

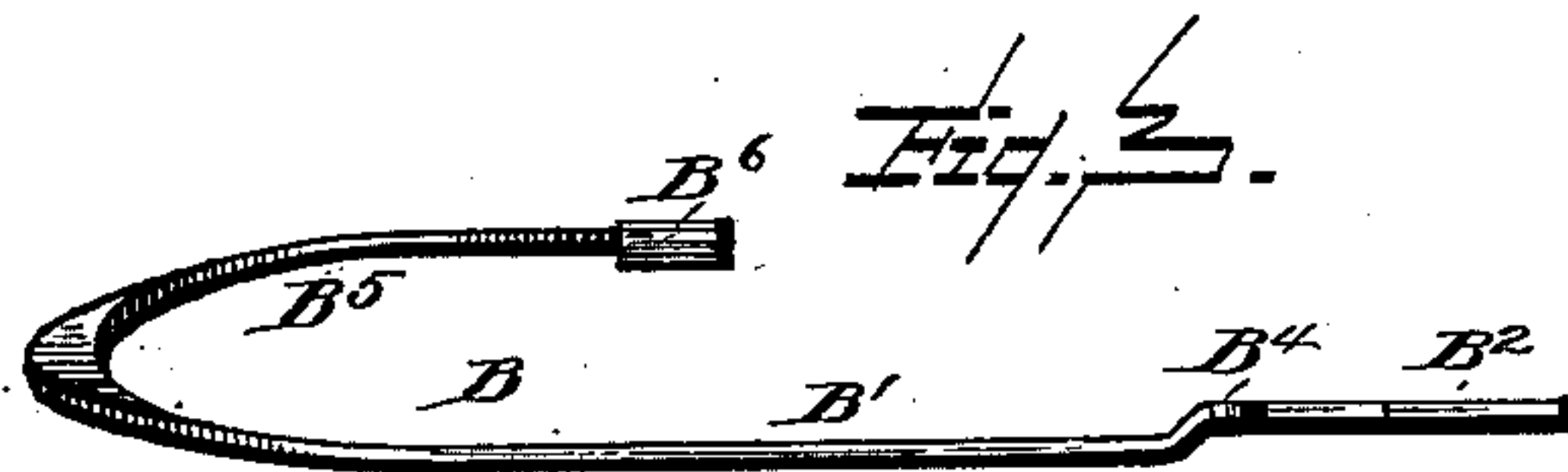
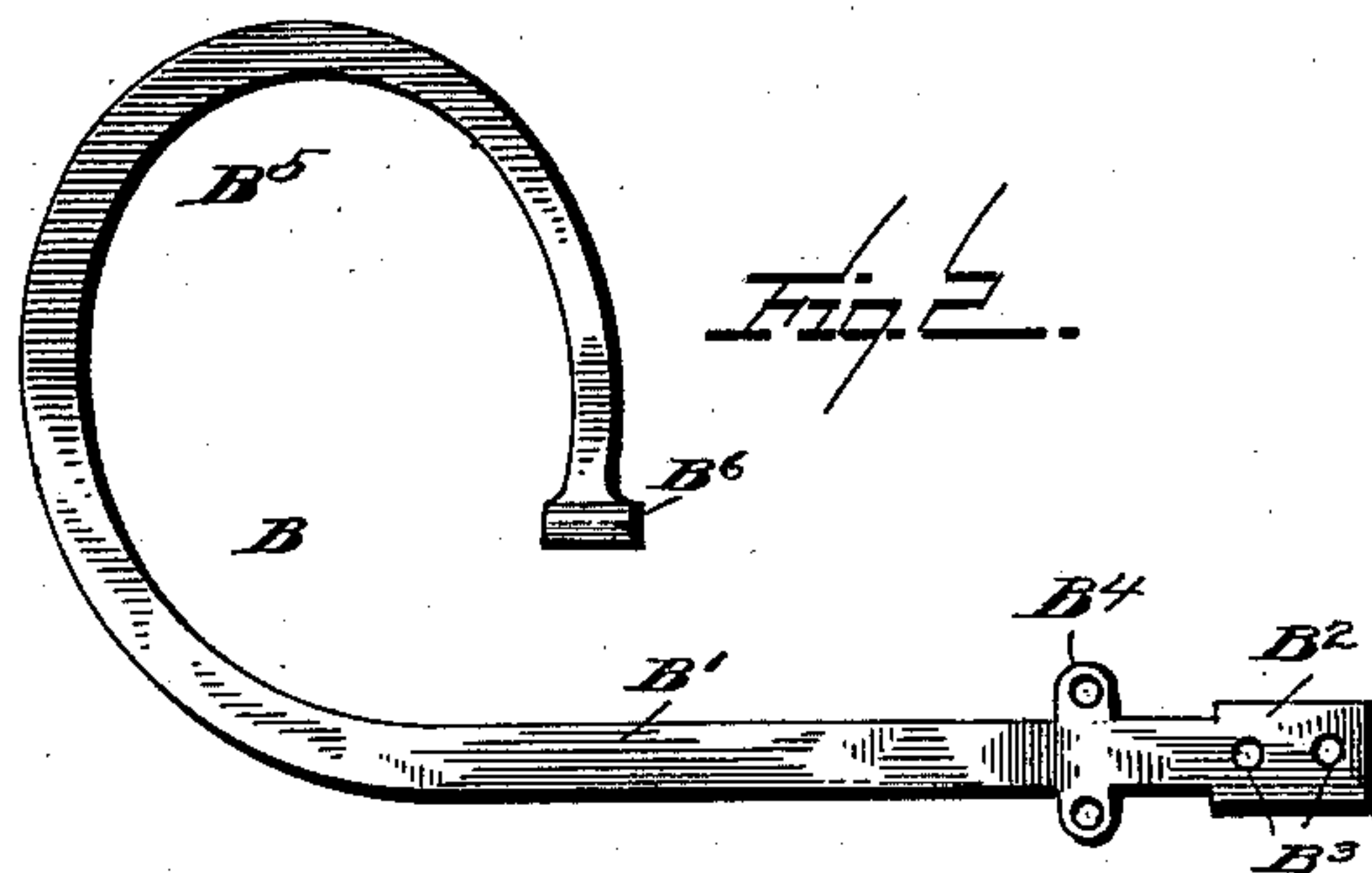
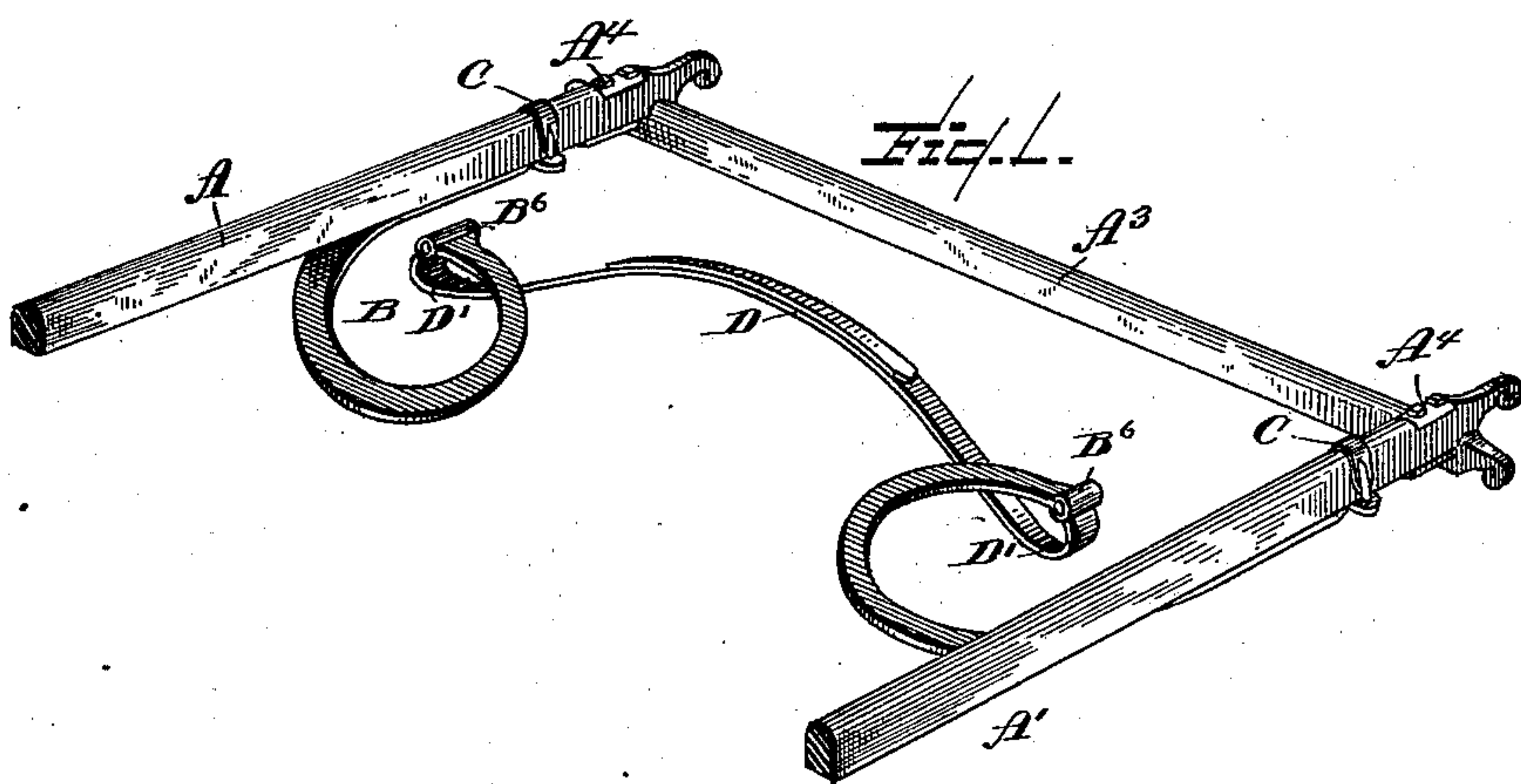
(No Model.)

G. W. HARRIS.

SPRING FOR SIDE BAR VEHICLES.

No. 393,759.

Patented Dec. 4, 1888.



Witnesses:

S. C. Mills,
W. D. Stowell

Inventor:

George W. Harris.
E. B. Stocking
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE W. HARRIS, OF SOUTH BEND, INDIANA.

SPRING FOR SIDE-BAR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 393,759, dated December 4, 1888.

Application filed March 12, 1888. Serial No. 266,980. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HARRIS, a citizen of the United States, residing at South Bend, in the county of St. Joseph, State of Indiana, have invented certain new and useful Improvements in Springs for Side-Bar Vehicles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to springs for vehicles of that class including in their construction side bars, the objects being to produce a strong serviceable spring at a reduced cost, decrease the number of shackles and
15 other usual securing devices, and provide a combined semi-elliptical and torsional spring that will prevent forward and side motion or pitching, and while retaining all the elasticity of the bow or semi-elliptical spring will have
20 the direct positive vertical motion of the torsional spring.

Other objects and advantages of the invention will hereinafter appear, and the novel feature will be particularly pointed out in the
25 claims.

Referring to the drawings, Figure 1 is a perspective of one end of a side-bar frame provided with a spring constructed in accordance with my invention. Fig. 2 is a detail in
30 plan of a portion of the spring, and Fig. 3 is a side elevation of the same.

Similar letters of reference indicate like parts in all the figures of the drawings.

35 A A' represent the side bars of a running-gear, the front and rear ends of which are connected by the usual bolsters, A³, to which they are bolted by bolts A⁴. Fig. 1 shows the front end of the gear, and the rear end thereof is but a duplication of that described.

40 B represents a horn-shaped semi-convolute spring, and it comprises the straight portion B', to which is welded the bearing end plate, B², which end is slightly above the plane of the straight portion B'. The end-bearing portion B² is perforated, as at B³, and adapted to
45 permit of the passage therethrough of the bolts A⁴, connecting the side bars and bolsters, said end plate being interposed between the bars and bolsters. An inverted-U-shaped
50 clip, C, straddles the side bars near each of their ends, the terminals of said clips depending below and passing through perforated

lugs or ears B⁴, formed on opposite sides of the plate B², to which are applied nuts serving to bind those ends of the spring snugly
55 in position against the under surface of the side bars, thus giving the spring two bearing points—namely, at their rear ends and forward of the same. Forward of the straight portion B' of the spring the same is curved
60 gradually inwardly and upwardly, as at B⁵, above the plane of the portion B', in a somewhat convolute shape, and terminates substantially opposite the point where the curved
65 portion begins. At this curved terminal end is formed an eye or shackle, B⁶, which is disposed in a direction coincident with the straight portion of the spring. One of these
70 springs is mounted at each corner of the frame and opposite each other.

D represents a semi-elliptical or bow spring, the center of which is above the plane of the terminals of springs B. The ends of the spring D are bent upwardly, and form, in connection with the eye B⁶ of the spring B, a
75 shackle, D'.

The body of the vehicle rests upon the curved raised centers of the spring D, there being one at each end of the frame and connecting the two opposite pairs of torsional
80 springs B. By this arrangement all end and side pitching is obviated and the strain equally divided and distributed to each of the springs. The weight is thrown directly over the axle, thus doing away with the straining and bend-
85 ing of the side bars.

Having described my invention and its operation, what I claim is—

1. The side bars, A A', and their front and rear connecting-bolsters, A³, in combination
90 with the torsional springs B, having the perforated bearing ends B² interposed between said bars and bolsters, secured by the bolts A⁴, curved, as at B⁵, and with the transverse bow-spring D, the ends of which are connected to
95 the springs B, as at D' B⁶, substantially as specified.

2. The frame A A' A³, in combination with the springs B, formed, as described, with the perforated plate B² and ears B⁴, and having
100 the straight and curved portions B' B⁵, the bolts A⁴ and clip C, and with the connecting-spring D, substantially as specified.

3. The spring B, having the raised bearing

portion B² B⁴, straight lower portion, B',
and upwardly and inwardly curved portion
B⁵, terminating in the eye B⁶, in combination
with the side-bar frame, the clips C and bolts
5 A⁴, and with the transverse spring D, having
the shackles or eyes D', adapted for connection
with the eyes B⁶ of the spring B, substantially
as specified.

In testimony whereof I affix my signature
in presence of two witnesses.

GEORGE W. HARRIS.

Witnesses:

JOHN A. CHOCKELT,
CHAS. COONLEY.