Title: ENGINEERED FLOOR AND SCAFFOLD SYSTEMS

Abstract: This unique modular flooring system with system scaffold understructure is engineered system capable of use with most tent manufacturer's options. The engineered floor is engineered for clear span tents. This unique system transfers the load of the tent, tent frame, scaffold system and floor understructure to the ground through the tent leg. The system is configured; so that the stage flooring section does not support the tent, tent frame, tent poles and scaffold system.
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
ENGINEERED FLOOR AND SCAFFOLD SYSTEMS

CROSS REFERENCE TO RELATED APPLICATION
This application claims the benefit of U.S. provisional patent application: serial no. 82/207,121 filed on August 15, 2015.

TECHNICAL FIELD
This invention relates to a unique modular flooring system and clear tents and the understructures can be system scaffolding.

BACKGROUND OF THE INVENTION
Conventional tent, awning and canopy frame structures of readily assemblable and disassemblable nature are known. They are commonly made up of cylindrical tubing and various types of junction elements or connectors; or so-called slip fit or slip-on fittings, commonly termed corner, ridge intermediate, intermediate, three-way crown, four-way crown, six-way crown and eight-way crown fitting.

Often, the prior art systems do not include means for sealing against the weather and other environmental conditions at the joints where the various panels are joined. Another disadvantage is that the prior art shelters have to be built on uneven ground, which is the normal situation. Uneven ground poses a number of problems when a number of units have to be added to each other to produce a relatively large shelter.

Another shortcoming is that the prior art systems are not strong enough to support the tent and tent frame structure.

SUMMARY OF THE INVENTION
The unique modular flooring system with scaffold understructure of this Invention provides a solution to the problems of the prior art systems.
The engineered system of this invention is capable of use with most clear span tent manufacturer's structures.

Clear span tents and frame structures are designed and manufactured in such a way that, it can be assembled and disassembled in the site. The clear span tent and structures are temporary structures and they are used in the event rental industries most of the time. The clear span tent and the structures are designed to setup in a leveled surface. Most of the clear span tent legs (uprights) are pinned to a base plate and the base plates are secured to a leveled surface. The entire base plates in a particular tent setup have to be in same level. These base plates transfer-entire lead from the tent to the ground or to a floor where the base plates are secured,

Majority of the time the clear span tents and structures are not used in a leveled surface, instead it is used in an unlevelled ground like golf courts. One or few of the base plates may sit on the ground level but the rest of them are in a different elevation from the ground. In order to get a leveled surface for base plates the customer has to create a platform. In the rental industry there is no engineered platforms designed to accommodate clear span tents and structures. So the customers use different staging products or they create a platform with scaffolding, wood and plywood.

The above mentioned poses the following challenges.

1. Safety of the tent platform.
2. These platforms are custom platforms and the load capacities of the platforms are questionable.
3. Transferring the tent base plate reactions and the platform lead to the ground is questionable.
4. Most of the time there is no proper way securing the platform from uplift loads.
5. No proper guide line to assemble a clear span tent en top of a platform.
The TF-2000 Flooring system provides solution for all the above challenges because it is designed, engineered and manufactured to take different clear span tents and structures.

The engineered system of this Invention solves many of the problems of prior art systems. First, the sides of the tent extend outside and below beam; connecters. The enclosure system is economical and light weight in construction and provides for depositing rain water and snow on the ground outboard of the scaffold assembly.

Secondly, the tent and tent frame are supported by scaffold legs which support the engineered system of this invention. The unique platform and the beam invention don't support the tent and tent frame. But the platform and the beam transfer all the loads to the system scaffold legs. The upright connecters transfer entire tent leg (Upright) load to the system scaffold leg. The beam of this invention and the upright connecter of this invention together transfer entire loads (platform live load, load from the tent and weight of the tent) to the system scaffold leg.

The tent floor can be 8’ from the ground to 15 feet or even more from the ground. As a result, this system may support a tent on very unlevel ground. The load is transferred to the ground through foé legs.

The components of this system's are universal beam, upright connecter, beam connector, platforms, platform filler, universal saddle, and system scaffolding under structure.

Other objects and advantages of this present invention will become apparent to those skilled in the art upon a review of the following detailed description of the preferred embodiments and the accompanying drawings,

**IN THE DRAWINGS**

Fig. 1 shows the scaffold system of this invention without a platform.

Fig. 2 shows the universal beam in place on a saddle according to this invention.

Fig. 3 shows the upright connecter of this invention.
Fig. 4 shows clear span tent legs and platforms (flooring) in place on the scaffold system of Fig. 1.

Fig. 5 shows the saddle of this Invention.

Fig. 6 shows a side view of the saddle of Fig. 5.

Fig. 7 shows an end view of the saddle of Fig. 5.

Fig. 8 shows a side view of the universal beam of this Invention.

Fig. 9 shows an end view of the universal beam of this invention.

Fig. 10 shows a side view of the upright connector of Fig. 3.

Fig. 11 shows an end view of the upright connector of Fig. 3.

Fig. 12 is a bottom view of the platform system shown in Fig. 4.

Fig. 13 shows a male roto lock used with the platform system shown in Fig. 12.

Fig. 14 shows a female roto lock used with the platform system shown in Fig. 13.

Fig. 15 shows the elevation of the system of this invention in greater detail.

Fig. 16 is a top view of the universal beam of this invention.

Fig. 17 is a side view of the universal beam of this invention.

**DETAILED DESCRIPTION OF THE INVENTION**

The TF-2100 is the engineered flooring system for the clear span tents and the structures. The TF-2100 flooring system consists of system scaffolding (under structures), and flooring system. The understructure can be any system scaffolding as long as they have the right load capacity. Flooring systems consist mainly of the following items: saddle, universal beam, TF-2100 platform, and the upright connectors. The base plates will be replaced by the upright connectors.

The upright connectors are specifically designed for this type of tents so the customer has to use the hunt upright connector for the right tent. The
TF-2100 flooring system accommodates most of the clear span tents and structures. When you use different manufacture tent the customer have to use the specific upright connector for the specified tent. The universal beam, saddle and the TF-2100 plate forms are same for any type of tents.

The TF-2100 flooring system is designed to transfer entire load coming from the platform and the tent will be transferred to the scaffold legs. The universal beam, saddle and the TF-2100 platform will transfer platform live load to the legs and the upright connector will transfer the tent load.

The other advantages of this system are the TF-2100 flooring system is designed to go low as 8° elevation to any platform heights. Also, the-tent platform will be the exact size of the tent so the platform will not stick outside the tent. This makes the tent floor water proof because when it rains, the water will flow from the wall to the ground not to the platform.

Fig. 1 shows the scaffold system of this invention without a platform.

Fig. 1 also shows scaffold system 10 inducing universal beam 12, upright connector 14 and saddle 16.

Fig. 1 also shows conventional scaffold components. For example, Fig. 1 shows connecting devices 30, horizontal posts 32 and scaffold legs 34.

Fig. 2 shows the universal beam 12 in place on a saddle 18 according to this Invention,

Fig. 3 shows the upright connector 14 of this invention. Upright connector 14 engages universal beam 12.

As shown in Figs. 1 – 3, the TF-2100 flooring system 10 is designed to transfer entire load coming from the platform and the tent to be transferred to the scaffold legs. Universal beam 12, saddle 16, and the TF-2100 platform will transfer platform live load to the legs. Upright connector 14 will transfer the tent load to the scaffold legs.

Fig. 4 shows clear span tent legs and platforms (flooring) in place on the scaffold system of Fig. 1. Fig. 4 shows clear span tent legs 20, TF-2100 platforms 22.
Fig. 5 shows saddle 16 of this invention. Saddle 18 includes insert, platform 33, and pin-snap lock shores 35. Hex jam nut 38 and screw cap 38 also are shown.

Fig. 8 shows a side view of saddle 18 of Fig. 5.

Fig. 7 shows an end view of saddle 16 of Fig. 5.

Fig. 8 shows a side view of universal beam 12 of this invention. Seam 12 also includes flanges 50. Flanges so are secured to upright connector 14 as shown in Figs. 10 and 11 with boll 52 and nut 54.

Fig. 8 shows an end view of universal beam 12 of this invention.

Fig 10 shows a side view of upright connector 14 of Fig. 3. Upright connector 14 engages universal beam 12.

Connector 14 comprises bottom portion 40 which circumscribes beam 12. Bolts with hex heads and loco nuts hold insert 49 in place. Screw cap flat head sockets 42 also hold insert 49 in place. Connector 14 also comprises flat plate 44 and upright portion 46.

Upright portion 46 engages clear span tent legs 20 as shown in Fig. 4. In one embodiment, tent legs 20 circumscribe upright portion 48 and rests on flat plate 44. The design of upright connector may vary depending on the design of legs 20.

The upright connectors are specifically designed for this type of tents. so the customer has to use the right upright connector for the right tent. The TF-2100 flooring system accommodates most of the clear span tents and structures. When you use different manfacture tent the customer have to use the specific upright connector for the specific tent. The universal beam, saddle, and the TF-2100 plate forms are same for any type of tents.

Fig. 11 shows an end view of upright connector 14 of Fig. 3. Housing 48 supports upright portion 48.

Fig. 12 is a bottom view of the platform system shown in Fig. 4. Male roto looks 60 and female roto locks 82 also are shown.

Fig. 13 shows male roto lock 60 used with the scaffold system shown in Fig. 12.
Fig. 14 shows female roto lock 82 used with the scaffold system shown in Fig. 13.

Fig. 15 shows the scaffold system of this Invention in greater detail. The platforms of Fig 12 is connected with another platform same size by roto lock. The roto lock is not use to connect the platform to the beam. The lock underneath the platform will secure the platform to the beam. Also shown is jack 33.

Every universal beam is connected with two universal saddles. Fig. 16 shows 4 universal beams. Other embodiments may include even more universal beam connected together to form a chain. At the end you have two upright connectors connected to the distal end and proximal end of the string.

Figs. 16 and 17 are views of the universal beam in greater detail, inserts 50 are welded to one side of beam 12. This makes the beam very special because you eliminate left and right beams. One beam fit all sides.

The other advantages of this system are the TF-2100 flooring system is designed to go low as 8" elevation to any platform heights. Also, the tent platform will be the exact size of the tent so the platform will not stick outside of the tent. This makes the tent floor water proof because when it rains, the water will flow from the wall to the ground not to the platform.

The above detailed description of the present invention is given for explanatory purposes. It will be apparent to those skilled in the art that numerous changes and modifications can be made without departing from the scope of the invention. Accordingly, the whole of the foregoing description is to be construed in an illustrative and not a limitative sense, the scope of the invention being defined solely by the appended claims.
CLAIMS

1. An apparatus comprising a unique modular platform system with scaffold understructure for supporting a clear span tent and tent frame wherein the apparatus comprises:
   a plurality of scaffold legs wherein each of the scaffold legs has a ground end and a support end;
   a plurality of upright connectors wherein each of the upright connectors is connected to the supporting end of one of the scaffold legs;
   a plurality of universal beams;
   a plurality of universal saddles wherein each of the universal beams is connected to two of the universal saddles;
   wherein the plurality of universal beams has a distal end and a proximal end;
   wherein the distal end is connected to one of the plurality of upright connectors; and
   wherein the proximal end is connected another of the plurality of upright connectors.

2. An apparatus according to claim 1 further comprising a plurality of platform sections wherein the plurality of universal beams support the plurality of platform sections.

3. An apparatus according to claim 2 wherein each of the universal beams has a shaped cross-section with opposing lips, and wherein the lips are configured to engage and support the platform sections.

4. An apparatus according to claim 1 further comprising: a plurality of clear span tent legs and each of the upright connectors supports one of the clear span tent legs.
5. An apparatus according to claim 1 wherein each of the upright connectors further comprises a bottom portion configured to circumscribe each of the universal beams.

6. An apparatus according to claim 1 wherein each of the upright connectors comprises a flat plate supporting an upright portion.

7. An apparatus according to claim 1 wherein the scaffold system is designed to transfer an entire load coming from the platform and the tent.

8. An apparatus according to claim 1 wherein the universal beam, saddle and the TF-2100 platform is designed to transfer platform live load to the scaffold legs.

9. An apparatus according to claim 1 wherein upright connector will transfer the tent load to the scaffold legs.

10. An apparatus according to claim 1 configured to transfer the load of the tent, tent frame, scaffold system and floor understructure to the ground through the plurality of scaffold legs.

11. An apparatus according to claim 1 configured so that the platform sections do not support the tent, tent frame, tent poles and scaffold system.

12. An apparatus according to claim 1 wherein the tent circumscribes the apparatus and wherein the tent is configured to keep the interior of the tent and the flooring section dry.

13. An apparatus according to claim 1 further comprising a plurality of modules arranged side by side to form a shelter structure.
14. An apparatus according to claim 1 wherein the plurality of scaffold legs have different heights to accommodate construction on uneven ground.

15. An apparatus according to claim 1 wherein the scaffold legs extend below the platform sections.

16. An apparatus according to claim 3 wherein each of the universal beams has a flange attached to each end of the beam and wherein each flange is attached on the same side of the beam.

17. An apparatus according to claim 16 wherein each flange is welded to each universal beam.

18. A universal beam configured for use in a scaffold system and floor understructure for supporting a tent and tent frame, wherein the universal beam has a shaped cross-section with opposing lips, and wherein the lips are configured to engage and support the flooring section.

19. A universal saddle configured for use in a scaffold system and floor understructure for supporting a tent and tent frame wherein the universal saddle has a U-shaped cross section with opposing lips, and wherein the lips are configured to engage and support the flooring section.

20. An upright connector configured with a geometric projection for attaching to a tent pole.
FIG. 1
INTERNATIONAL SEARCH REPORT

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [ ] Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. [ ] Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. [ ] Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

This International Searching Authority found multiple inventions in this international application, as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-17, directed to an apparatus having a modular platform system, plurality of scaffold legs, a ground end, a supporting end, a distal end, and a proximal end.

Group II: Claim 18, directed to a universal beam having a shaped cross-section and opposing lips.

Group III: Claim 19, directed to a universal saddle having a U-shaped cross section and opposing lips.

Group IV: Claim 20, directed to an upright connector having a geometric projection and a tent pole.

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claims Nos. 1-17.

Remark on Protest

[ ] The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.
INTERNATIONAL SEARCH REPORT

International application No. PCT/US 16/4716

A. CLASSIFICATION OF SUBJECT MATTER

- IPC(8) - E04G 1/00, 1/18, E04F 15/000, E04H 15/000, 15/32, 15/56, E04B 1/00 (2016.01)
- CPC - E04G 1/00, 1/18, E04F 15/000, E04H 15/000, 15/32, 15/56, E04B 1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
- IPC (8): E04G 1/00 (2016.01);
- CPC: E04G 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
- IPC (8): E04G 21/14, A47B 3/00, A47B 47/000, E04B 1/19, E04B 1/343, E04G 1/15, E04G 21/32 (2016.01);
- CPC: E04G 21/14, A47B 3/00, A47B 47/000, E04B 1/19, E04B 1/343, E04G 1/15, E04G 21/32, E04H 1/00 (keyword limited; terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
- PatBase; Google Patents; Google Web; Search Terms Used: scaffold* truss trusses tent* cover* shelter* leg columns pole poles rod rods pedestrian pedestals beam beams joist joists plank planks connect 'coupl' holder saddle saddles bracket brackets U-shape U-shaped Ushape lip lips protrusion protrusions protruding projection project

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>40x80 Frame Tent Victoria BC by Rental Network Ltd. Rental Network Ltd. 02 January 2015 (02.01.2015) [online], [retrieved on 18/10/2016]. Retrieved from the internet: <a href="">URL:https://www.youtube.com/watch?v=COYqEti5n6c</a>. Entire document, especially 0:50-1:19.</td>
<td>3, 4, 12</td>
</tr>
<tr>
<td>Y</td>
<td>US 3,316,680 A (CHRISTEK) 02 May 1967 (02.05.1967), entire document, especially Fig. 1, Fig. 2, Fig. 4.</td>
<td>5, 16, 17</td>
</tr>
<tr>
<td>A</td>
<td>US 3,628,628 A (Gilbreath et al.) 21 December 1971 (21.12.1971), entire document, especially Fig. 1.</td>
<td>4, 12</td>
</tr>
<tr>
<td>X, P</td>
<td>TF2100 Biljax Video HD 1080p; Biljax Scaffold and Event Solutions. 02 October 2015 (02.10.2015) [online], [retrieved on 10/14/2016]. Retrieved from the internet: &lt;URL:<a href="https://www.youtube.com/watch?v=K1eFW5DhKLY">https://www.youtube.com/watch?v=K1eFW5DhKLY</a> &gt;.</td>
<td>5</td>
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Further documents are listed in the continuation of Box C.

* Special categories of cited documents:
  "A" document defining the general state of the art which is not considered to be of particular relevance
  "E" earlier application or patent or published on or after the international filing date
  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  "O" document referring to an oral disclosure, use, exhibition or other means
  "P" document published prior to the international filing date but later than the priority date claimed

"T" document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
19 October 2016

Date of mailing of the international search report
28 DEC 2016

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Authorized officer: Lee W. Young
PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)
The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

SPECIAL TECHNICAL FEATURES

The invention of Group I includes the special technical feature of a modular platform system, a plurality of scaffold legs, a ground end, a supporting end, a distal end, and a proximal end, not required by the claims of Group II-IV.

The invention of Group II includes the special technical feature of the universal beam having a shaped cross-section and opposing lips, not required by the claims of Group I, III, and IV.

The invention of Group III includes the special technical feature of the universal saddle having a U-shaped cross section and opposing lips, not required by the claims of Group I, II, and IV.

The invention of Group IV includes the special technical feature of a geometric projection and a tent pole, not required by the claims of Group I-III.

COMMON TECHNICAL FEATURES

Groups I-III share the common technical features of an apparatus, a scaffold understructure, a clear span tent, and a tent frame. However, this shared technical feature does not represent a contribution over prior art as being anticipated by 40x80 Frame Tent Victoria BC by Rental Network Ltd to Rental Network Ltd (hereinafter 'Rental'), which discloses an apparatus (see video demonstration 1:02:1:19, collective unit of the platform, supporting understructure located under the platform, tent frame, and tent), a scaffold understructure (0:59-1:19, white supporting poles and beams located under the black platform), a clear span tent (0:59-1:19, clear span tent located on black platform), and a tent frame (0:59-1:02, metal tent frame components located on the platform).

Groups I and II share the common technical features of a universal beam. However, this shared technical feature does not represent a contribution over prior art as being anticipated by US 3,924,370 A to Cauceglia et al. (hereinafter 'Cauceglia'), which discloses a universal beam (spaced parallel beams, 1, Fig. 1; see NOTE).

Groups I and III share the common technical features of a universal saddle. However, this shared technical feature does not represent a contribution over prior art as being anticipated by Cauceglia, which discloses a universal saddle (hat-shaped clamps, 71, 71a, and 71b, Fig. 2 and Fig. 3; see NOTE).

Groups I and IV share the common technical features of an upright connector. However, this shared technical feature does not represent a contribution over prior art as being anticipated by Cauceglia, which discloses an upright connector (collective unit of U-shaped members 28 and plates 29, Fig. 1; see NOTE).

As the common technical features were known in the art at the time of the invention, these cannot be considered special technical features that would otherwise unify the respective groups.

Therefore, Groups I-IV lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.

*NOTE:*
The term "universal beams" is not further specified in the claim recitation or in the instant application specification. Accordingly, for the purposes of this opinion, "universal beams" has been interpreted to be any type of beam.

The term "universal saddles" is not further specified in the claim recitation or in the instant application specification. Accordingly, for the purposes of this opinion, "universal saddles" has been interpreted to be any type of saddle or supporting element.

Regarding claims 7-11, the claims fail to further limit the structure.