United States Patent

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[54] FOLDING INFLATABLE SURFBOARD

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[52] **U.S. Cl.** ..... **9/310 F**
[51] **Int. Cl.** **A63c 15/02**
[58] **Field of Search** ..... 9/310 R, 310 E, 310 F, 6 R

[56] **References Cited**

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[57] **ABSTRACT**

An elongated inflatable body including a flexible but substantially non-elastic and transversely convexed top wall. An elongated flexible panel constructed of flexible but stiff material is also provided and is capable of being bowed in only one direction at a time. The panel overlies the top wall of the inflatable body, when the latter is inflated, in surface-to-surface contact therewith and with the panel in a corresponding transversely bowed condition. The opposite marginal edge portions of the panel and the adjacent portions of the top wall of the body include coacting portions preventing lateral shifting of the panel edge portions outwardly relative to the aforementioned corresponding portions of the top wall and the internal pressure within the body serves to maintain the body top wall in a transversely bowed condition. Thus, the distance between the aforementioned corresponding portions of the top wall at the opposite sides thereof is maintained to thereby maintain the overlying stiff panel in a transversely bowed condition. Inasmuch as the panel is maintained in a transversely bowed condition and therefore resists being bowed longitudinally, the inflatable body is braced against longitudinal bowing. Further, the panel and body, when the latter is deflated, are each capable of being longitudinally rolled into a compact state with the rolled body nested within the rolled panel and a carrying case is provided to receive the rolled panel and the rolled body nested therein, the carrying case being of a size and shape to maintain the panel in a rolled condition.

10 Claims, 6 Drawing Figures

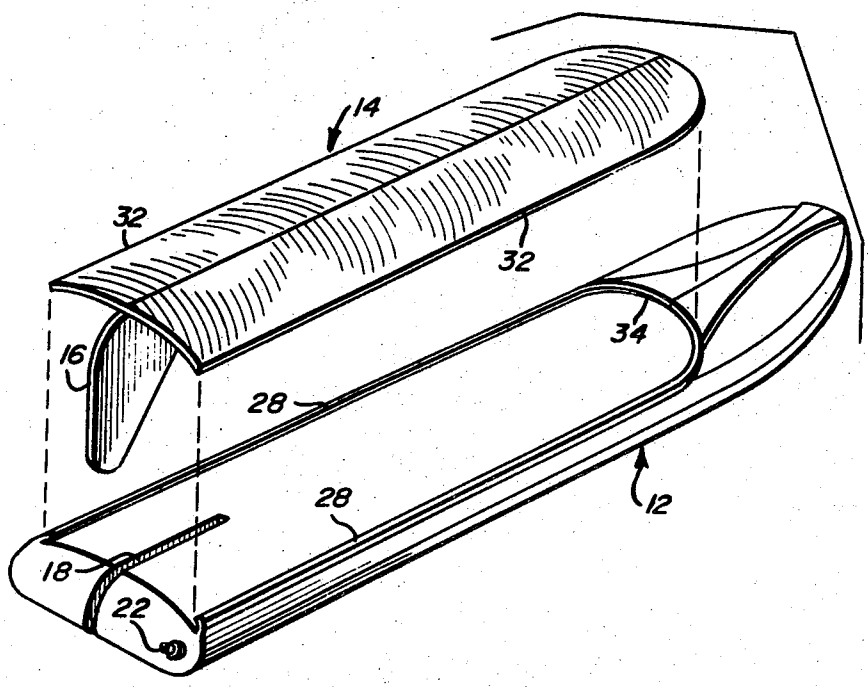


Fig. 1

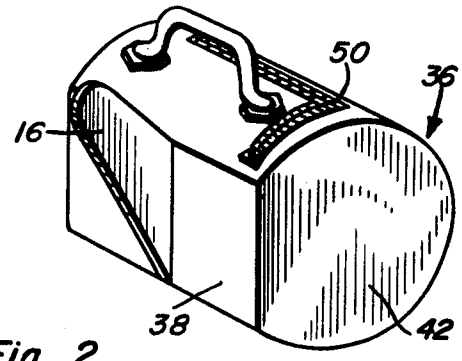


Fig. 2

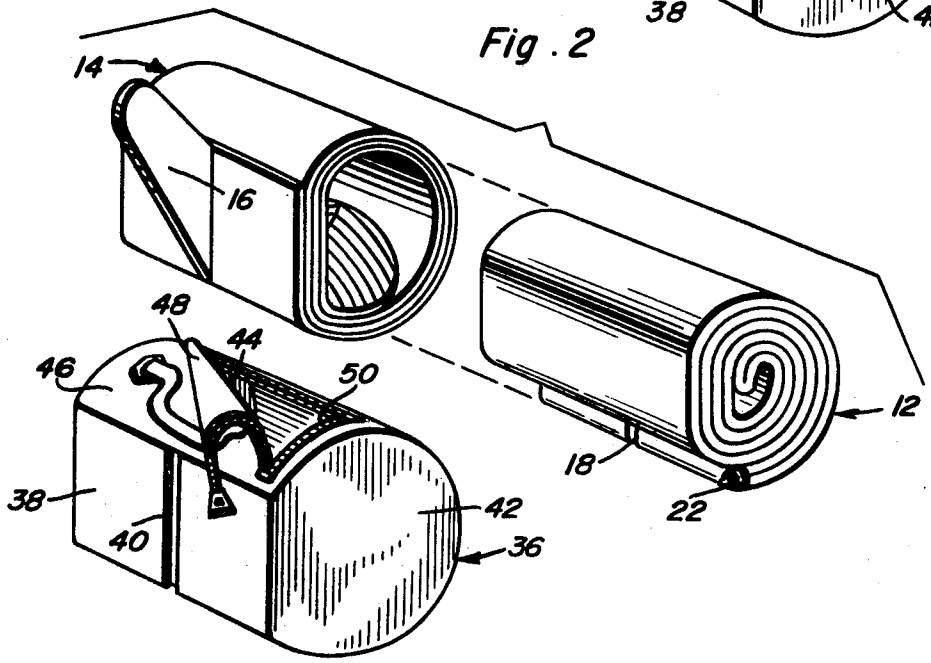
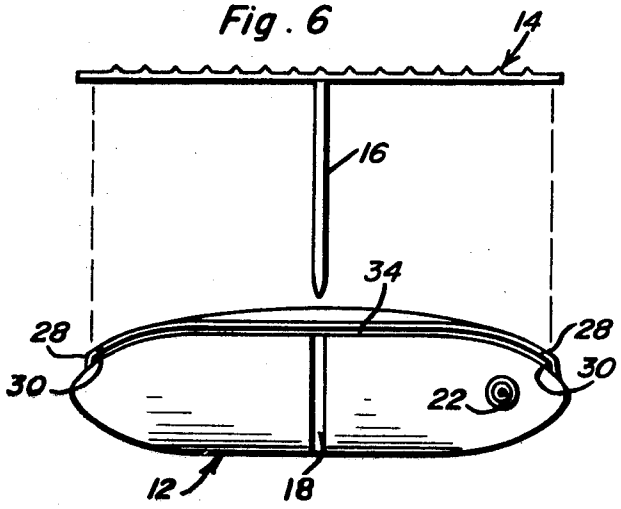


Fig. 6



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Fig . 3

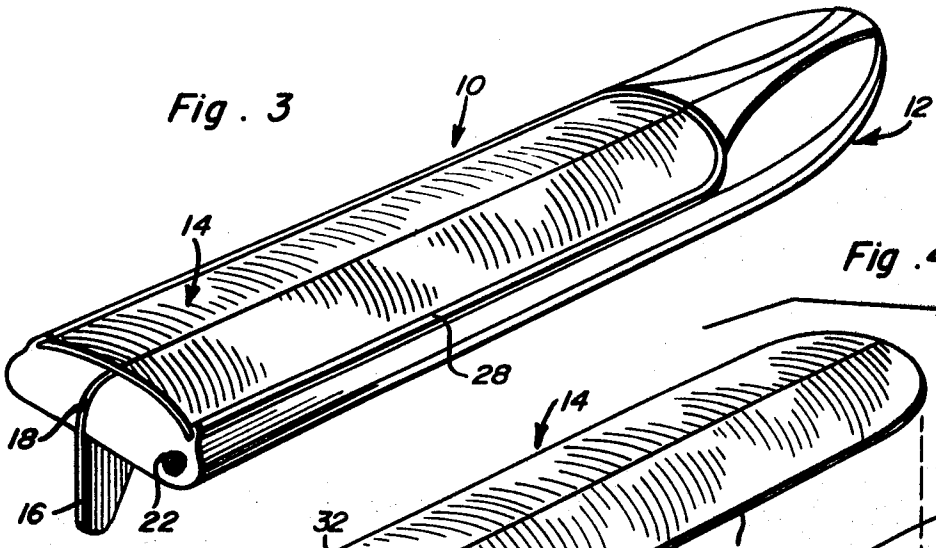


Fig . 4

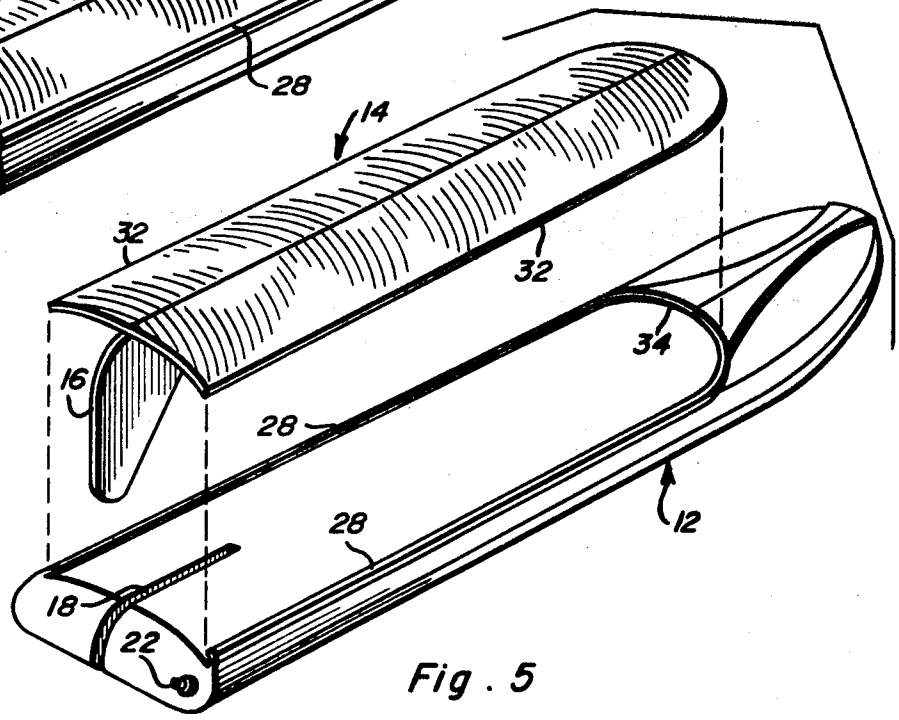
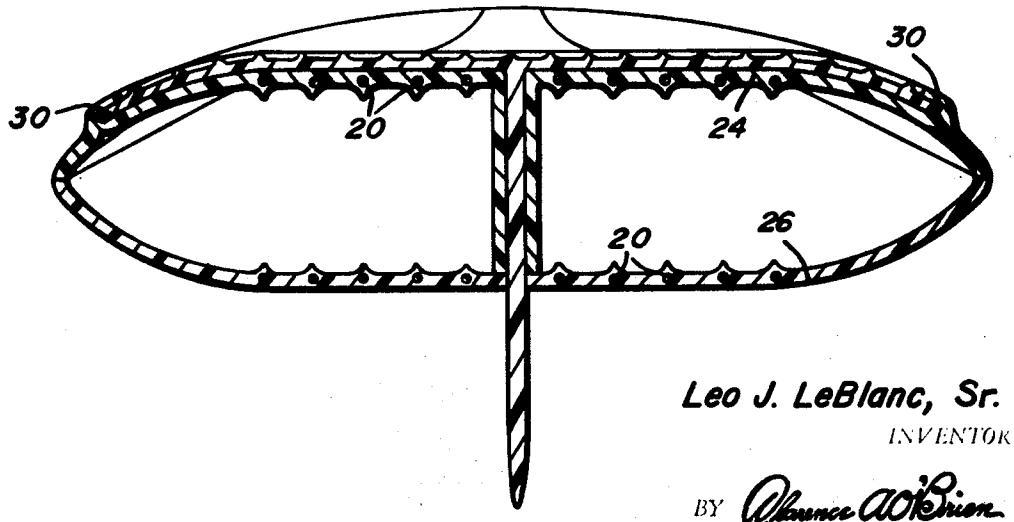


Fig . 5



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FOLDING INFLATABLE SURFBOARD

The folding inflatable surfboard of the instant invention has been designed to provide a means whereby a usable surfboard may be transported and stored in a compact state. Surfboards are sometimes constructed in excess of 7 feet in length and the transportation and storage of a rigid surfboard of this size presents considerable problems.

While sectional surfboards have been heretofore designed and these sectional surfboards may be dismantled so as to occupy a shorter but bulkier transportation or storage space, these sectional surfboards, when disassembled, occupy substantially the same volume of a rigid surfboard which may not be broken down into a plurality of parts. Further, these sectional surfboards are subject to breakage at the intersection between adjacent components thereof.

On the other hand, the surfboard of the instant invention is constructed in a manner whereby it may be disassembled and placed within a carrying case of appreciably less volume than the surfboard occupies when it is in the fully erected state. The surfboard includes an inflatable body portion which of course may be deflated and rolled into a compact state. However, an elongated inflatable body in excess of 7 feet in length cannot be readily constructed so as to resist longitudinal bowing. Therefore, the surfboard of the instant invention includes a novel top panel constructed from a sheet of stiff but bendable material such as plastic or lightweight metal. The panel, by its stiffness, and in the manner of sheet metal, may be readily rolled or bowed in one direction so as to resist bowing in all other directions. The panel is attached to the upper surface of the inflatable body in a manner whereby the non-elastic body, when inflated, maintains the rigidifying panel in a transversely bowed condition and yet the surfboard is constructed so as to enable ready separation of the rigidifying panel from the inflatable body of the surfboard once the surfboard has been deflated.

The main object of this invention is to provide a surfboard which may be readily collapsed into a storage or transport condition occupying considerably less volume and other shape that may be readily transported and stored.

Another object of this invention, in accordance with the immediately preceding object, is to provide an inflatable surfboard body which may be rolled into a compact state when deflated and which includes an elongated transversely bowed rigidifying panel anchored thereto when the surfboard is in a fully erected position with the rigidifying panel preventing longitudinal bowing of the inflatable body portion of the surfboard.

Yet another object of this invention is to provide a surfboard in accordance with the preceding objects and constructed in a manner whereby the body and rigidifying panel thereof may be rolled into relatively nested conditions for compact storage.

Another object of this invention is to provide a carrying case for the relatively nested body and rigidifying panel portions of the surfboard.

A final object of this invention to be specifically enumerated herein is to provide a collapsible surfboard in accordance with the preceding objects and which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble-free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a perspective view of the carrying case portion of the instant invention with the folding inflatable surfboard disposed within the carrying case and only the depending skeg portion of the surfboard projecting outwardly of one side wall of the case;

FIG. 2 is an exploded perspective view of the inflatable body portion of the surfboard in a deflated and rolled condition, the stiffening panel portion of the surfboard in a rolled condition and the carrying case in an open position preparatory to insertion of the rolled deflated body portion of the surfboard within the rolled stiffening panel portion of the surfboard and placement of the thus nested body and stiffening panel portions of the surfboard within the carrying case;

FIG. 3 is a perspective view of the surfboard in a fully assembled condition;

FIG. 4 is a view similar to FIG. 3 but with the stiffening panel portion of the surfboard in exploded position;

FIG. 5 is an enlarged transverse vertical sectional view taken substantially upon the plane passing through the rear end portion of the surfboard illustrated in FIG. 3; and

FIG. 6 is an end elevational view of the exploded assembly illustrated in FIG. 4.

Referring now more specifically to the drawings, the numeral **10** generally designates the surfboard of the instant invention. The surfboard **10** includes an inflatable body referred to in general by the reference numeral **12** and an elongated stiffening panel referred to in general by the reference numeral **14** and including a depending skeg **16** at its rear end portion.

The body **12** is constructed of any suitable material and so as to include a vertically extending and rearwardly opening slot **18** in its rear end portion when the body **12** is inflated. Any suitable overall shape may be built into the body **12** to be assumed as the latter is inflated and the material of which the body **12** is constructed is of course impervious to the passage of air therethrough and may include embedded reinforcing cords **20** constructed of any suitable material. The cords **20** may extend not only longitudinally of the body **12** but also transversely thereof so as to ensure that the body **12** will, by itself, resist being deformed from the shape thereof illustrated in FIG. 4 of the drawings when the body portion **12** is inflated. The rear end of the body or body portion **12** is provided with an inflation valve **22** and it may be seen that the body **12** includes transversely convexed longitudinally extending upper and lower walls **24** and **26**. Further, from FIGS. **4** and **5** of the drawings it may be seen that the upper or top wall **24** includes opposite side longitudinally extending integral portions **28** which define inwardly opening channels **30** extending along opposite side portions of the body **12**. The forward ends of the channels **30** are connected by means of a forward transverse connecting channel **32**.

The stiffening panel **14** may be constructed of any suitable stiff but bendable material such as plastic or metal which may be bowed in only one direction. The panel **14** includes generally parallel opposite side edges **32** which are spaced apart a distance slightly greater than the remote portions of the channel **30** when the top wall **24** is disposed in a planar condition. Further, the rigidifying panel **14** has the depending skeg **16** secured to one end thereof and the skeg **16** may be formed as an integral portion of the panel **14** and of the same material.

Inasmuch as the panel **14** may be bowed in only one direction, it may be transversely bowed in the manner illustrated in FIGS. **3** through **5** of the drawings, or it may be longitudinally rolled in the manner illustrated in FIG. **2** of the drawings. However, once the panel **14** is bowed in the manner illustrated in FIGS. **3** through **5** of the drawings, by being constructed of stiff material it strongly resists longitudinal bowing.

In assembling the surfboard **10**, the body **12** is first disposed in a generally straight condition while it is deflated. Then, the stiffening panel **14** is transversely bowed and laid over the top wall **24** of the body **12** while in a bowed condition so as to enable the opposite side edges **32** of the panel **14** to be received in the channels **30**. With the panel **14** thus transversely bowed and the top wall **24** disposed in a generally planar condition, the opposite side edges **32** of the panel **14** are prevented from spreading further apart by being seated in the channels **30** and thus the panel **14** is retained in a transversely bowed condi-

tion. Of course, when the panel **14** is initially engaged with the body **12**, the forward end of the panel **14** is received in the channel **34** and the skeg **16** is received through the slot **18**.

Thereafter, the body **12** is inflated and the pressure within the body **12** acts upon the upper wall **24** thereof to urge the latter upwardly tight against the undersurface of the panel **14** so as to ensure that the latter is maintained in a tensioned condition. Of course, any inflatable material, even though reinforced by reinforcing cords such as the cords **20**, may expand slightly when inflated and thus, any expansion or stretching of the upper or top wall **24** of the body **12** is compensated for by the pressure within the body **12** pushing the top wall **24** into a bowed condition against the undersurface of the panel **14**. With the panel **14** thus installed and the body **12** inflated, the panel **14** is even more greatly bowed transversely and will of course strongly resist longitudinal bowing. Thus, with the rigidifying panel **14** secured over the upper or top wall **24** of the body **12**, the body **12** is braced against longitudinal bowing and may be utilized effectively as a surfboard.

When it is desired to collapse the surfboard **10**, the body **12** is deflated and the rigidifying panel **14** is removed. Then, beginning with the front end of the body **12**, the latter is rolled tightly into a rolled condition such as that illustrated in the right hand portion of FIG. **2** of the drawings. Then, the rigidifying panel **14** is rolled beginning from the front end thereof until it is in the condition illustrated in the upper left hand portion of FIG. **2** of the drawings with only the rear end portion of the rigidifying panel from which the skeg **16** is supported being disposed in a generally planar condition. Then, the rolled body **12** is inserted into the rolled rigidifying panel **14** and the resultant assembly is inserted within the carrying case generally referred to by the reference numeral **36** illustrated in FIGS. **1** and **2** of the drawings. The carrying case **36** is of a generally cylindrical configuration conforming to the shape of the panel **14** when it is rolled and includes one planar side wall portion **38** in which a slot **40** is formed to receive the skeg **16** therethrough when the rolled rigidifying panel **14** and rolled body **12** are disposed within the case **36**. The case **36** includes generally planar opposite end walls **42** and **44** and the upper wall portion **46** of the carrying case **36** includes a flexible closure flap portion **48** which may be closed by means of a slide fastener assembly **50**. Of course, as soon as the rolled rigidifying panel **14**, with the rolled body **12** disposed therein, is disposed within the case **36** and the flap **44** is secured in the closed position by means of the slide fastener assembly **50**, the components **12** and **14** of the surfboard **10** are secured in their rolled conditions.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An inflatable surfboard including an elongated tubular inflatable body constructed of flexible air impervious and substantially non-stretchable material, said body, when inflated, being of less height than width and including a transversely upwardly convexed top wall, an elongated stiffening panel including opposite side edge portions overlying said top wall in transversely upwardly convex bowed condition, said edge portions and the opposite side marginal portions of said top wall including means coacting to releasably secure said edge portions to said marginal portions with said edge portions retained in maximum relative spaced relation and thus said panel retained in a bowed condition, the pressure within said body serving to maintain said top wall in a transversely upwardly convex bowed condition with the upper surface of said top wall in surface to surface contacting relation with the undersurface of said panel, said panel being constructed of a stiff but bendable and resilient material whereby said panel, while bowed in one direction, will strongly resist bowing in a second direction transverse to the first-mentioned direction.

2. The combination of claim **1** wherein said panel and said body, when the latter is deflated, may each be rolled longitudinally into compact cylindrical configuration.

3. The combination of claim **2** wherein said body, when rolled, may be telescoped into the rolled panel.

4. The combination of claim **3** including a hollow carrying case of generally cylindrical configuration in which said rolled panel, with the rolled body nested therein, may be received, said case including a closable opening in one wall thereof through which the rolled panel may be inserted into the case.

5. The combination of claim **4** wherein a second wall portion of said case has a slot formed therein, said body, when inflated including a rearwardly opening slot formed vertically through the rear end of said body, said panel including a depending skeg at its rear end portion, which projects downward through said body slot when said surfboard is assembled in inflated condition, said panel having the undersurface of its rear end portion disposed outermost when said panel is longitudinally rolled, said skeg, when said rolled panel is disposed within said case, projecting outwardly through said slot in said second wall portion thereof.

6. The combination of claim **1** wherein said coacting means includes opposite side marginal portions of said top wall of said body defining inwardly opening and opposing channels extending longitudinally along the opposite side marginal edge portions of said top wall and the opposite side edges of said panel seated in said channels.

7. The combination of claim **1** wherein the forward ends of said channels are communicated by the opposite ends of a rearwardly opening U-shaped channel extending across the forward end portion of the top wall of said body, the forward end of said panel including a complementary forward edge seated in said U-shaped channel.

8. The combination of claim **1** wherein the upper surface of said panel is roughened.

9. The combination of claim **1** wherein said panel, when standing free, is generally planar.

10. An inflatable surfboard including an elongated tubular inflatable body constructed of flexible air impervious and substantially non-stretchable material, said body, when inflated, being of less height than width and including a transversely upwardly convexed top wall, an elongated stiffening panel, overlying the top wall of said body and secured thereto in a manner stiffening said body against longitudinal bending.

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