

W. H. ENGLE.

SYSTEM OF BRACING FOR TRACTION ENGINES.

APPLICATION FILED JUNE 6, 1908. RENEWED DEC. 14, 1909.

947,099.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

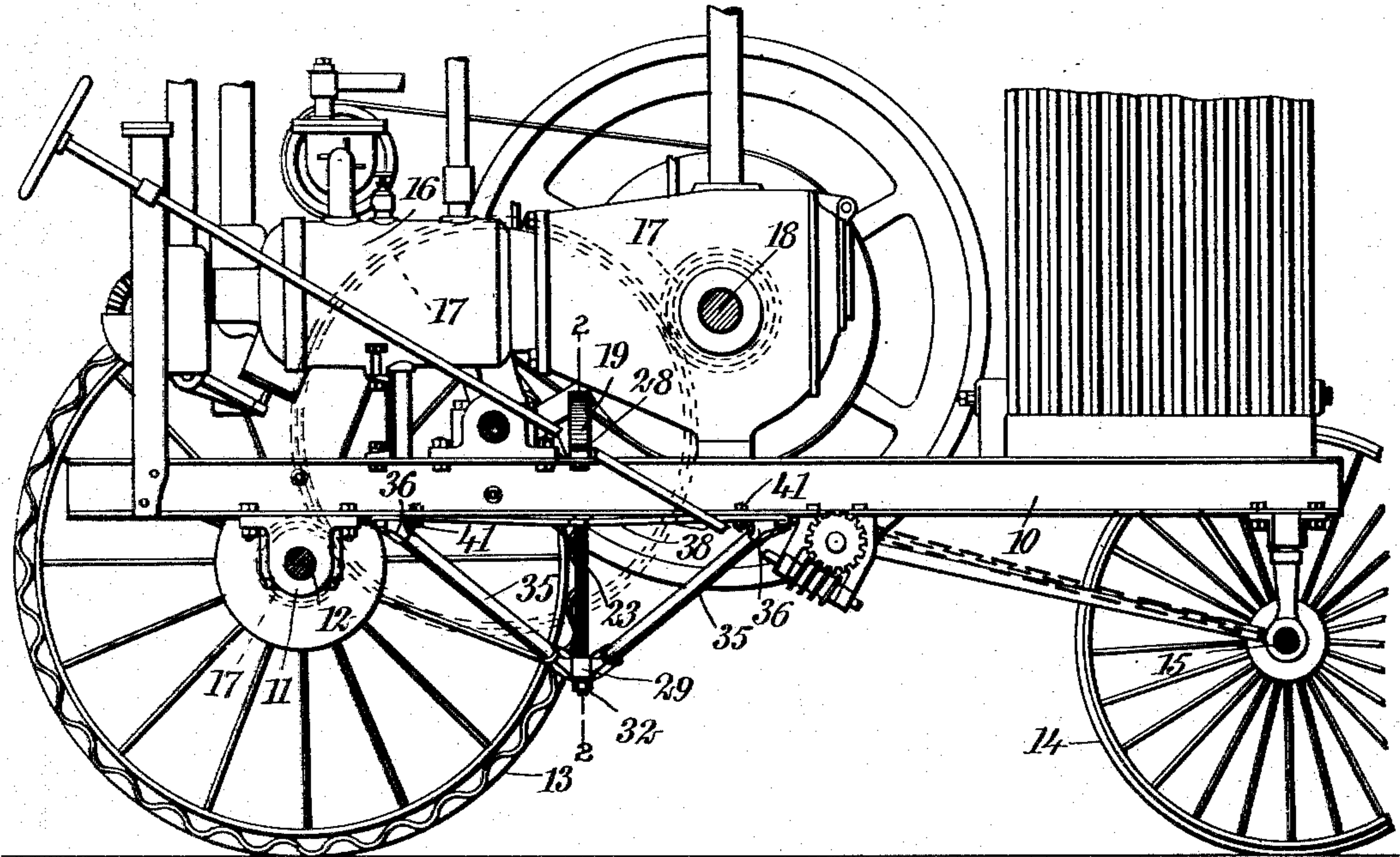


Fig. 2.

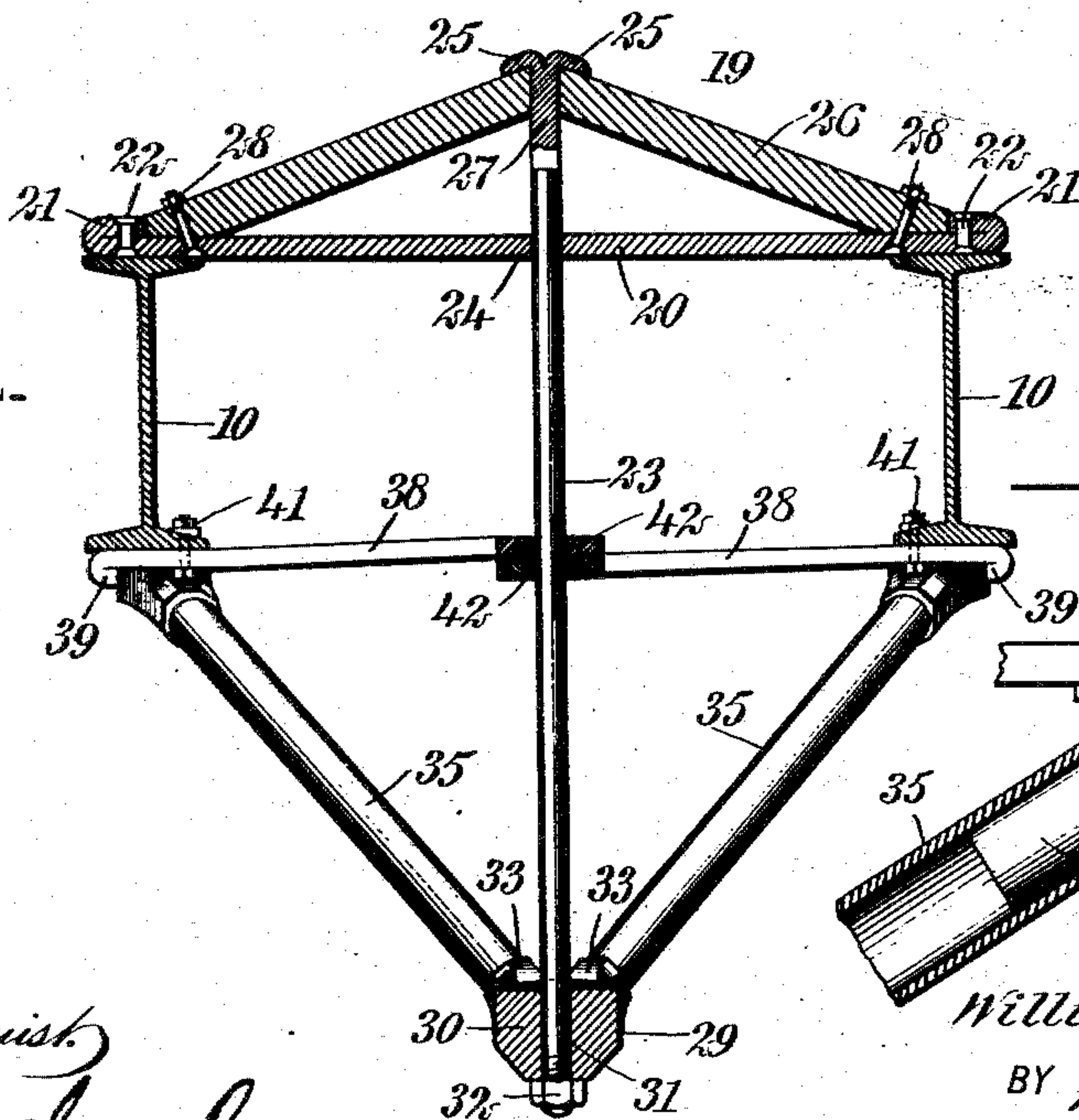
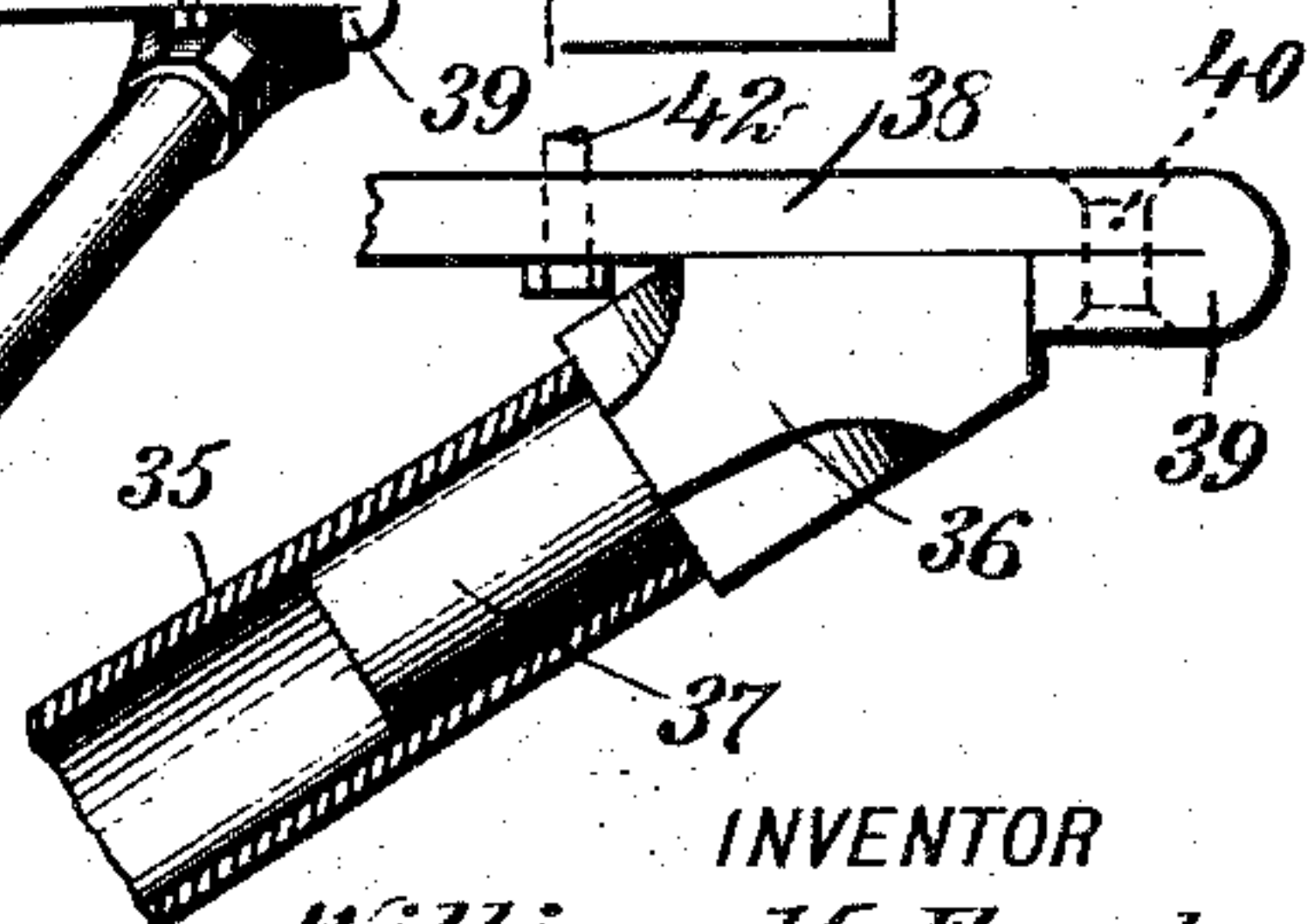


Fig. 4.



WITNESSES

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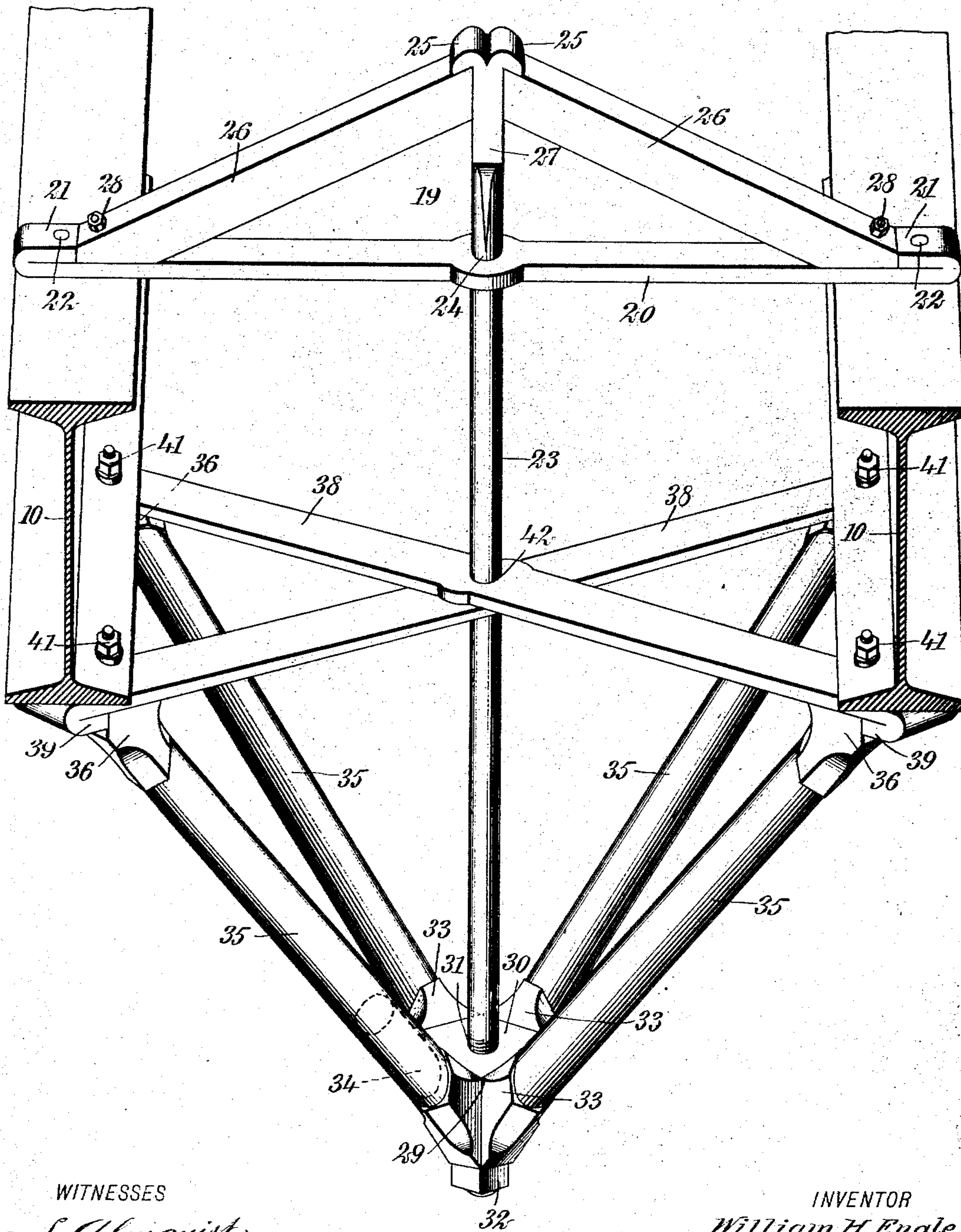
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Fig. 3.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. ENGLE, OF TOLSTOY, SOUTH DAKOTA.

## SYSTEM OF BRACING FOR TRACTION-ENGINES.

947,099.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed June 6, 1908, Serial No. 437,112. Renewed December 14, 1909. Serial No. 533,117.

*To all whom it may concern:*

Be it known that I, WILLIAM H. ENGLE, a citizen of the United States and a resident of Tolstoy, in the county of Potter and State of South Dakota, have invented a new and Improved System of Bracing for Traction-Engines, of which the following is a full, clear, and exact description.

This invention relates to systems of bracing for traction engines, and is particularly useful in connection with such vehicle or other structures having spaced frame members supporting mechanism tending to distort the frame members, or adapted to be unequally loaded, whereby the frame members are liable to distortion.

More specifically the invention relates to a system of bracing used in combination with spaced frame members and comprising struts at the under side of the frame members, and having a common support and engaging the frame members at separated points, means for connecting the separated ends of the struts whereby the same are held against movement away from one another, a bridge connecting the frame members at the upper sides thereof, and a tension member adjustably connecting the bridge and the common support.

The object of the invention is to provide a simple, strong and durable system of bracing spaced frame members of traction engines and the like, which can be removably mounted in position, which serves to brace and rigidly hold the spaced frame members against distortion in different directions, and which can be adjustably positioned with respect to the frame members.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a longitudinal section of an agricultural or other traction engine, showing one embodiment of my invention applied thereto; Fig. 2 is an enlarged transverse section on the line 2—2 of Fig. 1; Fig. 3 is an enlarged transverse section of the longitudinal frame members of an agricultural implement, having my invention applied thereto and showing the same in perspective view;

and Fig. 4 is a partial longitudinal section, showing the end of one of the struts and the means for securing it in position at the under side of one of the longitudinal frame members.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the same is particularly useful in connection with agricultural or other vehicle frames carrying prime movers and thereby liable to distortion, it can also be advantageously employed for bracing other structures having spaced frame members which are liable to be distorted owing to unequal loading or to some other cause.

In the embodiment of my invention I have shown herewith, I employ compression and tension members which may be fashioned from any suitable material such as cast iron and wrought iron, respectively, or the like.

Referring more particularly to the drawings, 10 represents the longitudinal frame members of a traction engine consisting preferably of I-beams, and having axle bearings 11 in which is journaled an axle 12 having driving wheels 13. Front or steering wheels 14 are mounted upon a steering axle 15 movably supporting the forward end of the frame. Upon the latter is positioned a prime mover 16 consisting, for example, of an internal combustion engine and arranged to actuate the driving wheels through a system of gears 17. The prime mover has its driving shaft 18 journaled upon the frame members 10 and tends to distort the same when it is in operation, causing one of the frame members to be depressed at one end and the other to rise at the other end, or to be otherwise displaced. My invention obviates this distortion of the frame members. It is positioned intermediate the same, substantially underneath the prime mover 16, as is shown most clearly in Fig. 1.

I provide a bridge 19 having a lower chord member 20 positioned upon the longitudinal members at the upper flanges thereof, and consisting preferably of an elongated bar having the ends 21 turned upon themselves to form shoulders and secured in the folded position by means of rivets 22 or the like. A central post or tension member 23 is arranged between the longitudinal frame members 10, and is in a substantially vertical position, having the upper portion extending through a suitable opening 24



near the middle of the lower chord member 20. The upper extremity of the post 23 is bifurcated and has the sides 25 laterally disposed as is shown most clearly in Figs. 2 and 3. Braces 26 are arranged upon the lower chord member 20, having their outer beveled ends resting upon the same and against the shoulders formed by the turned-over ends 21 of the chord member. The upper ends of the braces abut against the upper flattened portion 27 of the post 23 and engage underneath the bifurcated sides 25 of the latter. Bolts 28 or the like serve to hold the outer ends of the braces in position with respect to the lower chord member 20.

Underneath the frame members 10 and substantially central with respect to the same, is a spider 29 having a central portion 30 provided with an opening 31 therethrough which receives the lower end of the post 23. The extremity of the post is threaded to receive a nut 32 to hold the spider in position, and, as will appear more clearly hereinafter, to adjust the tension of the system of bracing. The spider has upwardly and outwardly disposed extensions 33 having cylindrical ends 34. These receive the lower extremities of hollow, preferably cylindrical struts 35 which extend in opposite directions toward the longitudinal frame members 10 and have at their upper ends, seats 36, provided with suitably formed extensions 37 adapted to project into the struts. The seats abut against diagonals 38 consisting preferably of bars or the like having the ends 39 turned upon themselves to form shoulders against which the seats can rest. The folded-over portions of the diagonals are secured in place by means of rivets 40 or the like. Bolts 41 are employed to secure the diagonals to the longitudinal frame members 10, as is shown most clearly in Figs. 2 and 3. The diagonals are crossed at their central portions and have registering openings 42 therethrough to receive the post 23. The diagonals serve to prevent the upper ends of the diagonally opposite struts from moving apart, and at the same time serve to position the struts at the under sides of the longitudinal frame members.

The tension of the bracing system can be regulated by means of the nut 32, which when turned in one direction tends to draw the bridge toward the spider 30, and when turned in the opposite direction, to release the members.

My system of bracing provides support at the under side of each of the longitudinal frame members 10 at two substantially separated points. It prevents the distortion of the plane of the longitudinal frame members, and securely binds the same together. It furthermore strengthens the entire frame of the vehicle or other device, by more

rigidly holding the longitudinal members in position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with spaced frame members, of a diagonal member connecting the same, a transverse member connecting said frame members, means for supporting said frame members at a plurality of separated points, and means for rigidly connecting said supporting means and one of said members.

2. The combination with spaced frame members, of cross members connecting the same, certain of said members being diagonally disposed, means for supporting said frame members at a plurality of points, said diagonal members serving to secure said means against movement in predetermined directions, and a further member connecting one of said cross members and said means and arranged transversely of said first members and said frames.

3. The combination with spaced frame members, of a diagonal member connecting the same, a bridge connecting said frame members, means for supporting said frame members at a plurality of points, and means for adjustably connecting said bridge and said supporting means.

4. The combination, with spaced frame members, of common means for supporting said frame members at the under sides at a plurality of separated points, means for connecting said frame members at diagonally opposite points, means for connecting said frame members at opposite points, and means for rigidly and adjustably securing said last-mentioned means and said first-mentioned means together.

5. The combination, with spaced frame members, of struts engaging said frame members at separated points, common means for supporting said struts, means for connecting the separated ends of certain of said struts whereby the same are held against movement away from one another, means for rigidly connecting said frame members, and means for adjustably connecting said last-mentioned means and said common means for holding said struts.

6. The combination, with spaced frame members, of struts having a common support and engaging each of said frame members at separated points, means for connecting the separated ends of opposite struts whereby said opposite struts are held against movement away from one another, a bridge connecting said frame members at the sides remote from said struts, and a tension member connecting said bridge and said common support.

7. The combination, with spaced frame members, of struts, each engaging at the un-



der side of one of said frame members, a spider supporting all of said struts, means for connecting the separated ends of diagonally opposite struts whereby said diagonally opposite struts are held against movement away from one another, said last-mentioned means serving to connect said frame members, a bridge connecting said frame members at the sides remote from said struts, and a tension member connecting said bridge and said spider, said spider being adjustable longitudinally of said tension member.

8. The combination, with spaced frame members, of diagonals rigidly connecting said frame members at the under sides thereof, struts, each engaging one of said diagonals at one of said frame members, a spider having means for supporting all of said struts, said diagonals serving to hold said diagonally opposite struts from movement away from one another, a bridge having a lower chord member connecting said frame members at the upper sides thereof and braces having the outer ends secured to said lower chord member, and a tension member having the upper end held by said braces and having the lower end adjustably secured to said spider.

9. The combination, with spaced frame members, of diagonals secured to said frame members and crossed intermediate the same at the under sides thereof, said diagonals having the ends turned upon themselves to form shoulders, upwardly and outwardly in-

clined struts underneath said frame members 35 and each consisting of a hollow column, a spider having extensions each adapted to project into one of said struts whereby said spider serves as a common support for all of said struts, seats at the upper ends of said struts and each having an extension project- 40 ing into one of said struts, said seats resting against said diagonals and engaging at said shoulders, a bridge having a lower chord member secured to said frame members at the upper sides thereof and braces having 45 the outer ends secured to said lower chord member, said lower chord member having the ends disposed upon themselves to form shoulders adapted to engage said braces, and a tension member having the upper end bifurcated and laterally disposed to engage 50 said braces, said tension member having the lower end threaded, said spider having an opening to receive said tension member, an adjusting nut upon said threaded end of said tension member and controlling said spider, said lower chord member and said diagonals having openings to receive said tension member therethrough. 60

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. ENGLE.

Witnesses:

THOMAS E. HOGG,  
EMIL B. LERR.