

No. 680,366.

Patented Aug. 13, 1901.

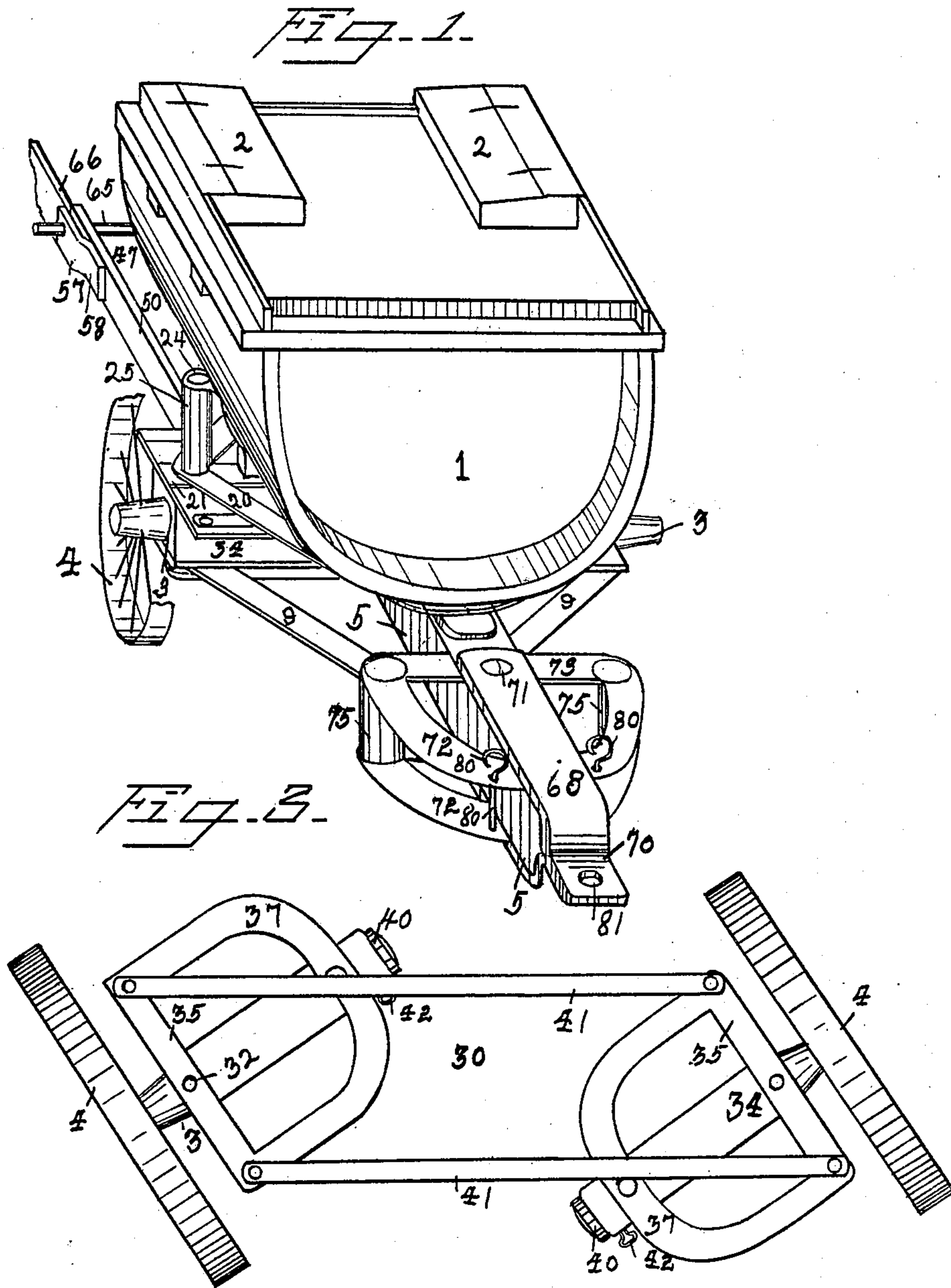
J. STAYER.

TENDER FOR TRACTION ENGINES.

(Application filed June 4, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES.

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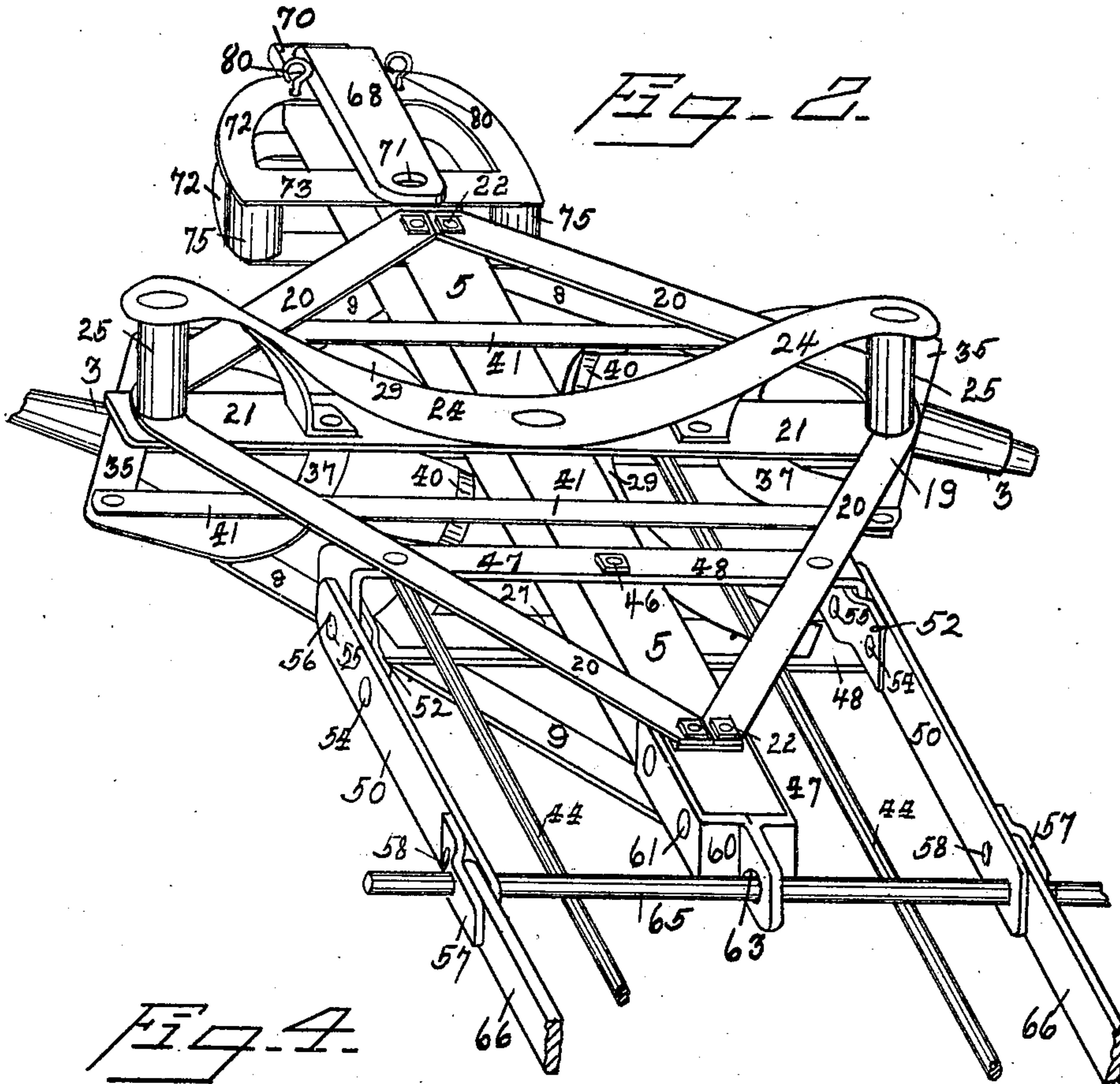
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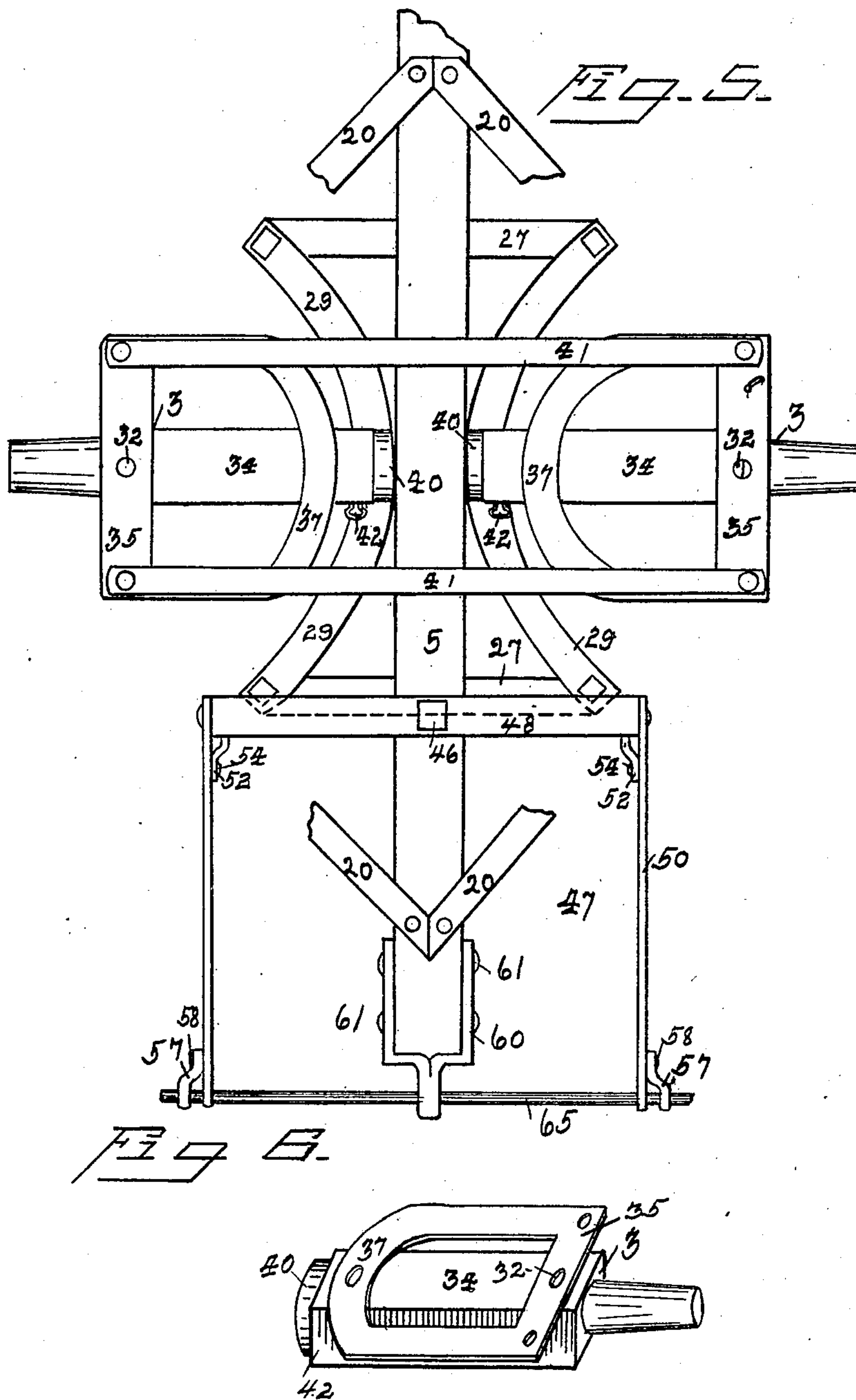
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# UNITED STATES PATENT OFFICE.

JOSEPH STAVER, OF QUINBY, IOWA.

## TENDER FOR TRACTION-ENGINES.

**SPECIFICATION** forming part of Letters Patent No. 680,366, dated August 13, 1901.

Application filed June 4, 1901. Serial No. 63,073. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH STAVER, a citizen of the United States, and a resident of Quinby, in the county of Cherokee and State of Iowa, have invented certain new and useful Improvements in Tenders for Traction-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tenders, with special reference to those adapted to be used with traction-engines; and the leading object is to provide a tender which will be exceedingly strong and rigid and also that can be conveniently operated by the engineer.

Another object is to provide means for rigidly securing it to the engine, so as to prevent lateral motion and at the same time permit it to yield somewhat in other directions to adapt it to the irregularities in the road.

A still further object is to provide means for readily and conveniently coupling it with separators or other machines with which it may be used.

These and other similar objects of somewhat less importance will be developed in detail in the following specification, when taken in connection with the accompanying drawings, forming a part hereof, in which—

Figure 1 is a perspective of the tender complete, including the water-tank, taken from the rear. Fig. 2 shows a perspective from the front with the water-tank removed. Fig. 3 shows the axles and equalizer removed. Fig. 4 shows a perspective of one of the stay-frames viewed from the under side. Fig. 5 shows a plan view of the equalizer and the track on which it runs, together with the forward frame by which it is connected to the engine. Fig. 6 represents a perspective of one of the axles removed.

Like figures of reference denote corresponding parts in all of the drawings.

Referring to the drawings, 1 designates the tank, which is of oval shape on the under side, flattened upon the top, and provided with tool-chests 2 and is situated upon the truck of the tender, presently to be described. The axles are represented by 3, which carry ordinary wheels 4.

Through the center of the frame of the tender runs a large stay or draw bar 5, to which each of the various parts of the frame, subsequently to be described, are connected. Against the under side of the draw-bar 5 is fastened a stay-frame 7. (Shown in Fig. 4.) This frame consists of four stays or braces 9 and a cross-plate 12. In order to set this frame rigidly, there is placed a strap 14, which is fastened at both ends by the bolts 18 and forms with the cross-bar 12, by the screw and nuts 13, a truss. The two rear plates 9 are bolted to the bar 5 through the bolt-holes 15, and the two forward plates 9 are bolted also to the stay-bar 5 through the bolt-holes 16. In this manner the frame is of nearly a diamond shape, and when thus fastened with the frame 7 in the truss shape it makes an exceedingly rigid frame. A similar frame 19, having the plates 20 and the cross-plate 21, but without the truss, is bolted to the top of the draw-bar 5 by the bolts 22, and upon the top of this frame, at the two opposite outer corners, are secured the posts 25, to which the bent stay 24 is secured and further secured to the cross-bar 21 and draw-bar 5. Upon this bent stay 24 rests the tank 1, projecting in front and back of said stay. Across the draw-bar 5, upon the under side, are fastened stays 27, and upon these are fastened the ends of the tracks 29. These tracks are curved toward each other, and their outer curved portions rest upon and are secured to the cross-plate 12. This mode of construction holds the tracks exceedingly rigid and in the same horizontal plane.

Between the plates 21 and 12 is set an equalizer 30. (Shown in Fig. 3.) This equalizer consists of two axles 3, on which the wheels of the tender revolve. The inner ends of these axles are formed into squares and are pivoted between the plates 21 and 12 by the pivot-pins 32. The rear ends of the axles are made square at 34 and are stayed by the cross-plate 35 and the half-moon plate 37. The inner end of each axle is provided with a roller 40, which travels upon the tracks 29. For the purpose of forcing these two axles to always operate in conjunction with each other there are pivoted to the cross-plate 35 two cross-bars 41. In the forward side of the axles 34, just back of the rollers 40, is secured a loop or link 42, and to each one of these links are



loosely attached bars 44, which run forward and are connected to the rear of the engine, whereby the direction of the axles, and with them the wheels, is changed by the operation of the engine.

To the forward end of the draw-bar 5, between the two frames 7 and 19, is rigidly fastened a third frame 47, consisting of the plates 48, one of which extends across the top of the draw-bar and the other beneath, and both are bolted together and to the draw-bar 5 by the bolt 46. The upper plate 48 is bent downward at the ends and secured to the lower plate 48. At each end of this plate 48 is somewhat loosely secured a plate 50, and to the plates 50 are fastened clips 52 by the bolts 54 and 55. The bolt-hole 56, through which the bolt 55 passes, is somewhat larger than the bolt itself, for the purpose presently to appear. Near the forward end of the bars 50 are also bolted bent clips 57 by the bolts 58. To the forward end of the draw-bar 5 is rigidly attached a clevis 60 by the bolts 61 passing through the two side pieces of the plate and through the body of the draw-bar 5. The forward end of the clevis 60 is provided with a hole 63.

Through a hole in the plates 50 and clips 57 and through the hole 63 in the clevis is passed a bar 65, and between the plates 50 and clips 57 upon the same bar are pivoted plates 66, which project forward and are attached to the sides of the engine. The hole 63 is somewhat larger than the bar 65, and the hole 55 is somewhat larger than the bolt which passes through it. The reason for making these two holes 63 and 56 larger than the bar 65 and the bolt 55, which passes through them, is that there may be a slight flexibility in the upward movement of the forward frame 47, which is attached directly to the engine, so that if one of the wheels of the tender should pass over a stone the frame would give a little on one side and not bend the various plates and still maintain the rigid lateral attachment of the tender to the engine. This is of importance in preventing the racking of the tender in passing over the roughness in the roads.

For the purpose of conveniently attaching the tender to the separator or other machine with which it may be used there is attached to the rear of the draw-bar 5 a coupler 68. This coupler consists of a clevis 70 and a frame with two plates, which extend upon the upper and lower sides of the draw-bar 5 and are united to the rear end and at the forward end pivoted to the bar 5 by the pivot-pin 71. (See Fig. 1.) Two plates 72 of half-moon shape, united together in the rear by the cross-plates 73, are secured the one to the upper side of the draw-bar 5 and the other to the lower side between the clevis 70. In order to firmly stay these plates, there are set between them at their outer corners posts 75. Upon the other end of the clevis 70 and of

the draw-bar 5 there are passed through the plates 72 pins 80, which prevent the clips from turning in either direction. Through the end of the clips at 70 is a hole 81, by which it is attached to the separator.

When it is desired to couple this tender with a separator or other machine to the rear of the tender, the tender is backed up against the separator, and if it does not coincide exactly with the end of the clevis, so as to couple direct through the hole 81 with the coupling of the separator, one of the pins 80 may be withdrawn and the clevis turned in the direction desired and coupled with the separator. Then as soon as the engine is started the draft will bring the tender and the separator into the same line with each other and also the clevis directly over the draw-bar. Then the pin 80 may be inserted again and prevent any side movement of the coupling.

The manner of operating my device has been mainly described in the foregoing description, but there may be added the following: The plates 66 are attached to the rear of the traction-engine and connection is also made with the rods 44, and when the engine advances the tender will be drawn forward by the plates 66 engaging with the rod 65, which also engages with the draw-bar 5 and the frame 47. The direction of the tender is governed by the rods 44, attached to the axles 34, and since the two axles are united together by the equalizer the same direction of the wheels is always maintained whether in advancing or backing and the same in coupling with the separator or for any other purpose.

It will be observed that the two frames 7 and 19 and the forward frame 47, attached, as herein described, to the draw-bar 5, form a strong and rigid tender which will maintain its rigid lateral position in all the variety of trying uses to which such machine is subjected, and by the loose connection of the plates 50 with the cross-piece 48 and also by the variation of the size of the hole 63 to the bar 65 the frame of the tender will be permitted to yield sufficiently to adapt it to all the irregularities of the road upon which it may be used without straining or racking any of the parts thereof.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a tender for traction-engines, a central draw-bar, angular stay-frames rigidly secured to the draw-bar, one beneath and one above, axles carrying sustaining-wheels pivoted between the angular frames, means connected with the engines for operating the axles, an equalizer connecting the axles, and a draw-frame flexibly secured to the tender and connected with the engine, as and for the purposes shown.

2. In a tender for traction-engines a central draw-bar, angular frames secured one above



and one beneath the draw-bar, axles pivoted in the frame and a draw-frame provided with plates 50 flexibly attached to the frame of the tender and a bar 65 loosely engaging the central draw-bar, as and for the purposes shown.

3. In a tender for traction-engines, a central draw-bar, angular stay-frames secured to the draw-bar one above and one below the draw-bar, axles carrying sustaining-wheels pivoted between the stay-frames, a track secured on opposite sides of the draw-bar, rollers pivoted to the inner ends of the axles and adapted to travel upon the tracks, an equalizer connecting the axles, means connecting the axles with the engine for operating the axles and a draw-frame flexibly connected to the frame of the tender, substantially as and for the purposes shown.

4. In a tender for traction-engines, a central draw-bar, angular frames, rigidly secured to the draw-bar, the one above and the other beneath the same, a stay 24, a water-tank upon said stay, a yielding draw-frame attached to the draw-bar and angular frames and yielding connections between the tender and engine, as and for the purposes shown.

5. In a tender for traction-engines a central draw-bar, angular stay-frames fastened to the draw-bar, axles pivoted in the frame and provided with rollers, a track attached to the frame, a coupler pivoted to the rear of the draw-bar and adapted to be turned in the plane of the draw-bar, a yielding draw-frame, means for attaching the draw-frame and axles to the engine and a tank, substantially as and for the purposes shown.

6. In a tender for traction-engines a central draw-bar, frames 7 and 19 secured to the draw-bar, axles pivoted in the angular frames and provided with rollers upon their inner ends, curved tracks for said rollers, means for connecting the axles with the engine, and the frame 47 provided with plates 50 loosely secured to the cross-plates 48, bar 65 loosely engaging the forward end of the draw-bar and

connecting-plates 66, as and for the purposes shown.

7. In a tender for traction-engines, a central draw-bar, an angular frame fastened to the top of the draw-bar, an angular truss-frame secured to the under side of the draw-bar, axles pivoted between the frames and provided with rollers on their inner ends, curved tracks for the rollers, a tank, stays for holding the tank upon the frame and a yielding draw-frame attached to the draw-bar, as and for the purposes shown.

8. In a tender for traction-engines, a central draw-bar, stay-frames secured to the draw-bar, one above and the other beneath, axles pivoted between the outer corners of said stay-frames, a curved track secured upon the opposite sides of the draw-bar, rollers pivoted to the inner ends of the axles, and adapted to travel upon the tracks, bars loosely connected to the inner ends of the axle and to the engine, a frame consisting of plates 48 rigidly attached to the draw-bar and stay-frame, and draw-bars attached in a yielding manner to the plate 48 and yielding connection between the tender and engine, substantially as described and shown.

9. A tender for traction-engines, consisting of a central draw-bar, angular frames secured to said draw-bar, axles pivoted in the frames and provided with rollers, tracks 29, connection between the axles and engine, an equalizer connecting the axles, supporting-wheels, coupler 68, draw-frame 47 loosely united to the frame of the tender and provided with a bar 65 loosely engaging the forward end of the draw-bar 5, means for connecting the frame with the engine, and a tank secured to the tender, as and for the purposes shown.

In testimony whereof I have hereunto signed my name in the presence of two witnesses.

JOSEPH STAVIER.

Witnesses:

D. T. MOORE,

H. C. MILLER.