

[54] **BED FRAME ASSEMBLY**
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 [22] Filed: **July 15, 1970**
 [21] Appl. No.: **54,994**

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[52] U.S. Cl.....5/201, 5/300
 [51] Int. Cl.....A47c 19/02
 [58] Field of Search5/300, 201; 248/224

[57] **ABSTRACT**

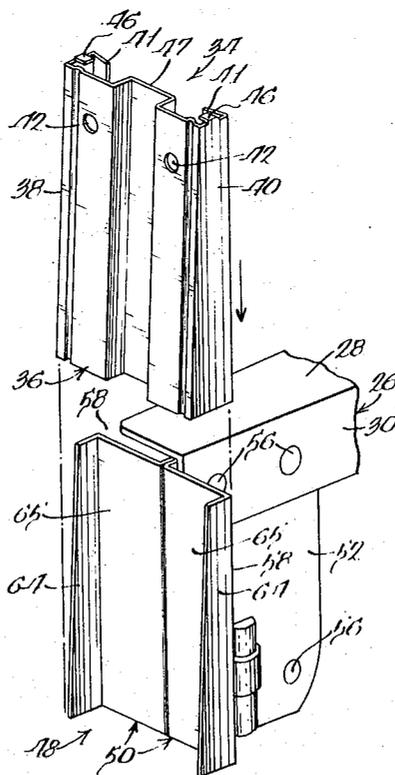
A bed frame assembly of the knockdown type including a pair of spaced parallel L-shaped side frame members and at least one perpendicularly extending L-shaped cross frame member detachably secured to said side frame members. Slidably interengaging male and female elements are provided on the side and cross frame members for detachably securing them to one another, and the male and female members have a corresponding dual taper, so that they are wedged into interlocking engagement with one another by the reaction force of floor-engaging abutments carried on the cross frame member.

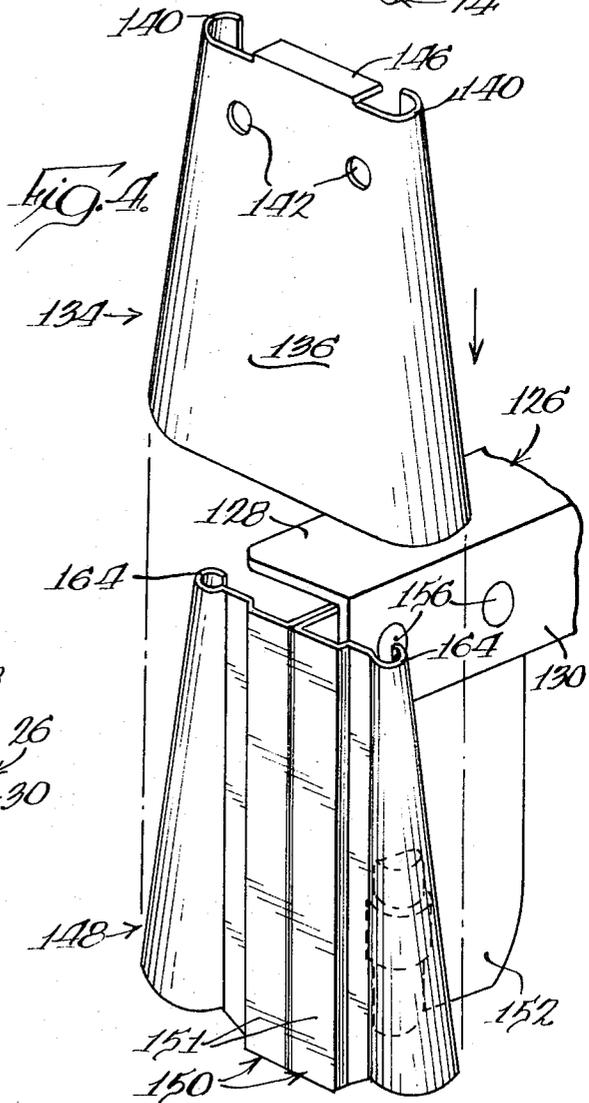
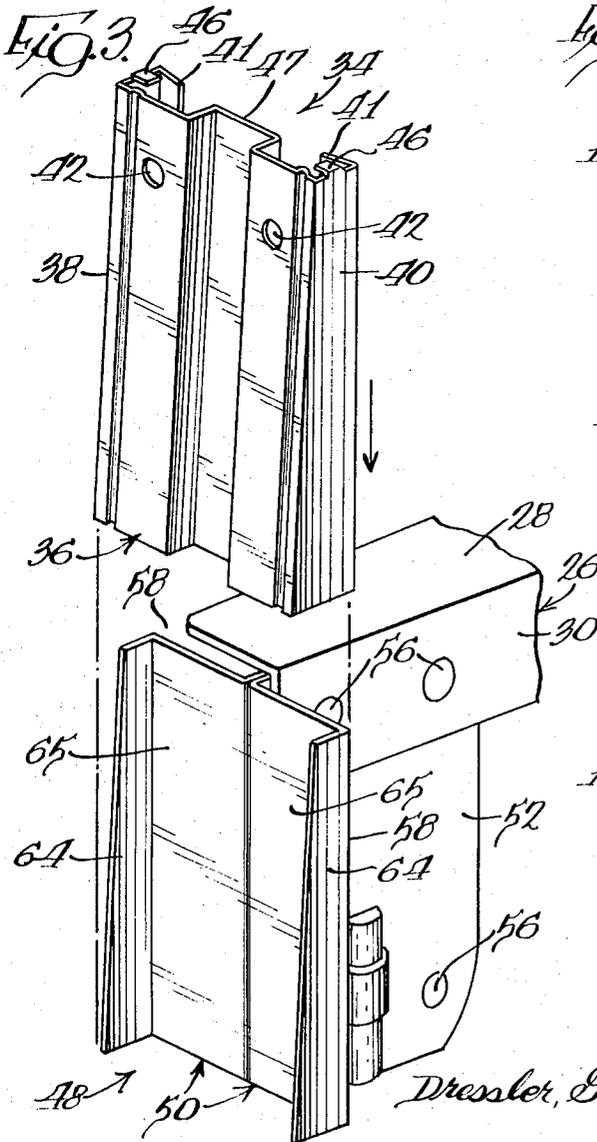
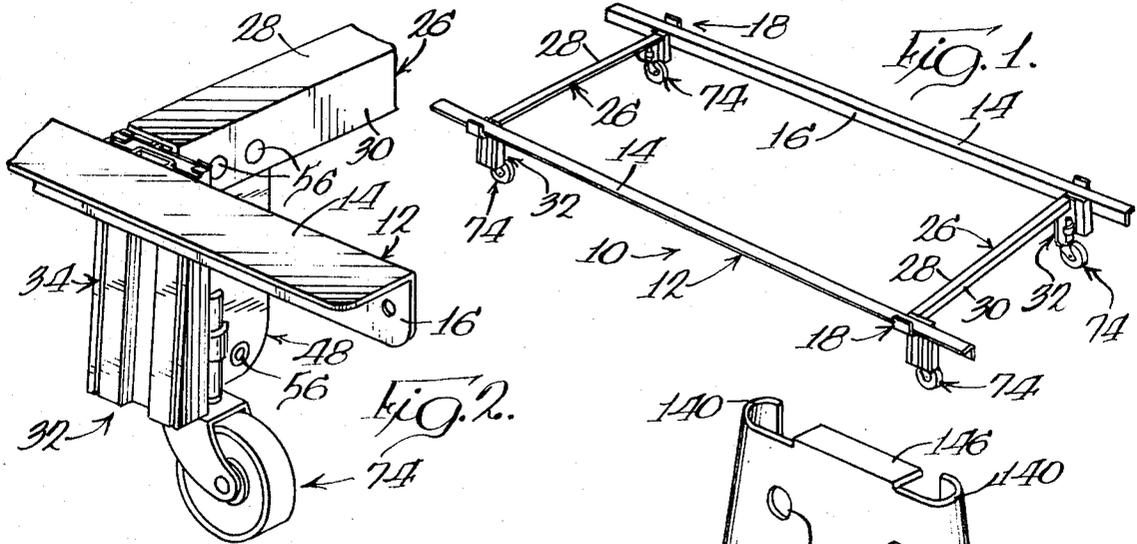
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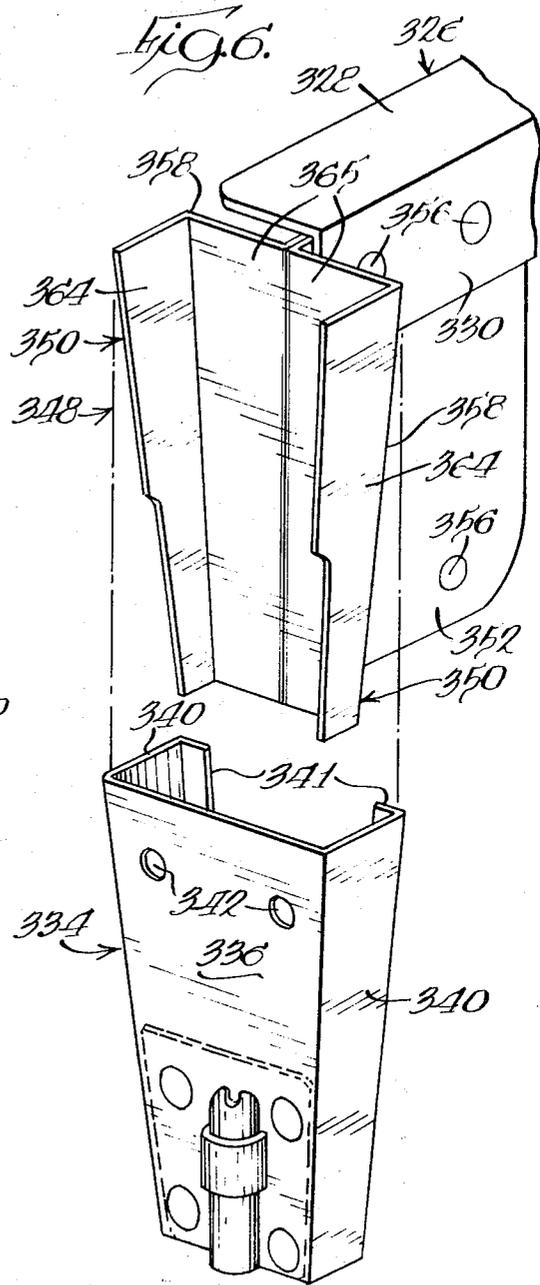
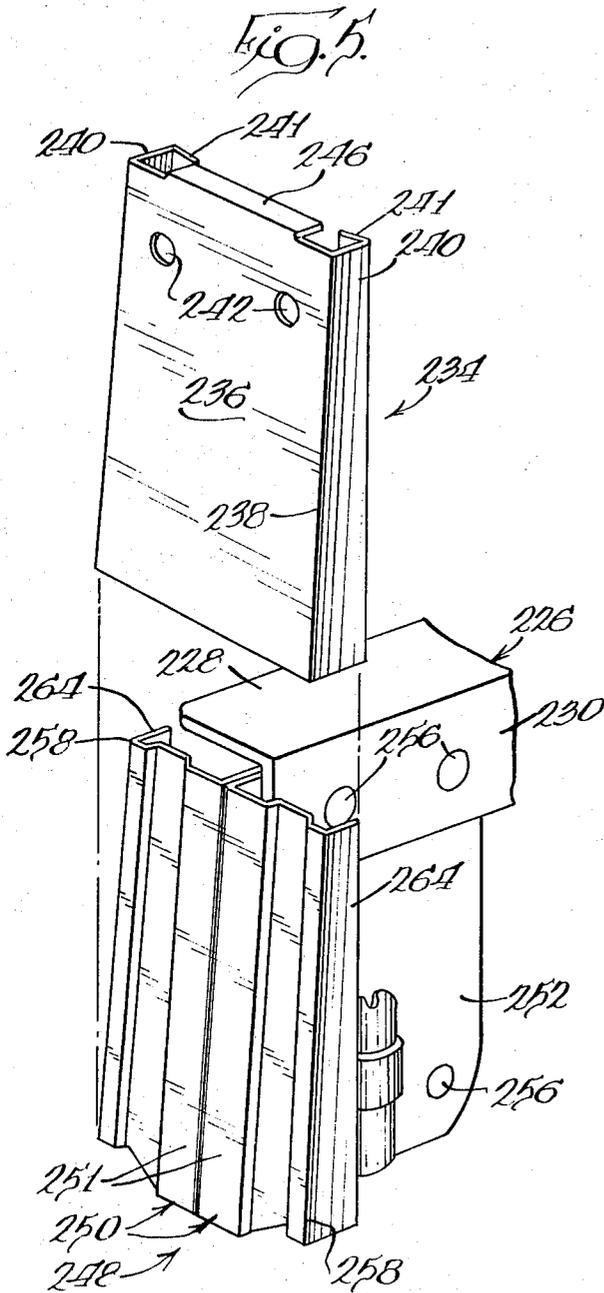
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10 Claims, 6 Drawing Figures





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BED FRAME ASSEMBLY**BACKGROUND OF THE INVENTION**

Knockdown bed frame assemblies of the so-called "Hollywood" type are well known to those skilled in the art. Such structures have conventionally included a plurality of generally L-shaped side and cross frame members detachably secured to one another for supporting the mattress and box spring unit between a foot board and head board. While such structures have met with wide commercial acceptance, the means that have been used in the past to detachably secure the various elements to one another have not been entirely satisfactory, in that the securing means have either been time-consuming and difficult to assemble and disassemble, or they have not provided a positive interlocking mode of engagement between the side frame members and the cross frame members.

The structure disclosed and claimed in my commonly assigned, copending application Ser. No. 741,577, now U. S. Pat. No. 3,537,114, obviates the problems noted above by providing a fastenerless connection between the cross frame members and the side frame members of a bed frame assembly, including a male element on one of the frame members and a female element on the other of the frame members, with the male element being slidably insertable in the female element to detachably interlock the cross frame members to the side frame members. The male and female elements have corresponding tapers, and a floor-engaging abutment in the form of a caster is associated with the cross frame member, so that forces imparted to the bed frame assembly through the mattress and box spring units will serve to wedge the male and female elements into positive interlocking engagement with one another. In a preferred arrangement, the female elements are mounted upon the side frame members, and are defined by a plate having a planar central portion with inclined flanges at opposite sides of the central portion extending inwardly toward one another to define an upwardly narrowing tapered passageway. The male elements are preferably associated with the cross frame members, and are formed of a pair of distinct plate members secured to one another and to the cross frame member. The plate members of the male element include planar portions positioned in face-opposed relationship with respect to one another, and an outwardly inclined flange is provided on each plate, with the flanges on the male element cooperating to collectively define a tapered insert that is slidably insertable within the passage in the female element. The face abutting planar portions of the male element also include confronting portions that collectively define a passageway for slidably receiving the stem portion of a caster assembly.

BRIEF SUMMARY OF THE INVENTION

The present invention represents an improvement upon the structure disclosed and claimed in my above mentioned application. Several improved embodiments are disclosed herein, and all of the embodiments are characterized by a novel arrangement wherein generally oblique side flanges on the male and female elements are tapered for providing an easily assembled releasable wedge-like connection between the side frame members and cross frame members of the bed frame assembly.

In certain of the improved embodiments disclosed herein, the central portions of the male and female elements are tapered in addition to the tapered side flanges to provide an extremely reliable two dimensionally tapered connection means. The side flanges of the male and female elements may be flat or rounded, and the male element may be inserted into the female element from either the top or the bottom. Cooperating planar abutment means are provided on the male and female elements for positively holding the elements relative to one another once the side frame and cross frame members have been assembled.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of the bed frame assembly of the present invention;

FIG. 2 is an enlarged perspective view illustrating a first embodiment of the connection means between one side frame member and one cross frame member;

FIG. 3 is an enlarged exploded perspective view of the connection means of FIG. 2; and

FIGS. 4-6 are exploded perspective views of second, third and fourth embodiments of the connection means.

DETAILED DESCRIPTION

Referring now to the drawings in detail, the bed frame assembly is indicated in its entirety at 10 in FIG. 1, and the bed frame assembly 10 includes a pair of spaced parallel side frame members 12 spanned by at least two perpendicularly extending cross frame members 26. As is conventional, side frame members 12 are L-shaped metal channels, and the side frame members are arranged with flanges 14 horizontally disposed and extending away from one another, and with flanges 16 extending downwardly from flanges 14 at the inner edge thereof. The upper surface of flanges 14 are disposed in a common plane, so as to provide a supporting surface for a box spring unit, and box spring confining brackets 18 are provided at a plurality of spaced locations along side frame members 12.

The cross frame members 26 are also conventional L-shaped metal channels, and are arranged with a first flange 28, horizontally disposed, and a second flange 30, vertically disposed. As is evident from FIG. 2, the outer end of the cross frame member 26 illustrated therein is spaced from the vertical flange 16 on side frame member 12, and the end of the cross frame member 26 is detachably secured to the side frame member 12 by interlocking securement means 32.

Interlocking means 32 includes a female element 34, best seen in FIG. 3. Female element 34 is formed of a sheet metal plate and includes a rectangular central portion 36 having side edges 38. Flanges 40 are bent inwardly from the edges 38 of central portion 36, with the flanges 40 being disposed perpendicularly with respect to the planar portion 36. Flanges 40 taper upwardly and include reversely bent perpendicular portions 41 that cooperate with central portion 36 to collectively define a tapered passageway therebetween. Central portion 36 is provided with a pair of spaced holes 42 that are registerable with corresponding holes in side member flange 16, so that common fasteners, such as rivets, can be employed to secure these members together. A locating flange 46 extends perpendicularly outwardly from the upper end of each flange 40

and is adapted to be positioned in engagement with the upper end of the male element 48, as will hereinafter appear. Female element 34 further includes an inwardly offset planar abutment 47 centrally of portion 36, that is adapted to engage a planar surface on the male element, when the frame members are assembled.

The male element 48 will also be best seen from FIG. 3, and as illustrated therein, the male element 48 is comprised of a pair of generally identical mirror image members 50. Members 50 are sheet metal plates like female element 34 and each member 50 includes a generally planar, somewhat rectangularly shaped mounting portion 52. A plurality of openings are provided in the mounting portions 52, and the uppermost openings are registerable with a pair of corresponding openings in cross member flange 30 for reception of common fasteners 56, such as rivets. Rivets 56 also extend through the lower openings in the plate portions 52 to secure them in face-abutting engagement with one another.

Plates 50 are bent outwardly about a vertical fold line 58 to define a perpendicular flange portion 64. Flange portions 64 converge upwardly, and provide a tapered insert which is slidably positionable within the passage in the female element 34 between flanges 40. The facing surfaces of male element plate portions 52 are provided with vertically spaced recesses at the lower end thereof which cooperate to collectively define a downwardly open passageway or socket for reception of a caster assembly 74. The outwardly facing surfaces 65 of the plates 50 are planar and rectangular, and are engaged by the abutment 47 on the female element when the frame members are assembled.

From the foregoing, it will be appreciated that the caster assembly 74 provides a floor-engaging abutment, so that the weight of the mattress and box spring unit, and the weight of an individual lying upon the bed, will cause the male element 48 to be positively interlocked with the female element 34 by forcing them into positive wedging engagement with one another.

The embodiments illustrated in FIGS. 4, 5 and 6 are similar to the previously described embodiments, so that similar reference numerals have been used to designate corresponding elements, with the reference numerals in connection with the embodiment of FIG. 4 being in the 100 series, and with the reference numerals in connection with the embodiments of FIGS. 5 and 6 being in the 200 and 300 series, respectively.

The embodiment of FIG. 4 differs from the previously described embodiment in that the flanges 140 on the female element 134 are curved, rather than flat, with the flanges 140 being curved to a position facing one another. Similarly, the flanges 164 on male member 148 are also curved toward one another. Flanges 140 and 164 are generally frusto-conically shaped, so that the passageway formed by female member 134 converges upwardly, while the insert provided by male member 140 also converges upwardly.

The central portion 136 of female element 134 is flat to provide an upright abutment surface, and is generally trapezoidally shaped. Since the sides of central portion 136 converge upwardly, the passageway provided by the female member has a dual taper. The plates 150 that define the male member 148 are also

trapezoidally shaped, so that the insert provided by the male member has a taper corresponding to that of the passageway within the female element. Plates 150 have outwardly bent flat abutment surfaces 151 that engage the inwardly facing surface on the central portion 136 of female element 134 to positively hold the male and female elements against movement when the frame members are assembled. An inwardly extending flange 146 is provided at the upper end of the central portion 136 of the female element 134, and bears upon the upper end of the plates 150, when the frame members are assembled.

Turning now to the embodiment illustrated in FIG. 5 the connection means illustrated therein is similar to the embodiment of FIG. 4 to the extent that the central portion 236 of the female element is trapezoidally shaped, and cooperates with the upwardly converging flange 240 to provide a dual tapered passageway for the similarly tapered male element 248. The connection means of FIG. 5 is also similar to the embodiment of FIG. 4 to the extent that the flanges 240 and 264 extend inwardly toward the cross rail 226. The embodiment of FIG. 5 is similar to the embodiment of FIG. 3, and different than the embodiment of FIG. 4, to the extent that the flanges 240 and 264 are planar. Flange portions 241 on the female element 234 preferably extended slightly inwardly toward the central portion 236 to provide a positive means for retaining the flange 264 therewithin.

The embodiment of FIG. 6 differs from the previously described embodiments in many respects, the most significant of which is that the male element 348 is inserted into the female element 334 from the top, as opposed to the bottom insertion that is common to the previously described embodiments. As with the embodiment of FIG. 5, the passageway within female element 334 has a dual taper by virtue of the trapezoidally shaped central portion 336 and trapezoidally shaped flat flanges 340. However, the passageway converges downwardly, for slidable reception of the similarly tapered male element 348, which includes flat flanges 364.

What is claimed is:

1. A bed frame comprising: a pair of spaced parallel side frame members, each having a coplanar portion defining a first surface; a pair of longitudinally spaced cross frame members extending perpendicularly between said side frame members, said cross frame members each having a coplanar portion defining a second surface; one of said surfaces being vertically spaced from the other surface to form a support for a box spring and mattress; and combined means for detachably securing each end of said cross frame members to one of said side frame members and for supporting said frame, said securing and supporting means being defined solely by slidably interengaging complementarily tapered male and female elements, each female element having a central portion with flanges at opposite sides thereof, said flanges having portions extending toward one another and defining a passageway which forms means confining its respective male element for vertical movement relative thereto, each male element having outwardly extending flanges at opposite sides thereof defining an insert slidably positionable in said passageway, the flanges on both of said elements

being gradually complementarily tapered from a first end having a given width to a second end having a smaller width, said flanges being uniformly tapered between their ends, whereby said insert and passageway are tapered, one element being on one of the frame members that define said one surface and the other element being on one of the frame members that define said other surface, a downwardly extending floor engaging abutment carried by each of said latter elements, each element on said cross frame members extending outwardly from one end thereof into position for free sliding engagement with an element on one of said side frame members, whereby said cross frame members are mounted for limited vertical movement relative to said side frame members so that said elements are wedged into interlocking relationship with one another by forces applied to said one surface by said box spring and mattress and the reaction force of said abutments against the floor.

2. A bed frame as set forth in claim 1 in which the upper and lower ends of said male and female elements have the same dimension.

3. A bed frame as set forth in claim 1 in which the upper and lower ends of said male and female elements have different dimensions and cooperate with said

tapered flanges to provide a dual tapered arrangement.

4. A bed frame as set forth in claim 3 wherein said male members are connected to said cross frame members and said female members are connected to said side frame members.

5. A bed frame as set forth in claim 3 wherein the tapered portions of the flanges are flat.

6. A bed frame as set forth in claim 5 wherein said female element opens downwardly so that said male element is inserted from the bottom.

7. A bed frame as set forth in claim 6 in which the central portion of said female elements are planar, and wherein said male elements include a planar abutment engageable with said planar surface.

8. A bed frame as set forth in claim 6 in which said male elements include a planar central portion and wherein the central portion of said female elements include a planar abutment engageable therewith.

9. A bed frame as set forth in claim 5 wherein said female element opens upwardly so that said male element is inserted from the top.

10. A bed frame as set forth in claim 1 wherein the tapered portions of the flanges are curved.

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