

R. M. STIVERS.
Springs for Vehicles.

No. 157,425.

Patented Dec. 1, 1874.

Fig. 1.

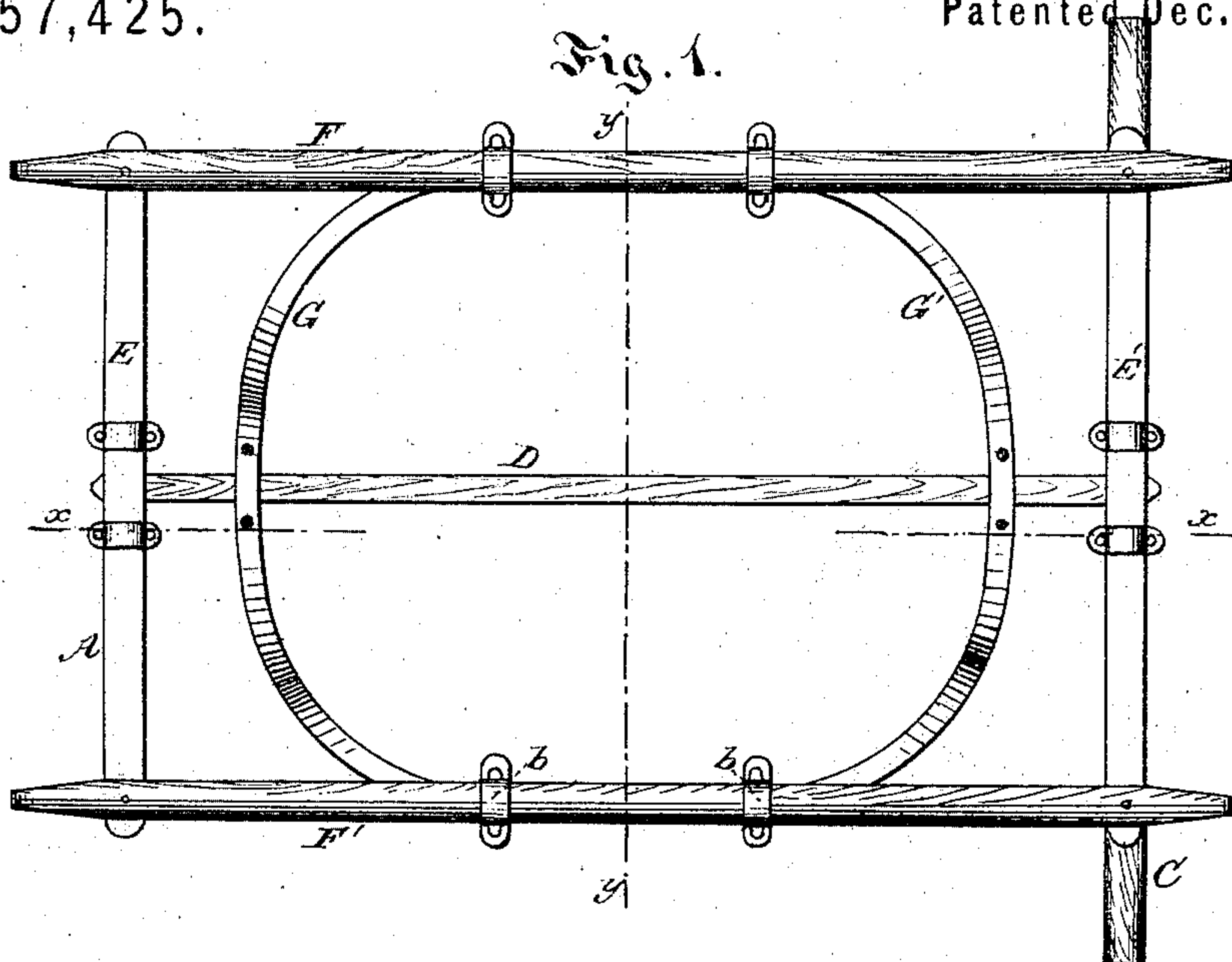


Fig. 2.

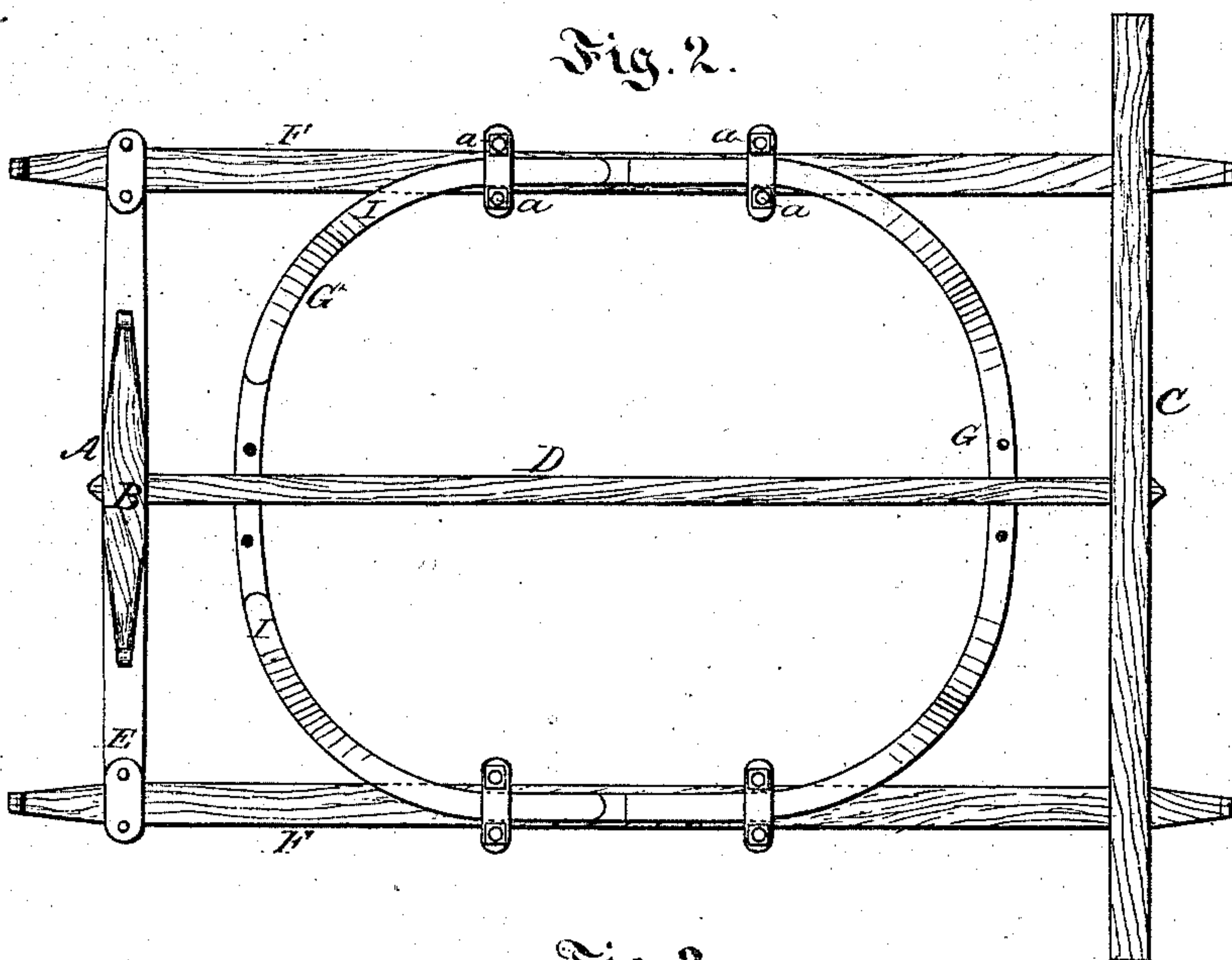
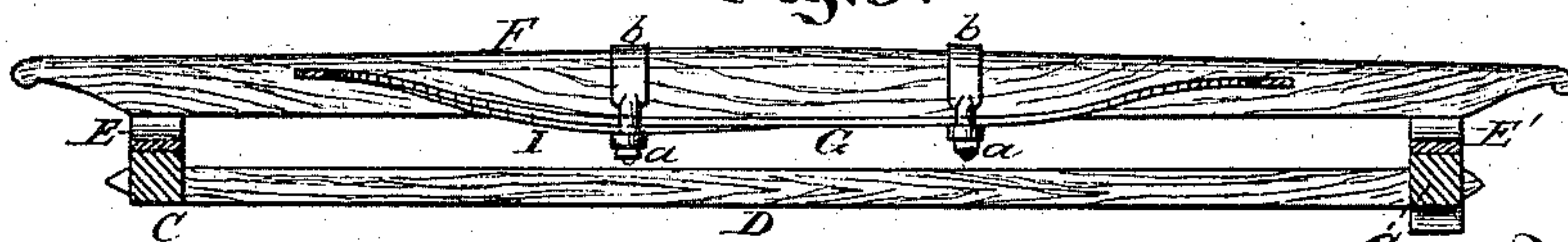


Fig. 3.



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Fig. 4.

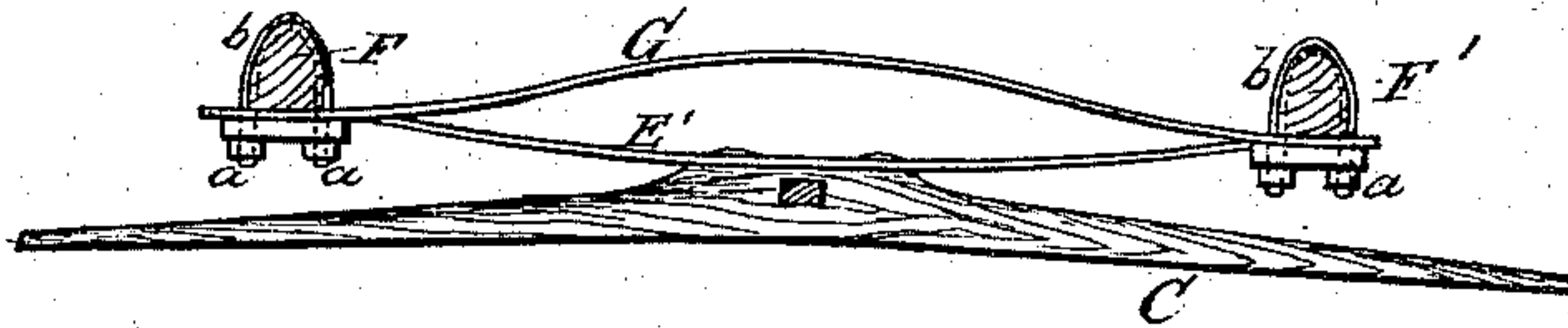


Fig. 5.

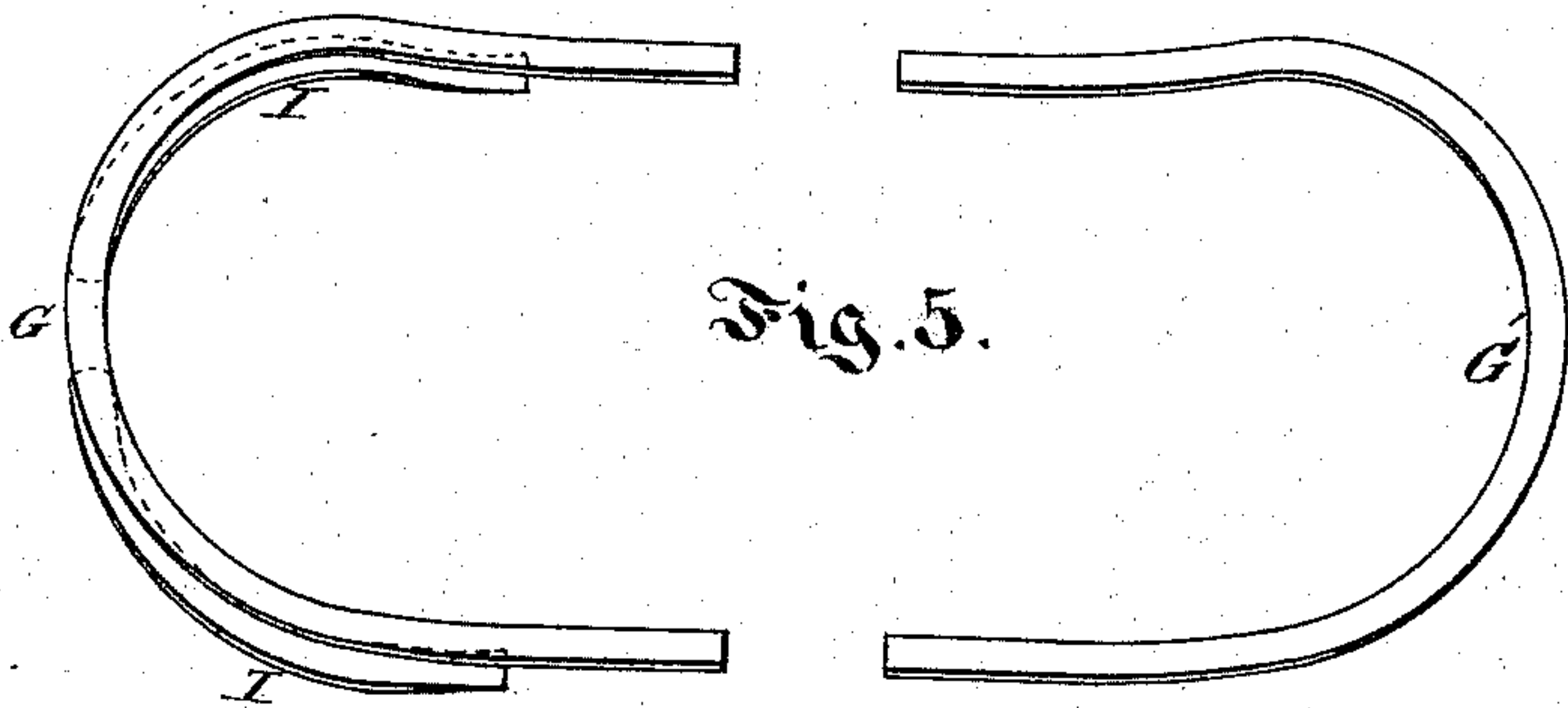


Fig. 6.

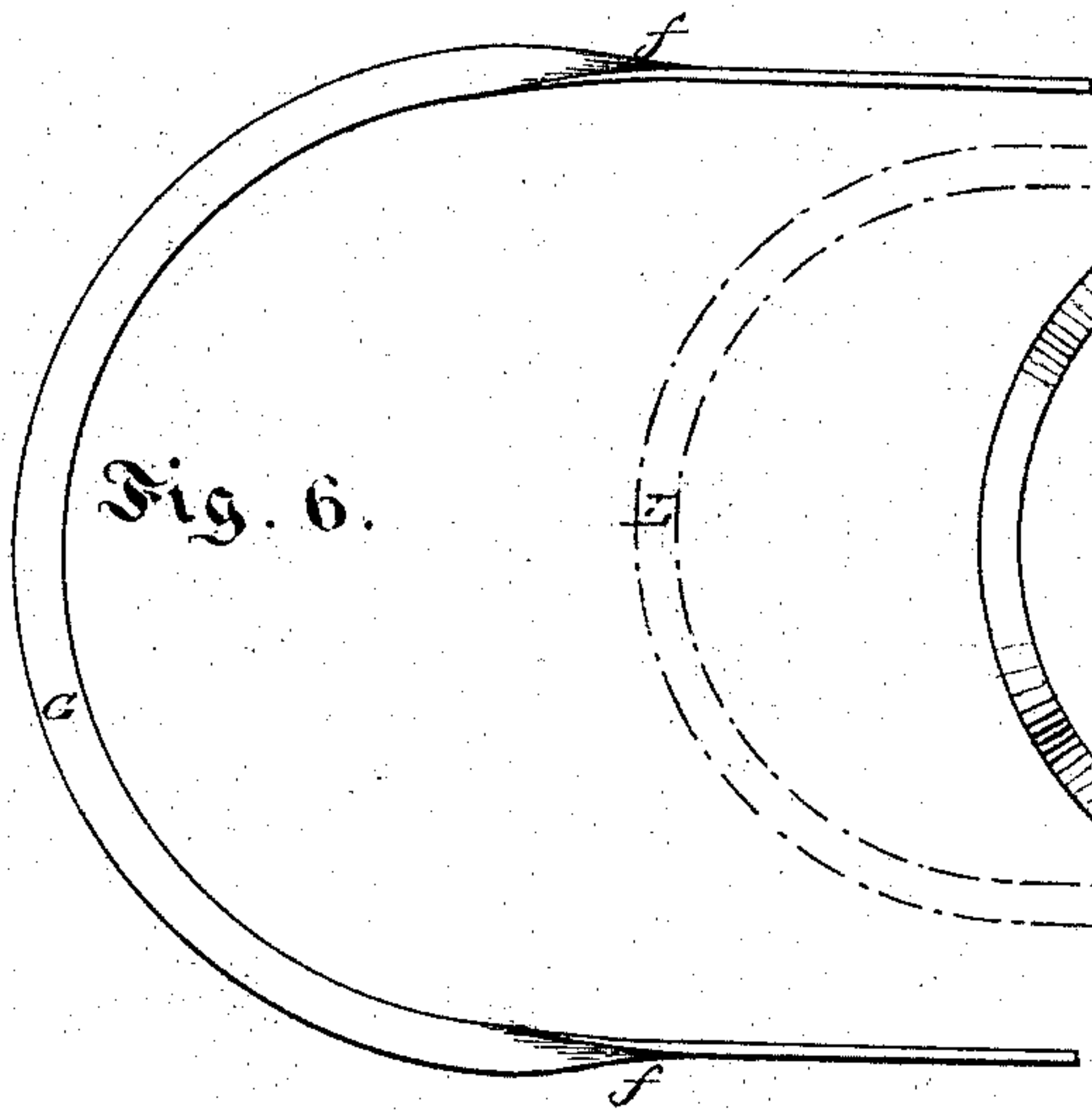


Fig. 8.

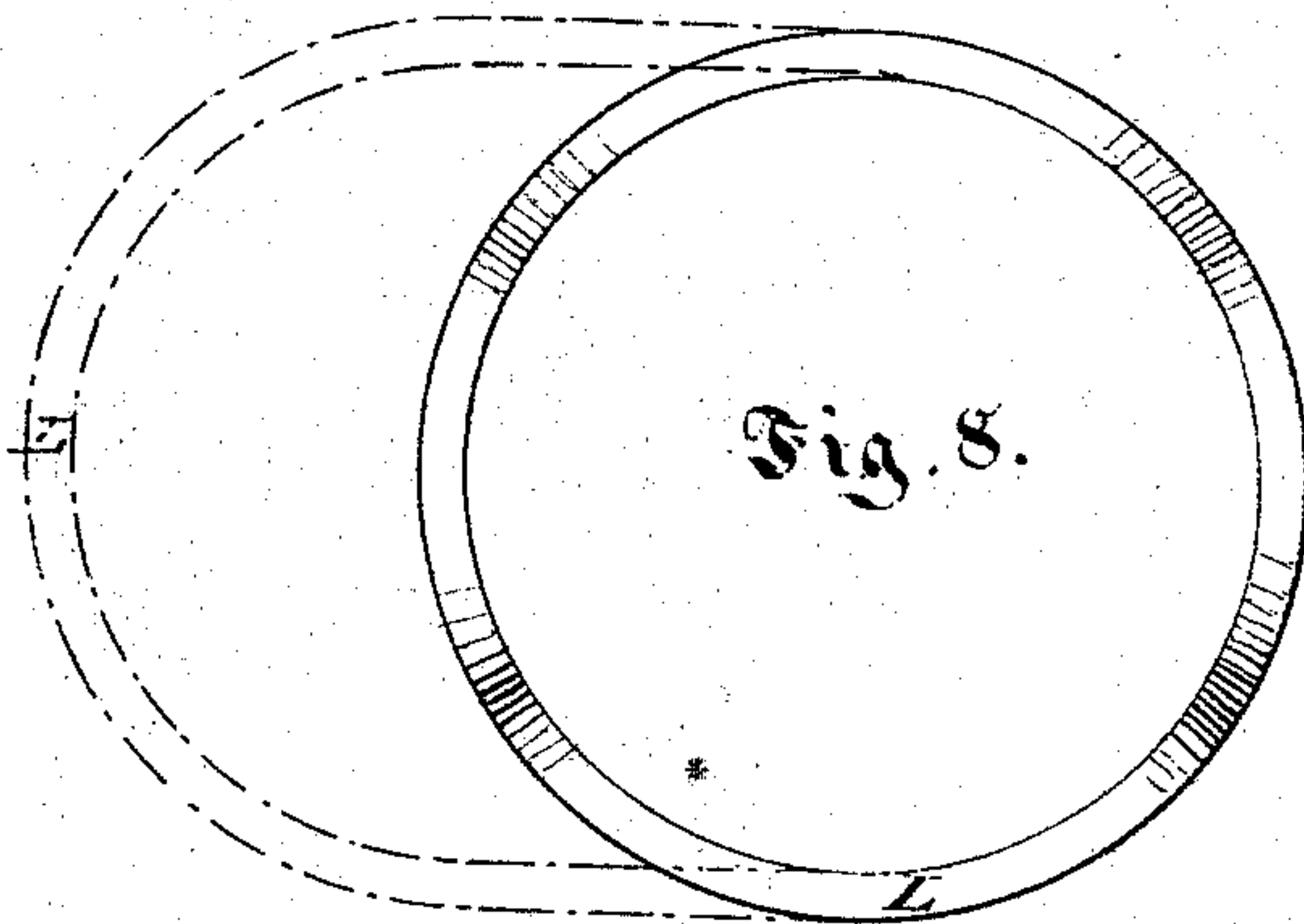


Fig. 7.



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UNITED STATES PATENT OFFICE.

RUFUS M. STIVERS, OF NEW YORK, N. Y.

IMPROVEMENT IN SPRINGS FOR VEHICLES.

Specification forming part of Letters Patent No. 157,425, dated December 1, 1874; application filed November 25, 1874.

To all whom it may concern:

Be it known that I, RUFUS M. STIVERS, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Springs for Vehicles, of which the following is a specification:

This invention relates to that class of vehicles in which the body is supported upon a platform or frame composed of the ordinary front bolster and head-block, rear bolster, perch, and two lateral longitudinal bars, supported at their ends upon semi-elliptic springs.

The invention consists in the employment of body-springs, which are made of a form approximating that of a curve, and made either of one or more plates, the ends of each spring being attached to the longitudinal side bars, from which point they are gradually curved in an upward direction toward the center of the spring, which raised central portion is attached to the cross-bar supporting the vehicle-body, whereby the latter is permitted to rise and fall evenly, all side motion being prevented, these results being attained by the semicircular springs in conjunction with the semi-elliptic springs at the ends of the longitudinal side bars, which serve as elastic or flexible supports for the bars, and take up the greater portion of the shocks or jars imposed upon the running-gear.

In the accompanying drawings, Figure 1 is a top view, illustrating my arrangement of springs in a running-gear for vehicles. Fig. 2 is a bottom view of the same. Fig. 3 is a longitudinal section taken on the line *x x*, Fig. 1. Fig. 4 is a central transverse section taken on the line *y y*, Fig. 1. Fig. 5 is a perspective view of two detached semicircular springs, illustrating their construction. Fig. 6 represents a top or plan view of a torsional spring. Fig. 7 is a detail view of the same, showing the point at which it is twisted; and Fig. 8 represents a circular or oblong spring made in one piece.

The running-gear or platform portion of the vehicle is composed of the ordinary front bolster A and head-block B, the rear bolster C, and the connecting-perch D, which may either be made single or double. Flat or semi-elliptic springs E E' are centrally secured to the top of the front head-block and rear bolster by

means of bolts or clips and to the free ends of a pair of longitudinal bars, F F, which are located at the sides of the buggy, carriage, road, and other wagon. Said bars are supported by the end springs in an elastic or flexible manner, so as to permit them to rise and fall to relieve the shocks or jars to which the vehicle is exposed. The central or greater portion of the carriage or wagon body is supported upon springs of a novel construction. The springs referred to are designated by the letters G G, and they are made of a form approximating that of a semicircle or oblong, as is clearly illustrated in the several figures.

The springs when made in two parts may be described as consisting of a flat plate, which is bent into a semicircular form, the two ends of the springs being flat, while the main portion gradually rises or curves in an upward direction to the center, thus forming an arched supporting-surface. The ends of the springs are secured to the side bars of the vehicles by means of bolts *a* and clips *b*, the contiguous ends of the springs meeting each other, or the ends may overlap, so as to be secured by a single clip or bolt. The raised or arched portion of the springs supports the cross-bar, to which the irons of the body of the carriage or wagon are connected by bolts passing through the bar and spring, or by clips embracing the bar and springs. The bolts and clips may be used conjointly or separately, according to the exigencies of the case.

A single leaf-spring is more specially adapted for light vehicles. In heavier vehicles, or where considerable weight is imposed upon the springs, short re-enforcing leaves I may be attached to the mainspring underneath the same by rivets or otherwise, said re-enforcing leaves being one or more in number, and of a shape conforming with the main leaf or spring. The leaves I are secured in place by bolting them to the mainspring, so as to cause their free ends to terminate near the center of the arched portion of the mainspring, but at such a distance apart as to enable them to advance toward each other without coming in contact when the mainspring is subjected to a downward pressure.

Instead of applying re-enforcing leaves to each spring, I contemplate using the same in

connection with the front or rear semicircular spring, either or both, and especially with the rear, since it receives the greater portion of the weight and the thrust of the vehicle.

The mainspring may be made in one piece, as at L, (shown in Fig. 8,) and of such a shape as to approximate in its contour a circle or oblong body. I prefer, however, to construct the mainspring in two parts, as previously described.

Instead of employing a direct-acting spring I propose also to construct a torsional spring, the same being represented in Figs. 6 and 7. A spring of this description is also made of a form approximating a semicircle; but it is twisted at the points *f*, where the end portions join the arched flat portion which supports the body of the vehicle.

A torsional spring, shaped as described, offers the greatest resistance to strain, and is withal very elastic and durable, and possessed of the greatest amount of flexure, so as to support the carriage-body in a perfect manner.

By the employment and novel arrangement of springs, constructed so as to partake of a semicircular or oblong form, and provided with a raised center, the body of a buggy, carriage, or road-wagon can be substantially supported thereon, and elevated above and be free to rise and fall between the side bars or sills, whereby is imparted neat finish to the entire vehicle; and, further, such vehicle-body will at all times be retained in a horizontal position and the usual racking motion to which vehicles are subjected be avoided or greatly lessened.

The extended basis afforded the vehicle-body by such form of spring, and the flexure and elasticity present in the same, accompanied by the rigidity and strength of the re-enforcing leaf or leaves, will arrest and distribute throughout their curvilinear portions all jars and concussions transmitted by the wheels, and such can be effected without the presence of the front and rear cross-springs, which, in many instances, will be dispensed with, especially in buggies, road-wagons, or other vehicles built for supporting light weight. In such instances the side bars or sills will be connected with or rest upon the bolsters.

It is evident that the springs may be re-

versed, so that the central raised portion will be curved downwardly, and the bar for supporting the body of the vehicle be arranged across or upon the arch-shaped portion; and, further, that, in lieu of imparting a curved raised portion to the spring, the same may be made flat, and the bar for connecting the body with the spring rest upon such flat portion; and, further, that the body may rest directly on the spring or a block placed between the spring and the cross-bar or body, when it is desirable to elevate the body, all of which will be apparent to a mechanic skilled in the manufacture of carriages.

The prime advantages derived by the use of either of the springs described is, that they are so located in respect to the vehicle-body and side bars of the running-gear as to receive the entire weight of the body, and to cause a spring bearing-surface to be arranged at different points along the same. The end springs supporting the side bars will receive the greater portion of the shocks and jars to which a vehicle is exposed; and the mainsprings upon which the vehicle-body is supported will be free to rise and fall, so as to secure great flexure and elasticity, and compensate for and take up all rocking or lateral motion.

I desire to have it distinctly understood that the shape of the independent spring may be varied from a form approximating a semicircle, so long as the two springs, when put together, will present the appearance of an oblong, or nearly oblong, body.

What I claim is—

1. A semicircular or semi-oblong spring having a curved and raised central portion, in combination with longitudinal side bars for supporting the body of a vehicle, substantially as described.

2. The combination of semicircular body-supporting springs, longitudinal side bars, transverse and semi-elliptic or plate springs, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand.

RUFUS M. STIVERS.

Witnesses:

JAMES L. NORRIS,

A. H. NORRIS.