# W. F. WHITNEY.

## Spring for Vehicles.

No. 165,641. Patented July 13, 1875.

*Fig. 1.*

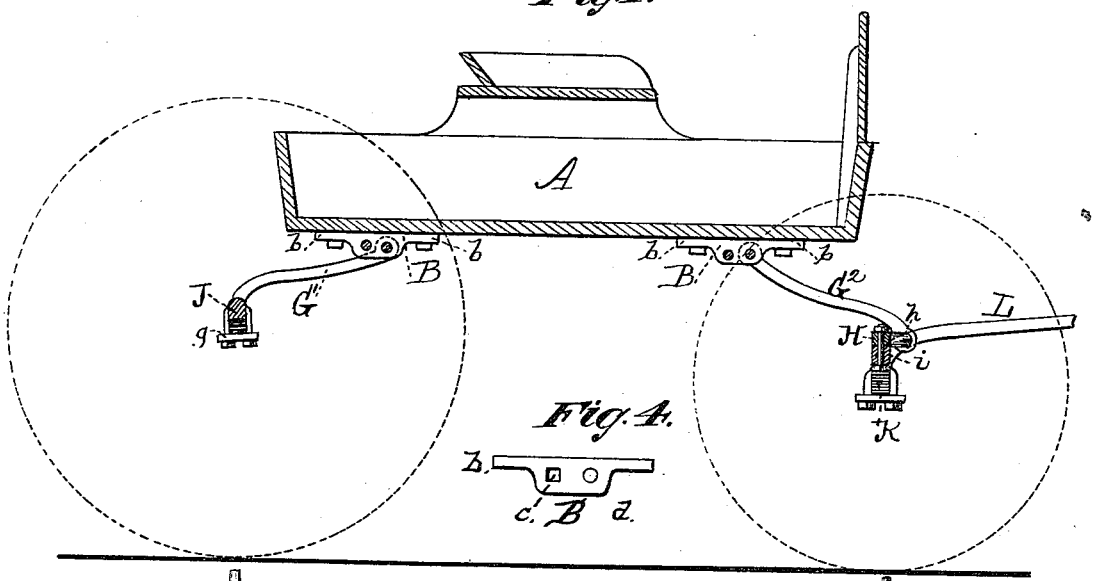



*Fig. 4.*




*Fig. 2.*

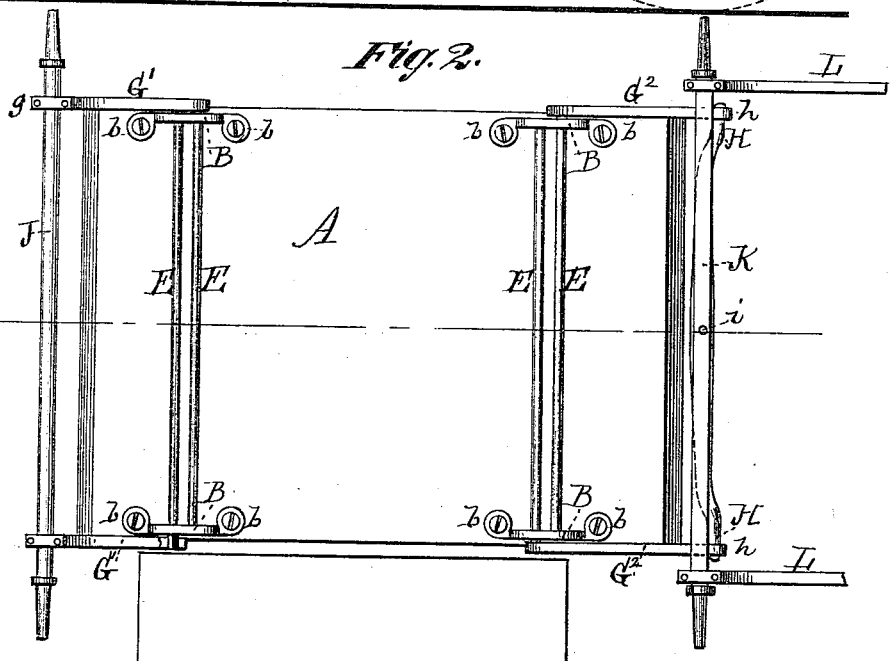
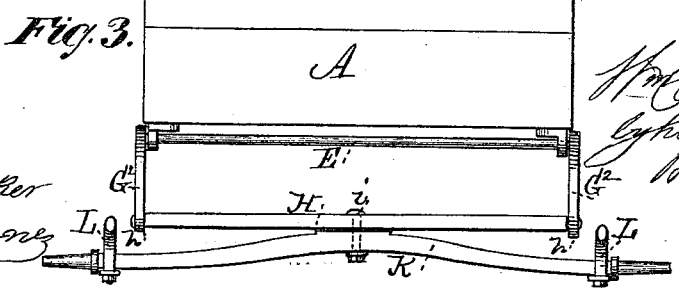



*Fig. 3.*




Witnesses
John Becker
Fred Haynes

Wm. F. Whitney
by his Attorneys
Dewitt & Allen

# UNITED STATES PATENT OFFICE.

WILLIAM F. WHITNEY, OF NEW PALTZ, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN C. SUYDAM, OF KINGSTON, NEW YORK.

## IMPROVEMENT IN SPRINGS FOR VEHICLES.

Specification forming part of Letters Patent No. **165,641**, dated July 13, 1875; application filed December 30, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM F. WHITNEY, of New Paltz, in the county of Ulster and State of New York, have invented certain Improvements in Springs for Vehicles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

My invention relates to certain improvements in springs operating on the torsion principle; and it consists in the combination, with the front axle and bolster, having its ends curved forward, of arms having eyes at their lower ends for the reception of the curved ends of the bolster, the upper end of said arms being attached to the ends of the torsional spring-bars, all of which will be fully hereinafter described, and pointed out in the claim.

In the accompanying drawing, Figure 1 is a side sectional view of a carriage with my improvement applied thereto. Fig. 2 is a bottom view of the same. Fig. 3 is a front view of the same. Fig. 4 is a detail view.

A represents the body of a carriage of any ordinary construction. B is a metallic bracket, at the ends of which are perforated lugs *b b*, for securing it to the under side of the bottom of the carriage-body A. About midway of the length of the bracket are two holes, one of which is round, and the other square. The square hole *c* is for the reception of a square tenon on one end of a rod, E, and the round hole *d* is for the reception of the round portion of a similar rod. Four of these brackets are attached to the under side of the bottom of the body A, near the four corners thereof, with the length of the bracket parallel with the length of the body. The rods E are made of elastic steel, and serve as springs by operating on the torsion principle. They are applied to the brackets by inserting the square tenon in the square hole *c* of one bracket, while the rounded portion of the rod, near the opposite end, passes through and works freely in the round hole *d* in the opposite bracket, projecting slightly beyond the same. Two of the rods are applied to the brackets at the rear end of the body, and two more to those at the front end. The rods are so arranged that the square tenon of one rod engages with the square socket in the bracket on one side of the body, and the square tenon of the other rod engages with the square socket of the bracket on the opposite side, so that the projecting ends of the rods of each pair are on opposite sides of the body. These projecting ends are also provided with square tenons, to which are attached, by square sockets, the upper ends of arms $G^1$ $G^2$, which extend outward and downward from the body A. The arms $G^1$, at the rear end of the body, are attached directly to the rear axle J by means of clips *g*, formed on their lower ends. The arms $G^2$, at the front end, are attached to a bolster-rod, H, the ends of which are round, and engage with eyes *h*, formed at the lower ends of the arms. The front axle K is attached to the bolster-rod H by means of a king-bolt, *i*; and in order that said axle may retain its proper position directly under the bolster-rod, and not be pulled forward, so as to bend the king-bolt, the ends of the bolster-rod are bent or curved forward, so that the axle K will occupy a position somewhat to the rear of a line drawn through the eyes *h* at the lower ends of the arm. The thills L are rigidly attached to the front axle, and the necessary oscillation thereof, resulting from the motion of the horse, is permitted by the free working of the ends of the bolster-rod in the eyes *h*.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the front axle K, the bolster H, having its ends curved forward, and the arms $G^2$, having eyes *h* at their lower ends for the reception of the curved ends of the bolster, substantially as shown and described.

WM. F. WHITNEY.

Witnesses:

THEODORE DEYO,

ASA LEFEVER.