

W. EVANS.
Vehicle-Springs.

No. 155,509.

Patented Sept. 29, 1874.

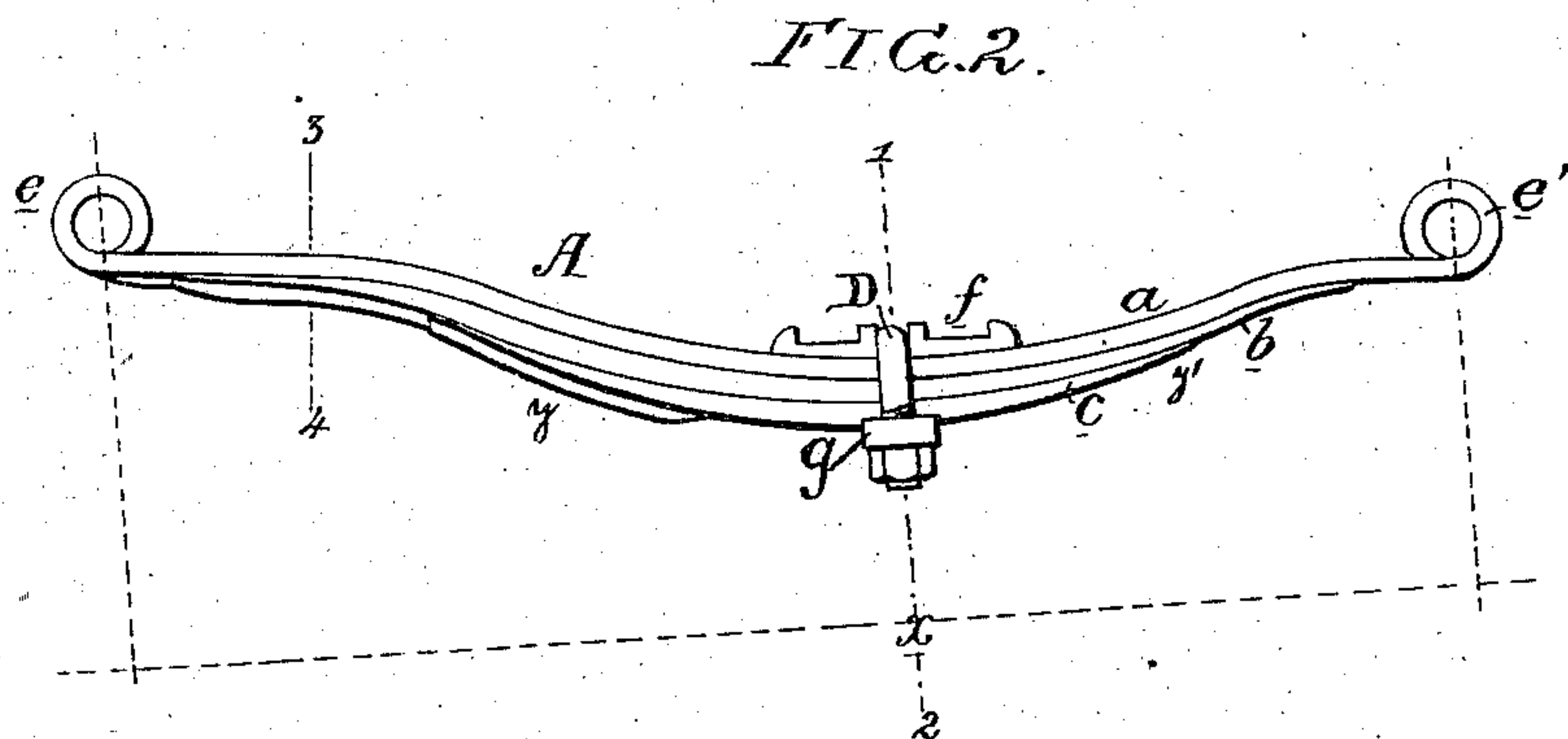
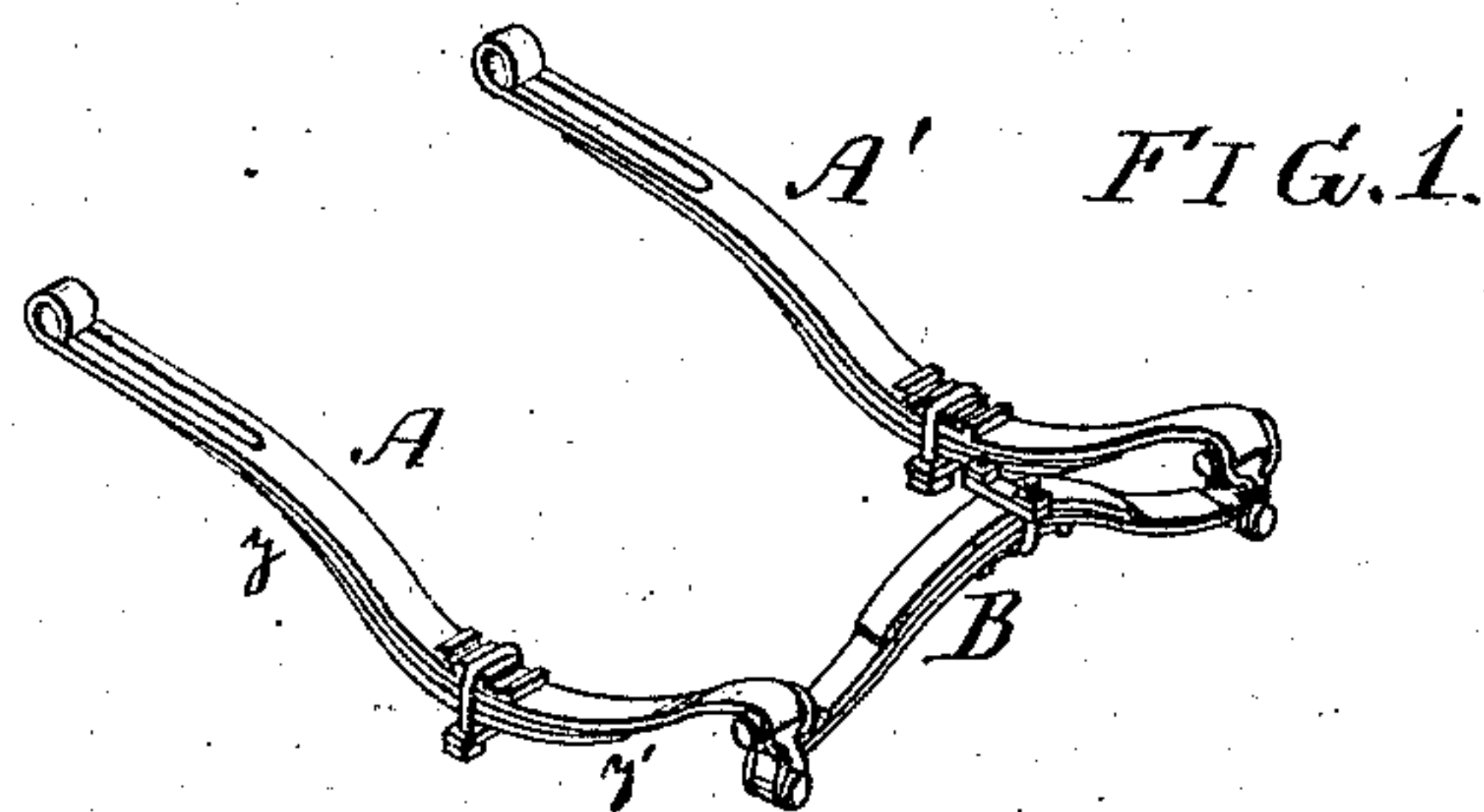


FIG. 4.

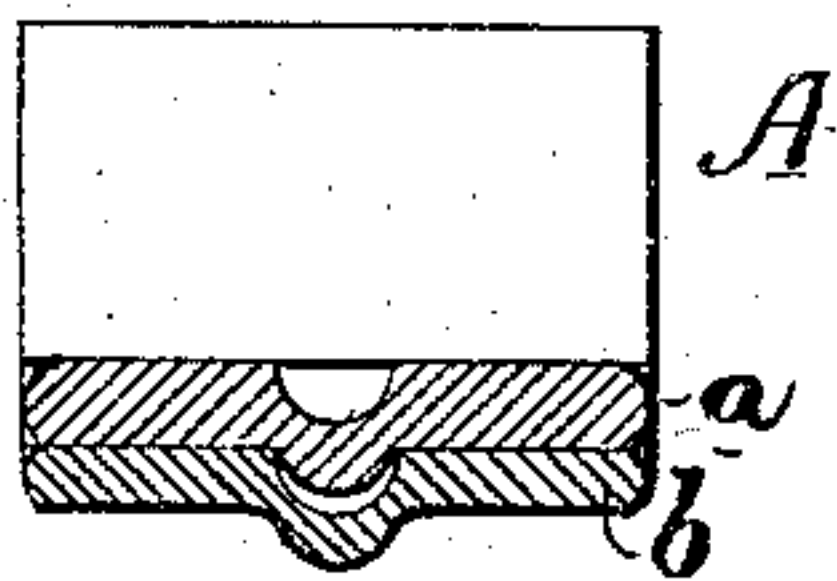
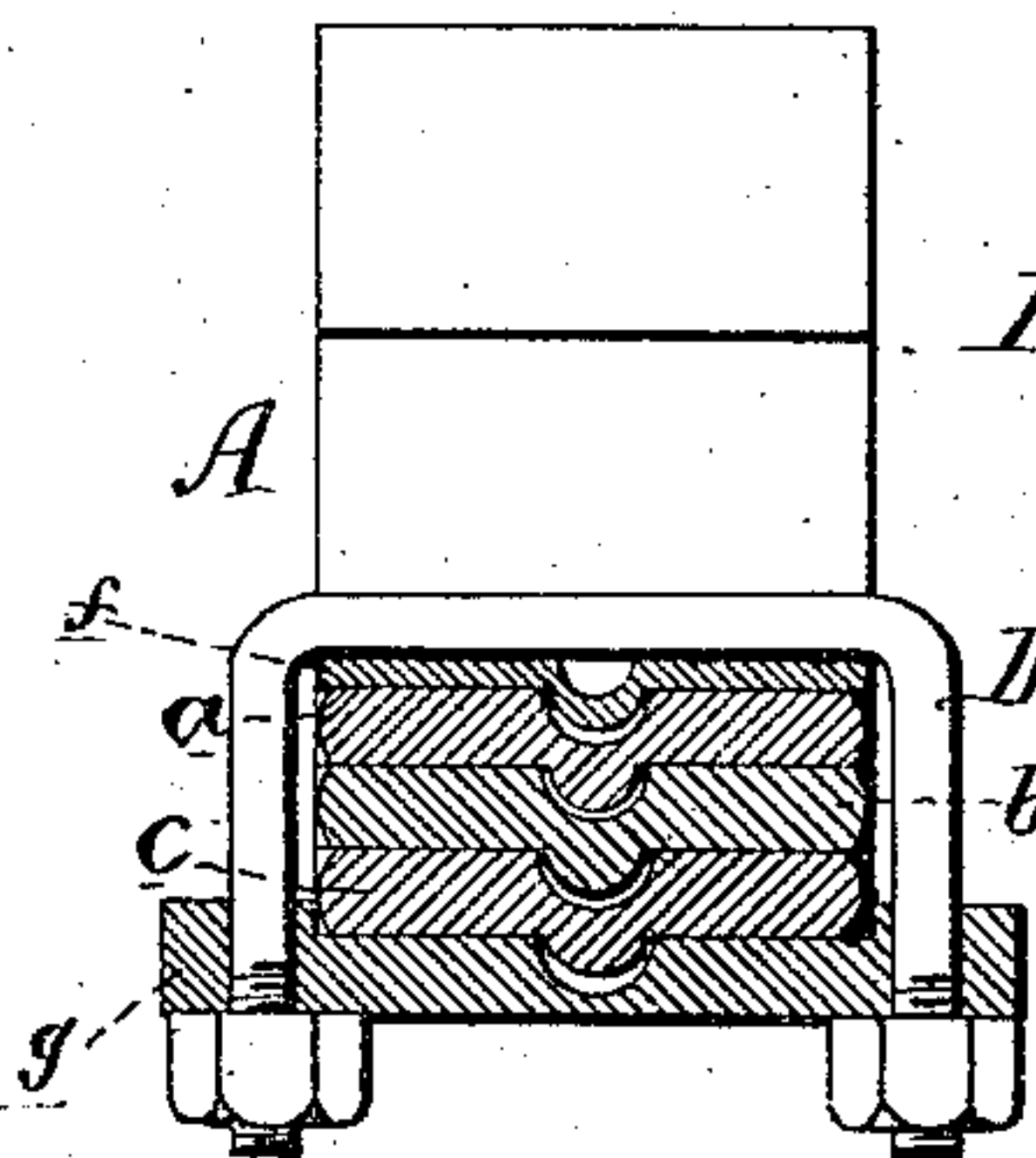


FIG. 3.



Witnesses,

Thomas McIlvain
Hubert Howson

William Evans
By his Attys.
Howson and Son.

UNITED STATES PATENT OFFICE.

WILLIAM EVANS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
BENEZET & COMPANY, OF SAME PLACE.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **155,509**, dated September 29, 1874; application filed
April 27, 1874.

To all whom it may concern:

Be it known that I, WILLIAM EVANS, of the city of Philadelphia, Pennsylvania, have invented certain Improvements in Springs for Vehicles, of which the following is a specification:

My invention relates to the construction of carriage-springs of the character illustrated in the perspective view, Fig. 1, of the accompanying drawing, where two springs, A A', are combined with a third transverse spring, B, the fulcrum of each of the said springs A A' being nearer to one end of the same than to the other; and the object of my invention is to equalize the elasticity of the long and short portions of the spring. Compound springs of this class are in general use for express-wagons and other heavy vehicles, the springs A A' resting upon and being secured to the axle, while the extremities of the long arms of the said springs A A', and the central portion of the transverse spring B, are secured to the body of the vehicle, or to a frame pivoted to the said body.

On reference to the side view, Fig. 2, of the spring A it will be seen that it is composed of three layers, *a*, *b*, and *c*, the first being turned at the opposite end so as to form the usual eyes *e e'*. The three layers are confined at the usual point between the opposite ends by a strap, D, and clip-plates *f* and *g*, as best observed in the transverse section, Fig. 3, on the line 1 2, the strap and clip plates taking the place of the usual center bolt, which weakens the spring, and is apt to become cut or broken off. Where the strap and clip plates bind the layers together, a projection or teat on one fits into a recess in the other, so that all the layers are maintained in the same relative lon-

gitudinal position. The clip-plates are also formed with corresponding teats and recesses adapted to those of the layers of the spring, while the strap D is adapted to a groove in the upper clip-plate, *f*, and the lower clip-plate, *g*, has shoulders at its opposite sides, which overlap the lower layer of the spring, this also tending to maintain the several parts in their proper relative positions. In the longest portion of the spring *y* from the fulcrum *x*, the layer *a* has a rib adapted to a groove in the layer *b*, the latter having a similar rib adapted to a groove in the layer *c*, which has also a rib on its under side, as best observed in the transverse section, Fig. 4, on the line 3 4. In the short portion of the spring *y'* from the fulcrum *x*, the layers are made without ribs and grooves. As usually constructed, the long portion of a spring of this class is necessarily more elastic than the short portion, but by making the longer portion with ribs in the manner described, its rigidity may be increased to conform with that of the short portion. In other words, the elasticity of both portions of the spring is equalized by the presence of ribs in the long portion.

I claim as my invention—

The spring A, consisting of the combination of layers *a b c*, confined at *x* to form long and short arms *y y'*, and having ribs and grooves in the long arm, as set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM EVANS.

Witnesses:

WM. A. STEEL,
HUBERT HOWSON.