May 12, 1925. 1,537,589

G. H. DAWSON ET AL.

STRIP AND ROD TRUSSED STRUCTURE

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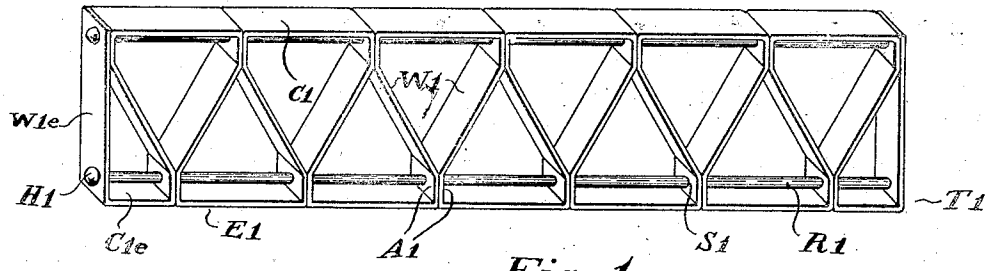


Fig. 1

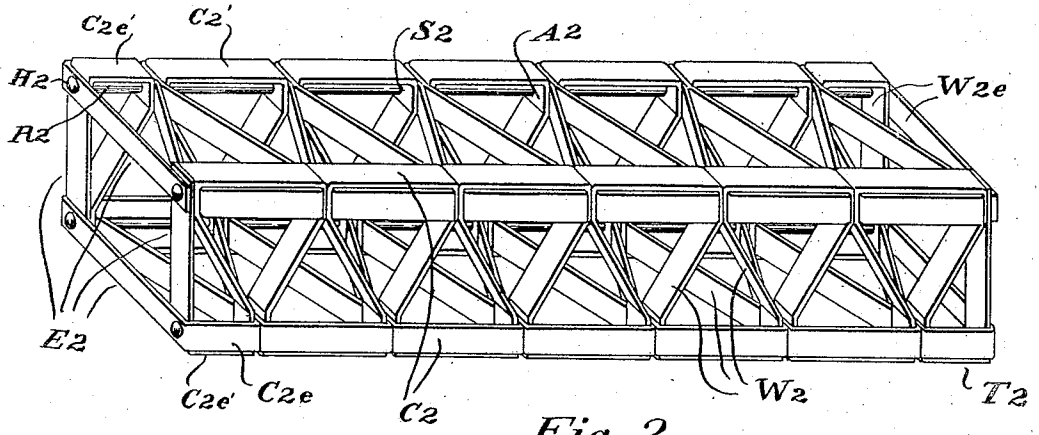


Fig. 2

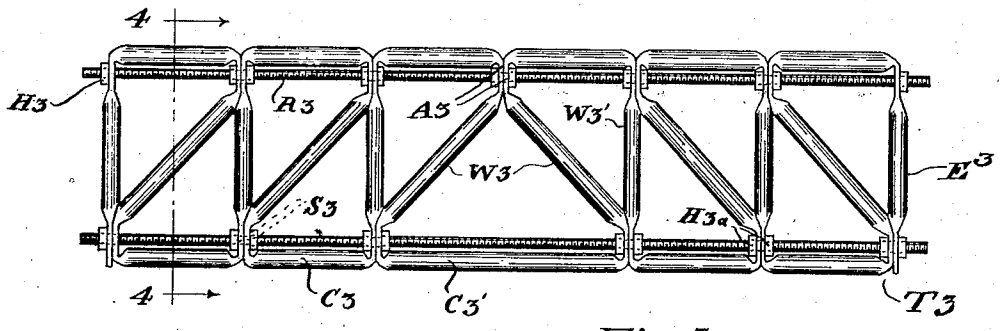


Fig. 3

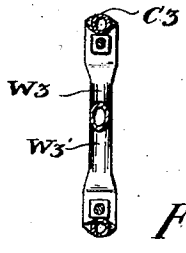


Fig. 4

Inventors

George Hives Dawson

Hurxthal Field Frease

By Treat and Bond Attorneys

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STRIP AND ROD TRUSSED STRUCTURE

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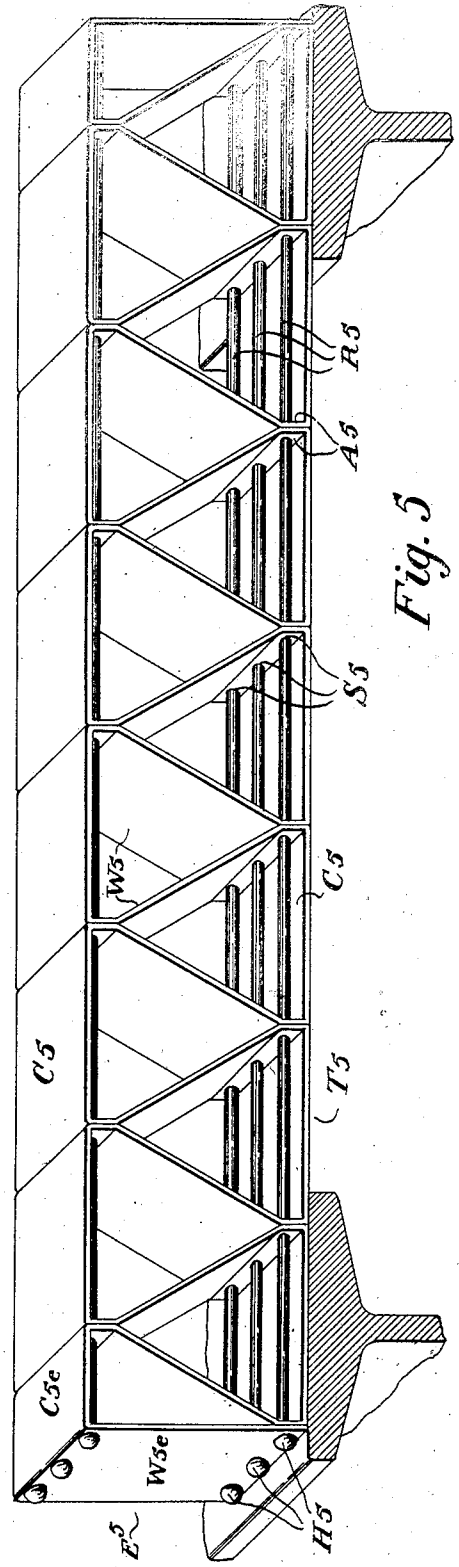


Fig. 5

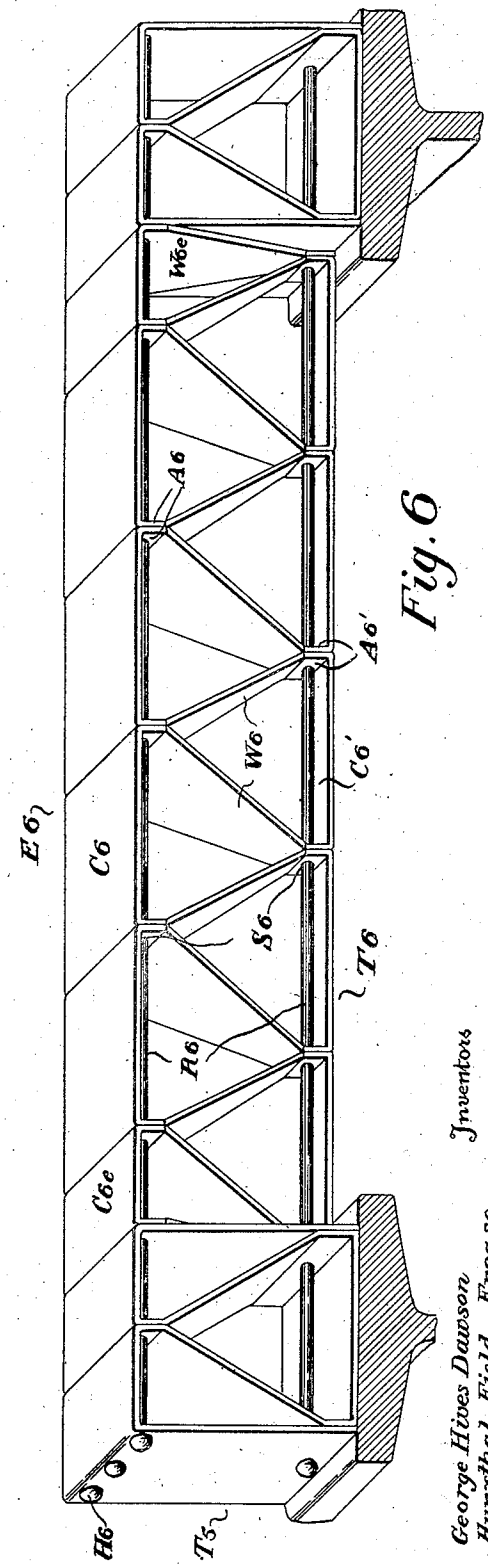


Fig. 6

Inventors
George Hives Dawson
Hurxthal Field Frease
By Glascock Downing & Seibold
Attorneys

May 12, 1925. 1,537,589

G. H. DAWSON ET AL

STRIP AND ROD TRUSSED STRUCTURE

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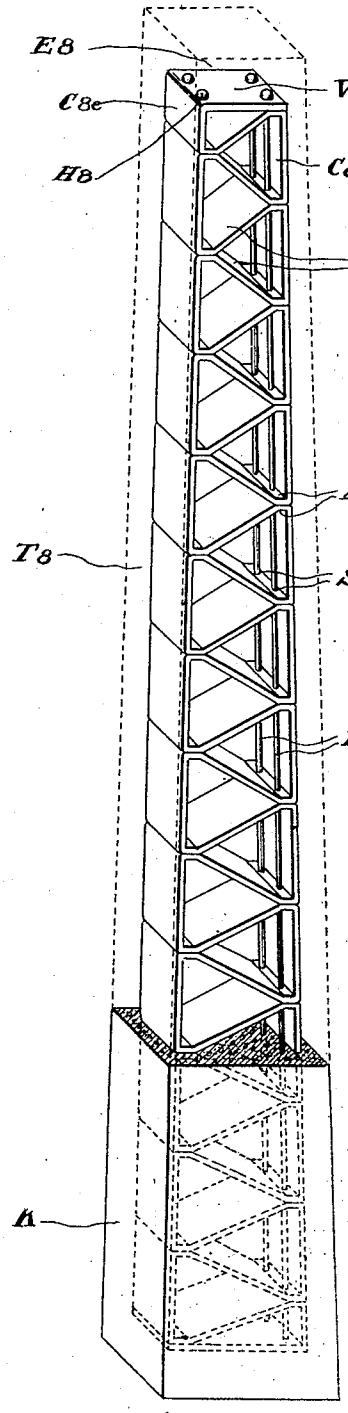
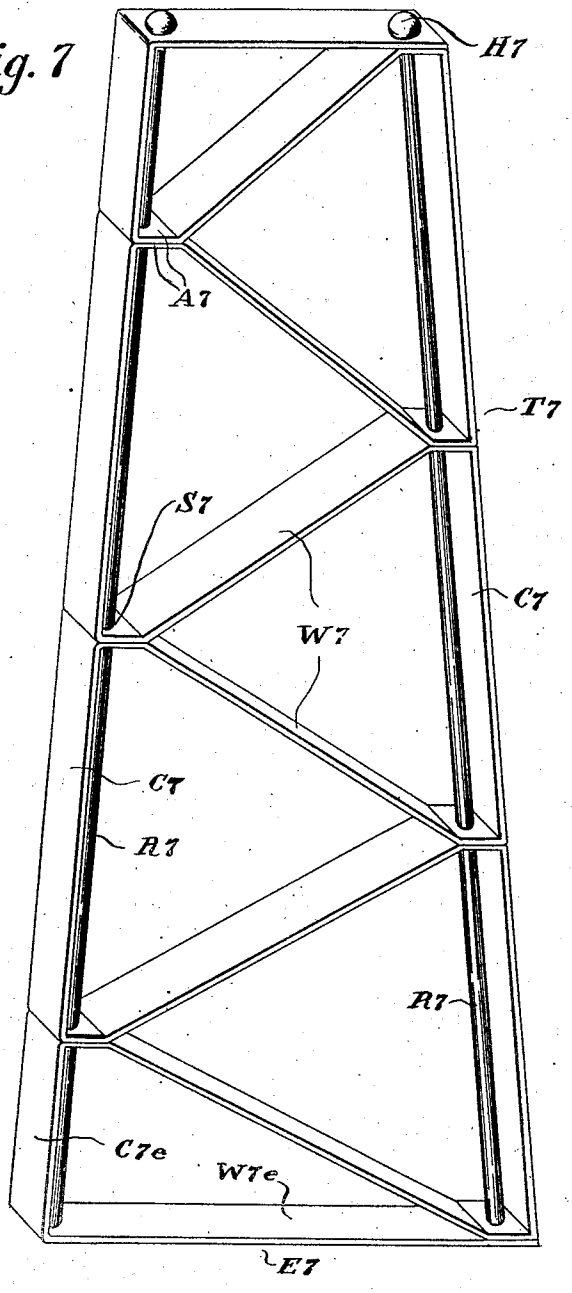


Fig. 8

Fig. 7



Inventors

George Hives Dawson

Hurxthal Field Frease

By Frease and Bond

Attorneys

Patented May 12, 1925. 1,537,589

UNITED STATES PATENT OFFICE.

GEORGE HIVES DAWSON, OF BOSTON, MASSACHUSETTS, AND HURXTHAL FIELD FREASE, OF CANTON, OHIO.

STRIP AND ROD TRUSSED STRUCTURE.

Application filed October 27, 1924. Serial No. 746,068.

To all whom it may concern:

Be it known that we, GEORGE HIVES DAWSON and HURXTHAL FIELD FREASE, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, and at Canton, in the county of Stark and State of Ohio, respectively, have invented new and useful Improvements in Strip and Rod Trussed Structures, of which the following is a specification.

The invention relates to trussed structures having chord members and web members abutting each other at apexes, and having means securing and locking the truss members together.

Preferably the chord and web members are portions of a continuous strip of material formed according to the disclosure of the prior application of the present inventors, for Letters Patent of the United States, filed November 26, 1923, Serial Number 676,897.

The objects of the present improvement are to provide simple mechanical means for fastening the truss members together and replacing a relatively large number of separate apex fastening means otherwise required, the improved mechanical truss fastening means not only securing the truss members together, but co-operating with the truss members to form a structure of greater strength and rigidity than may be attained by merely fastening the truss members together at the apexes by rivets, or welding.

These structural advantages with coincident production economies are attained by providing apex abutting feet for the chord and web members, said feet registering with each other at the apexes, and having registering apertures through which tie rods extend, and are secured for fastening the truss members together and strengthening the structure.

Several forms of the invention are illustrated in the accompanying drawings forming part hereof, in which—

Figure 1 is an oblique perspective view of a strip and rod trussed element;

Fig. 2, an oblique perspective view of a trussed structure including a plurality of strip and rod trussed elements;

Fig. 3, an elevation of a strip and rod trussed structure, the strip being formed in tubular cross-section;

Fig. 4, a cross-section of the same, as on line 4—4, Fig. 3;

Fig. 5, an oblique perspective view of a strip and rod trussed structure formed and used as a rectangular beam, and including a plurality of rods;

Fig. 6, an oblique perspective view of a strip and rod trussed structure formed and used as a triangular beam with rectangular supporting ends, and including a plurality of rods;

Fig. 7, an oblique perspective view of a tapered strip and rod trussed structure which may be a fence post;

Fig. 8, an oblique perspective view of a long tapered strip and plural rod trussed structure embedded in a protective and compression resisting material, and which may be a telephone pole.

Similar numerals refer to similar parts throughout the drawings.

In Fig. 1, the trussed structure indicated by T1 includes a trussed element E1 having spaced rows of chord members C1 and end chord members C1*e*, and connecting web members W1 and end web members W1*e*, preferably formed as shown from a continuous strip, so that the chord and web members alternate with each other in the strip. Between the alternating chord and web members are provided abutting apex feet A1, having registering apertures S1, through which tie rods R1 extend and terminate in end rivet heads H1, as shown, to fasten the truss members together, and strengthen the complete structure.

In Fig. 2, is illustrated a rectangular trussed structure T2 including four trussed elements E2, each having one row of chord members C2 and end chord members C2*e* in two cases and another row of chord members C2′ and end chord members C2*e*′ in two cases, and web members W2 and W2*e* connecting the rows of chord members. Preferably all of the members of a single element are formed from a single strip, so that the chord and web members alternate with each other in the strip.

Between the alternating chord and web members are provided abutting apex feet A2, having registering apertures S2, and the rows of chord members C2, and C2 and C2*e*, lap over the angled chord members C2′, and C2′, and C2*e*′, of the next element to form the corners of the rectangular structure, as shown, so that the apertures S2 in the apex feet A2 of the chord members of the two

elements forming each corner register with each other.

Four tie rods R2 extend through the registering apertures at each corner and terminate in end rivet head H2 as shown to fasten the members of the truss elements together to form the rectangular trussed structure, and to strengthen the complete structure.

In other words the structure of Fig. 2, is a combination of a plurality of the elements of Fig. 1, and it is obvious, that instead of the four elements illustrated, three, five or more may be used to form a polygonal trussed structure.

The strengthening effect of forming the strip used in a strip and rod trussed structure, is illustrated by the trussed structure T3 in Fig. 3. Here trussed element E3 includes spaced rows of formed strip tubular chord members C3 and C3′, and connecting web members W3 and end web members W3′ preferably made from a continuous tube, so that the chord and web members alternate with each other in the tube. Between the alternating chord and web members, abutting apex feet A3 have been flattened in the tube and provided with registering apertures S3, through which threaded tie rods R3 extend and terminate in nut heads H3.

This modification of strip and rod trussed structure is particularly adapted to aircraft work, and in order further to strengthen the structure, apex nuts H3*a* may be threaded on the tie rods and tightened on each side of the abutting apex feet.

In Fig. 5, is illustrated a rectangular strip and rod structure T5, including a wide strip trussed element E5 having spaced rows of chord members C5 and end chord members C5*e*, and connecting web members W5 and end web members W5*e*, preferably formed as shown from a continuous strip, so that the chord and web members alternate with each other in the strip. Between the alternating chord and web members are provided abutting apex feet A5 having a plurality of registering apertures S5, through which tie rods R5 extend and terminate in end rivet heads H5, as shown, to fasten the truss members together, and strengthen the complete structure.

The structure of Fig. 5, is illustrated as a rectangular beam or joist, and it is obvious that the plurality of tie rods, increases the torsional rigidity of the structure.

In Fig. 6, is illustrated a triangular strip and rod structure T6, having rectangular supporting ends made of short lengths of structures similar to T5. The structure T6 includes a profiled strip trussed element E6 having one row of wide chord members C6 and end chord members C6*e*, and another row of narrow chord members C6′, and web members W6 and end web members W6*e* connecting the rows of chord members, and being preferably formed as shown from a continuous profiled strip, so that the chord and web members alternate with each other in the strip.

Between the alternating chord and web members are provided abutting apex feet A6 and A6′, having registering apertures S6 through which tie rods R6 extend and terminate in rivet heads H6 as shown to fasten the truss members together, and strengthen the complete structure.

In Fig. 7, a tapered trussed structure T7 includes a strip trussed element E7 having converging spaced rows of chord members C7 and end chord members C7*e*, and connecting web members W7 and end web members W7*e*, preferably formed as shown from a continuous strip, so that the chord and web members alternate with each other in the strip. Between the alternating chord and web members are provided abutting apex feet A7, having registering apertures S7 through which tie rods R7 extend and terminate in end rivet heads H7 as shown to fasten the truss members together, and strengthen the complete structure.

The structure T7 is adapted among other things, for use as a fence post.

A long tapered plural rod trussed structure T8 is illustrated in Fig. 8, which may be embedded in a compression resisting and, protective material K such as concrete for strengthening the truss and protecting it against corrosion, thereby providing an efficient trussed structure for use as a telephone pole and the like.

As before the trussed structure T8 includes a trussed element E8 having spaced rows of chord members C8 and end chord members C8*e*, and connecting web members W8 and W8*e*, preferably formed as shown from a continuous strip, so that the chord and web members alternate with each other in the strip. Between the alternating chord and web members are provided abutting apex feet A8, having registering apertures S8, through which tie rods R8 extend and terminate in end rivet heads H8 as shown to fasten the truss members together, and strengthen the complete structure.

For production economy continuous strip trussed elements as illustrated are preferable for use in the strip and rod trussed structures of the present invention, but the strip truss members may be separate pieces each having apertured apex feet at each end.

For most purposes both the strip trussed elements and the tie rods are preferably made of metal, and in this connection the designation strip is not intended to be limited to the restricted meaning of strip as applied to steel but to indicate any desired cross section for the truss members.

Moreover the trussed elements may be

made in part or in whole of perforated or expanded metal of any desired type.

We claim:

1. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, and tie rods extending through the registered apertures for locking and securing the truss members together.

2. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, and tie rods extending through the registered apertures and terminating in end heads for locking and securing the truss members together.

3. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, threaded tie rods extending through the registered apertures, and nuts on the tie rods for locking and securing the truss members together.

4. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, and a tie rod extending through some of the registered apertures for locking and securing the truss members together.

5. A trussed structure including spaced rows of formed chord members and connecting formed web members, feet on the members abutting each other at apexes, registered apertures in the feet, and tie rods extending through the registered apertures for locking and securing the truss members together.

6. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, a plurality of registered apertures in the feet, and a plurality of tie rods extending through the registered apertures for locking and securing the truss members together.

7. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, a plurality of registered apertures in one row of the feet, and a plurality of tie rods extending through the registered apertures for locking and securing the truss members together.

8. A trussed structure including converging spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, and tie rods extending through the registered apertures for locking and securing the truss members together.

9. A trussed structure including spaced rows of chord members and connecting web members, feet on the members abutting each other at apexes, registered apertures in the feet, and tie rods extending through the apertures for locking and securing the truss members together, the structure being embedded in a compression resisting material.

10. A trussed structure including a trussed element having spaced rows of chord members and alternating and connecting web members made from a continuous strip of material, there being feet between the alternating chord and web members in the strip, the feet abutting each other at apexes, and there being registered apertures in the feet, and tie rods extending through the registered apertures for locking and securing the truss members together.

11. A trussed structure including a plurality of trussed elements each having spaced rows of chord members and alternating and connecting web members made from a continuous strip of material, there being feet between the alternating chord and web members in the strip, the feet abutting each other at apexes, and there being registered apertures in the feet, and tie rods extending through the registered apertures for locking and securing the truss members together.

In testimony that we claim the above, we have hereunto subscribed our names.

GEORGE HIVES DAWSON.
HURXTHAL FIELD FREASE.