Dec. 27, 1966 A. HESSLER 3,293,828

SADDLETREE CONSTRUCTION AND METHOD

Filed April 21, 1965 3 Sheets-Sheet 1

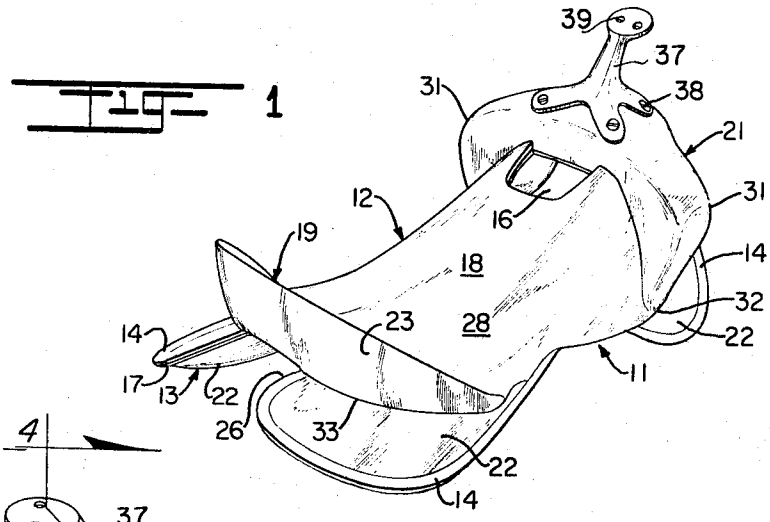


FIG. 1

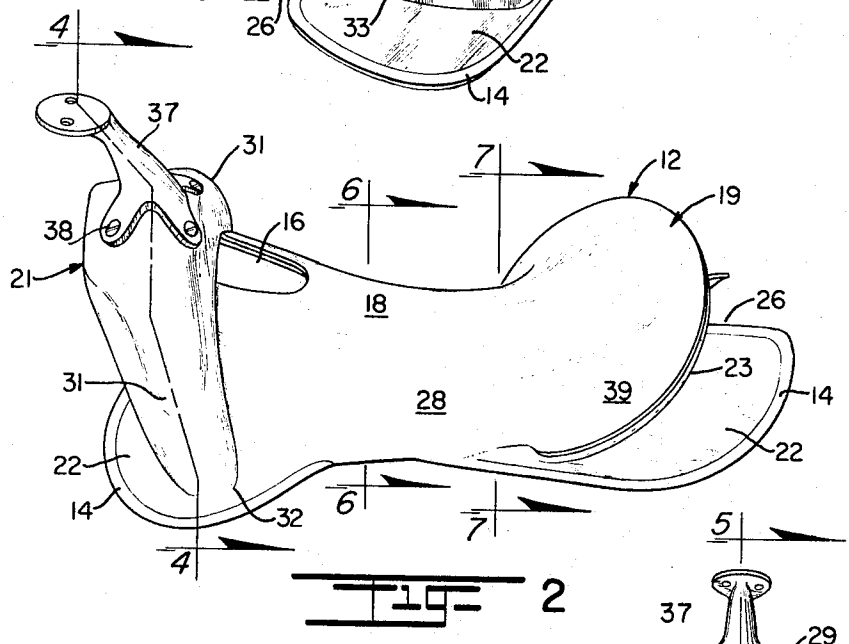


FIG. 2

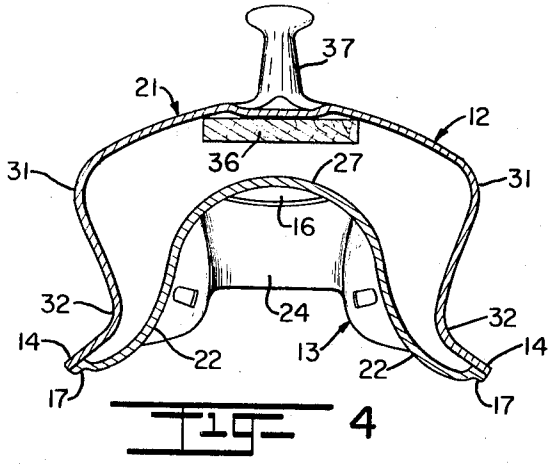


FIG. 4

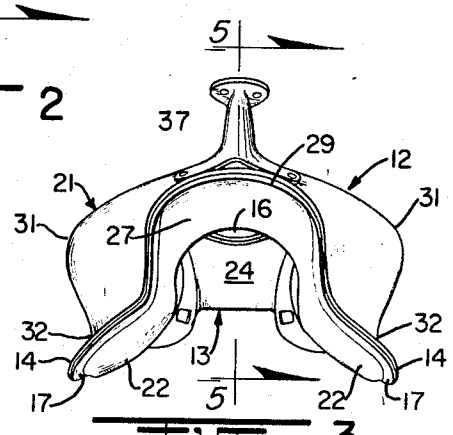


FIG. 3

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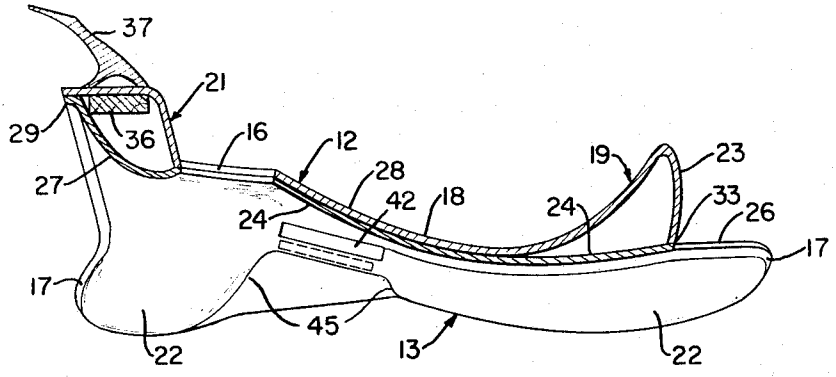


FIG 5

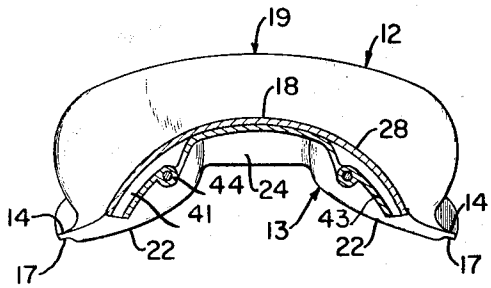


FIG 6

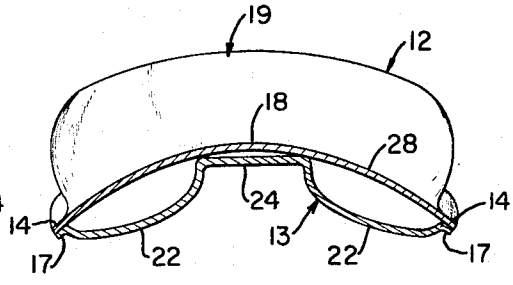


FIG 7

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SADDLETREE CONSTRUCTION AND METHOD

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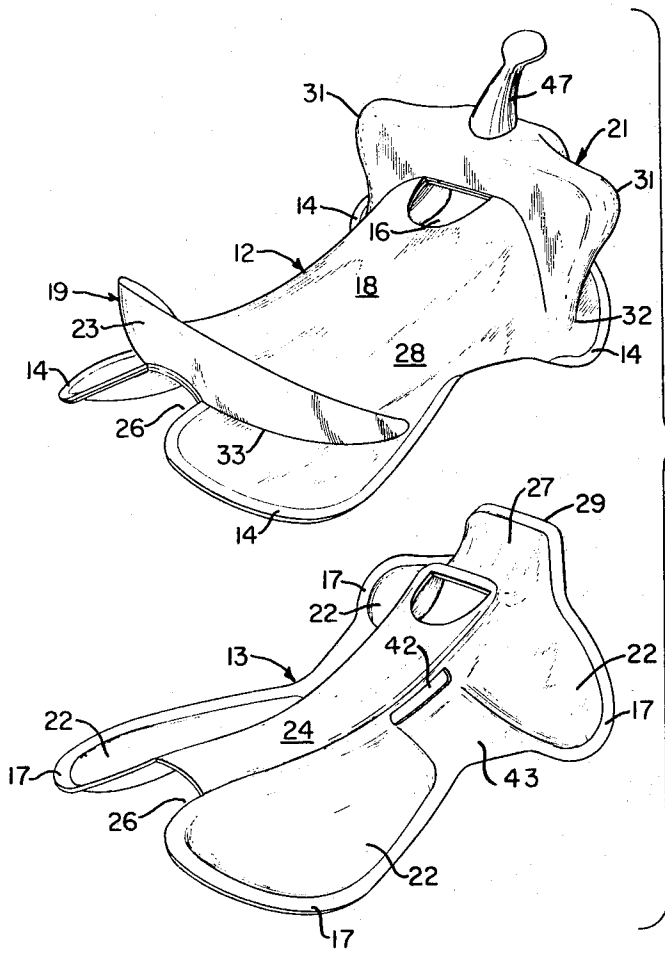


FIG. 8

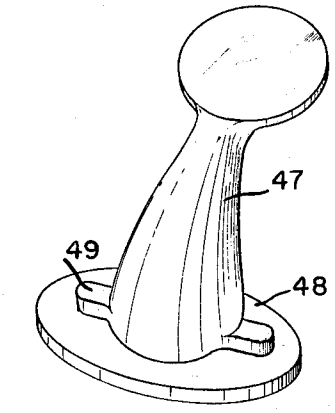


FIG. 9

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3,293,828

SADDLETREE CONSTRUCTION AND METHOD

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7 Claims. (Cl. 54—44)

The present invention relates to saddletrees and to the manufacture and production of saddletrees from fiber glass.

Though the form and appearance of saddles has evolved over a long period of years, saddles have predominantly been made of leather that is formed and shaped over a saddletree which provides the rigidity and strength required in usage. In recent years saddletrees of wood have evolved into a customary shape in which two spaced apart longitudinal members known as tree rails or side bars are joined at the rear and front by cantle and saddle bow or pommel members. The saddletrees have usually been formed from wood by carving and routing and joining processes to derive shapes that would best accommodate the leather construction of the saddle.

The manufacture of saddletrees from wood is a relatively expensive process, since it requires the formation of individual side bars, cantles and pommels with subsequent accurate joining of such members to make up a combined structure. In the more expensive saddles the wood saddletree elements are joined together by use of glues and cloth, and subsequently these parts are reinforced by the application of rawhide which further binds and strengthens the assembled saddletree. Because of the fact that the side bars are spaced each from each in their longitudinal course in order to provide clearance for the withers of the horse, the leather worker has previously had a considerable problem in building up a suitable construction that would span this longitudinal gap and provide smooth support for the saddle plate upon which the rider sits. In general, the prior construction method has been concerned with the gradual build up of multiple layers of leather with each of the layers of usually coarse grade material being carved or skived at the edges so that the termination of the separate layers will not be discernible when the final saddle leather is in place. In more recent years it has been recognized that some materials other than leather can be adapted to this gap spanning function. Sheet metal and, finally, plastic or fiber glass components have been provided and used for this purpose.

After a review of the known and existing techniques in the manufacture of saddletrees, the present inventor determined to provide a new and improved saddletree which would be of such construction as to facilitate the easier placement and support for the covering saddle leathers. As the result of such determination, the inventor now presents a saddletree construction in which glass reinforced plastics materials are used to form an integral saddletree. Among the guiding objectives in the provision of such improved tree are the following:

To provide a saddletree that is of final unitary construction in which the component segments mutually contribute to the strength of the entire assembly;

To provide a unitary saddletree of proper and smooth conformation so that conventional saddle leathers, stirrups and skirts may be conveniently applied directly to the tree without the requirement for build-up support leathers;

To provide a saddletree which is initially formed of two major parts and in which such parts are joined together by simplified means to obtain a structurally strong and unitary construction;

To provide a saddletree, the elements of which will themselves span the longitudinal slot between the side bars and provide smooth transitions between saddletree parts so that saddle leathers can be applied directly to the saddle tree;

To provide a saddletree construction, the elements of which may be made up of two mating mold formed pieces notwithstanding the duplication of the characteristic obstructing curves and convolutions of saddletrees and saddles;

To provide a saddletree construction that provides strong and secure support for a saddle horn, and further to provide a modified saddletree construction in which a saddle horn can be secured directly in molded elements of the saddletree for integral bonding with the glass reinforced plastic components thereof.

Further objects and advantages of the present invention will be apparent from the description and drawings, in which:

FIG. 1 is a perspective view showing the overall saddletree construction of a first embodiment of the invention,

FIG. 2 is a side perspective view showing further details of saddletree construction,

FIG. 3 is a front elevation showing components of a mold formed saddletree,

FIG. 4 is a cross-sectional elevation taken along the line 4—4 of FIG. 2,

FIG. 5 is a cross-sectional elevation taken along the line 5—5 of FIG. 3,

FIG. 6 is a cross-sectional elevation taken along the line 6—6 of FIG. 2,

FIG. 7 is a cross-sectional elevation taken along the line 7—7 of FIG. 2,

FIG. 8 is an exploded perspective drawing showing details of a second embodiment of the invention, and

FIG. 9 is a perspective drawing of a saddle horn used in the second embodiment of the invention.

Briefly stated, the present invention provides a saddletree made of glass reinforced plastics materials, molded to provide the characteristic supporting structure of a saddletree and further incorporating additional design features contributing to the strength, utility and convenience of such saddletree. Significant aspects of the invention are embodied in the fact that the new saddletree is molded in only two separate pieces which are subsequently joined together along matching and mating external edges and internal surfaces during the forming process for the bottom piece in order to obtain an eventual strong and unitary one-piece saddletree. With this construction all exposed surfaces are of smooth texture as derived from the mold surface for the component parts and necessary saddle leathers can be directly applied. The new and improved saddletree provides a hollow construction of increased cross-sectional rigidity at points of maximum strain and bulk that is of significantly lighter weight than heretofore possible. The molding and fabricating process used to obtain the saddletree is likewise of significance in connection with the practice of the invention.

Two separate but related embodiments of the invention are shown in the accompanying drawings. FIGURES 1 through 7 represent a first embodiment to which a saddle horn of existing type may be applied. The embodiment shown in FIGURES 8 and 9 includes the provision of a saddle horn which is directly molded in the plastics materials of the top segment of the saddletree to be tightly and securely held in such desired position when the plastics construction materials have cured. In most other respects the two constructions are similar, though some difference in configuration for the pommel may be discerned that is representative of the type of changes that can be made in saddletree construction in accordance with

this invention to satisfy the use and appearance requirements of individual purchasers and users.

In FIGURES 1 through 7 the unitary saddletree construction is designated by the numeral 11. The major components of the unitary whole include top and bottom segments 12 and 13 which are formed in separate molds and which are joined together each to each during the forming process for the bottom segment by compressing the outer terminal edges 14 and 17 of the top and bottom segments, respectively, together while the bottom segment 13 is being cured. In addition to the compressed juncture at the outer terminal edges, the top and bottom segments are likewise bonded together along the edges of the gullet 16 and along a conterminous joint section 18 extending rearwardly from the gullet to a location adjacent the cantle 19. The joint section 18 in general approximates the location of a gap previously existing between the side bars of wood formed saddletrees.

Away from such section 18 and the terminal edges, the top and bottom segments 12 and 13 are spaced each from each so that the final unitary saddletree construction is hollow in positions corresponding to the cantle 19, the pommel 21 and the side bars 22. These points of hollow construction essentially coincide with the traditional positioning of solid wood members of a conventional saddletree. In the present construction the hollow segments not only decrease the combined weight of the saddletree, but the hollow cross-section provides inherent reinforcing that duplicates the strength characteristics of the previous solid wood components. For convenience of nomenclature, these hollow components have been given names corresponding to those usually applied in the description of saddletree construction. In the present instance, however, each of such components, other than the cantle, is made up in part by surfaces that are formed with the top segment 12 and in part by matching or mating surfaces that are formed integrally with the bottom segment 13.

The cantle construction itself is predominantly formed with the top segment, but it should be noted that the bottom segment provides support and reinforcement for the cantle by reason of the joinder along the joint section 18 and further by reason of the junction between the back face 23 of the cantle 19 and the continuation of the bridge segment 24 as seen in FIGURE 5. This bridge segment 24, in fact, continues from this rear point of junction just forward of the notch 26 behind the cantle 19 all the way forward to the pommel 21 and provides the lower mating edge at the gullet 16. At its front extent the bridge segment 24 actually joins a yoke or saddle bow 27 type of construction. The saddle bow 27 itself terminates in a front edge 29 which matches with a mating edge of the top segment pommel construction. The bottom segment yoke or saddle bow 27 and the top segment pommel 21 together make up a transverse hollow section which tends to reinforce the saddletree construction.

In similar manner the cantle 19 provides a strong transverse structure which adequately serves to hold the rear portions of what would be the side bars of a conventional saddletree together. As an improvement over conventional wooden saddletrees, the lower bridge segment 24 and the top saddle plate 28, which includes the joint section 18, likewise further supports the unitary saddletree construction.

The unitary construction of the cantle, pommel and saddle plate 28 represents a major improvement over previous saddletree construction, since it is possible with this new configuration to dispense with the previously necessary build-up leathers and separate support plates that were used to span the gap between conventional side bars. With the new smooth contours for all surfaces the saddle plate leathers and, in fact, all other saddle leathers used in finishing a saddle may be directly applied to the saddletree.

The smooth surfaces and flared transitions used in the top segment, however, present a special mold problem that will be apparent after consideration of the divergent angular dispositions for the cantle and pommel. It will be seen that the swells 31 on the pommel 21 which are characteristic of Western type saddles extend in a direction opposite the general direction for the cantle components. The swells 31 further overhang the line of juncture 32 between the pommel and the saddle plate 28 or the front portions of the side bars 22.

This angular positioning of components complicates the desired attainment of a one piece top segment. Accordingly, special mold designs are necessary to obtain such desired construction. A two piece mold is used which has a match line that corresponds to the longitudinal axis of the top segment. After the unitary top segment has been molded, the mold can then be parted along such match line so that the top segment can be extracted therefrom. Use of a conventional rigid type two piece mold would make it possible to obtain a top segment of perhaps satisfactory configuration, but it has been noted that the presence of desirable hollows on the front face of the cantle in the area 39 complicates direct extraction of molded segments from rigid molds. In order to avoid these difficulties, the two piece mold for the top segment is itself made of flexible material so that the mold can be slightly deformed as the top segments are extracted.

With the configurations illustrated it has been noted that the top segments can best be extracted from the two piece flexible molds if the molds are sprung away from the pommel section first. Thereafter the molds can be pivoted about the line of juncture 33 between the rear cantle face 23 and the top surface of the side bar 22 so that the cantle 19 can be loosened and extracted.

One further feature of the mold process is of major importance in the construction of glass fiber saddletrees in accordance with this invention. Since the top and bottom segments 12 and 13 are individually formed, it is necessary that they be joined together to provide the desired unitary saddletree construction. For the purpose of securing a strong joint the mating edges 14 and 17 of the top and bottom segments 12 and 13, respectively, are cooperatively formed so that a good bond may be obtained along mating edge surfaces of considerable width. In addition to the mating edges 14 and 17, the top and bottom segments 12 and 13 are provided with additional internal surfaces that mate each to each. If a proper bond can be obtained between all of such cooperative mating surfaces, a strong and structurally rigid saddletree can be provided.

While various types of adhesives and cements can be used to bond glass fiber pieces together, it has been found that a highly satisfactory bond can be obtained through use of the glass fiber bonding resin itself. Since the polyester type resins normally used in the fabrication of molded glass reinforced plastics materials are considerably cheaper than most cements or adhesives that might be used, the use of such resins is economically advisable. While such resins may be used to join previously formed and cured pieces, it has been found that a further economy is possible when the top and bottom segments are joined together at the same time that one of such sections is itself being formed and cured.

Since the top segment is the more complicated piece, this segment is formed in its two piece mold and is allowed to cure to the point where it can be removed from the mold. As a next step, the inception of which may begin coincident with the later curing cycle of the top segment, a bottom segment is formed in its mold. The requisite layers of glass reinforcing and resin are applied until the desired thickness has been obtained. Upon attainment of the required buildup and prior to the complete curing of the bottom segment, the top segment which has been removed from its mold is applied directly to the bottom segment while it is still in its mold and before the resin of the bottom segment has cured.

Clamping members are applied along the mating surfaces **14** and **17**, and similar clamping frames are further applied along the bridge **24** and joint section **18**. With this arrangment the uncured resin of the bottom segment will join and bond with the resins and materials of the top segment. When the bottom segment has cured, a unitary saddletree can be removed from the bottom segment mold, and the top and bottom segments will be found to be solidly and intimately joined each to each. After finishing operations, which include the removal of overlapping glass fibers at the mold edges, the router cleanout of the gullet **16** and the like, the completed unitary saddletree product is obtained.

For the embodiment shown in FIGURES 1 through 7, a saddle horn **37** may be applied to the saddletree. To facilitate the installation, it is preferred that a block of wood or other reinforcing block **36** be molded into the top segment **12** in position at the top of the pommel **21**. This reinforcing block **36** will then provide strength and support for the saddle horn **37** which can be applied to the external surface of the top segment **12** by use of screws **38** or bolts which extend through the pommel surface **21** and into the reinforcing block **36**. The saddle horn **37** may be of a type providing holes **39** so that leather covers or other ornamentation may be applied to the horn **37**.

In order to facilitate the application of stirrup straps, the bottom segment itself is provided with strap receptacles **41**. Such strap receptacles include the provision of openings **42** through which the stirrup straps may be engaged and a raised section **43** on the top surface of the bottom segment **13**, which is still spaced away from the top segment **12** so that a strap may be engaged over such raised section **43** and through the opening **42**. The raised section **43** on the top surface provides a corresponding channel **45** in the bottom surface of the bottom segment to accommodate a return length or portion of such stirrup strap. A reinforcing bar **44** is preferably formed into the molded surface of the bottom segment **13** in position adjacent the opening **42** and at the top of such raised portion **43** or the corresponding channel **45**. This reinforcing bar **44** and the molded glass fiber which surrounds it provides a smooth contour of a radius adequate to prevent undue wear or strain on the stirrup strap leathers.

In the embodiment shown in FIGURES 8 and 9, a modified construction is used so that the saddle horn **47** can be directly implaced in the top segment **12** as such segment is being molded. Horn **47**, as shown in FIGURE 9, is provided with an elliptical base **48** which includes guide shoulders **49** raised above the base. When the guide shoulders **49** are engaged in corresponding notches provided in the mold for the top segment **12**, the saddle horn **47** will be properly oriented with respect to the pommel **21** and the other elements of the saddletree.

In the fabrication of this modified top segment, several layers of glass fabric and resin are first applied in the mold, and next the saddle horn **47** is inserted through an opening in the mold, and clamping pressure is directed against the base **48** of the saddle horn so that the guide shoulders **49** move into engagement with the corresponding guide notches. Thereafter, additional layers of glass fabric and resin are applied to the top segment and about the base **48** of the horn **47** so that the base **48** and the shoulders **49** will all be embedded directly in the reinforced plastic structure of the top segment **12**. With this direct embedmtent, it is found that a secure placement of the saddle horn is obtained.

This particular construction has an advantage over that of the first embodiment, inasmuch as it has been found possible to provide a saddle horn **47** that has a finished and polished exterior surface. The saddle horn can, accordingly, be left exposed, and it is then only necessary to apply pre-cut saddle leathers to the pommel **21** in order to obtain a finished construction.

With any embodiment of the invention it is found that the application of saddle leathers is greatly expedited. The provision of a full seat construction and the further provision of smooth transition contours between the seat, cantle and pommel make it possible to apply the finish saddle leathers directly to the saddletree without any requirement for the cutting and fitting of buildup leathers. The bonded unitary construction provides a strong saddletree which fully duplicates the strength of side bar, cantle and pommel components of previous wood fabricated saddletrees. The hollow, spaced apart, cooperative configuration for the top and bottom segments in areas corresponding to the location of conventional saddletree side bars provides a strong rigid longitudinal support. A similar hollow construction for the cantle and pommel provides strong construction in the lateral directions.

A saddle horn that is applied externally as in the first embodiment or which is embedded in the molded plastic will be firmly supported by the yoke type construction for the pommel so that any forces exerted against the saddle horn will be efficiently transmitted to other portions of the saddletree. Actual tests of the strength of these molded fiber glass saddletrees indicates that a strength equivalent to that of previous rawhide covered wood saddletrees may be obtained. The two piece bonded construction, accordingly, provides an improved type of saddletree which can be economically fabricated.

Inasmuch as further economies and advantages are noted when saddle leathers are applied to these accurately formed saddletrees, it should be apparent that an overall improvement which is novel and useful is presented by the present disclosure. Further, it should be noted that the improvement is in part embodied in the processes and methods used as well as in the final construction of the saddletrees themselves.

Accordingly, while separate embodiments of the invention have been shown and described, it should be obvious that the invention is not limited to such specific embodiments or methods but is adaptable to various modifications and changes. All such modifications and changes that come within the scope of the appended claims are considered to be a part of this invention.

I claim:

1. A process for the manufacture of saddletrees in molded plastics materials which comprises unitarily forming a top component of said saddletree having outermost contours characteristic of conventional cantle and saddle bows inclusive of lateral overhanging projections in a two part mold having a match line coinciding with the longitudinal axis of said saddletree, curing said plastics materials, removing said top component from said top molds by parting the mold, forming a bottom component of said saddletree having lower contours characteristic of conventional side bar-stirrup supports in a one piece bottom mold, positioning said completed and cured top component in matching position above said formed and uncured bottom component, pressing said components together, and allowing said bottom component to cure while in forced contact with the top component whereby said bottom and top components will be bonded together to provide a unitary hollow saddletree construction.

2. A process for the manufacture of saddletrees from molded plastics materials which comprises unitarily forming a top component of said saddletree inclusive of a cantle and saddle bow each having lateral projections in a two part mold having a match line coinciding with the longitudinal axis of said saddletree, curing said plastics materials, removing said top component from said top molds by parting the mold, forming a bottom component of said saddletree inclusive of side bars and stirrup support pins in a one piece bottom mold, positioning said completed and cured top component in matching posi-

tion above said uncured bottom component, pressing said components together, and allowing said bottom component to cure while in forced contact with the top component whereby said bottom and top components will be bonded together to provide a unitary hollow saddletree construction.

3. A process for the manufacture of saddletrees from molded plastics materials which comprises unitarily forming a top component of said saddletree which is inclusive of cantle and pommel elements having projections disposed in opposed directions by forming said top component in a two part flexible mold which has a match line coinciding with the longitudinal axis of said saddletree, curing said plastics materials, removing said top component from said top part molds by parting and flexing said mold, forming a bottom component of said saddletree inclusive of side bars and stirrup support pins in a one piece bottom mold, positioning said completed and cured top component in matching position above said uncured bottom component, pressing said components together, and allowing said bottom component to cure while in forced contact with the top component whereby said bottom and top components will be bonded together to provide a unitary hollow saddletree construction.

4. A saddletree adapted for convenient use in the production of leather saddles comprising a molded glass reinforced plastics construction inclusive of individually mold formed top and bottom segments wherein said top segment is of a single sheet construction having the characteristic outermost contours and form of conventional saddle seat and overhanging cantle and pommel sections, said top segment being formed unitarily to provide smooth transitions between said sections with full and direct support for all saddle leathers applied thereto, mating edge surfaces at the lateral extremities of said top segment, said bottom segment being of a single sheet construction and having outer contours characteristic of the lower surfaces of the side bars of conventional saddletrees, and mating edge surfaces at the lateral extremities of said bottom segment for engagement with the mating edge surfaces of the top segment, said top and bottom segments being joined together along said mating edge surfaces to provide a unitary hollow construction.

5. A saddletree adapted for convenient use in the production of leather saddles when saddle leather cover pieces are applied to said saddletree comprising a molded glass reinforced plastics construction inclusive of individually mold formed top and bottom segments wherein said top segment is of a single sheet construction having the characteristic outermost contours and form of conventional saddle seat and overhanging cantle and pommel sections, said top segment being formed unitarily to provide smooth transitions between said sections with full and direct support for all saddle leathers to be applied thereto, mating edge surfaces at the lateral extremities of said top segment, said bottom segment being of a single sheet construction and having outer contours characteristic of the lower surfaces of the side bars of conventional saddletrees, mating edge surfaces at the lateral extremities of said bottom segment for engagement with the mating edge surfaces of the top segment, and cooperative mating central surfaces disposed along the longitudinal center line of said top and bottom segments, said top and bottom segments being joined together along said mating edge surfaces and along said centrally disposed surfaces to provide a unitary hollow construction at sections corresponding with the pommel, cantle and side bars of said saddletree.

6. A saddletree adapted for convenient use in the production of leather saddles when saddle leather cover pieces are applied to said saddletree comprising a molded glass reinforced plastics construction inclusive of individually mold formed top and bottom segments wherein said top segment is of a single sheet construction having the characteristic outermost contours and form of conventional saddle seat and overhanging cantle and pommel sections, said top segment being formed unitarily to provide smooth transitions between said sections with full and direct support for all saddle leathers to be applied thereto, a saddle horn disposed in position on the pommel of said top segment, plastics materials molding said saddle horn in place, mating edge surfaces at the lateral extremities of said top segment, said bottom segment being of a single sheet construction and having outer contours characteristic of the lower surfaces of the side bars of conventional saddletrees, mating edge surfaces at the lateral extremities of said bottom segment for engagement with the mating edge surfaces of the top segment, and cooperative mating central surfaces disposed along the longitudinal center line of said top and bottom segments, said top and bottom segments being joined together along said mating edge surfaces and along said centrally disposed surfaces to provide a unitary hollow construction at sections corresponding with the pommel, cantle and side bars of said saddletree.

7. A saddletree adapted for convenient use in the production of leather saddles when saddle leather cover pieces are applied to said saddletree comprising a molded glass reinforced plastics construction inclusive of individually mold formed top and bottom segments wherein said top segment is of a single sheet construction having the characteristic outermost contours and form of conventional saddle seat and overhanging cantle and pommel sections, said top segment being formed unitarily to provide smooth transitions between said sections with full and direct support for all saddle leathers to be applied thereto, said top segment further providing a mating undersurface thereon, said bottom segment being of single sheet construction and having outer contours characteristic of the lower surfaces of the side bars of conventional saddletrees, a mating upper surface on said bottom segment adapted for engagement with the mating undersurface of the top segment, said top and bottom segments being joined together along said mating surfaces to provide a unitary hollow construction at sections corresponding with the pommel, cantle and side bars of said saddletree, and a saddle horn support element formed in said top segment.

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