

(No Model.)

E. CLIFF.
VEHICLE SPRING.

No. 382,137.

Patented May 1, 1888.

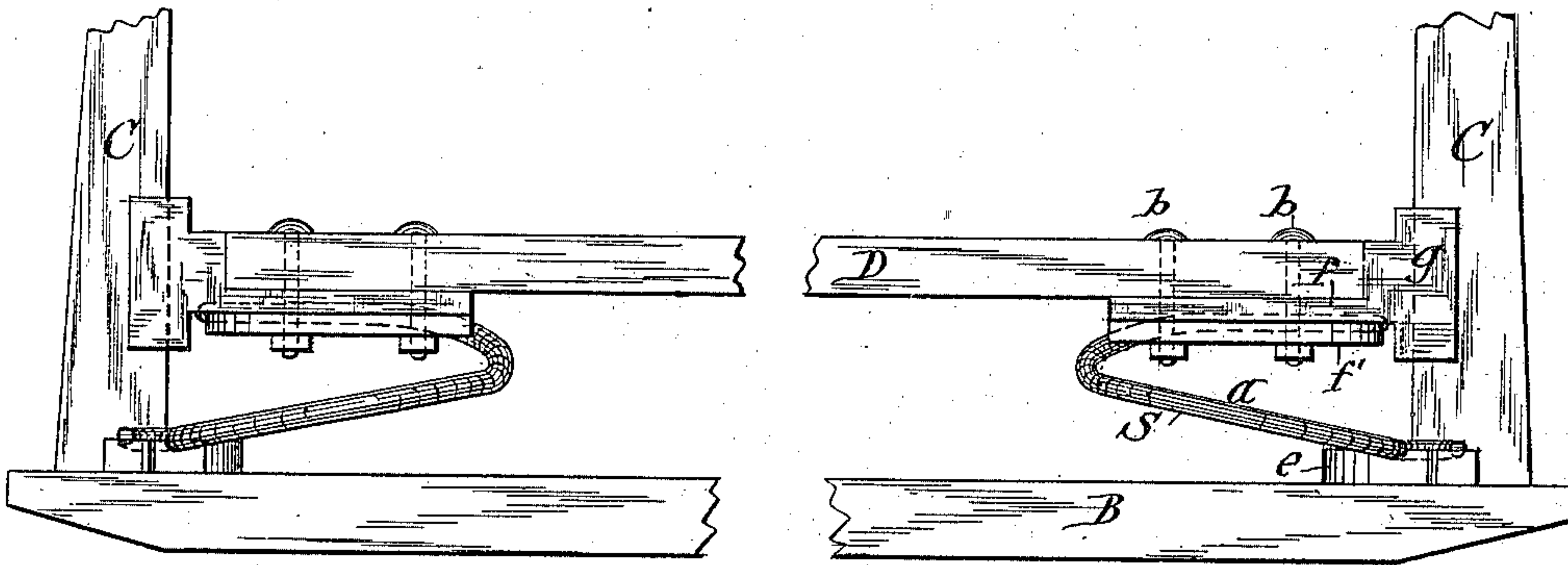


Fig. 1

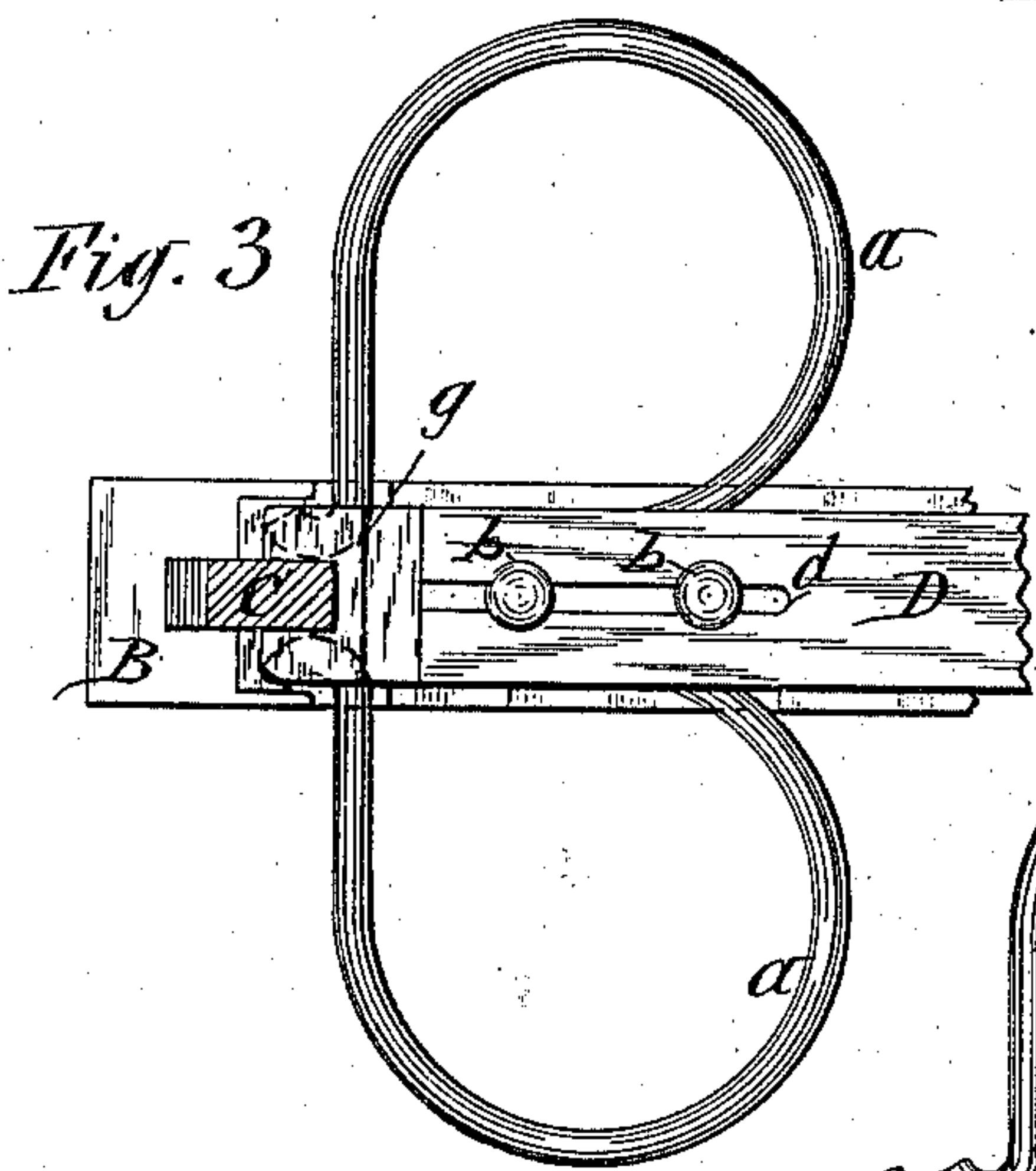


Fig. 3

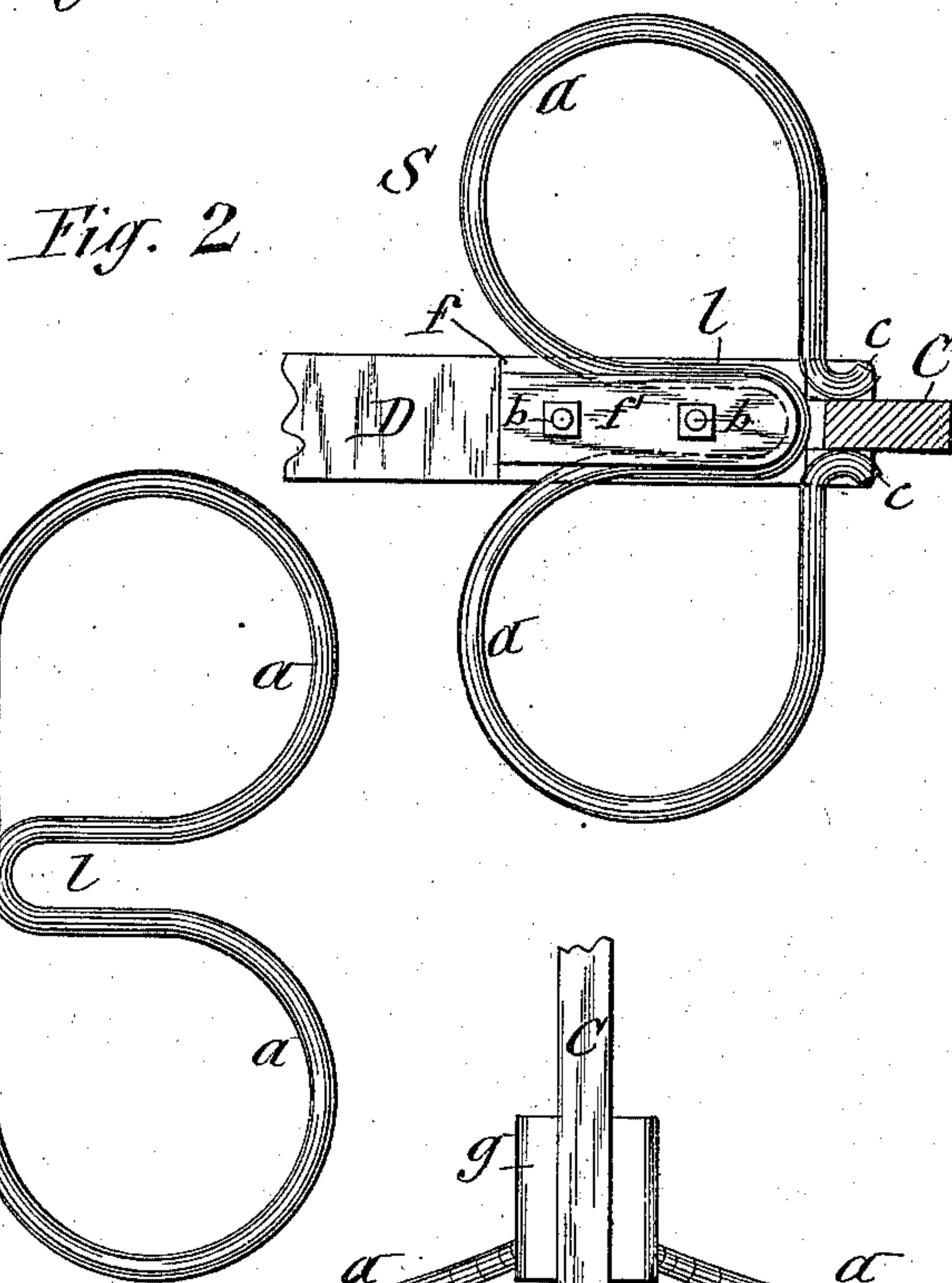


Fig. 2

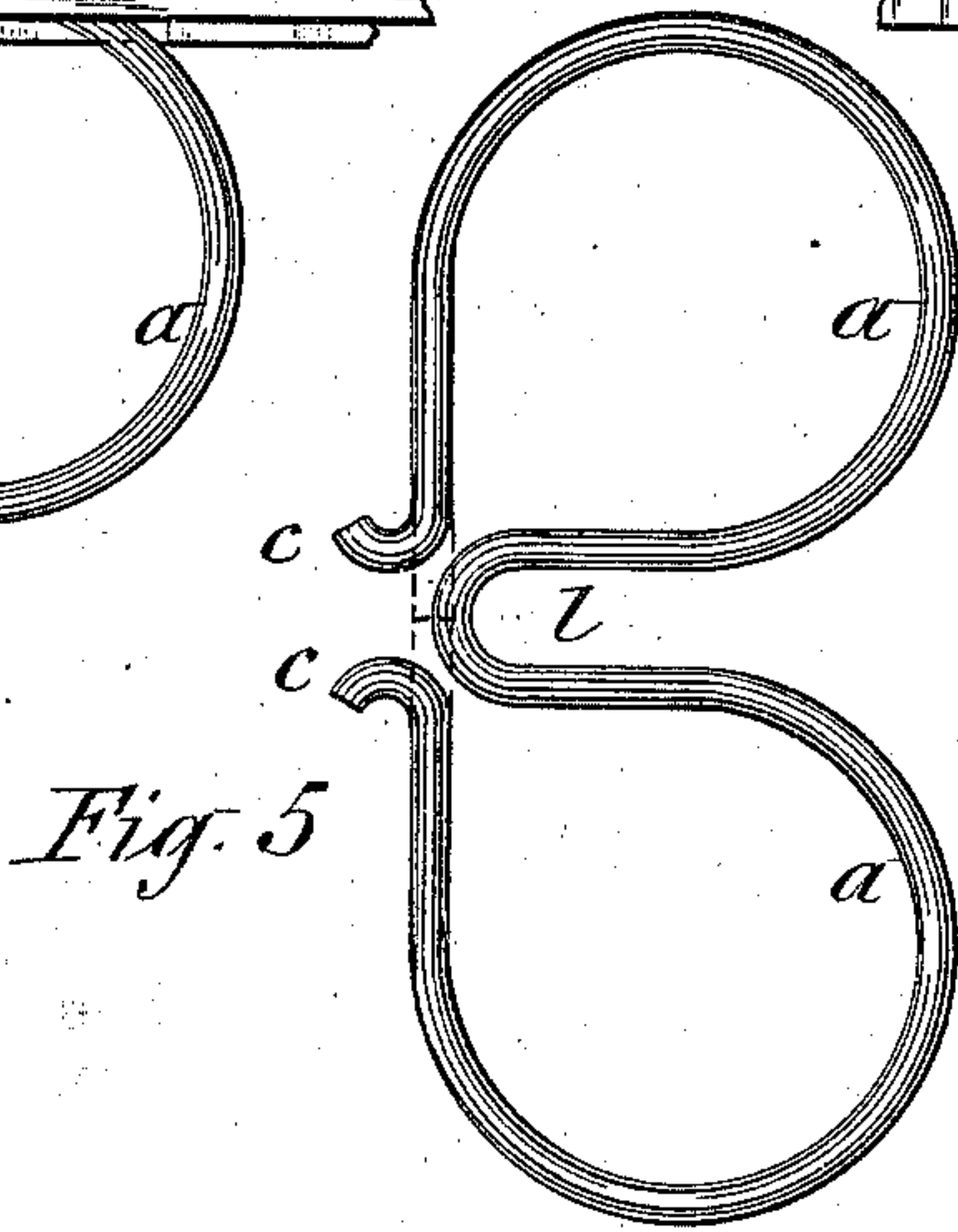


Fig. 5

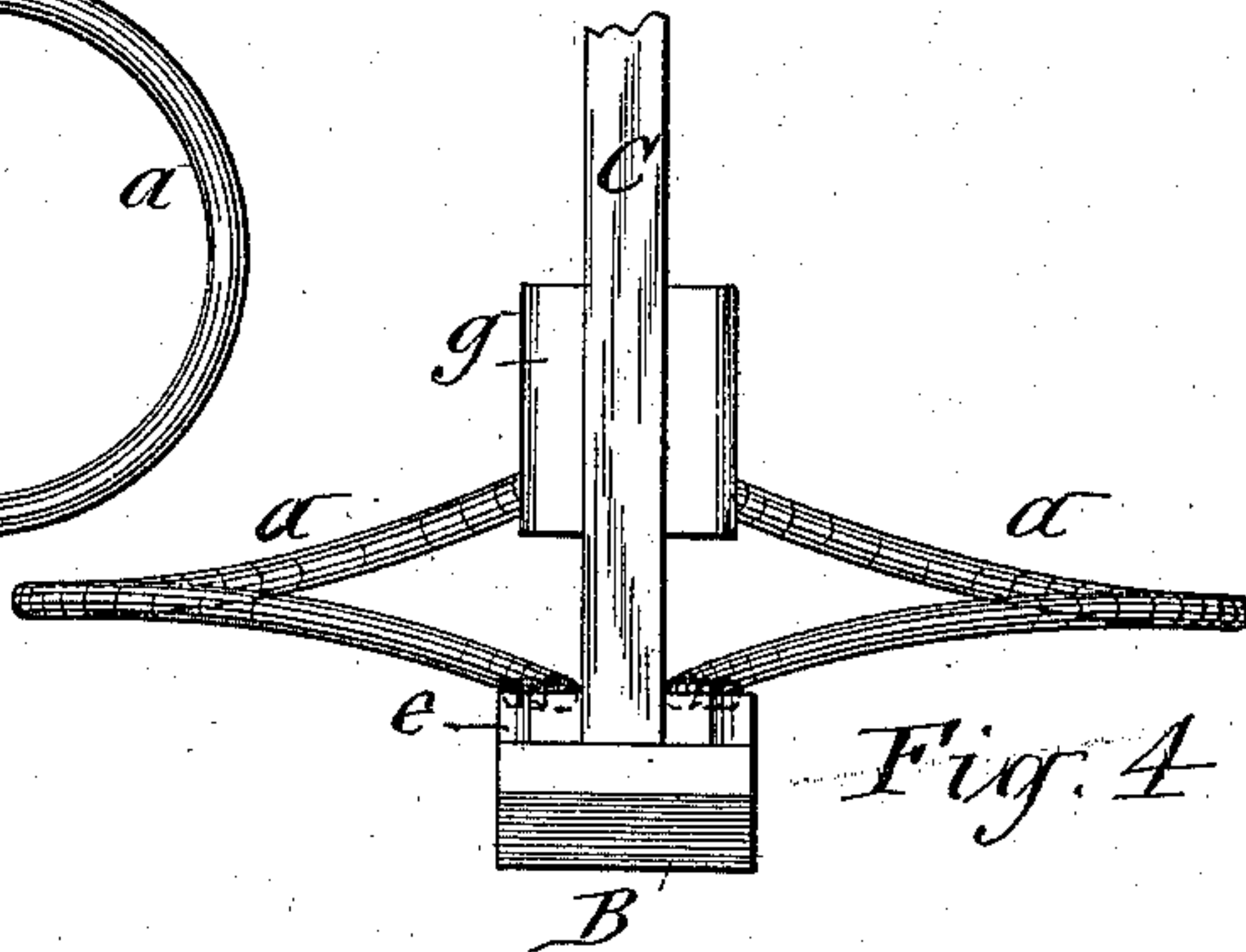


Fig. 4

WITNESSES :

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Fig. 6

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UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF ROCHESTER, NEW YORK.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 382,137, dated May 1, 1888.

Application filed November 28, 1887. Serial No. 256,283. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, of Rochester, in the county of Monroe, in the State of New York, have invented new and useful Improvements in Vehicle-Springs, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of vehicle-springs which are interposed between the bolster and a body-supporting bar over the bolster and parallel therewith; and it has special reference to the style of springs shown in a prior application for Letters Patent filed by me June 15, 1887, and known as Serial No. 241,335.

The object of my present invention is to further simplify and reduce the cost of manufacture of the spring, and to render the length of the body-supporting bar and the attachment of the springs to said bar adjustable to the width between the stakes of the bolster; and to that end the invention consists in the novel construction and combination of parts hereinafter fully described, and specifically pointed out in the claims.

In the annexed drawings, Figure 1 is a front elevation of a set of bolster-springs embodying my improvements. Fig. 2 is an inverted plan view of one of the springs and its attachment to the body-supporting bar. Fig. 3 is a top plan view of the same. Fig. 4 is a side elevation. Fig. 5 is a detached plan view of the spring, and Fig. 6 is a detached plan view of an end portion of the body-supporting bar.

Similar letters of reference indicate corresponding parts.

B represents the bolster provided with the usual stakes, C C; and D is the body-supporting bar arranged over the bolster, parallel therewith and guided on the stakes C C.

S represents my improved bolster-spring, which I form of a single bar of steel bent at the center into a horizontal elongated loop, *l*, and into axially vertical coils *a a* at the open end of the loop, and respectively at opposite sides thereof, and terminated with horizontal bearings *c c*, nearly directly under the closed end of the loop *l*. Said bearings may be made straight and in line with each other, and meet as represented by dotted lines in Fig. 5 of the

drawings; but I prefer to curve them outward, so as to allow them to rest on the bolster at the front and rear of the stake C, as shown. The described spring I secure with its loop *l* to the under side of the bar D, and with the closed end of the said loop adjacent to the end of said bar, so as to bring the bearings *c c* of the spring to rest upon the bolster at the front and rear of the stake, as aforesaid.

In order to furnish the spring with a broad bearing and a secure fastening to the bar D, I spread the loop *l* so as to form a longitudinal opening therein, and employ two plates, *f* and *f'*, formed with grooves in their adjacent sides for embracing between them the loop *l*, in a manner similar to that shown in my prior application for patent, hereinbefore referred to, the plate *f* being provided with the usual guide, *g*, by which it slides on the stake C. Bolts *b b*, passing vertically through the bar D, plates *f f'*, and inclosed loop *l* serve to fasten said parts together.

Inasmuch as I intend to furnish to the trade the bar D with the springs attached thereto in the manner aforesaid, I find it necessary to make the said bar adjustable in length and the attachment of the spring adjustable on the bar, so as to adapt the bar and its appurtenances to be applied to bolsters with the stakes C C different distances apart. To provide for the said adjustment, I cut vertically in the end of the bar D a longitudinal slot, *d*, for the reception of the bolts *b b*, said slot being of sufficient length to allow a portion of the bar to be cut off from the end thereof when necessary, and the plates *f f'* to be secured to the shortened bar by the bolts passing through the slot.

If desired, a metallic shoe, *e*, may be placed on the bolster to receive the bearings *c c* of the spring, in a manner similar to that shown in my aforesaid prior application for patent.

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

1. In combination with the bolster B, stake C, and the bar D, over the bolster and parallel therewith, the spring S, composed of the vertical coils *a a* at opposite sides of the bolster, and united at the top by the loop *l*, extending with its closed end toward the end of the bar D, and the bases of the coils terminating with

bearings on top of the bolster nearly directly under the closed end of the loop *l*, substantially as described and shown.

2. The spring *S*, composed of the central horizontal loop, *l*, vertical coils *a a*, extending from the open end of the loop and terminating with horizontal curved bearings *c c* under the closed end of the loop, all formed in one piece, substantially as described and shown.

10 3. In combination with the bolster *B* and stakes *C C*, the bar *D*, provided with the longitudinal slot *d*, the plate *f*, formed with the guide

g, and the bolts *b b*, passing through said plate and slot *d* and fastening the plate to the bar *D*, substantially as described and shown.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 7th day of November, 1887.

EDWARD CLIFF. [L. S.]

Witnesses:

H. P. DENISON,
J. J. LAASS.