S. M. RICHARDSON.
Vehicle-Spring.

No. 204,915. Patented June 18, 1878.

Fig: 1.

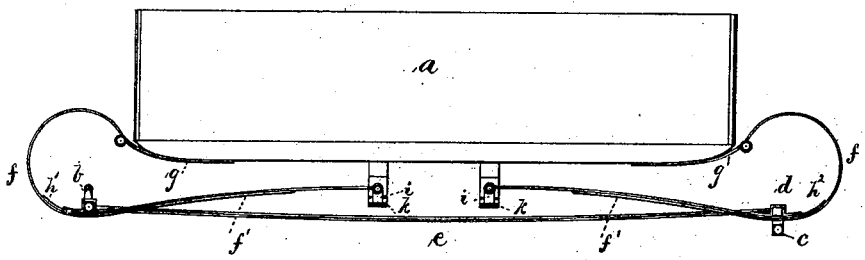


Fig: 2.

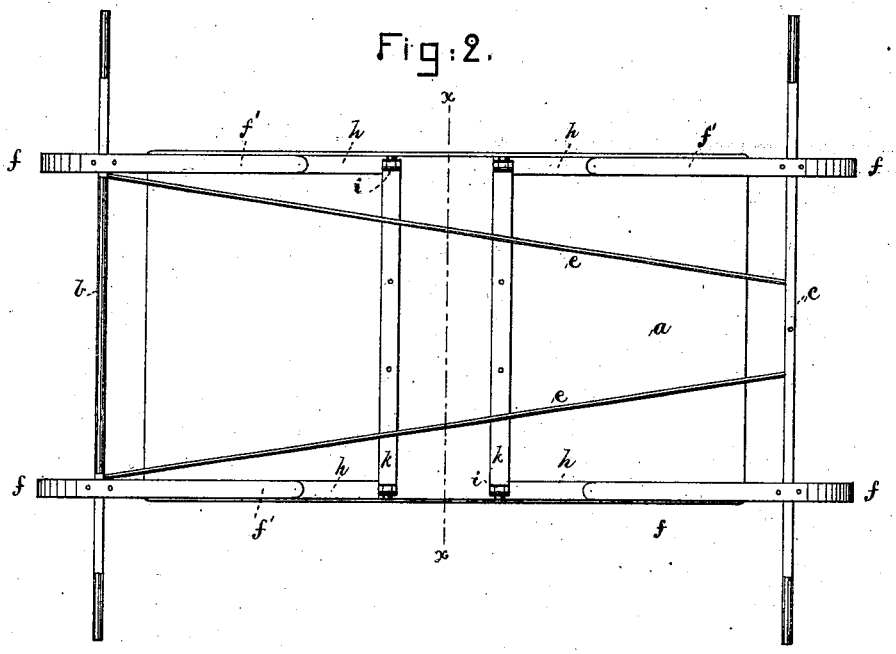


Fig: 3.

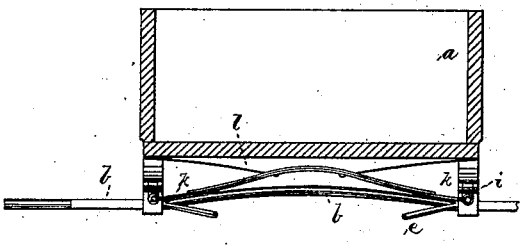
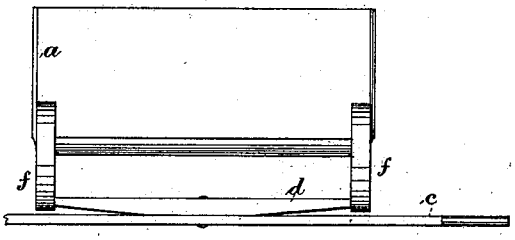


Fig: 4.



Witnesses.
L. F. Connor.
N. E. Whitney.

Inventor.
Samuel M. Richardson
by Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

SAMUEL M. RICHARDSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **204,915**, dated June 18, 1878; application filed May 3, 1878.

To all whom it may concern:

Be it known that I, SAMUEL M. RICHARDSON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Wagons, of which the following is a specification:

This invention relates to wagons, and has special reference to devices for supporting the box, such devices being intended as substitutes for the ordinary wooden side rods of the so-called "road-wagons," to avoid the jar common to such wagons, and make them ride more easily.

Figure 1 represents, in side elevation, a wagon constructed in accordance with my invention, the wheels being omitted; Fig. 2, a bottom view thereof; Fig. 3, a section on the line *x x*, Fig. 2; and Fig. 4, an end view.

The box *a* is shown as a square box. *b* represents the rear axle; *c*, the front axle; *d*, the cross-bar thereon; and *e*, the reaches or rods connecting the two axles, all as usual. The box is supported at each corner by means of curved springs *f*, (shown connected with straps *g*, secured to the box, and with the axle *b* or cross-bar *d*,) the ends *f'* of *f* projecting toward the center of the wagon to stiffen the springs *h*, which are also attached to the axle *b* and cross-bar. These springs *h* project back of the rear axle, as at h^1, and in front of the cross-bar, as at h^2, to stiffen the springs *f*, and at their other ends they are connected with ears *i* at the ends of the elliptic half-springs *k*, attached to cross-pieces *l* at the bottom of the box, such springs *k* having one or more leaves, as may be desired.

It is obvious that the stiffness of springs *f* *h* may be regulated by extending their ends one over the other, more or less.

If desired, a third spring may be attached and extended under springs *f* and *h*, to produce a very stiff spring, and the reaches *e* may be entirely omitted.

This construction of road-wagons obviates the jar common to the use of wooden springs, and makes a very strong, light, and easy riding wagon.

By employing the springs *k*, to which to connect springs *h*, rather than connecting such springs *h* directly to the sides of the box, I am enabled to balance the box, so that it will remain more nearly in a horizontal position under the action of weight in the box.

I claim—

1. The springs *f*, attached at one end to the box, and having their other ends projecting inwardly beyond the point of attachment to the axle or cross-bar, in combination with springs *h*, extending inwardly, and attached to cross-springs *k*, and projecting outwardly, so as to overlap and stiffen the springs *f*, substantially as described.

2. The combination of springs *f f'* and *h* h^1 h^2 with the cross-springs *k* and the box, axle, and cross-bar of a wagon, when constructed and arranged substantially as and for the purpose described.

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

SAML. M. RICHARDSON.

Witnesses:

G. W. GREGORY,

N. E. WHITNEY.