(No Model.)

S. G. SMITH.

VEHICLE SPRING.

No. 335,645. Patented Feb. 9, 1886.

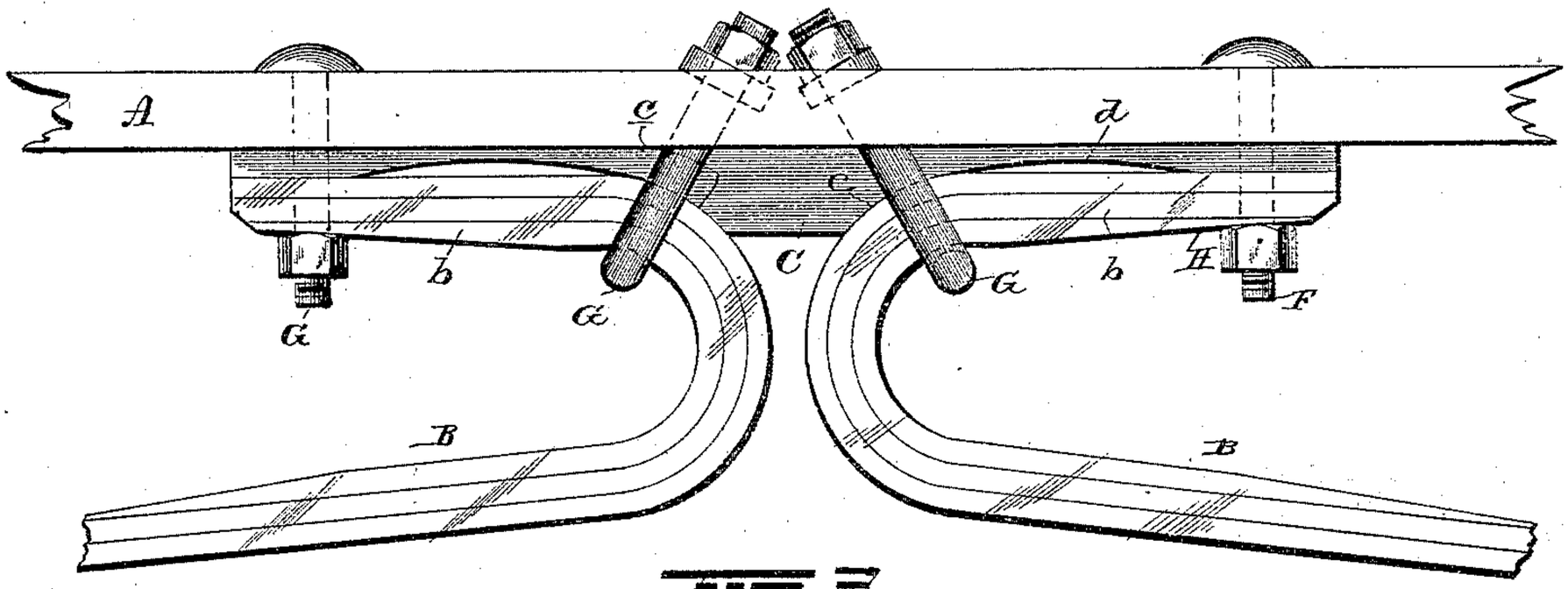

FIG. 2.

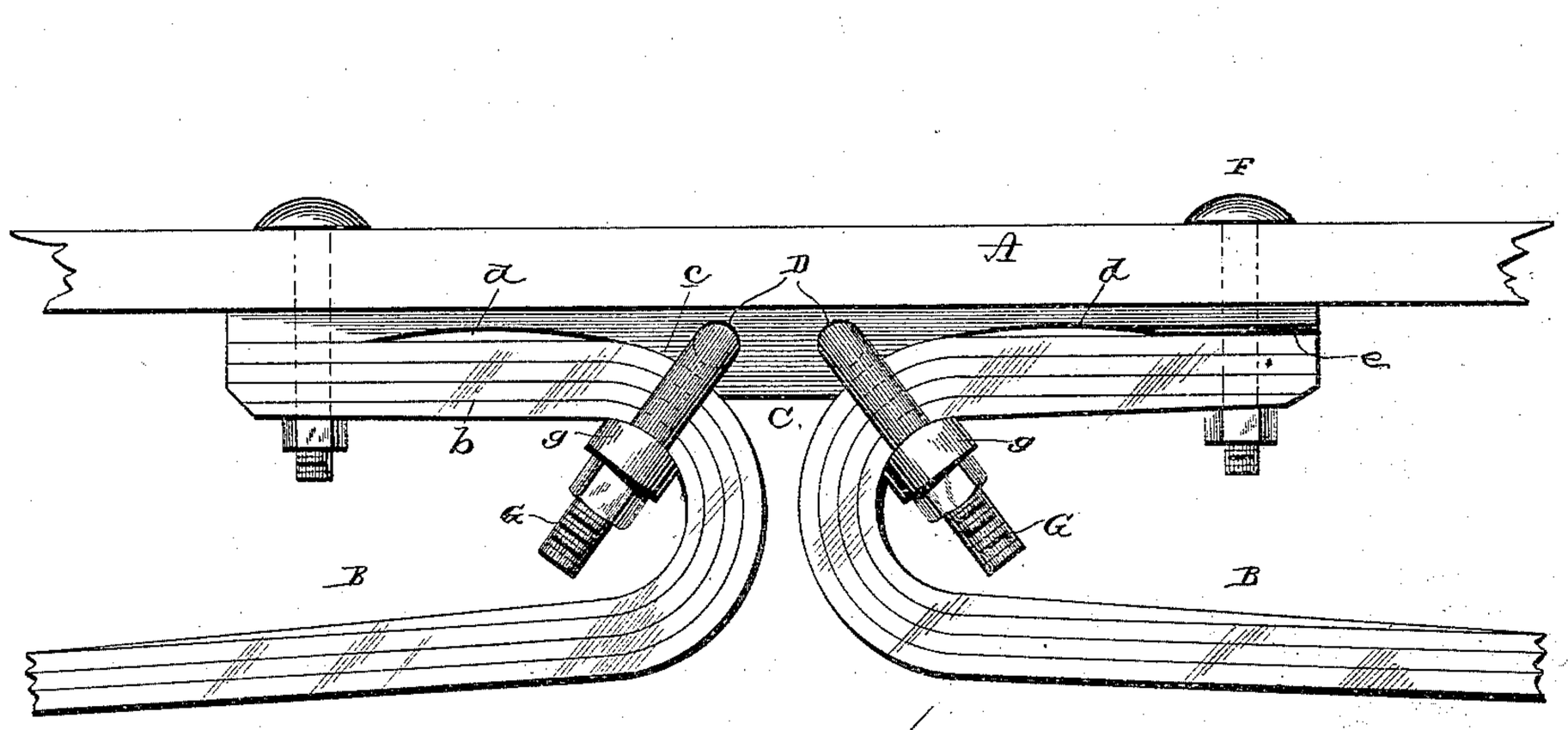

FIG. 1.

WITNESSES

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STEPHEN G. SMITH, OF HANNIBAL, MISSOURI.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 335,645, dated February 9, 1886.

Application filed October 30, 1885. Serial No. 181,401. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN G. SMITH, of Hannibal, in the county of Marion and State of Missouri, have invented certain new and useful Improvements in Vehicle-Springs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in vehicle-springs.

In Patent No. 315,176, granted to me on April 7, 1885, a pair of springs having return-bends were shown and described, secured to a cross-bar, bolster, or axle by means of a plate adapted to receive their short ends, and bolts extending through flanges formed on the sides of the plate across the bites of the springs.

In the above construction it was necessary to have the holes which received the spring-locking bolts made with great exactness, since if they were a trifle too near the plate the spring would interfere with the passage of the bolt, and if too far away the spring would be loose. It was also found inconvenient to take up wear between the locking-bolt and the bite of the spring.

The object of my present invention is to provide a fastening by means of which the springs may be securely locked to the plate, and which will admit of being adjusted to take up wear and to suit any slight difference in the thicknesses of different springs, and which will also admit of the introduction of flexible or non-flexible washers or bearings.

A further object is to provide an improved construction of the locking-plate, whereby the spring will have greater freedom to bend, and to provide a spring of varying thickness to cause it to yield more readily at the heavy end.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents the pair of springs secured by a clip extending through a perforation in the locking-plate, and Fig. 2 represents the springs secured by a clip extending through the cross-bar of the wagon-body.

A represents a cross-bar at the bottom of a vehicle-body.

B represents a pair of springs provided with return-bends *b*, adapted to be secured to a locking-plate, C, with their return-bends extending in opposite directions from each other. The plate C is provided with a flat back adapted to rest in contact with the under side of the cross-bar A, and its face is slightly curved near the central portion, as shown at *c*, to fit the bends on the springs, and afford thereby bearings for the same. The curves *c* are not essential, however, as a square shoulder, the outer edge of which is adapted to rest in contact with the bend of the spring, would answer the purpose fairly well. The thicker portion of the plate C, where the curves *c* or the shoulders are formed, is provided with a pair of transverse perforations, D, adapted to receive the clips G.

The face of the plate C, between the center and the ends, is hollowed out, as shown at *d*, leaving a shallow open space between the spring and the plate to allow the heavy ends *b* of the springs to bend slightly as the load is applied, and thereby afford an easier elastic motion. The recesses *d* may be formed by depressions in the face of the plate, as noted above; or they may be formed by building up the ends of the plate by the introduction of spacing-blocks *e*.

The springs may be formed of as many leaves as the purposes of the vehicle may demand. In the accompanying drawings the springs in Fig. 2 are shown composed of three leaves and adapted to use as front springs, while those in Fig. 1 are composed of four leaves and adapted to use as rear springs.

The springs are provided at their heavy ends with bolt-holes, through which the bolts F extend, the said bolts extending also through the cross-bar A and the thick ends of the plate C.

Clips G, consisting, preferably, of round iron, extend through the perforations D, their branches closely embracing the sides of the springs. The ends of the clip are threaded to receive draw-nuts, and a cross-bar or yoke, *g*, is adapted to fit on the ends and slide into contact with the inner face of the bite of the spring. By turning on the draw-nuts the yoke may be forced snugly against the spring

and the spring against the plate C. Thus any wear may be taken up with the greatest ease, and a thinner or thicker spring, as may be desired, locked to the plate. This means of attachment also admits of the insertion of a cushion, either flexible or not, between the yoke and the bite of the spring, or between the spring and the plate C.

In Fig. 2 the clip G is reversed, and instead of extending through a perforation D in the plate C it crosses the spring within the bite, and, closely embracing the sides of the spring and plate C, extends from thence upwardly through the cross-bar A, where it is secured by the nuts on its threaded ends. This last construction does away with the necessity of perforating the plate C, and also serves to lock both the spring and plate to the wagon-body. It may, however, in some instances be found less desirable than the first arrangement described, on account of its projecting ends.

To add somewhat to the flexibility of the heavy end of the spring, I find it convenient to thin down the end of the outer leaf of the spring or the ends of two or more of the leaves, as shown at H.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a locking or bearing plate secured to the body of the vehicle and having two or more thicker portions, of a return-bend spring secured to the plate in contact with two at least of the thicker portions, thereby leaving an open space between the spring and plate, for the purpose substantially as set forth.

2. A return-bend spring having its heavy end somewhat reduced and resting on the bearing-plate in contact with two thicker portions of the same, for the purpose substantially as set forth.

3. The combination, with a pair of return-bend springs secured to the bearing-plate at their extreme ends, and having a bearing on the plate at their bends, of clips secured in the plate and provided with yokes in engagement with the bites of the springs, substantially as set forth.

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

STEPHEN G. SMITH.

Witnesses:
J. N. CHIPLEY,
JAMES HALLETT.