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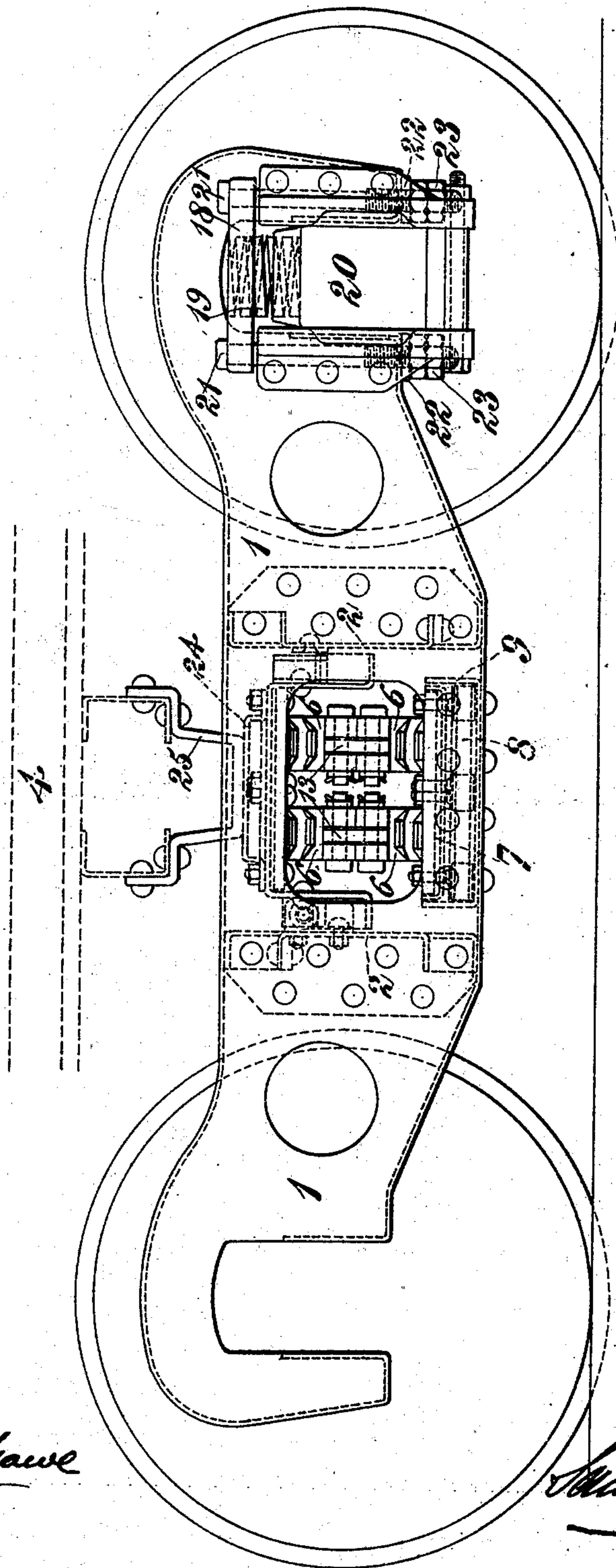
S. FOX.

BOGIE TRUCK FOR RAILWAY CARRIAGES.

No. 505,159.

Patented Sept. 19, 1893.

Fig. 1.



Witnesses  
*Bernard Bagshawe*  
*S. Fox.*

Inventor  
*S. Fox*

(No Model.)

9 Sheets—Sheet 2.

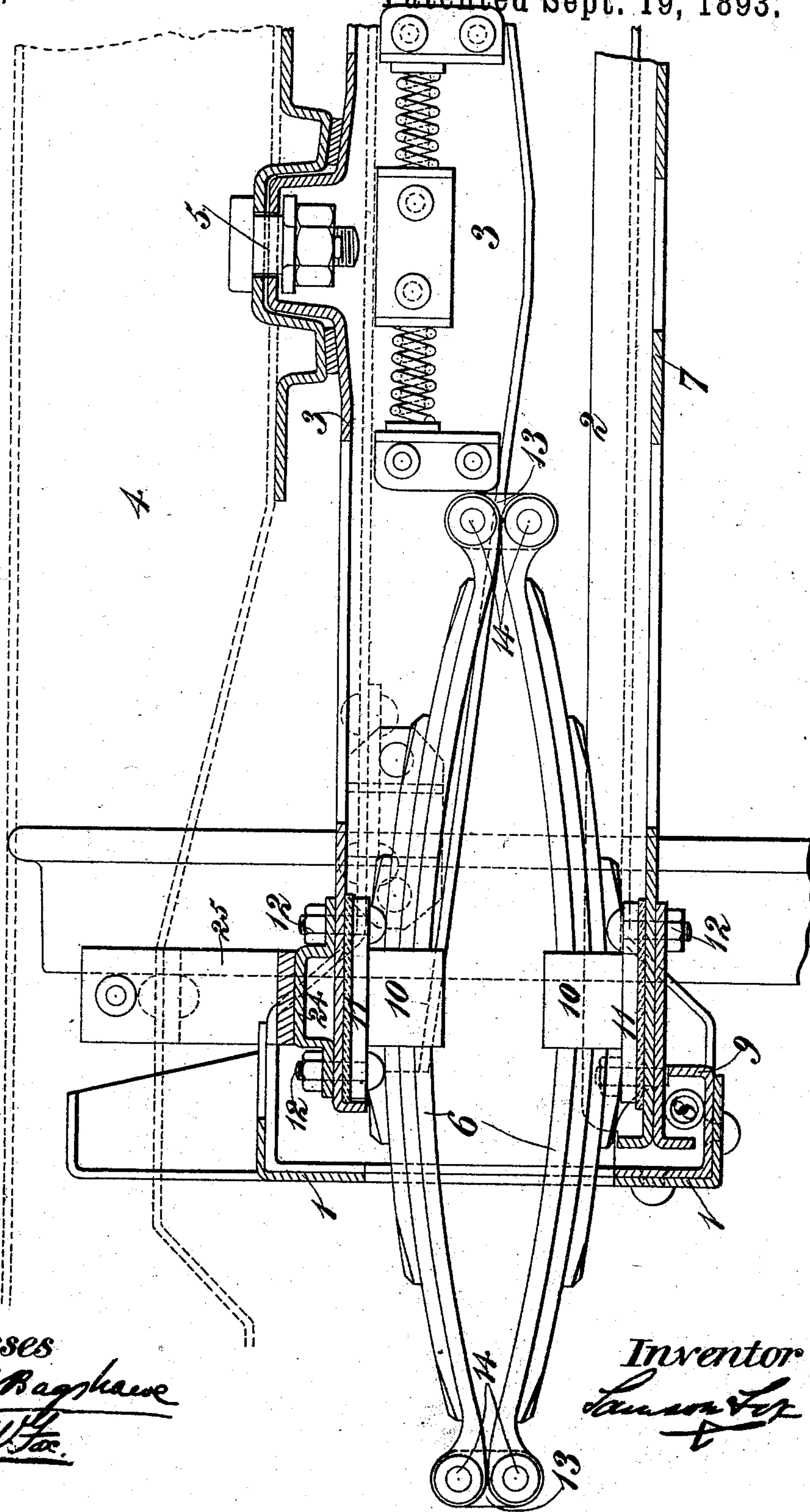
S. FOX.

BOGIE TRUCK FOR RAILWAY CARRIAGES.

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Patented Sept. 19, 1893.

Fig. 2.



Witnesses  
Bernard Bagshaw  
S. Fox.

Inventor  
Samuel Fox

(No Model.)

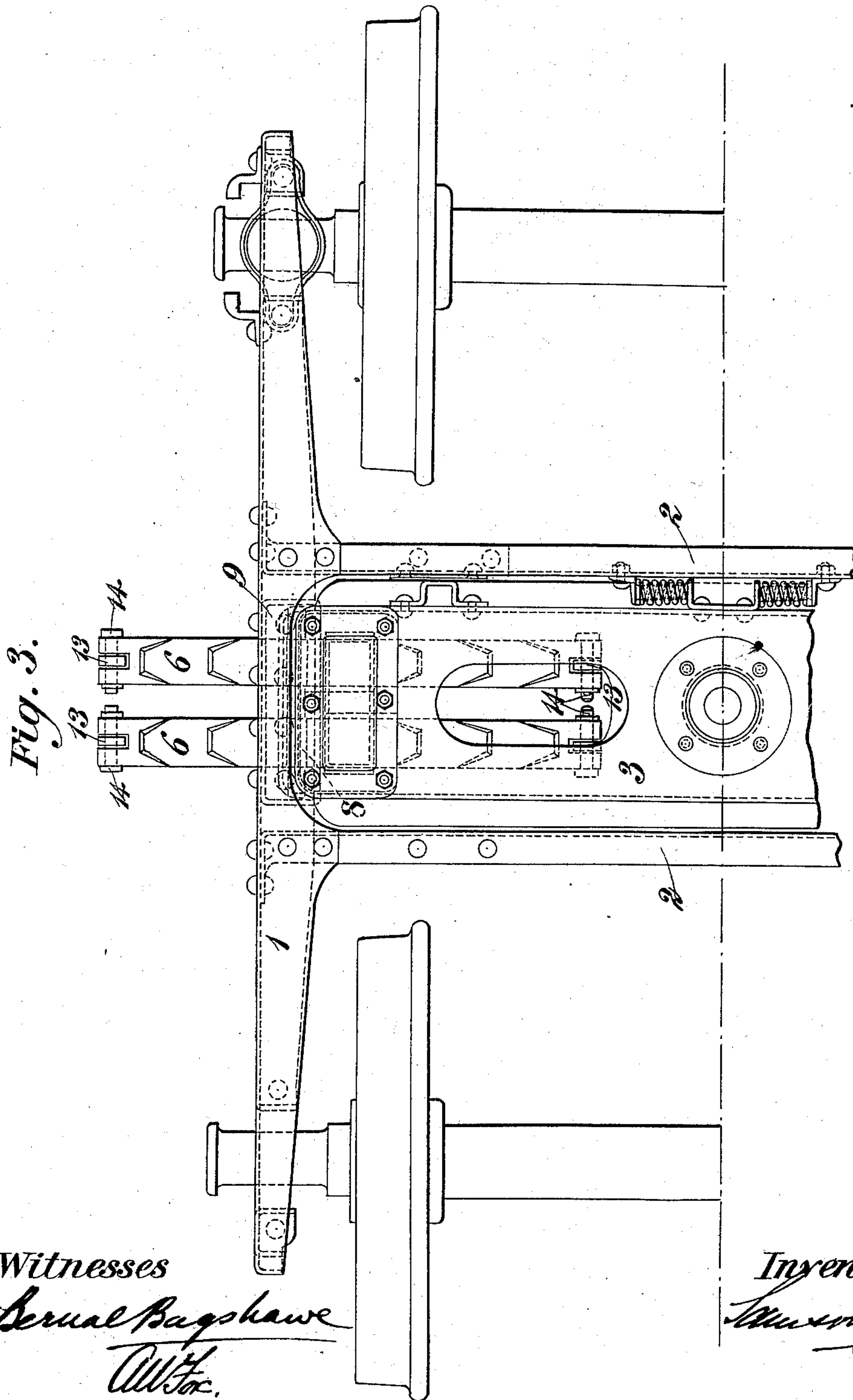
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(No Model.)

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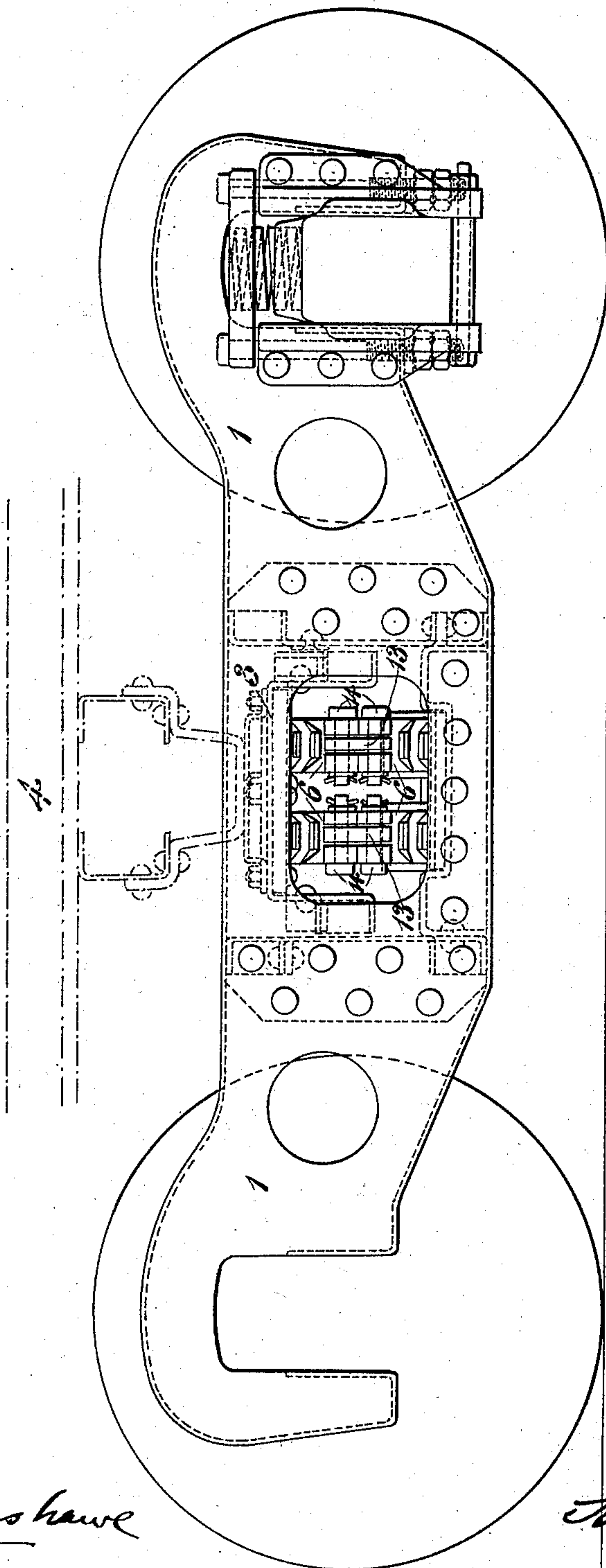
S. FOX.

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Fig. 4.



Witnesses  
Bernard Baggshaw  
S. Fox.

Inventor  
S. Fox

(No Model.)

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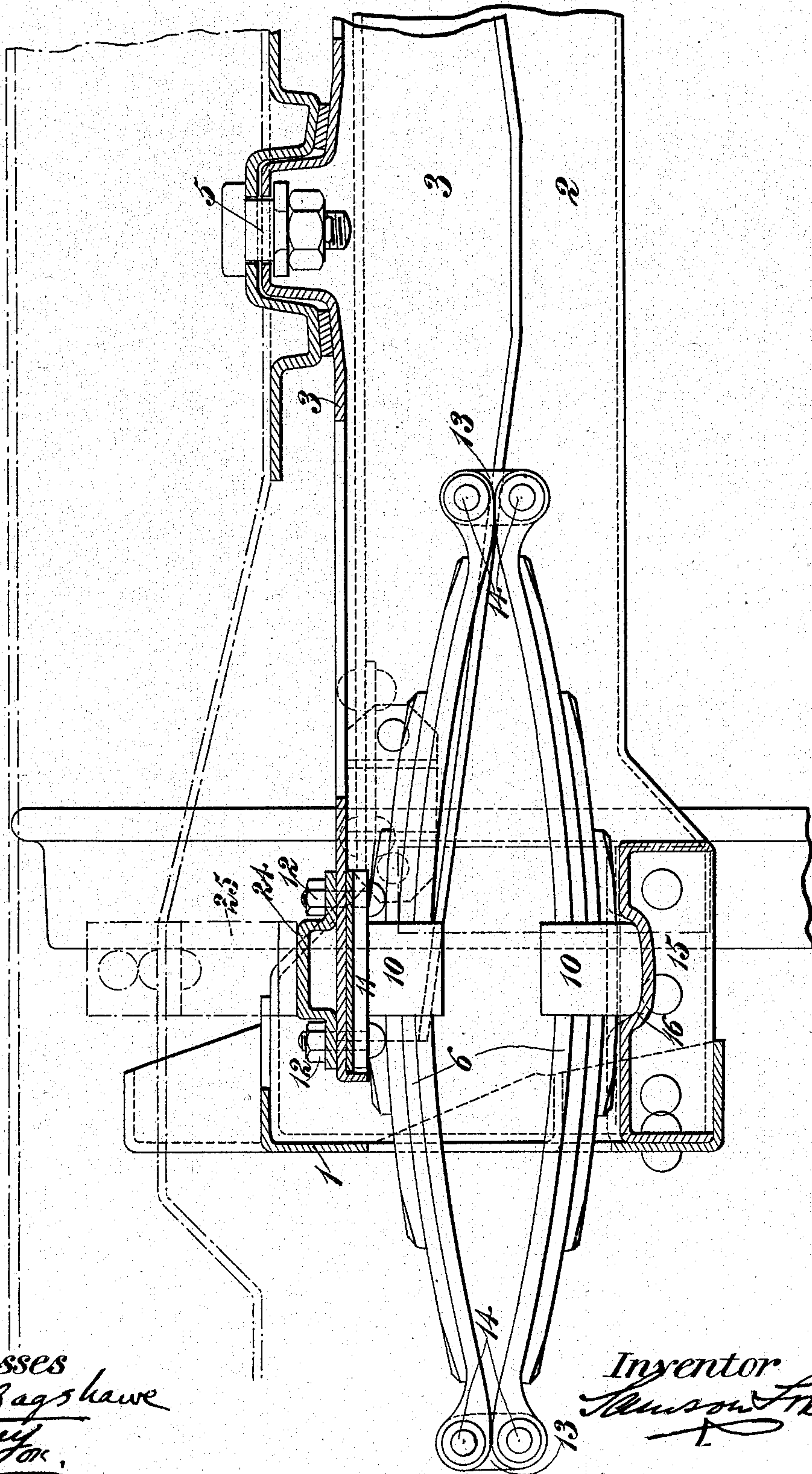
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BOGIE TRUCK FOR RAILWAY CARRIAGES.

No. 505,159.

Patented Sept. 19, 1893.

Fig. 5.



Witnesses  
Bernard Bagshawe  
Atty for.

Inventor  
S. Fox  
L.



(No Model.)

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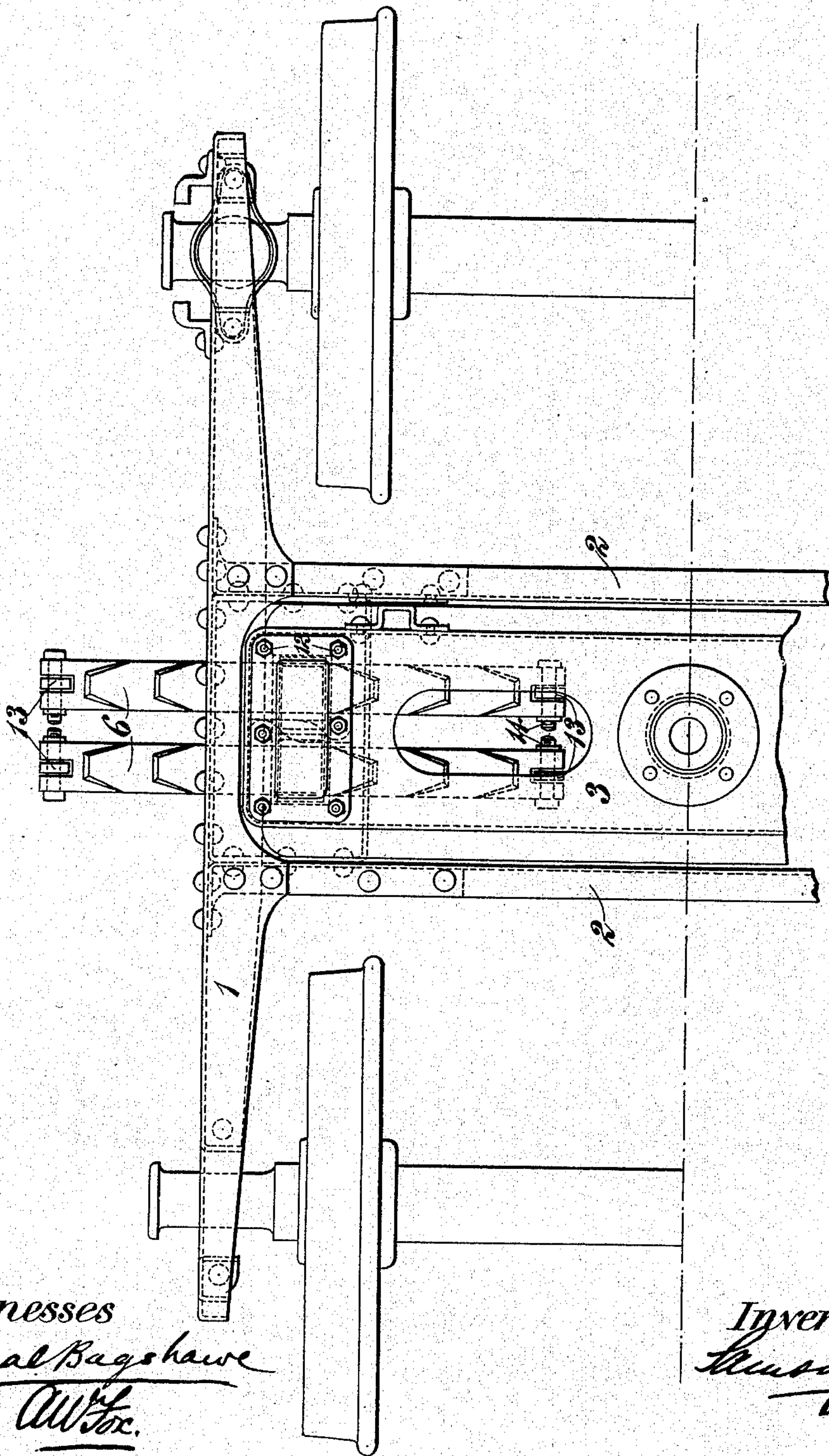
S. FOX.

BOGIE TRUCK FOR RAILWAY CARRIAGES.

No. 505,159.

Patented Sept. 19, 1893.

Fig. 6.



Witnesses  
Bernal Bagshawe  
Atty.

Inventor  
S. Fox

(No Model.)

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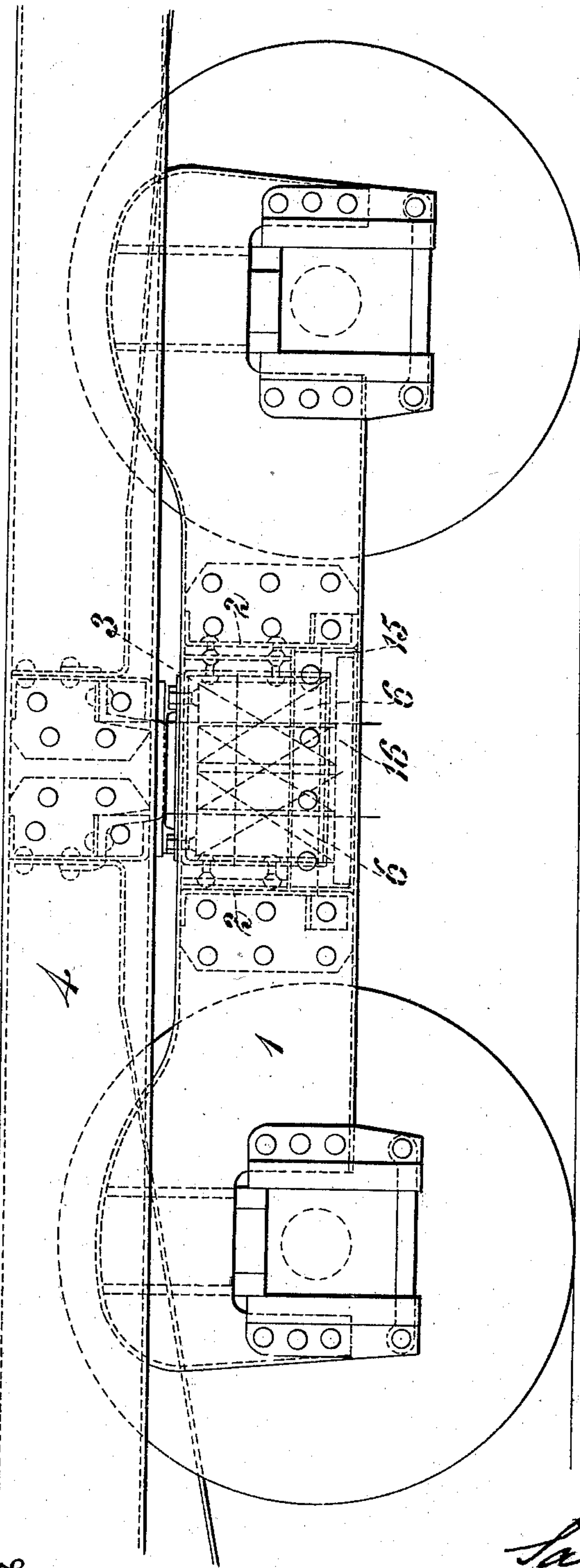
S. FOX.

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Patented Sept. 19, 1893.

Fig. 7.



Witnesses  
Gerald Bagshawe  
Att. Fox.

Inventor  
Samson Fox



(No Model.)

9 Sheets—Sheet 8.

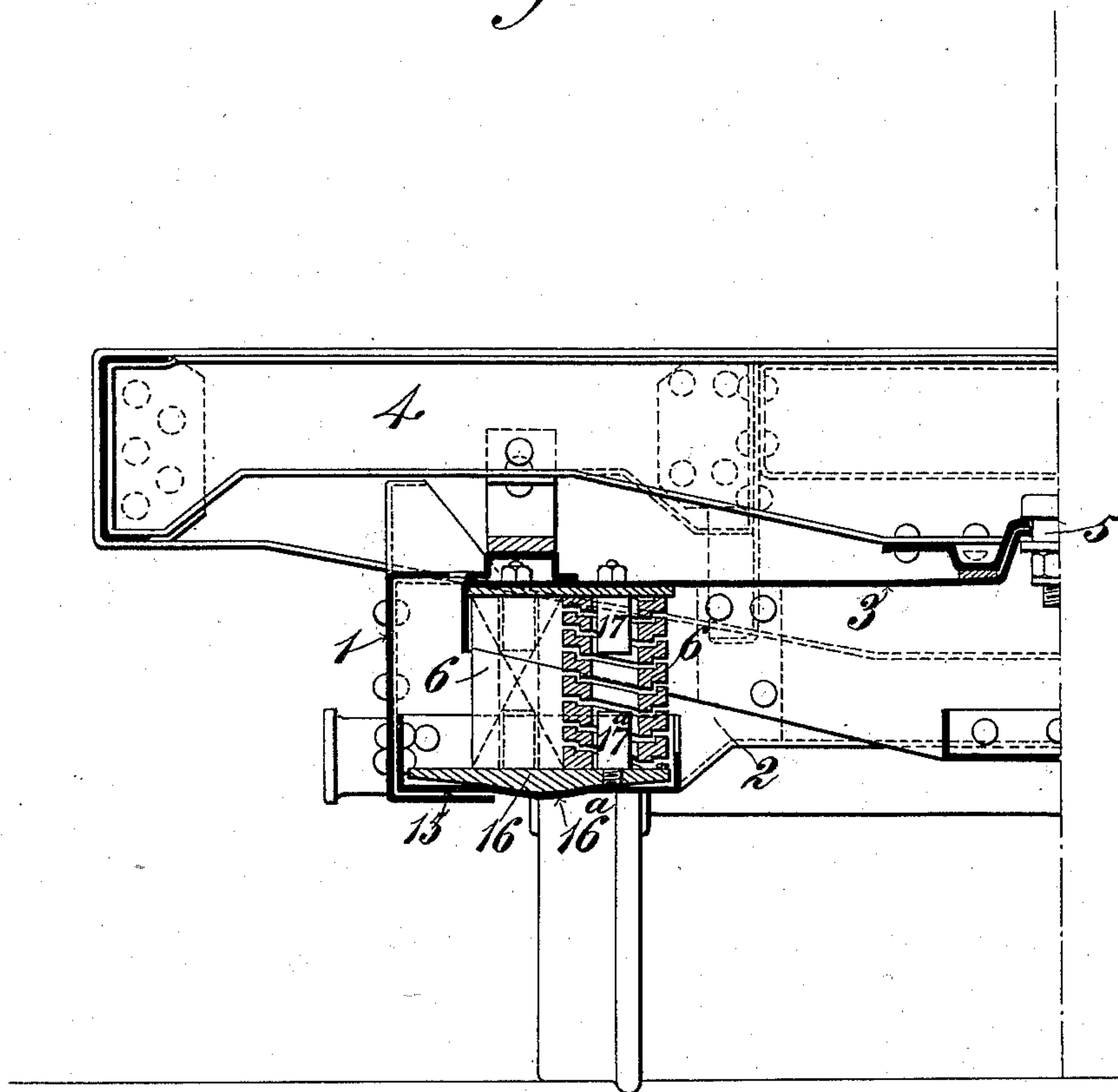
S. FOX.

BOGIE TRUCK FOR RAILWAY CARRIAGES.

No. 505,159.

Patented Sept. 19, 1893.

*Fig. 8.*



Witnesses  
*Bernal Bagshawe*  
*Att. Fox.*

Inventor  
*Samson Fox*



(No Model.)

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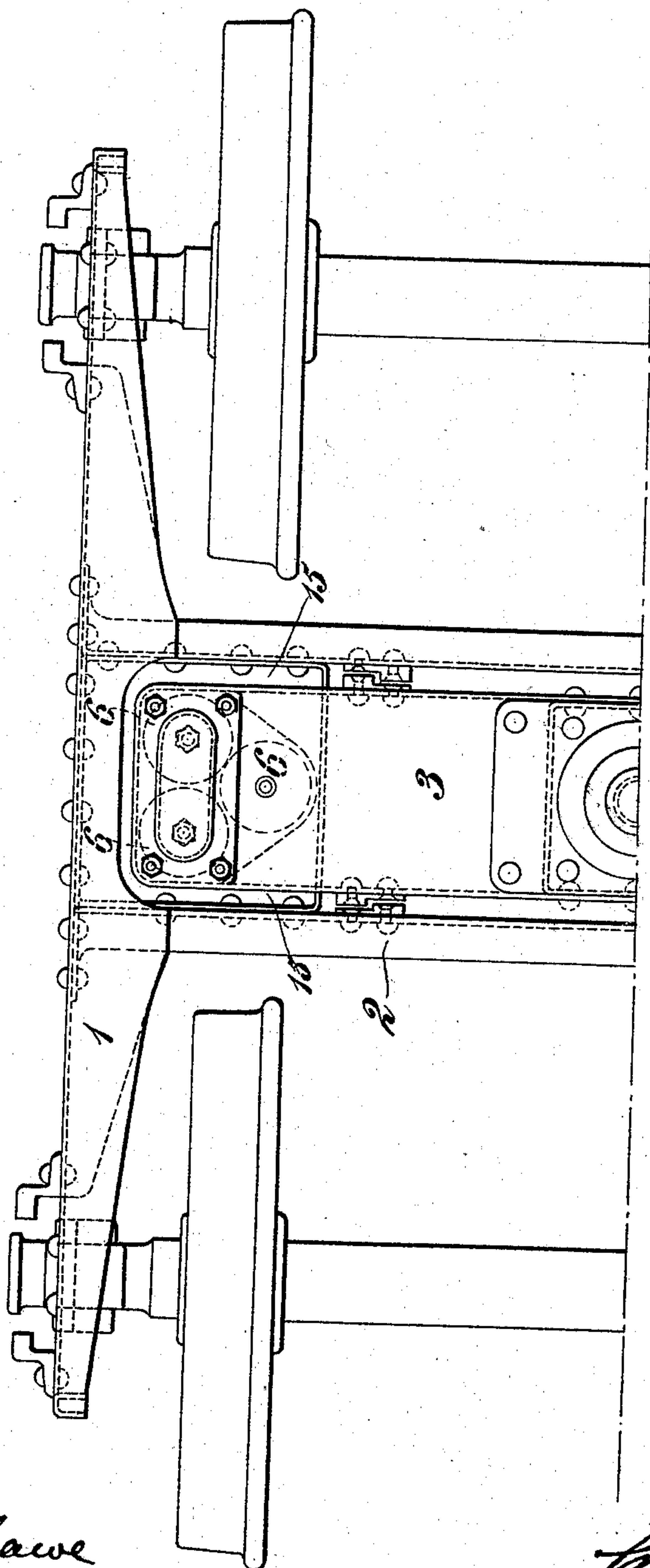
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BOGIE TRUCK FOR RAILWAY CARRIAGES.

No. 505,159.

Patented Sept. 19, 1893.

Fig. 2.



Witnesses  
Bernard Bagshawe  
Att'ys.

Inventor  
S. Fox



# UNITED STATES PATENT OFFICE.

SAMSON FOX, OF HARROGATE, ENGLAND.

## BOGIE-TRUCK FOR RAILWAY-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 505,159, dated September 19, 1893.

Application filed September 21, 1892. Serial No. 446,429. (No model.) Patented in England February 26, 1892, No. 3,799.

### *To all whom it may concern:*

Be it known that I, SAMSON FOX, a subject of the Queen of Great Britain and Ireland, residing at Harrogate, in the county of York, England, have invented Improvements in Bogie-Trucks and Under Frames for Railway-Carriages and other Vehicles, (for which I have obtained British Letters Patent No. 3,799 of 1892,) of which the following is a specification.

This invention has reference to constructions of bogie trucks whereby suspension links or bolts and connections such as are usually employed in supporting the lower transverse spring beam (sometimes called a swing bar), as also in some cases the spring beam or swing bar itself, can be dispensed with; likewise to constructions whereby when springs acting vertically (whether they be coiled, cylindrical or of other shape) are employed either as bearing springs or as auxiliary supporting springs, the bogie frames or vehicle under-frames can be vertically adjusted when desirable for any reason, such for example as to compensate for the settling down of the springs or wear of wheel tires or axle brasses.

In the accompanying drawings, Figures 1, 2 and 3 are respectively a side elevation, a part central transverse section, and a part plan of a bogie truck constructed according to this invention, a part of the under frame of a vehicle supported thereby, being shown in dotted lines in Figs. 1 and 2. Figs. 4, 5 and 6 are similar views to Figs. 1, 2 and 3 respectively, illustrating a modified construction. Figs. 7, 8 and 9 are also similar views to Figs. 1, 2, and 3 illustrating a further modified construction. Figs. 2 and 5 are drawn to a larger scale than the remaining figures.

Referring to Figs. 1 to 3 inclusive, the bogie frame comprises stamped or pressed side plates 1—1 connected by transverse members 2, 2. 3 is the bolster to which the under frame 4 of the vehicle is pivoted by the center pin or bolt, 5. 6 6 are the bolster bearing springs, shown as laminated elliptical metal springs, of which there are in the example shown, two pairs at each side of the bolster. 7 is the lower transverse spring beam. This beam which can be of any suitable form and material, is arranged to be capable of easy lat-

eral motion, its ends being for this purpose arranged to work on bearers that may be in the form of rollers, balls or slides carried directly or indirectly by projections, attachments or brackets (hereinafter called sole bars) secured to or carried by frame plates of the bogie. In the example shown in Figs. 1, 2 and 3 each end of the spring beam is supported by a roller 8 carried by a trough shaped sole bar 9 secured to the inner side of the side frame 1.

To obviate all liability of the bolster bearing springs to become displaced from between the bolster 3 and spring beam 7, the strap 10 of each spring is made in one with a plate 11 that is firmly bolted to the bolster or spring beam, as the case may be, by studs or bolts and nuts 12. Also to enable the ends of the bolster bearing springs 6 of each pair to roll or move relatively to each other in a lateral direction without undue displacement, the adjacent ends of each pair of springs are connected by links 13 and pins 14.

In the arrangement shown in Figs. 4, 5 and 6 the spring beam is dispensed with, the bolster bearing springs 6 being supported by a sole bar carried by the bogie frame and in relation to which the lower spring of each pair can angle or rock so as not to unduly impede the lateral motion of the bolster 3, to which the upper spring of each pair is bolted. This mode of mounting the springs can be carried out in various ways. In the construction now being described, the sole bar is in the form of a dished plate 15 fixed to the side plates of the bogie frame and the top of which is formed with a recess 16 having a concave bearing surface to receive the correspondingly formed adjacent portion of the strap 10 of each of the lower adjacent bearing springs 6.

In the modified arrangement shown in Figs. 7, 8 and 9, the bolster bearing springs 6 are in the form of coiled metal springs arranged in two groups, one at each side of the bogie. Each group rests upon a plate 16 formed with a lower convex portion 16<sup>a</sup> carried by a correspondingly formed portion of the sole bar 15 fixed to the bogie frame. These springs are prevented from becoming displaced, by pins 17 17<sup>a</sup> which project into the ends of the springs and are fixed to the bolster 3



and plate 16 respectively. It will thus be seen that in each arrangement the sole bars serve to carry the bolster and bolster bearing springs, thus dispensing with the suspension links or bolts and connections heretofore usually employed for this purpose.

To enable bogie trucks or vehicle under frames to be adjusted vertically a cross head of adjustable form is arranged to bear on the top of the spring carried by each axle box and between each cross head and the bogie frame are interposed suitable means such as adjusting screws for varying in a vertical direction the position of the bogie frame relatively to the cross head. Such an arrangement is shown in side elevation at the right hand side of Figs. 1 and 4. 18 is a cross head arranged to bear upon the top of the coiled spring 19 the lower end of which rests upon the top of the axle box 20. 21 are suspension bolts passing through cross head from which they are suspended, and through the lower inwardly bent flanges 1<sup>a</sup> of the corresponding side frame 1. Each bolt is provided with a plate 22 upon which the side frame directly bears and with nuts 23. With this construction it will be seen that by adjusting the nuts on the suspension bolts, the vertical position of the bogie frame can be varied to suit requirement. In each arrangement the bolster 3 is provided at each end with a pressed metal bearing piece 24 upon which a bent metal bearing piece 25 fixed to the under frame 4 slides.

What I claim is—

1. A bogie truck having side-frames and fixed supports therein for the bolster supporting springs, a bolster free to move longitudinally independently of the side-frames, springs connecting said bolster and side-frames whereby longitudinal motion of the bolster is obtained, and the swinging bolster is dispensed with, substantially as described.

2. A bogie truck having side-frames, spring supports secured thereto, an upper bolster, bolster-bearing springs connecting the bolster and the side-frames, and mechanism for allowing the motion of said springs when the bolster moves over them longitudinally, substantially as described.

3. A bogie truck having side-frames, sole bars secured to the inner side of the side-frames, an upper bolster, bolster-bearing springs connecting the bolster and the side-frames, and mechanism for allowing the mo-

tion of said springs when the bolster moves over them longitudinally, substantially as described.

4. A bogie truck comprising a bogie frame, a bolster, and laminated metal bearing springs carried by said bogie frame and supporting said bolster, said springs being arranged in pairs and having their adjacent ends jointed together thereby allowing motion transverse of the car only substantially as herein described for the purpose specified.

5. A bogie truck comprising a bogie frame, laminated metal bearing springs carried by said frame and connected together in pairs by links jointed to the ends of the springs, and a bolster carried by said springs and fixed to the upper spring of each pair substantially as herein described for the purpose specified.

6. A bogie truck comprising a bogie frame, sole bars secured to the inner side thereof, a bolster, and laminated metal bearing springs supported by said sole bars, said springs being jointed together in pairs, fixed to said bolster and mounted to move laterally in relation to said sole bars substantially as herein described.

7. The combination with a truck frame and bearing springs therefor, of cross heads arranged each to bear on the top of one of said springs and adjusting mechanism arranged between each of said cross heads and said frame and supporting the latter and axle boxes bearing against said springs and sliding vertically only in the pedestal substantially as herein described for the purpose specified.

8. The combination with a bogie frame and bearing springs therefor, of cross heads arranged to bear on said springs, and bolts suspended from said cross heads and provided with adjusting nuts upon which said frame rests and axle boxes bearing against said springs and sliding vertically only in the pedestal substantially as herein described for the purpose specified.

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

SAMSON FOX.

Witnesses:

H. MARSHALL,  
77 Tonbridge St., Leeds.

J. W. HAWLEY,  
Newlay, Leeds.