaining the container parts in said closure relation.

10. A container according to claim **9** wherein the chamber top surface is substantially parallel to the chamber bottom surface when the container parts are engaged in said closure relation, and the vamp engaging means extends from the chamber top surface a distance sufficiently greater than the normal distance between the chamber top surface and the location on the vamp surface of a reed in the chamber aligned with the vamp engaging means that the reed is deformed between its ends sufficiently to move the reed lower surface into substantial engagement along its length with the chamber bottom surface when the container parts are in said closure relation.

11. A container according to claim **10** wherein the container parts are molded as a unit of polypropylene and including integral hinge means interconnecting the one end of the one container part with the other container part, and the releasable means are defined by the container parts and are operable upon movement of the container parts into said closure relation.

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THERON E. CONDON, *Primary Examiner.*

J. M. CASKIE, *Assistant Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,344,913 October 3, 1967

Melvin H. Best

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, lines 74 and 75, "being closer to the other end of the top part than to the one end thereof for engaging the vamp of the reed for" should read -- being closer to the one end of the top part than to the other end thereof for engaging the vamp of the reed for --.

Signed and sealed this 24th day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents