

(No Model.)

2 Sheets—Sheet 1.

E. M. VAN VALKENBURG & F. L. WOOD.

VEHICLE SPRING.

No. 398,011.

Patented Feb. 19, 1889.

Fig. 1.

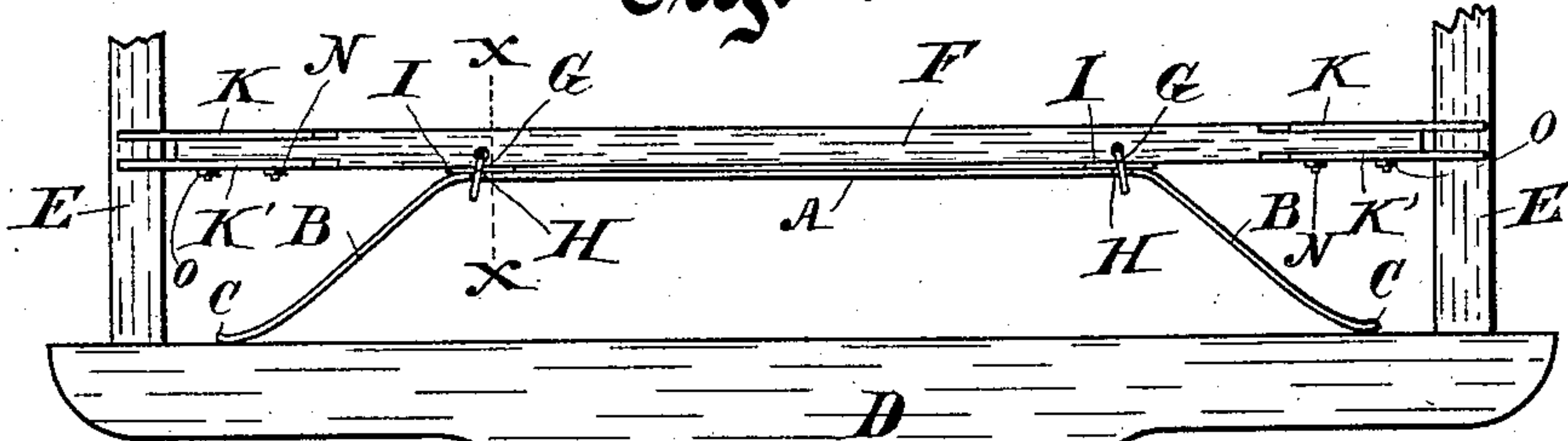


Fig. 2.

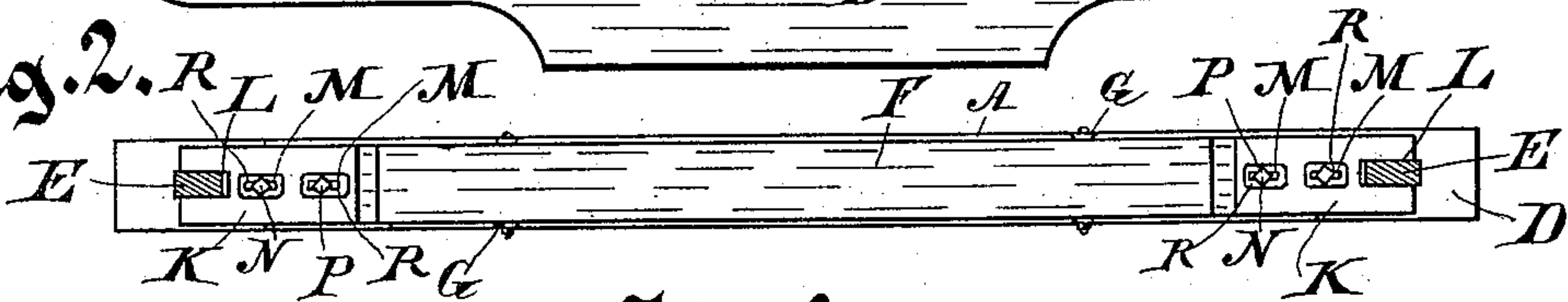


Fig. 3.

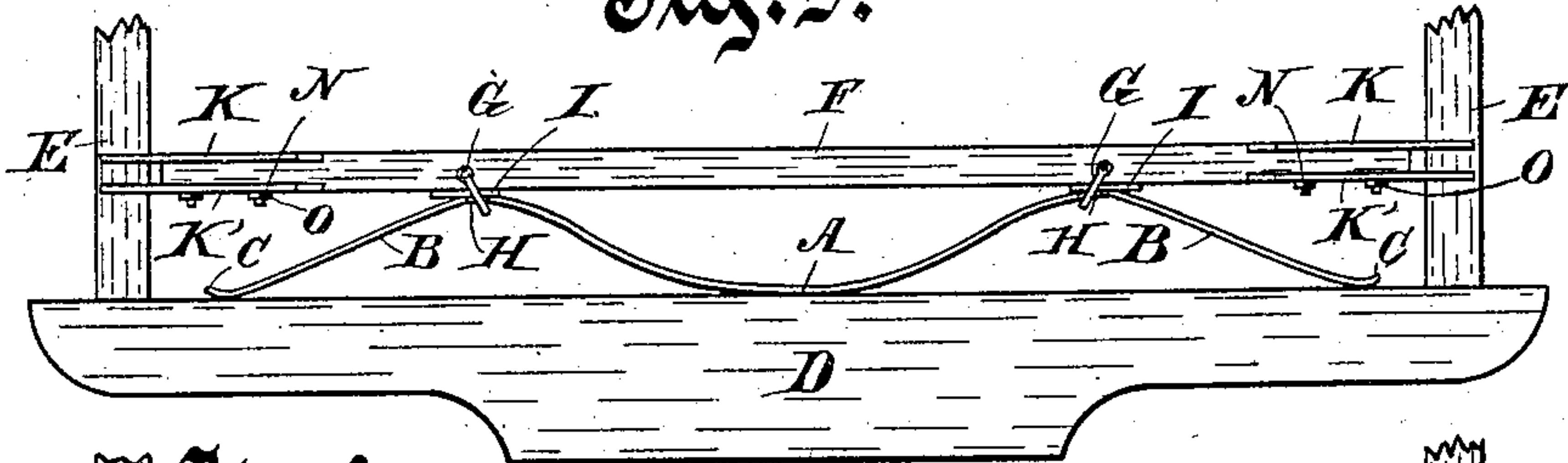


Fig. 4.

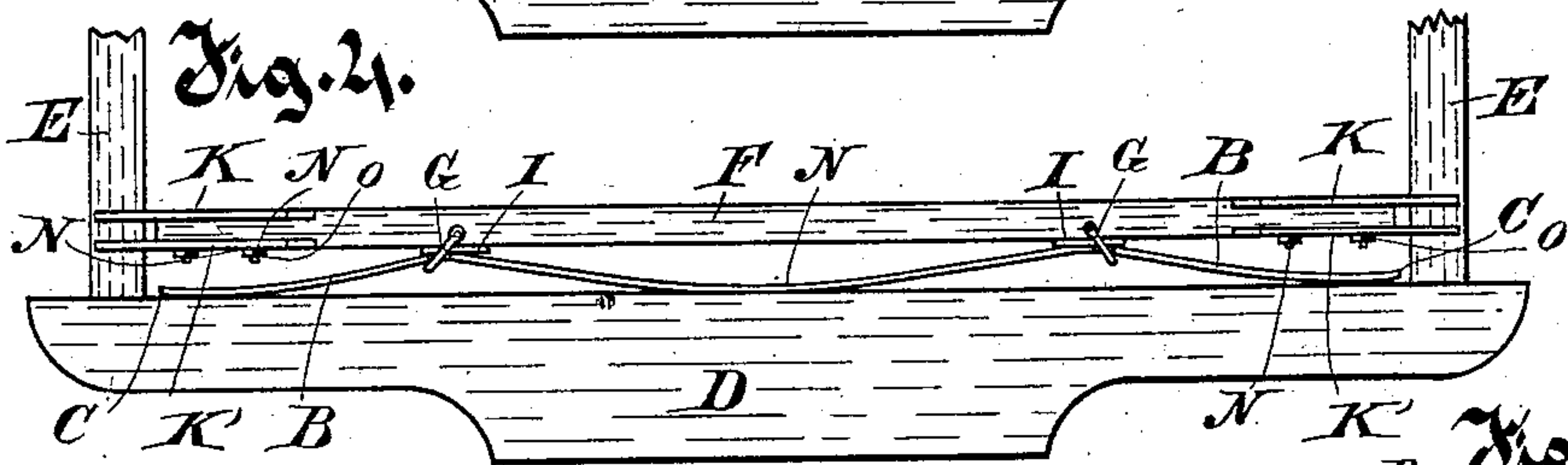


Fig. 7.

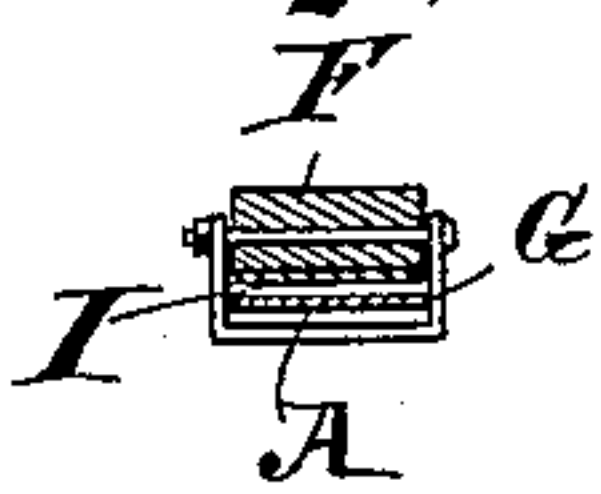


Fig. 6.

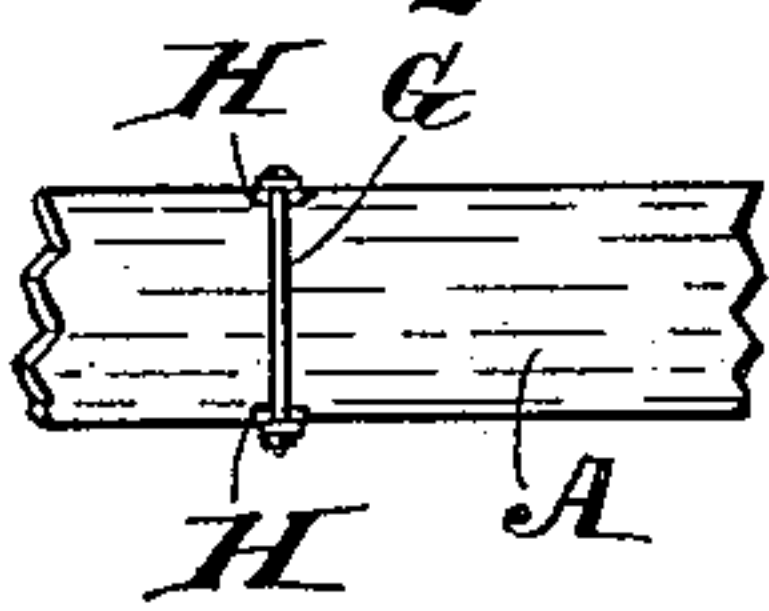


Fig. 5.

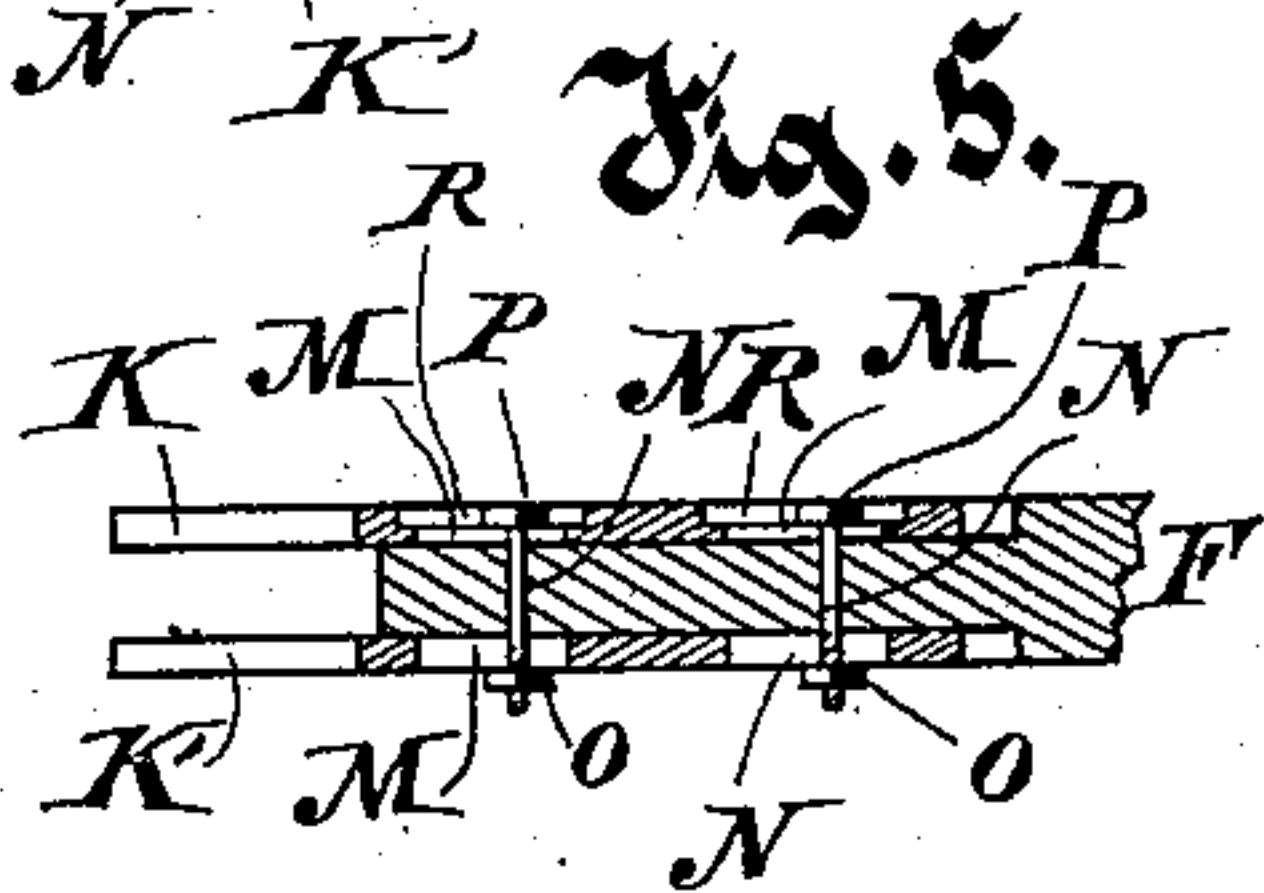


Fig. 8.



Witnesses.

C. H. Keeney.

Anna Faust

Inventors.

Ellis M. Van Valkenburg
Frank L. Wood
By Ermin Buedich
Attorneys.

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Fig. 9.

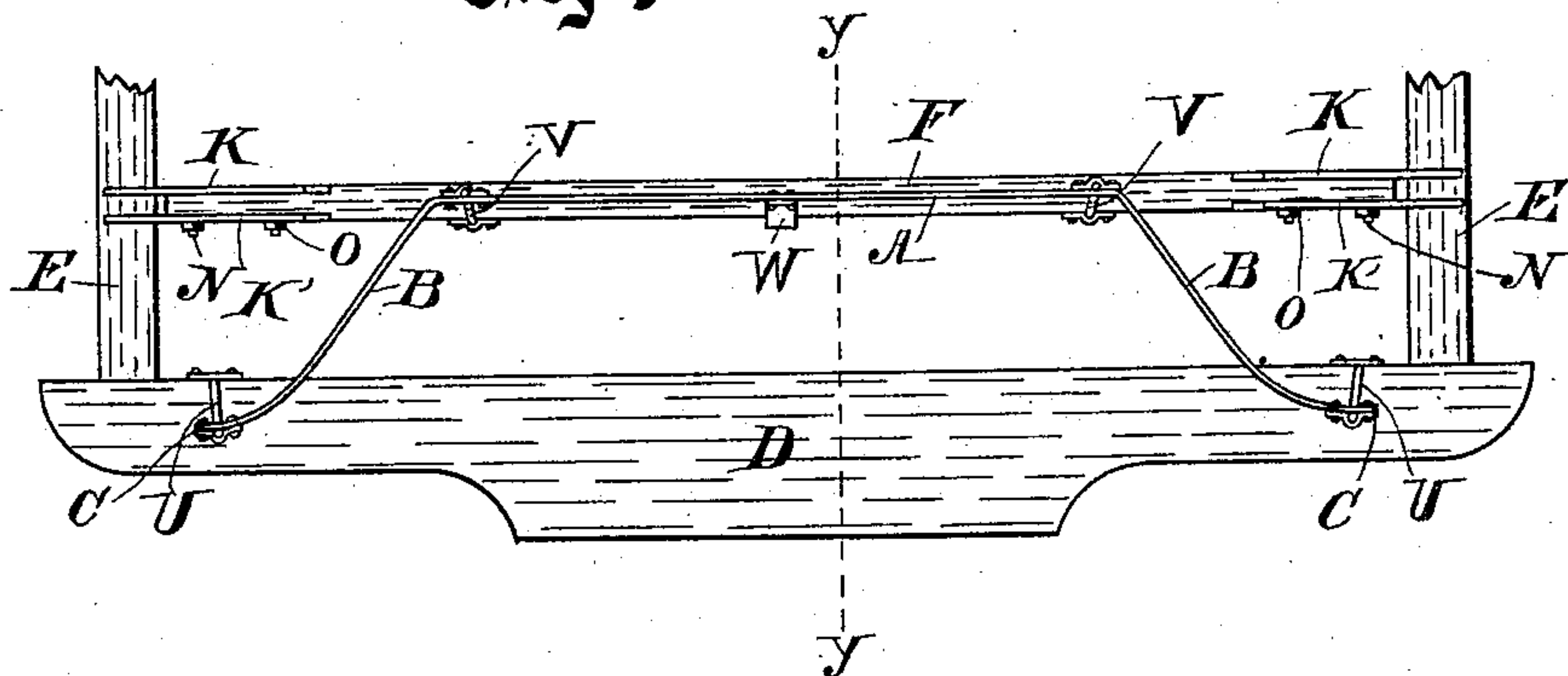
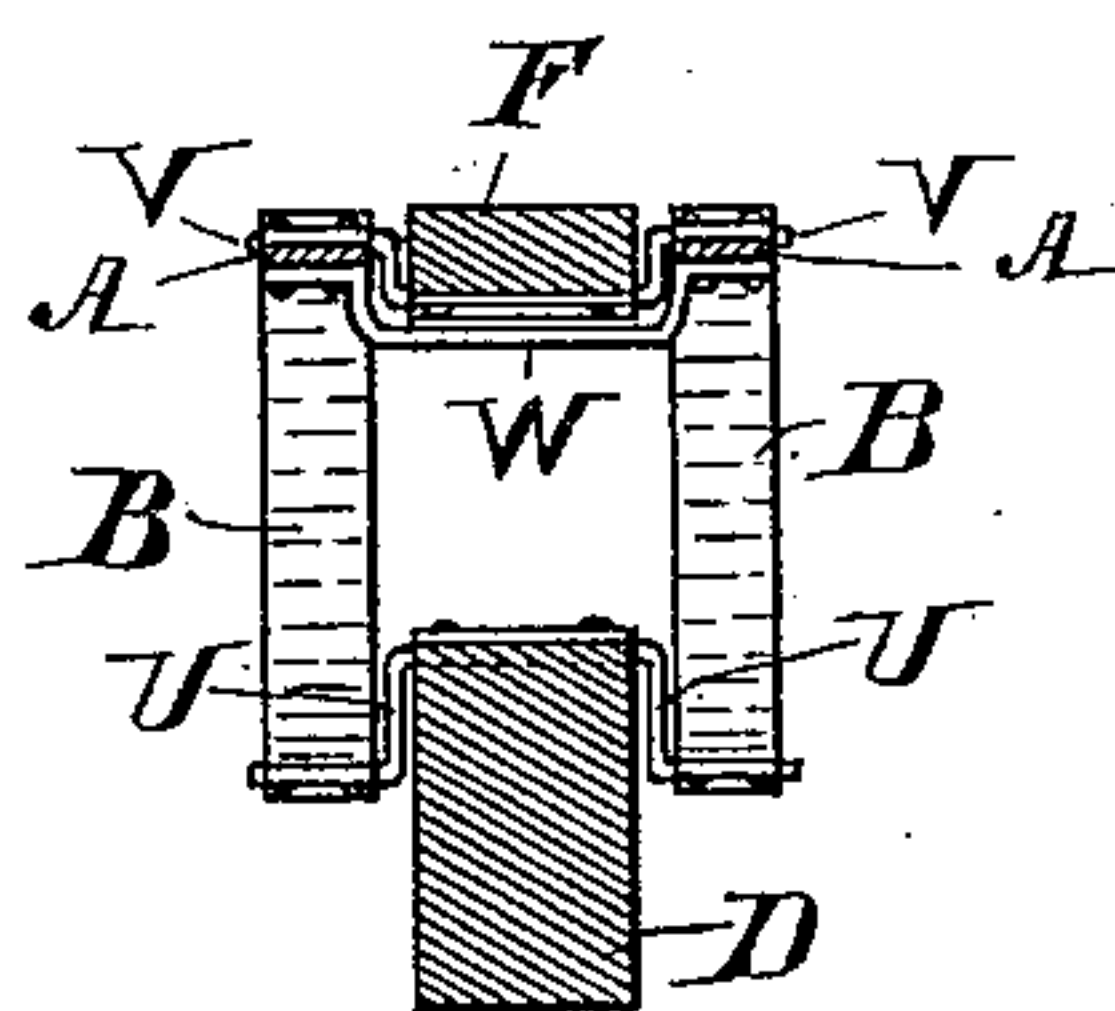


Fig. 10.



Witnesses.

C. H. Keeney.

Anna Faust

Inventors.

Ellis M. Van Valkenburg
Frank L. Wood
By Erwin Ruedich
Attorneys.

UNITED STATES PATENT OFFICE.

ELLIS M. VAN VALKENBURG AND FRANK L. WOOD, OF UNION GROVE,
WISCONSIN.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 398,011, dated February 19, 1889.

Application filed November 16, 1888. Serial No. 290,978. (No model.)

To all whom it may concern:

Be it known that we, ELLIS M. VAN VALKENBURG and FRANK L. WOOD, of Union Grove, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in Vehicle-Springs; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

Our improved device is especially intended and adapted for supporting a load thereon on the real bolster of a wagon, although it may be used in many other situations. The spring is constructed of a single strap of oil-tempered steel. Two of these springs—one upon the other—may be used for heavy loads; but we prefer to have a single spring made of sufficiently heavy strap to accomplish the same purpose as two lighter springs.

In the drawings, Figure 1 is an elevation of a bolster and a false bolster supported thereon by our improved spring. Fig. 2 is a top plan view of the false bolster used in connection with our improved spring. Figs. 3 and 4 are the same device seen in Fig. 1, showing the position of the spring when depressed by a load on the false bolster. Fig. 5 is a vertical central section of one end of the false bolster. Fig. 6 is an under side view of a section of the spring with the clevis or shackle about it. Fig. 7 is a vertical transverse section of the false bolster and spring on line X X of Fig. 1. Fig. 8 is a slightly-modified form of our spring as used in connection with a side-bar buggy. Fig. 9 is an elevation of a modified device in which our spring is embodied. Fig. 10 is a vertical transverse section of the modified device shown in Fig. 9 on line Y Y thereof.

The same letters refer to like parts in all the views.

Our improved spring, constructed of a steel band or strap, consists of the central straight flat part, A, and of the downwardly-bent ends B B. Each of the ends B is preferably about one-half the length of the straight flat part A. The very extremities of the ends B B are slightly turned up, as shown at C C, and the

under sides of these extremities are adapted to rest upon the top of the bolster D. The bolster D is provided with the rigid upright posts E E, and is in form such as is in use commonly on farm-wagons, or on light road-wagons of the same general character. A false bolster, F, is supported on the spring, being secured thereto, near the ends of the straight part A, by means of the shackles or clevises G G, pivoted in the false bolster F, the loop passing around the spring. The spring is provided with recesses H H in its edges for receiving and retaining the sides of the clevises G. These clevises are so located and pivoted in the false bolster F and retained in the recesses H H that when the spring is in its normal position, as shown in Fig. 1, the clevises assume an outwardly-inclined position downwardly, as also shown in Fig. 1. When a load is placed upon the false bolster F, the part A yields, first bending downwardly in the center, as shown in Fig. 3, until it strikes the bolster, swinging the lower portions of the clevises G G inwardly, as there shown, and when the bolster is still farther depressed by an additional load the extremities of the spring slide outwardly and the clevises are thereupon swung outwardly, as shown in Fig. 4. The important and most excellent result obtained by this spring is, that it does not matter whether the load is placed centrally on the bolster F or at either end of it, the spring yields in such manner that the false bolster is depressed throughout horizontally or parallel with the lower bolster. When the false bolster F is constructed of wood, we preferably secure small bearing-plates, I I, to the under surface of the false bolster, near the ends of the straight part A of the spring, to take the wear of the spring. The false bolster F extends from one post E to the other post E, and is provided at each end, above and below, with metal plates K K', which project out beyond the end of the false bolster, and are provided with a recess, L, in which the post E is received, and whereby the false bolster is held in position endwise and laterally, but is permitted to move vertically.

As our improved spring, in connection with the false bolster F, may be applied to almost

any wagon having a bolster with posts, we make the plates K K' adjustable on the ends of the bolster, to thereby adapt it to be attached to wagons having slightly-different distances between the posts E E. The plates K K' are each provided with slots M M, through which bolts N N are inserted through the intervening part of the false bolster F, and are secured therein by means of the nuts O, turned thereon. The heads P P of the bolts are in the upper plate, K, in recesses R R therefor, so that the heads of the bolts do not project above the surface of the plate. The slots M M are longitudinal in the plates K K', and are only wide enough to admit the shank of the bolts N N. By means of this construction the plates K K' may be adjusted limitedly outwardly on the false bolster, thereby adapting it to be fitted to a real bolster having greater or less distance between the posts. If the false bolster F is made as wide or wider than the spring, recesses must be provided in its sides for the reception of the clevises G G. A modified form of our spring is shown in Fig. 8 as used in a side-bar buggy, the ends of the spring being suspended in shackles on the side bars, S S, and the clevises G G being pivoted in a bolster or sill, T, of the buggy-box.

Another modified form is shown in Figs. 9 and 10, in which two springs are used—one in front and one in the rear of the bolster—the outer ends of the springs being hung on the arms of oscillating double cranks U U, suspended on the bolster, and the false bolster being suspended on double cranks V V,

the arms of which are hung on the springs, and a plate, W, is provided, which is affixed to and connects the two springs centrally, and is adapted to strike and rest on the bolster when the springs are depressed.

What we claim as new, and desire to secure by Letters Patent, is—

1. The elastic steel band-spring consisting of the straight flat part A, secured movably at its ends to a false bolster which rests thereon throughout the entire length of the flat part of the spring in its normal condition, and the downwardly-bent or thereto-inclined ends B B, resting at their free extremities movably on a bolster, the ends B B being each about one-half the length of the straight part A, substantially as described.

2. The flexible band-spring consisting of a straight part, A, and thereto-inclined ends B B, in combination with a false bolster, F, and clevises G G, pivoted in the false bolster and located and retaining the spring at or near the extremities of the straight part A, substantially as described.

3. A flexible band-spring having a straight part, A, provided with recesses H H, and the thereto-inclined ends B B, in combination with the false bolster F, the clevises G G, and the bolster D, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ELLIS M. VAN VALKENBURG.
FRANK L. WOOD.

Witnesses:

C. T. BENEDICT,
JAS. B. ERWIN.