

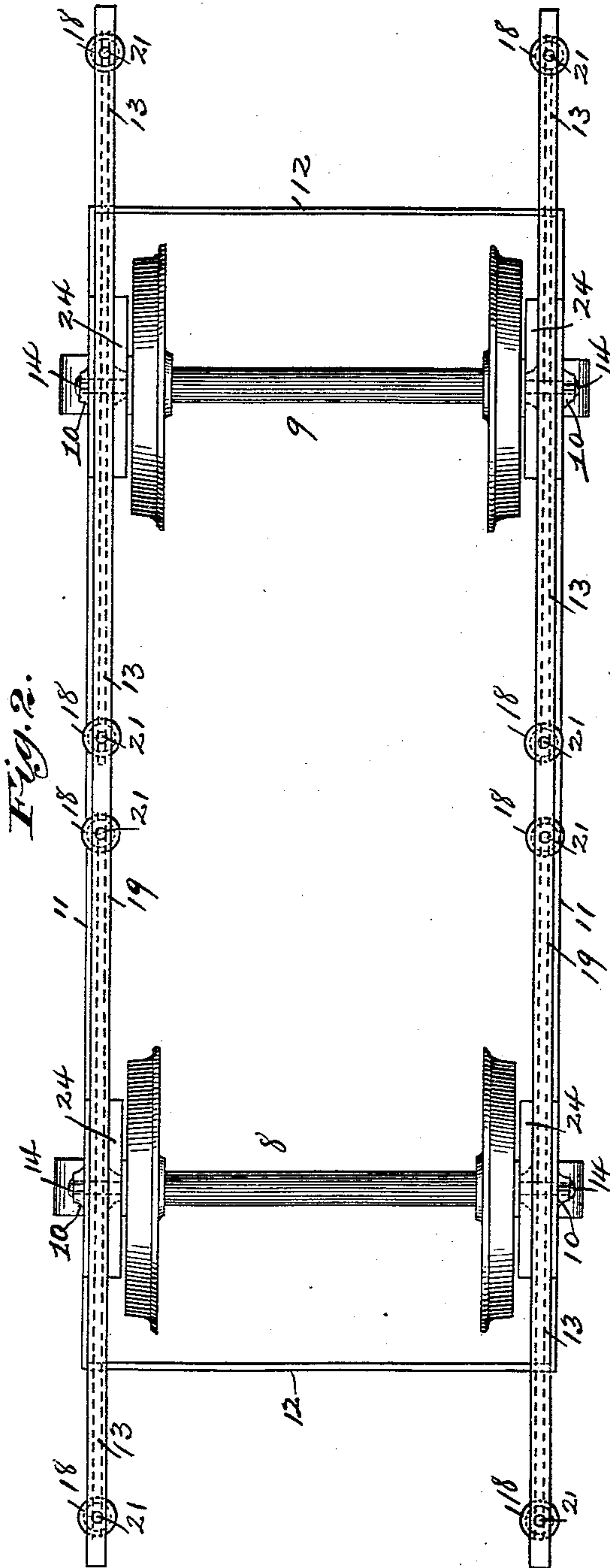
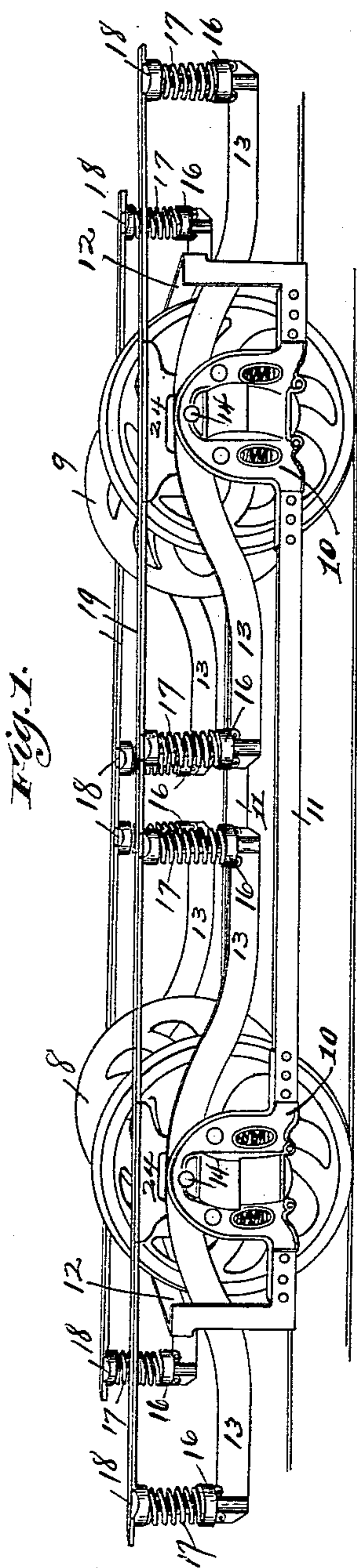
(No Model.)

4 Sheets—Sheet 1.

E. A. CURTIS.
CAR TRUCK.

No. 560,155.

Patented May 12, 1896.



Witnesses,
D. Mann
F. B. Goodwin

Inventor,
Edmund A. Curtis
By Offield, Towle & Luthicum
Atty's.

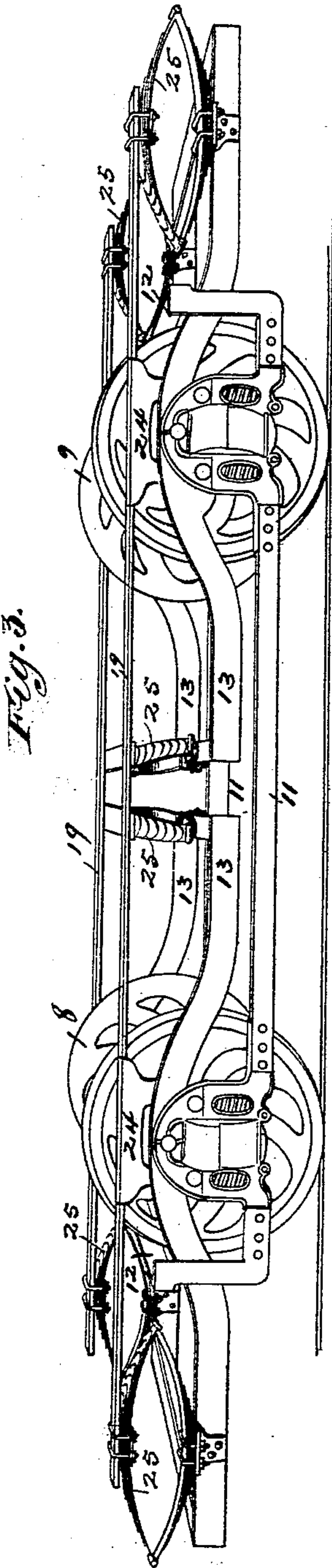
(No Model.)

4 Sheets—Sheet 2.

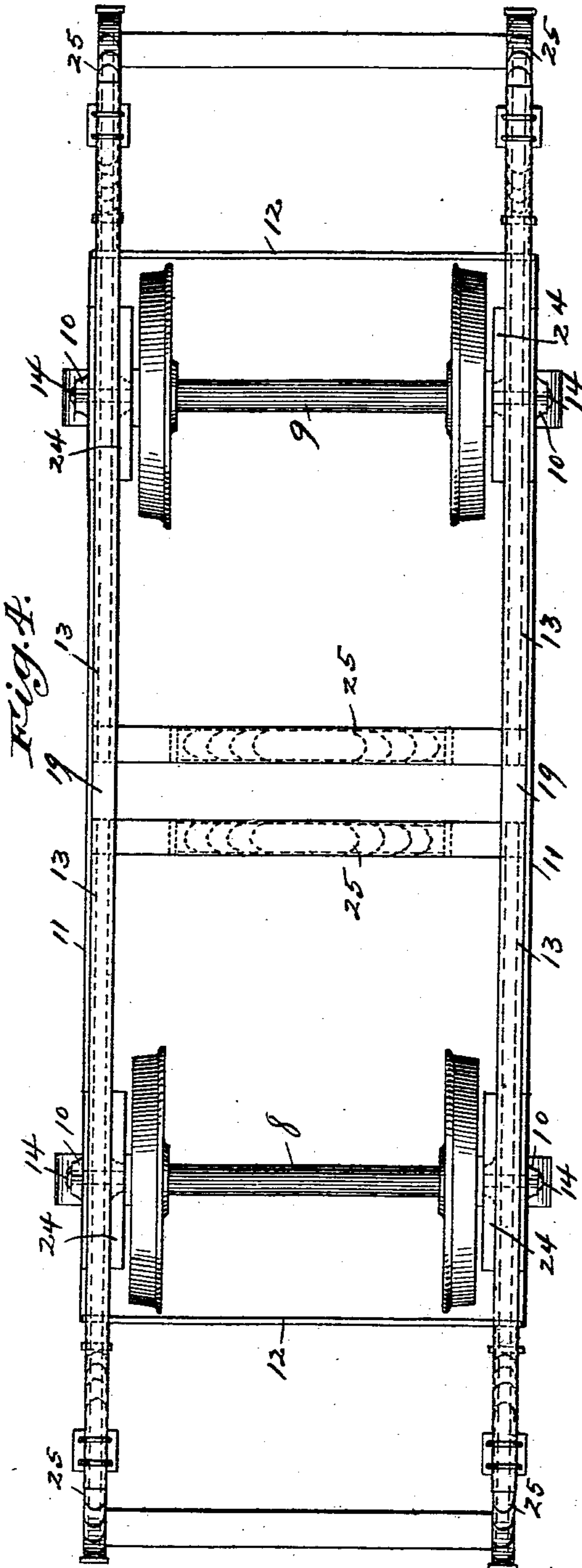
E. A. CURTIS.
CAR TRUCK.

No. 560,155.

Patented May 12, 1896.



Witnesses,
J. D. Mann,
F. B. Goodrum



Inventor,
Edmund A. Curtis
By *Offield, Fowler & Lathrop*
Attys.

(No Model.)

4 Sheets—Sheet 3.

E. A. CURTIS.
CAR TRUCK.

No. 560,155.

Patented May 12, 1896.

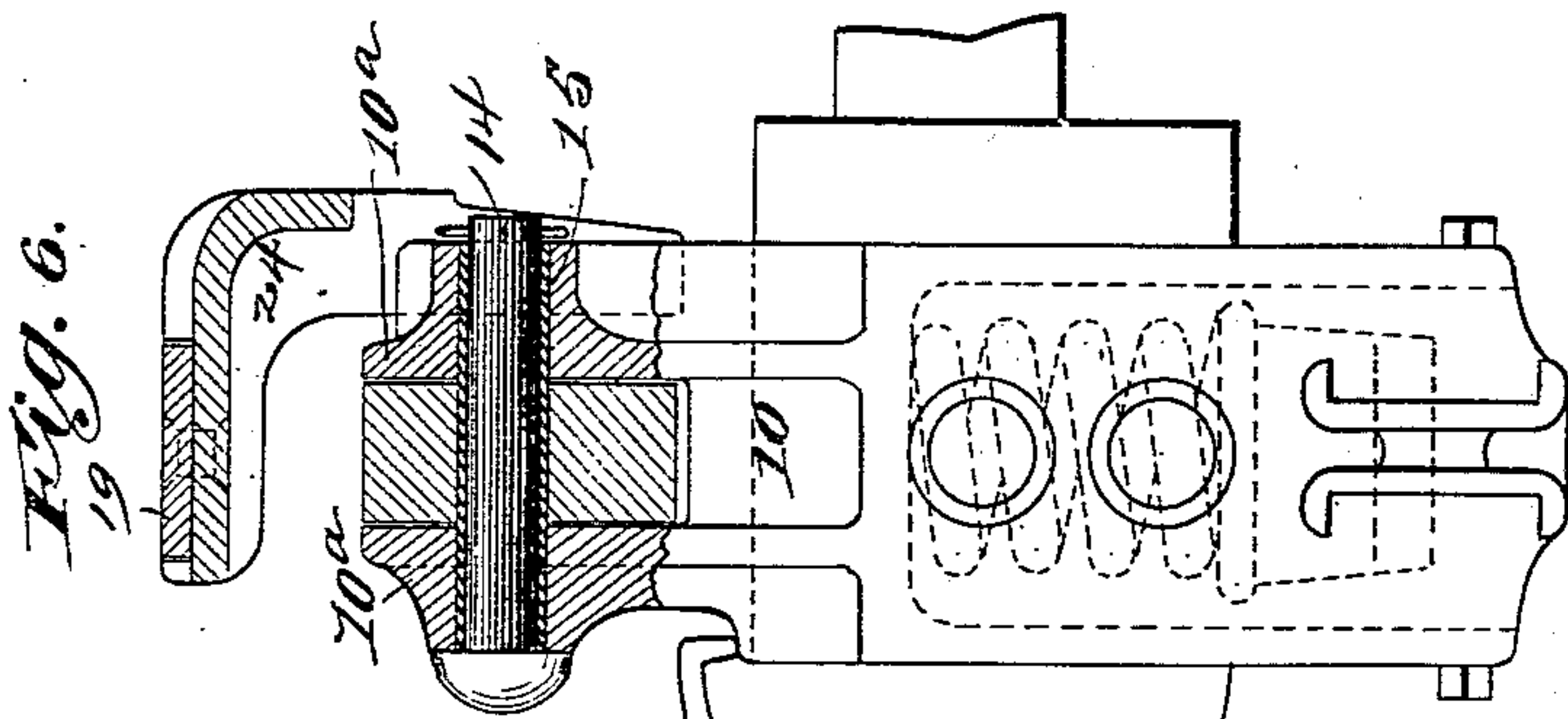
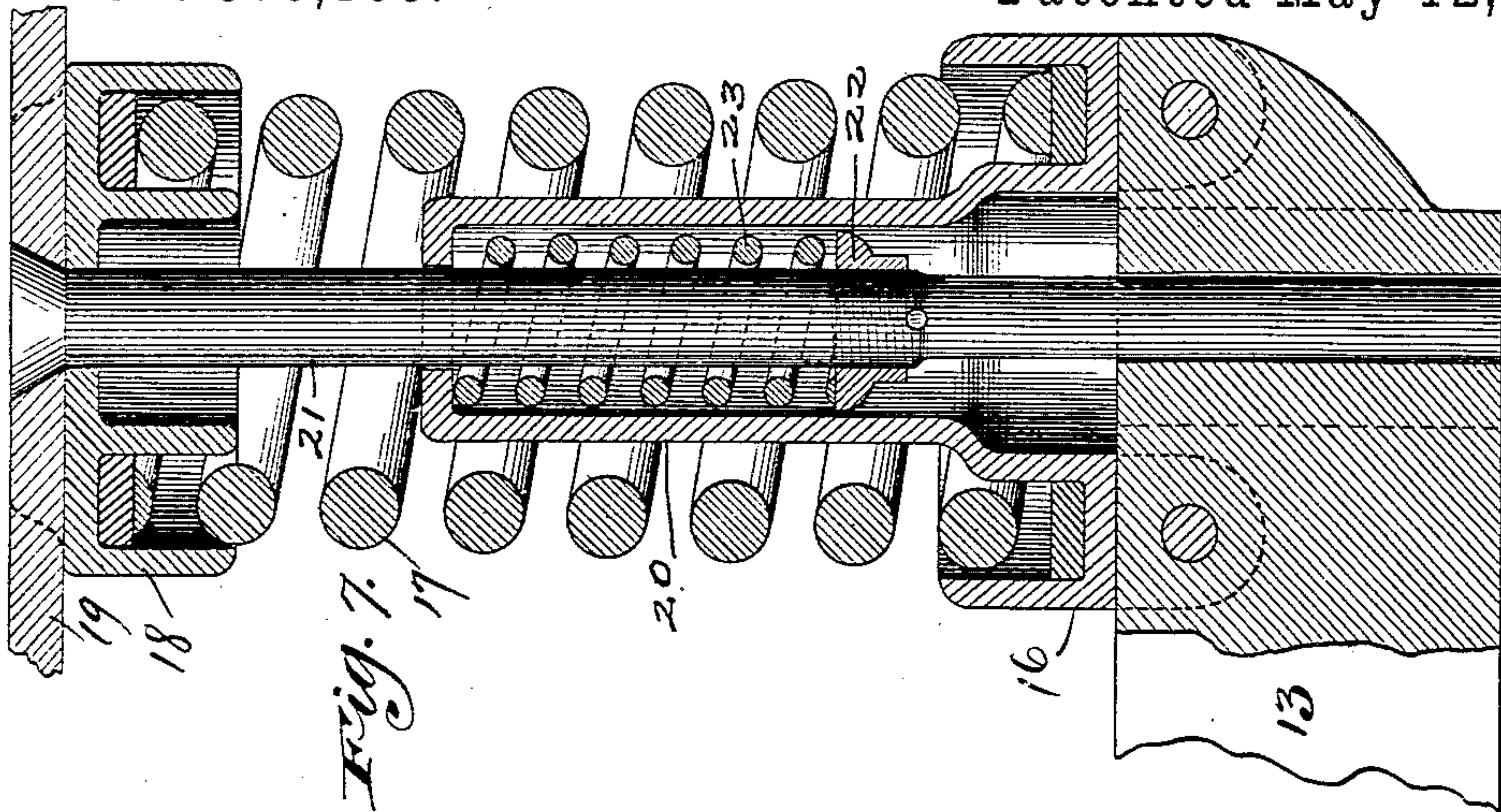
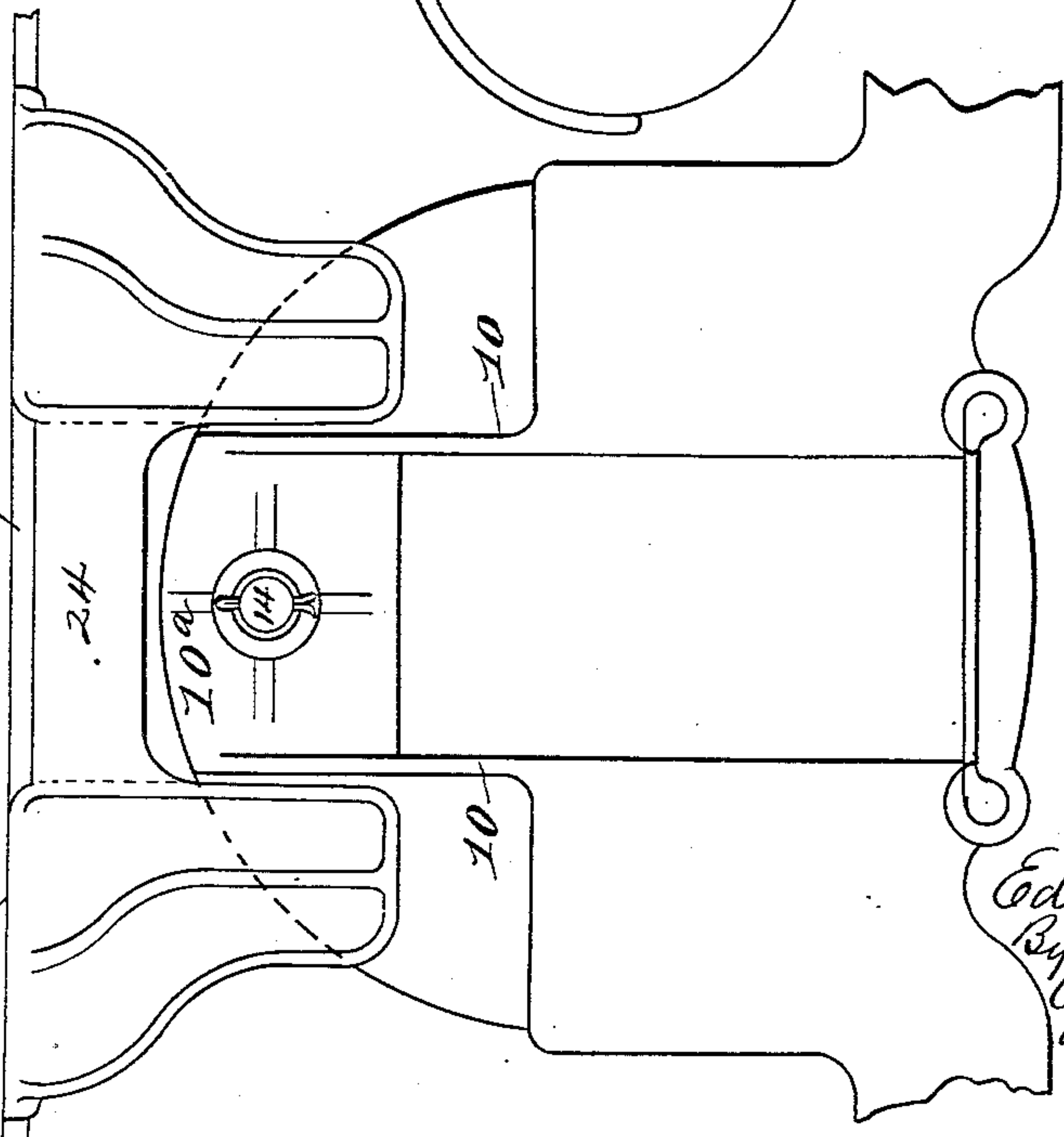


Fig. 5.



Witnesses,
J. D. Mann,
F. B. Goodwin

Inventor,
Edmund A. Curtis
By
Offield, Towle & Hutchinson
Attys.

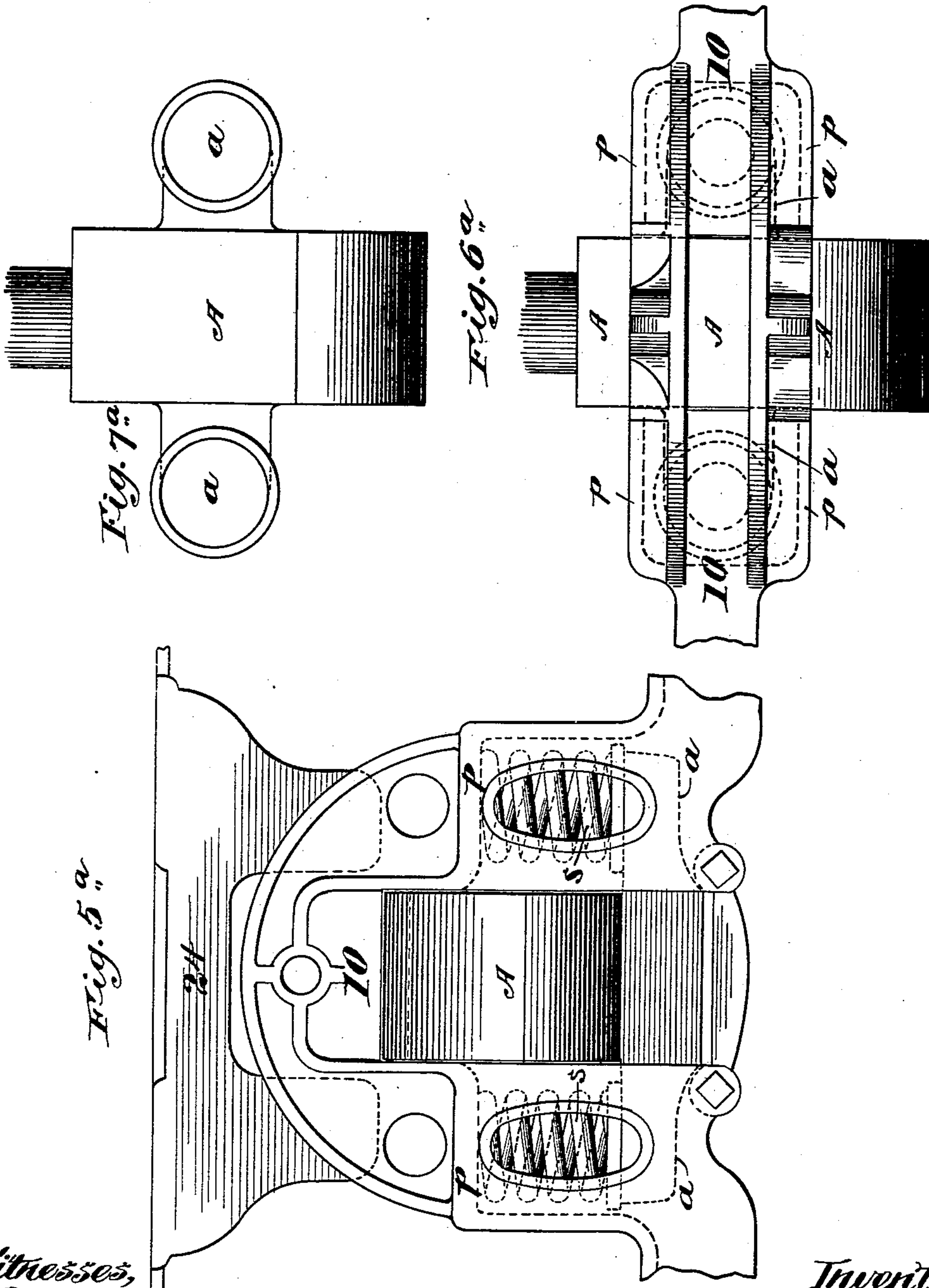
(No Model.)

4 Sheets—Sheet 4.

E. A. CURTIS.
CAR TRUCK.

No. 560,155.

Patented May 12, 1896.



Witnesses,
J. M. Munn
J. B. Goodwin

Inventor,
Edmund A. Curtis
By Offield, Towle & Lenthien,
Attys.

UNITED STATES PATENT OFFICE.

EDMUND A. CURTIS, OF CHICAGO, ILLINOIS.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 560,155, dated May 12, 1896.

Application filed January 8, 1895. Serial No. 534,220. (No model.)

To all whom it may concern:

Be it known that I, EDMUND A. CURTIS, of Chicago, Illinois, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

This invention relates to certain improvements in car-trucks and is particularly adapted for use in street-cars, such as cable, electric, and horse cars.

The object of the invention is to so mount the car-body upon the trucks as to avoid as far as possible oscillations, shocks, and jars, which tend to the discomfort of passengers and wear and rack the car-bodies.

To this end the invention consists in the means of mounting the car-body, which means comprise equalizer-bars, which are pivoted in the vertical plane of the axles, projecting transversely thereto and on each side thereof and carrying at their outer ends springs upon which the car-bodies are mounted either directly or indirectly.

The invention further consists in certain devices and combinations of parts for effecting the objects above stated.

In the accompanying drawings I have shown my invention embodied in a truck having two pairs of wheels, each pair being provided with the equalizers of my invention.

In the drawings, Figure 1 is a perspective view showing the preferred form of construction. Fig. 2 is a plan view thereof. Fig. 3 is a perspective, and Fig. 4 a plan, showing a different form of springs. Fig. 5 is a side elevation of the pedestal axle-box, a yoke embracing the pedestal, and one of the connecting-bars, the latter and a portion of the pedestal being broken away. Fig. 6 is an elevation, partly in section, showing the manner of pivoting the equalizers to the pedestal, the view being at right angles to that shown in Fig. 5. Fig. 7 is a sectional view showing the equalizer-spring, its housing, and support. Fig. 5^a is a side elevation of the pedestal, showing springs on which the pedestal rests and a yoke embracing the pedestal and showing the axle-box in end elevation. Fig. 6^a is a plan view of the pedestal, axle-box, and a portion of the axle broken away, the springs being shown in dotted lines. Fig. 7^a is a plan view of the axle-box, a broken portion

of the axle, and showing spring-supporting lugs on the axle-box.

In the drawings, 8 and 9 represent the two pairs of truck-wheels, which are journaled in a truck-frame comprising the pedestals 10, the connecting-bars 11, and the transverse arch-bars 12. The pedestal and truck-frame may be of different form, or the truck-frame may be omitted.

A represents the axle-box having the lateral spring-supporting lugs *a a*, upon which are mounted springs *S*. Said springs are inclosed by the offset hollow portions *p* of the pedestal 10, the latter having a bearing upon the upper ends of said springs and being relatively movable to the axle-box.

13 represents the equalizers, which are flat bars slightly curved longitudinally at their middles and which are pivotally mounted upon the pedestals in the vertical plane of the truck-axles. The precise manner of making this pivotal connection is immaterial; but I have shown in Fig. 6 a pivot-pin 14 passing through the bifurcations 10^a of the pedestal and transversely through the bar, the pin having a sleeve 15, which may be replaced when worn.

In the construction shown in Figs. 1 and 2, the equalizer-bars are provided at their outer ends with cylindrical spring-cups 16 to receive coiled springs 17, having caps 18 at their upper ends, which are grooved to receive bars 19, the latter in turn being secured to the car-body. (Not shown.) The spring-cups 16 have hollow bosses 20, perforated for the passage of a bolt 21, which has a head fitting an aperture in the bar 19 and its stem sliding freely in a socket in the ends of the equalizer-bars 13. The bolt 21 preferably has a threaded collar or spring-stop 22, and a spring 23 surrounds the body of the bolt and is seated at its lower end on the spring-stop 22 and at its upper end on an abutment or ledge of the boss 20. A spring 23 serves to prevent the bolt 21 from being lifted out of its socket, but is much weaker than the spring 17.

In order to limit both longitudinal and lateral oscillations of the car-body, I prefer to employ the yokes 24. (Shown particularly in Figs. 1, 5, and 6.) These yokes are of suitable form to embrace the narrow upright por-

tion of the pedestal, and may be connected directly to the car-body or to the bars 19 when the latter are employed. As they are intended as limiting devices they should not work tightly against the sides or the pedestals; but a yoke being mounted to embrace each pedestal they will prevent undue movement of the car-body either longitudinally or laterally with reference to the truck.

10 In the construction shown in Figs. 3 and 4 the ends of the equalizers are connected by the cross-pieces, and elliptical springs 25 are employed instead of the coiled springs in the preceding figures.

15 In use it will be found that while the car-body is evenly mounted upon the springs violent oscillations will be prevented by the interposition of the equalizers. Thus if one end of the car-body rises or falls the springs at that end will be extended or compressed, while the springs at the opposite ends of the equalizer-bars will be compressed or extended. The springs thus working in opposition to each other tend to limit the vertical oscillation, while the pivoting of the equalizer-bars themselves obviates the jerking motion which would ensue upon the movement of one end of the car if said equalizers were rigidly connected to the truck. This improvement therefore conduces to the comfort of the passengers and prevents racking strains upon the car-body itself.

It will be observed that in my improved truck the car is mounted upon the springs and the latter are carried by the equalizer-bars alone. The pedestals are not extended to nor connected with the car-body; but the lugs are carried by the car-body and embrace the pedestals, so as to restrain and limit the oscillation. This is a materially different arrangement from the common one wherein the pedestals extend up to and are connected with the car-body, as thereby the structure is rendered more rigid and the spring effect is minimized. In this construction it will be seen that the two sets of equalizer-bars are not connected at their inner or adjacent ends, but that the equalizers for one pair of trucks

are entirely independent of and disconnected from the equalizers of the other pair of trucks. Each end of the car-body is therefore separately mounted upon its own set of equalizers, and each set of equalizers act in restraint of oscillation independently of the other.

I claim—

1. A car-truck comprising the combination with the truck-wheels and their axles, of a truck-frame having pedestals in which the axle-boxes move, equalizer-bars two for each pair of truck-wheels pivotally mounted on the pedestals in the vertical plane of the axles and projecting transversely of the axles and on each side thereof and provided at their ends with springs for carrying the car-body, substantially as described.

2. A car-truck comprising the combination with the truck-wheels and their axles, of a truck-frame having pedestals in which the axle-boxes move, equalizer-bars two for each pair of truck-wheels pivotally mounted on the pedestals in the vertical plane of the axles and projecting transversely of the axles and on each side thereof and provided at their ends with springs for carrying the car-body and lugs secured to the car-body and embracing the pedestals whereby to restrain oscillations of the car-body, substantially as described.

3. The combination with a car-truck having a truck-frame carrying pedestals, and axle-boxes movable within the pedestals, of two pairs of equalizer-bars pivotally mounted upon the pedestals and socketed at their outer ends, spring-cups mounted over said sockets, springs adapted to said cups, bars for connecting the upper ends of the springs, bolts connected with said bars and projected through the sockets and coiled springs surrounding and bearing on said bolts and normally tending to hold them in their sockets, substantially as described.

EDMUND A. CURTIS.

Witnesses:

N. M. BOND,
L. T. MANN.