

(No Model.)

2 Sheets—Sheet 1.

E. I. TENNANT.
VEHICLE GEAR.

No. 547,692.

Patented Oct. 8, 1895.

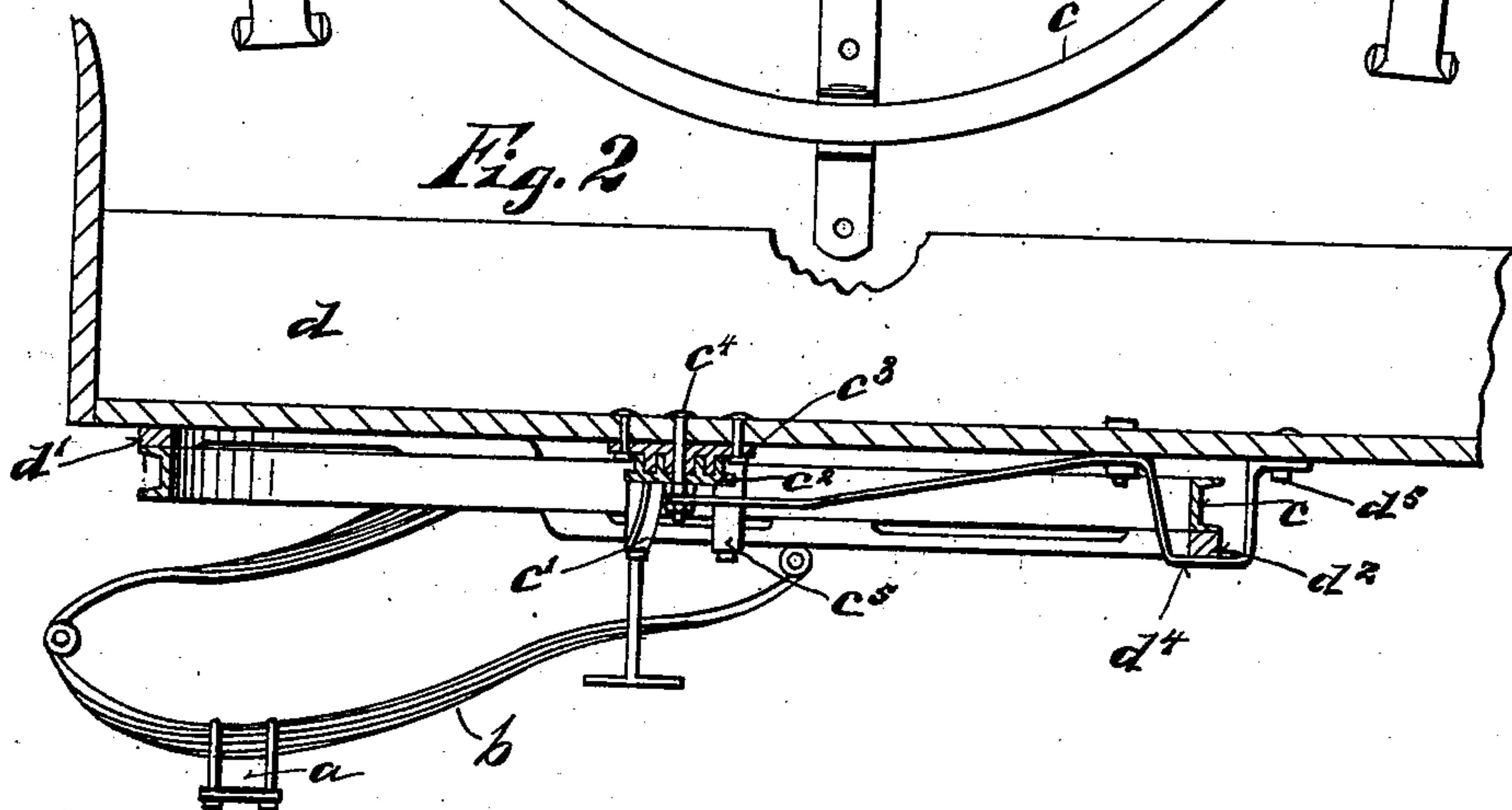
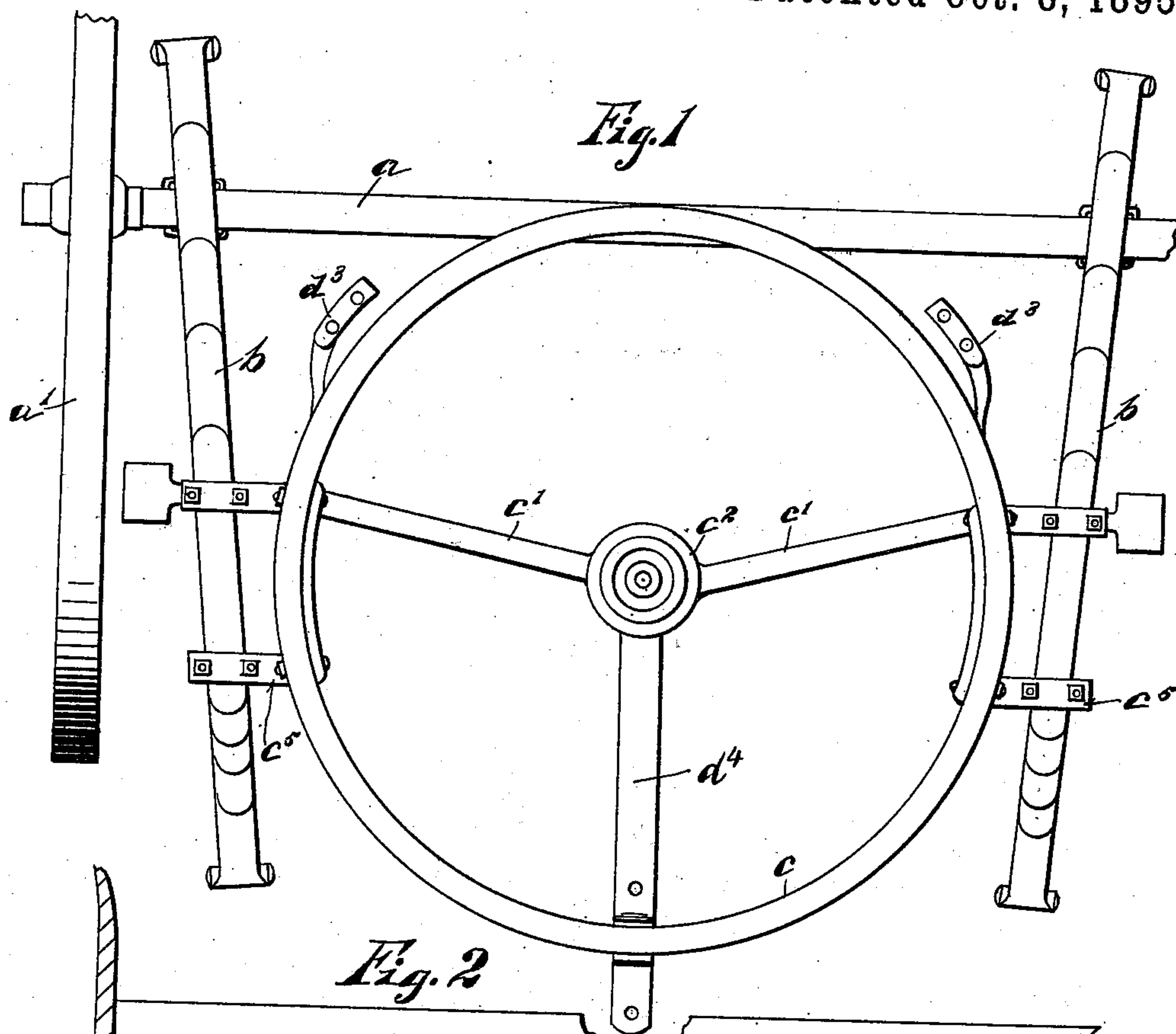
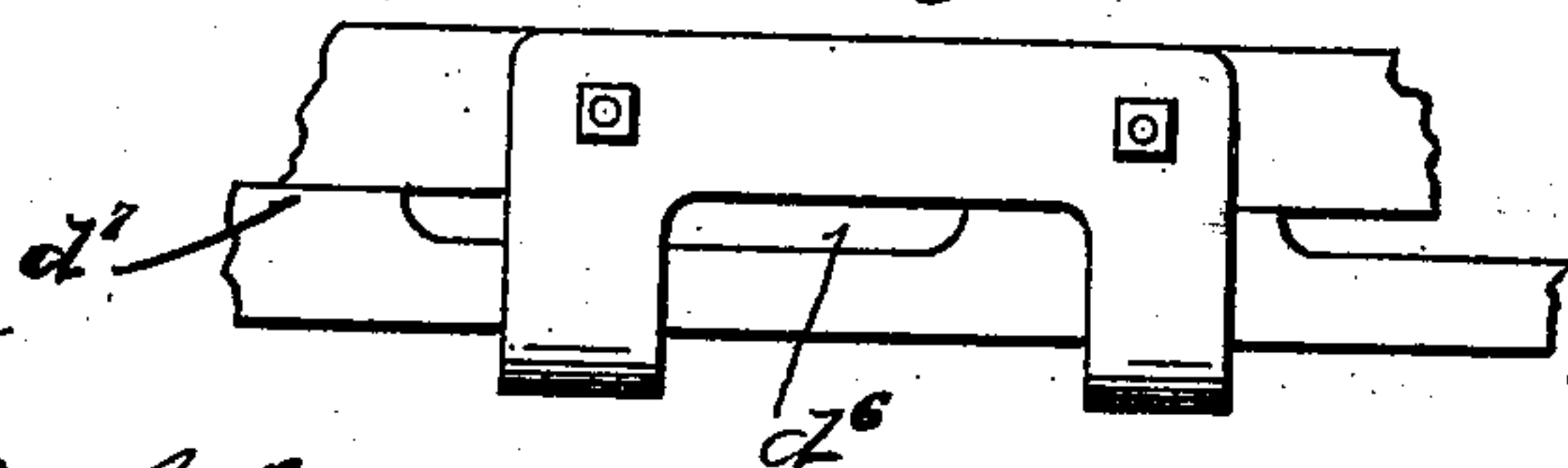


Fig. 3



WITNESSES:

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INVENTOR

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BY *Shepherd*

ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

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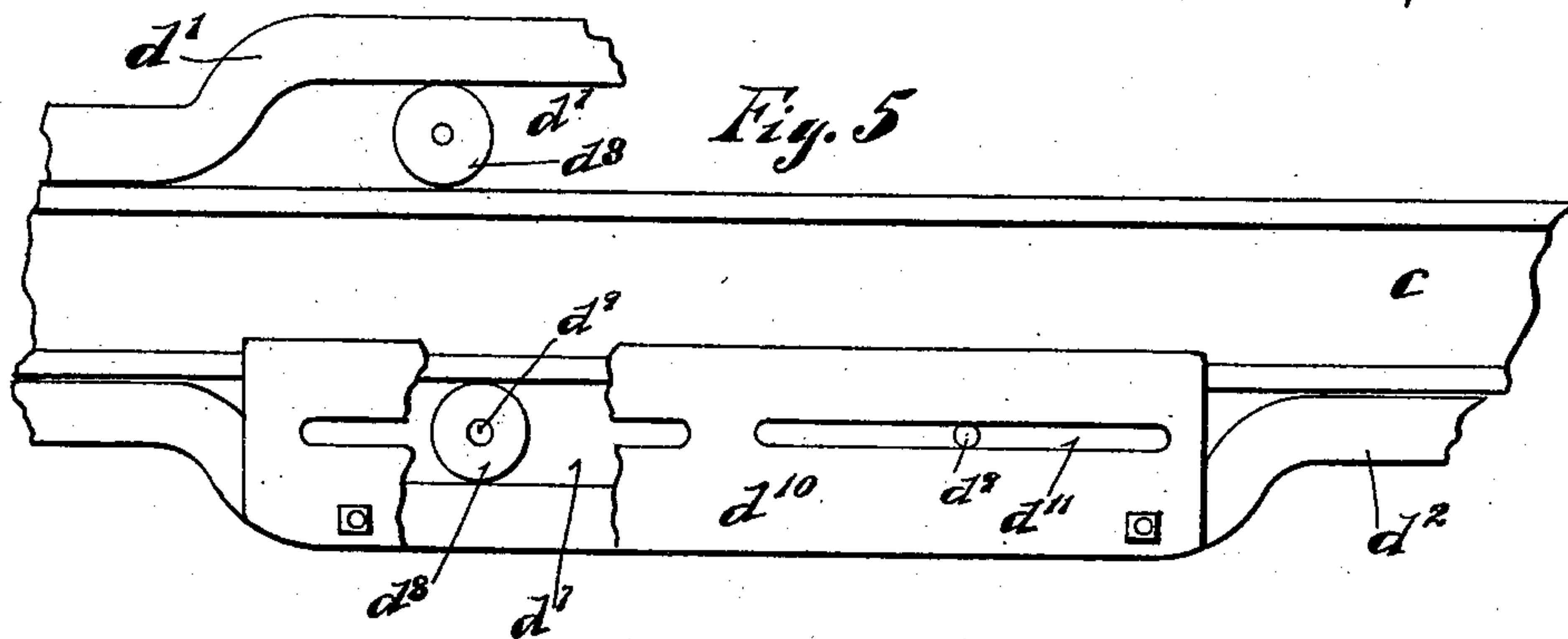


Fig. 6

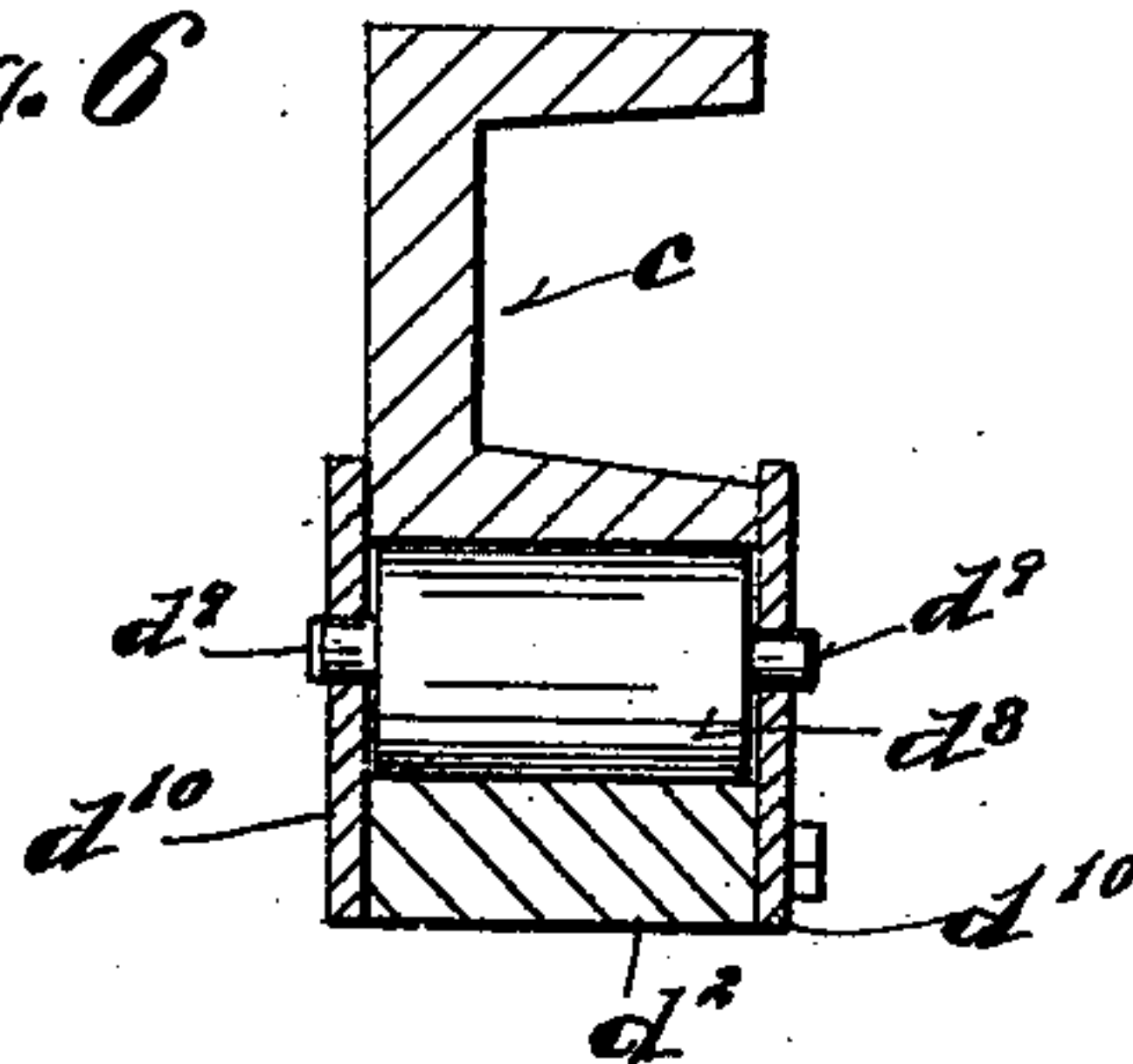
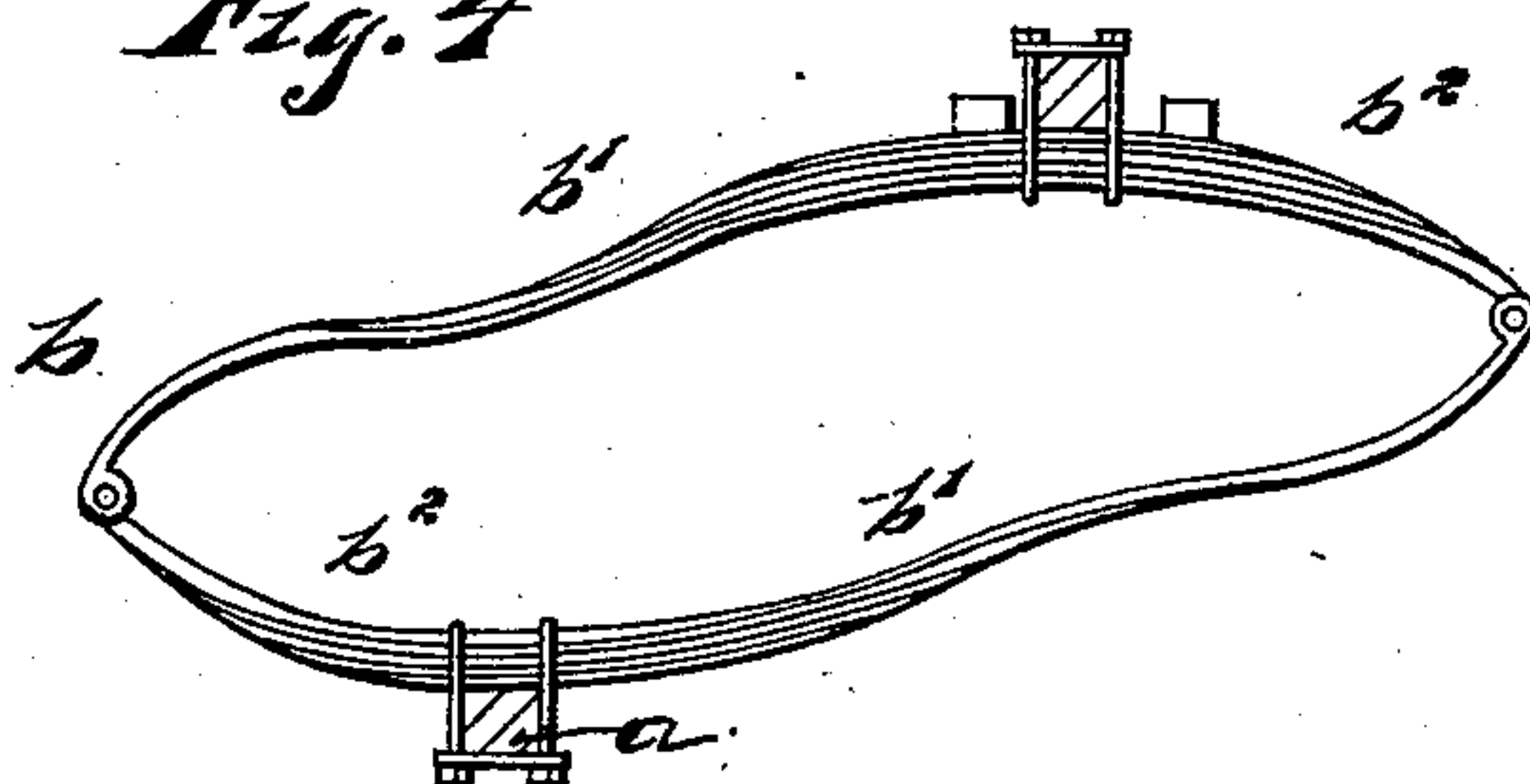


Fig. 4



WITNESSES:

Fred B. Ernest

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UNITED STATES PATENT OFFICE,

EDWARD I. TENNANT, OF SPRINGFIELD, OHIO.

VEHICLE-GEAR.

SPECIFICATION forming part of Letters Patent No. 547,692, dated October 8, 1895.

Application filed April 14, 1894. Serial No. 507,561. (No model.)

To all whom it may concern:

Be it known that I, EDWARD I. TENNANT, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Vehicle-Gears, of which the following is a specification.

My invention relates to improvements in vehicle-gears; and the object of my invention is to provide a vehicle-gear of simple and strong construction and one in which the pivotal point for the axle is located back of the center of the axle, so as to facilitate turning.

A further object of my invention is to provide a novel construction of spring which shall permit the proper location of the respective parts and at the same time furnish the proper elasticity to the gear without producing a rotation of the axle.

A further object of my invention is to produce an improved construction of fifth-wheel and connections in connection with said spring.

I attain these objects by the constructions shown in the accompanying drawings, in which—

Figure 1 is a plan view of a portion of the gears embodying my invention, the bed being shown removed therefrom. Fig. 2 is a sectional elevation view of the same with the bed shown in position. Fig. 3 is a detail view showing a portion of my improved fifth-wheel and the spring connections. Fig. 4 is a side elevation of my improved spring; and Figs. 5 and 6 are detail views of my improved fifth-wheel, showing a modification.

Like parts are represented by similar letters of reference in the several views.

In the said drawings, *a* represents the axle and *a'* one of the carrying-wheels, the front portion only of the vehicle being shown, as the rear portion may be of any desired construction and may embody my improved form of spring and connections or not, as desired.

bb are the springs and *c* the fifth-wheel. The springs *b b* are made of a peculiar form, each of said springs consisting of two parts pivoted together at the respective ends and formed of any desired number of leaves, in the usual manner, the peculiarity of the spring consisting in the form. Each of said parts have a long and short arm *b' b²*, as shown in

Fig. 4, the short arm *b²* being formed with a simple curve and the long arm with a compound curve, the short arms of each of said parts being substantially rigid, while the long arms are made flexible and adapted to yield principally in those portions which constitute the compound curve. The spring is connected to the axle at a point substantially opposite the yielding portion of the upper arm, while the body or its connection is attached to the spring at a point substantially opposite the yielding portion of the lower arm. The result of this construction is that the point of attachment for the body is made considerably back of the axle, and at the same time the spring will yield in a vertical direction without producing any perceptible oscillation of the axle.

My improved fifth-wheel *c* is constructed of channel-iron bent in a circular form and supported on each side on a connecting-bar *c'*, the center of which is provided with a suitable plate *c²*, having circular flanges thereon adapted to engage with a similar plate *c³* on the bottom of the body, a connecting-bolt *c⁴* being adapted to connect the parts together. This bar *c'* is preferably extended outwardly and attached to the springs *b b*. A separate connection *c⁵* is also preferably made between the spring and the fifth-wheel *c*, so as to secure the proper rigidity between the parts. The body *d* is further provided with a bearing-plate *d'*, which rests on top of the fifth-wheel at the front and has connected thereto a curved bearing-strap *d²*, having upwardly-projecting flanged ends *d³*, adapted to be connected to the body in such a manner that the circular portion thereof extends below and rests in contact with the bottom of the fifth-wheel *c*. A connecting-bar *d⁴* is preferably provided, extending from the bolt *c⁴* backward and in contact with the bearing-strap *d²* and secured at the rear to the body *d*, as shown at *d⁵*. The bearing-plate *d'* and the strap *d²* are preferably cut away at *d⁶*, as shown in Fig. 3, to form bearing-points *d⁷* at suitable intervals to reduce the wear and the consequent friction thereon.

The fifth-wheel *c* is made quite large, as it can be owing to the position which it occupies back of the axle. Being connected rigidly to the springs, as described, and having

the body connected thereto, no reach or other connection is necessary between the front and rear of the vehicle. The springs *b* are preferably set slightly at an angle, so as to extend inwardly from front to rear, so that the connection between the fifth-wheel and springs shall be as short and therefore as rigid as possible, the fifth-wheel, the connecting-bar, and the springs being adapted to form substantially a platform-gear.

In Figs. 5 and 6 I have shown a modification, in which the bearing-plate *d'* and the strap *d³* are formed with depressed portions *d⁷* to receive supporting-rollers *d⁸*. These supporting-rollers are preferably formed at each end with trunnions *d⁹*, adapted to extend into guiding-plates *d¹⁰*, connected to the side of the respective bearing plates or straps and the fifth-wheel. The plates *d¹⁰* are provided with slotted openings *d¹¹*, through which the trunnions project, the slotted openings being of sufficient length to permit the free movement of said rollers, but adapted to form guides and stops therefor to prevent them from being moved out of their proper operating position. In operation the rollers travel back and forth as the respective parts move in relation to each other, thus forming a traveling support. In the event that the parts should move too far the rollers, coming to the ends of the slots, will be retained, but still roll, so as to lessen the friction between the respective parts.

It will be seen that a vehicle-gear as above constructed is extremely simple, as well as substantial. The peculiar form of the springs and the constructions described permit the use of a large fifth-wheel and support and at the same time secure the location of the pivotal point and axle back of the center of the axle, so as to enable the vehicle to turn on a shorter radius, while an elastic spring is secured, which permits a perfectly-vertical movement of the body without rotating the axle.

Having thus described my invention, I claim—

1. A vehicle gear consisting essentially of an axle, springs secured to said axle, a fifth wheel secured to said springs, said springs being each composed of two parts which are hinged together at the front and rear of said axle as described, each of said parts consisting of a long and short arm, one of said parts being secured to the axle and the other to

the fifth wheel, with the yielding portions of the respective arms substantially opposite the point of attachment with the fifth wheel and axle respectively, substantially as specified.

2. In a vehicle gear, an axle, a spring composed of two parts pivoted together at the front and rear of said axle, as described, said parts each being formed with a long and short arm, the long arm of the lower part being in the rear of said axle and the long arm of the upper part being connected in the front of said axle, and a fifth wheel connected to the upper part of said spring at a point in the rear of said axle, substantially as specified.

3. In a vehicle gear, a spring consisting essentially of two parts pivoted together, each of said parts consisting of a short arm formed with a single curve and a long arm formed with a compound curve, the long arms of one part being arranged opposite the short arms of the opposite part whereby the yielding portion of each of the long arms is brought substantially opposite the point of attachment of the respective parts, substantially as specified.

4. In a vehicle gear, a spring composed essentially of two parts pivoted together, each of said parts consisting essentially of a long arm having a compound curve and a short arm having a single curve, the short arms of each being substantially rigid, while the long arms are flexible, as described, the flexible portions being arranged substantially opposite the points of attachment of the said spring, substantially as specified.

5. In a vehicle gear, a fifth wheel consisting essentially of a channel iron formed on the arc of a circle, as described, a connecting bar on which said channel iron is supported, a vehicle body pivoted to said bar and having a bearing plate adapted to rest on said fifth wheel, and a curved loop or strap extending downwardly and backwardly around said fifth wheel so as to form a bearing under the same, substantially as specified.

In testimony whereof I have hereunto set my hand this 11th day of April, A. D. 1894.

EDWARD I. TENNANT.

Witnesses:

OLIVER H. MILLER,
CHAS. I. WELCH.