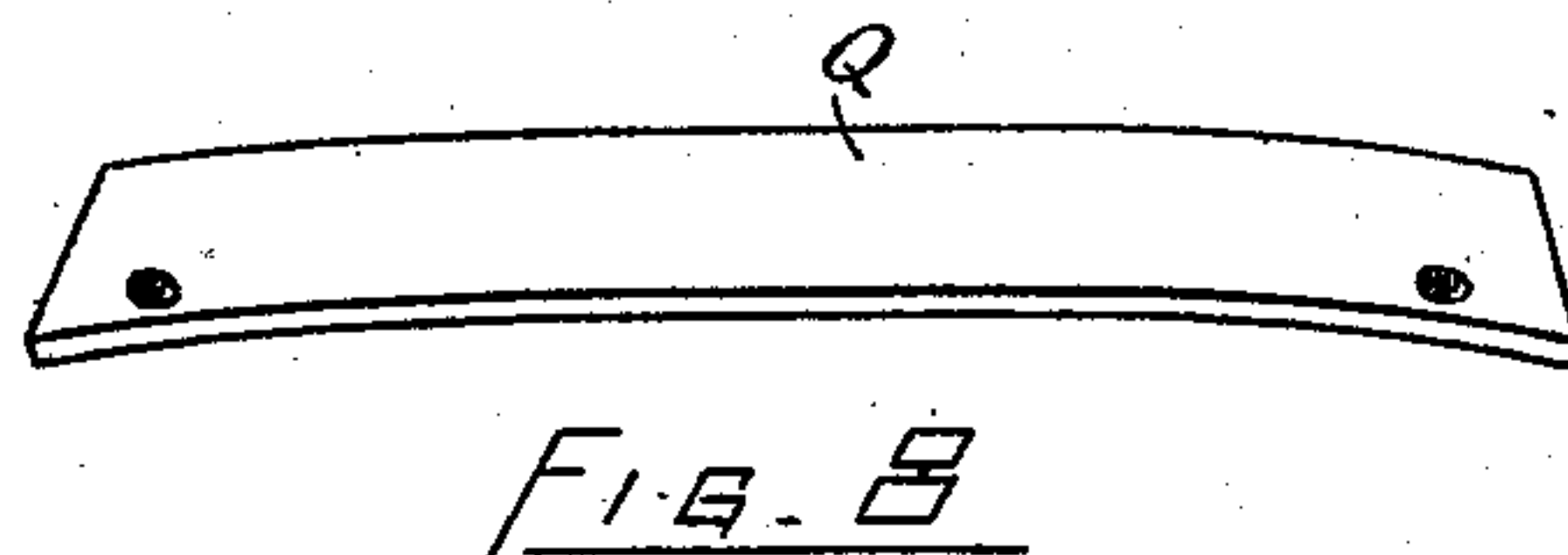
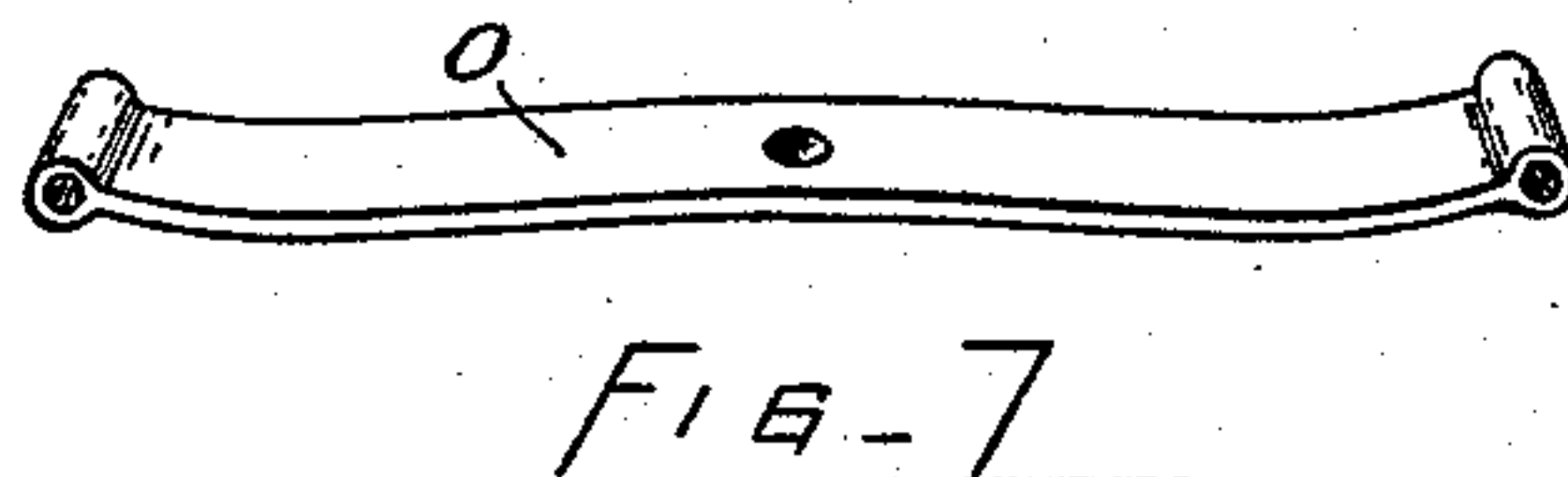
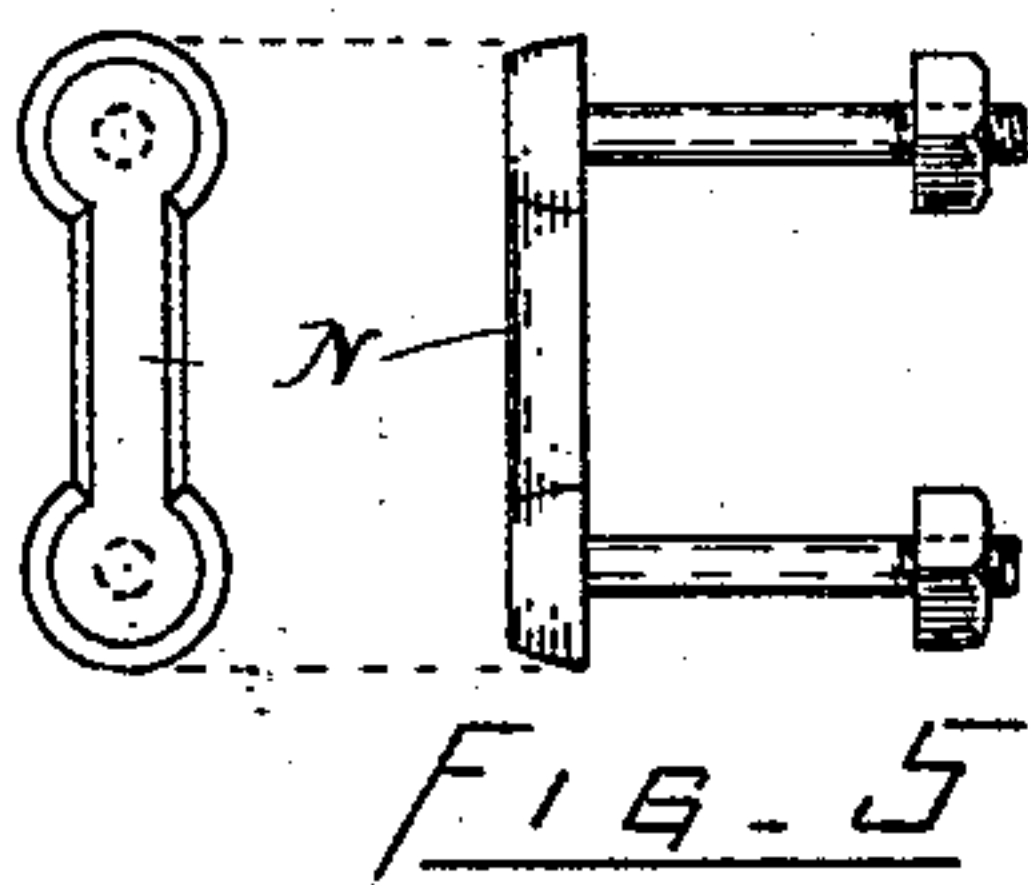
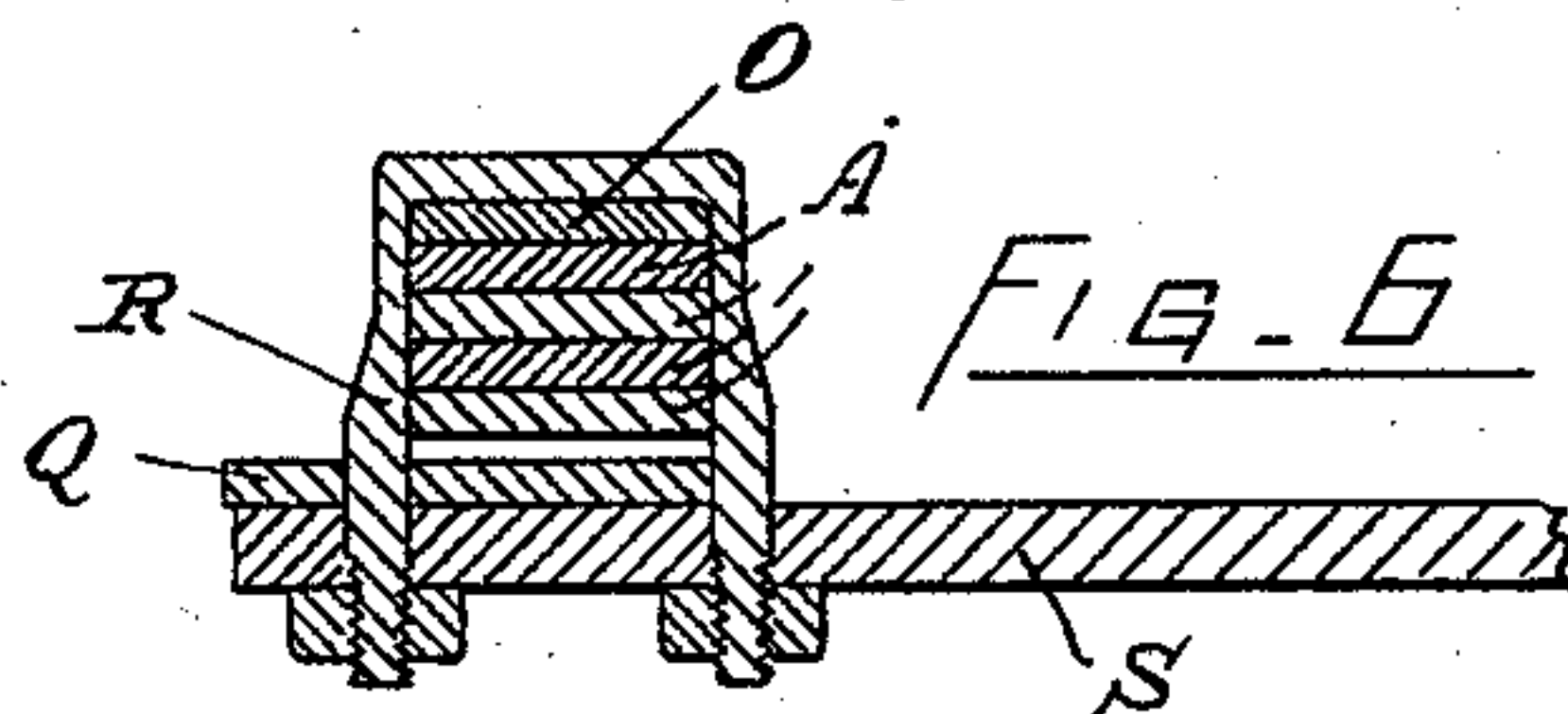
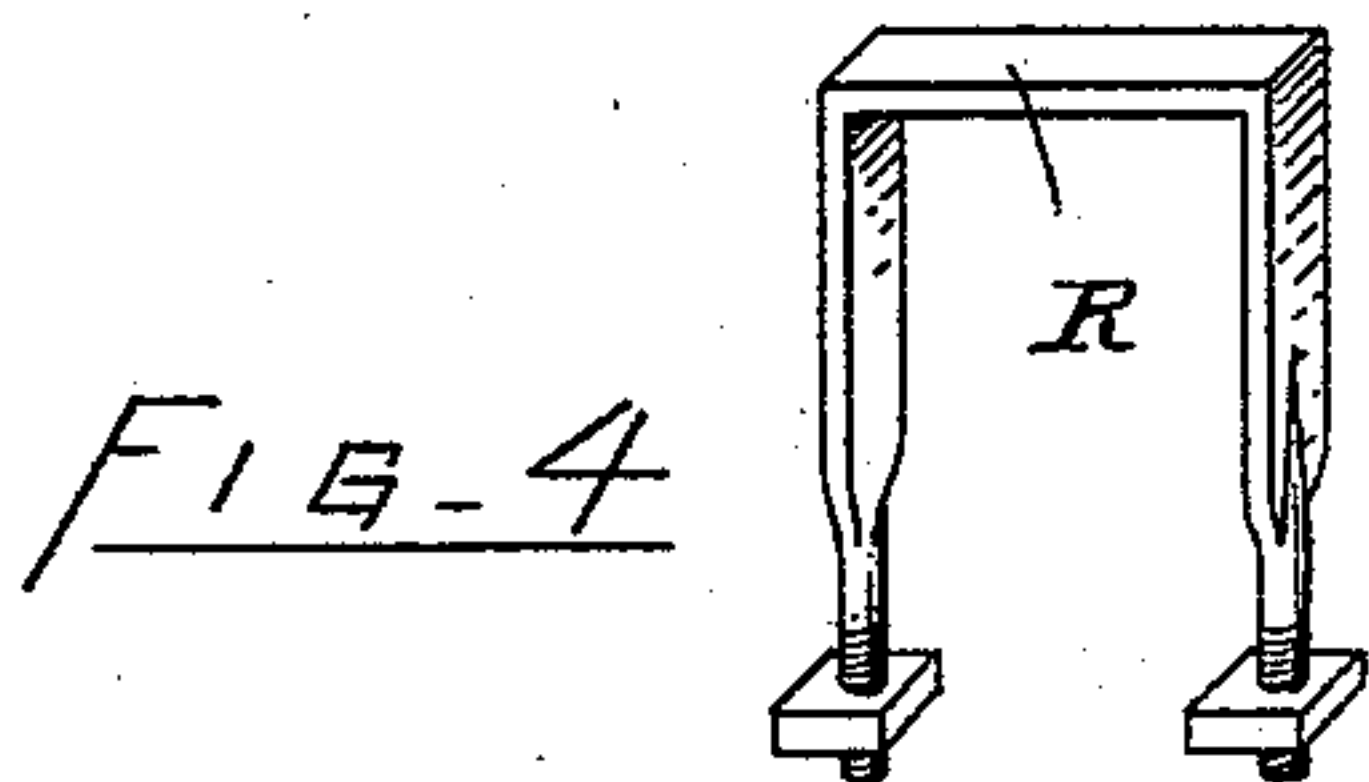
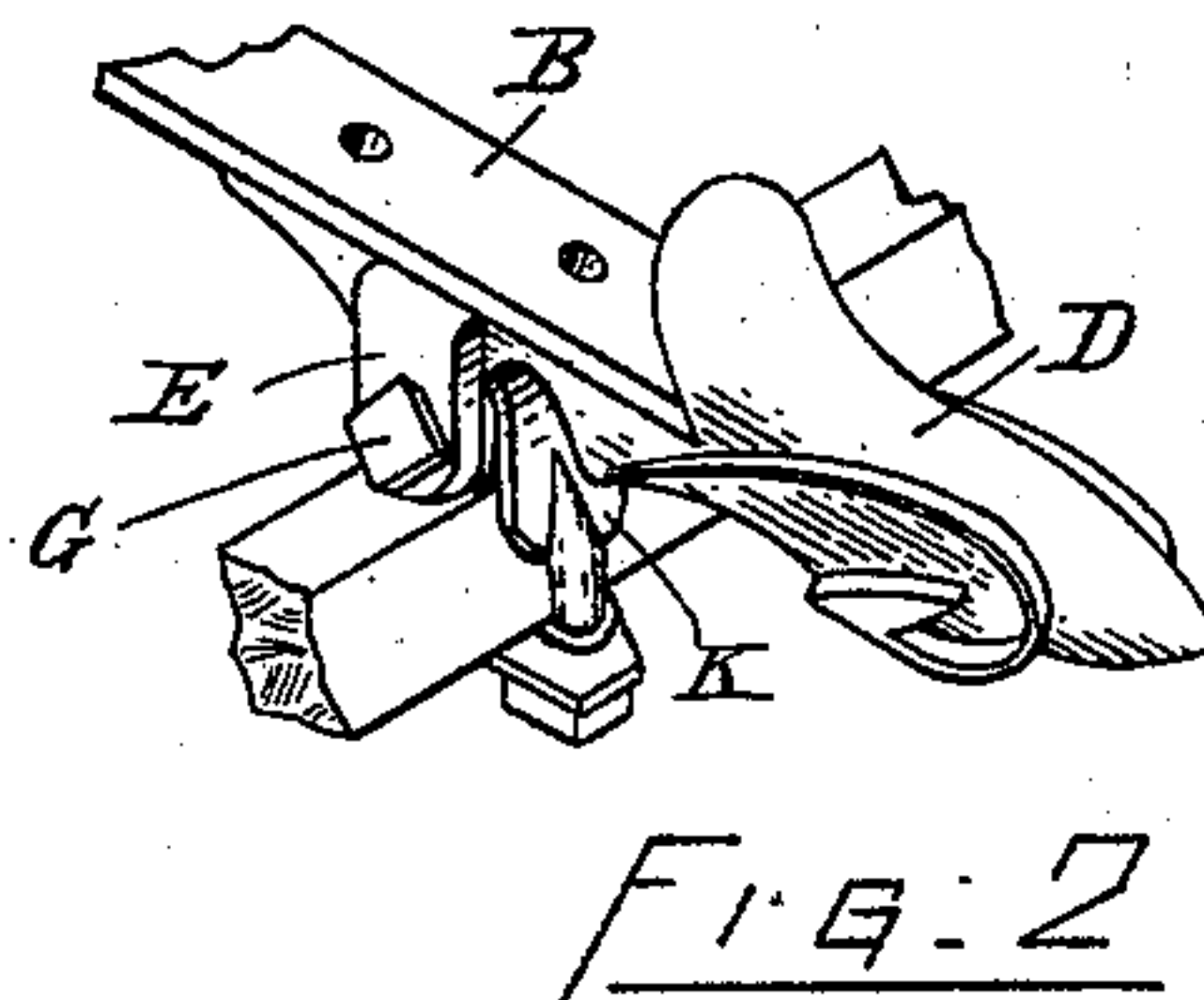
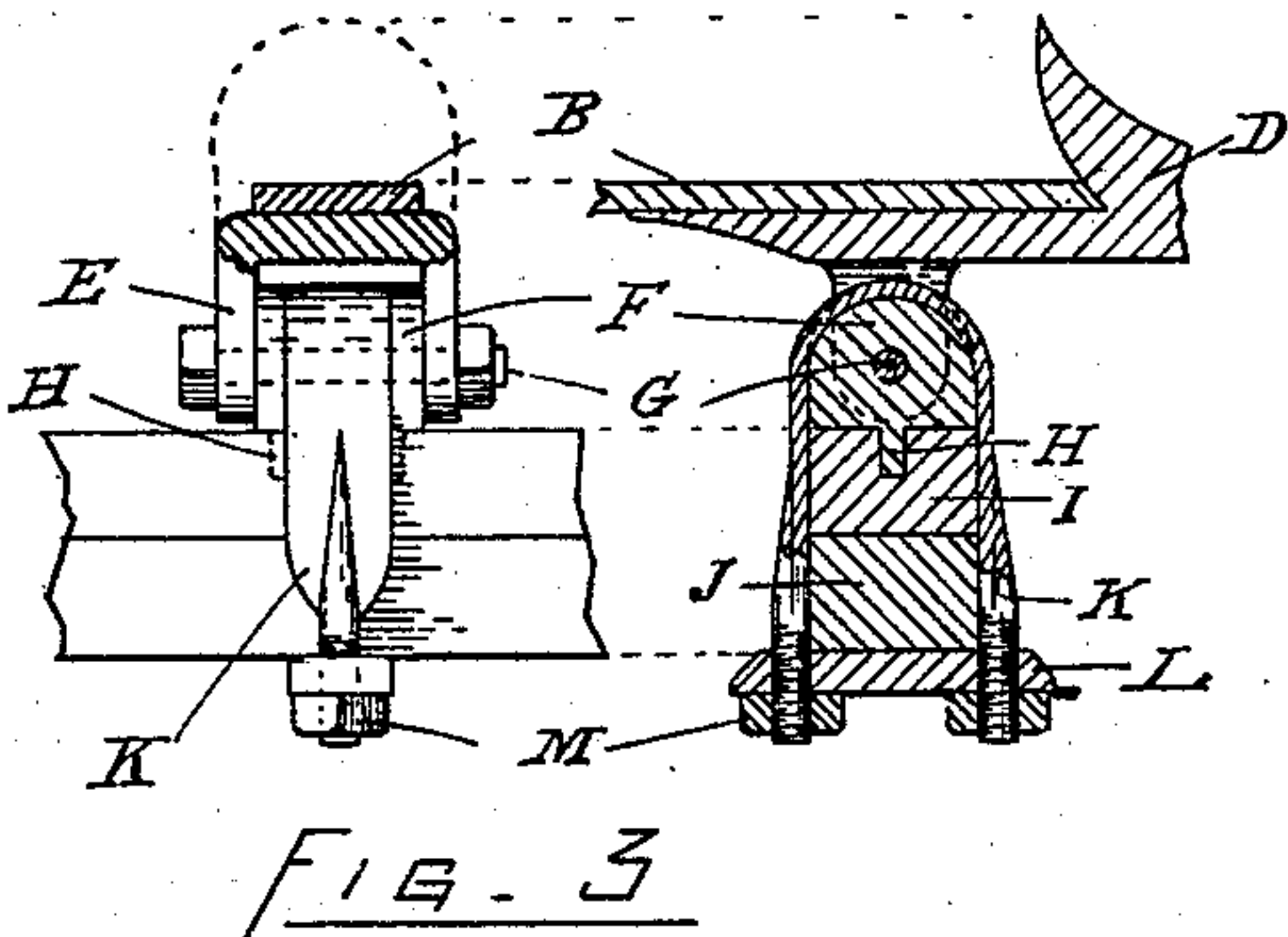
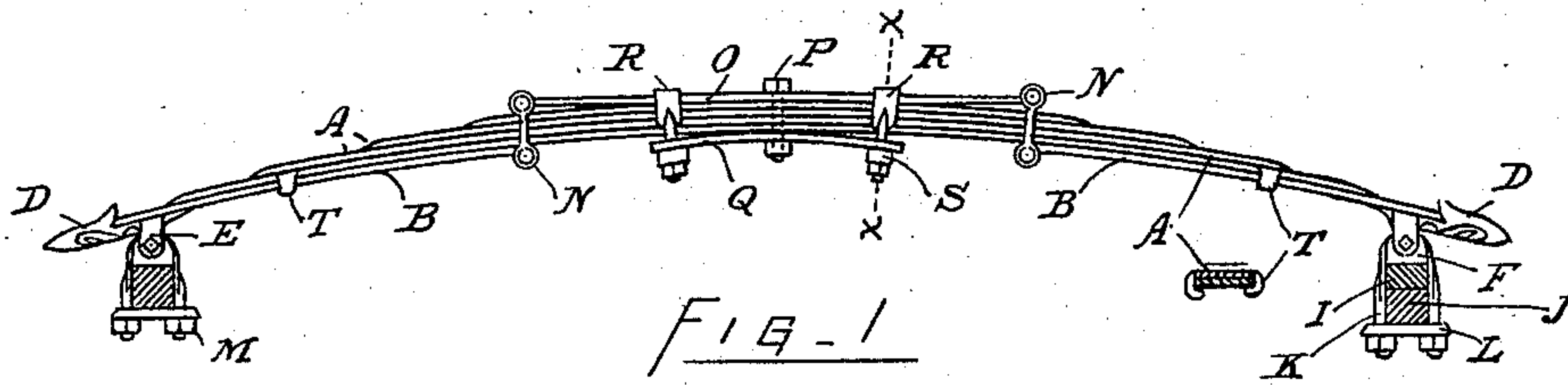


(No Model.)

W. ATKINSON.
VEHICLE SPRING.

No. 455,603.

Patented July 7, 1891.



Witnesses:
A. R. Kennedy
J. S. Elmore

Inventor
William Atkinson
By *Phil. T. Dodge* Atty.

UNITED STATES PATENT OFFICE.

WILLIAM ATKINSON, OF GRANBY, CANADA, ASSIGNOR OF ONE-HALF TO
RICHARD JOHN RODDEN, OF SAME PLACE.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 455,603, dated July 7, 1891.

Application filed March 12, 1891. Serial No. 384,735. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ATKINSON, carriage-maker, a citizen of Canada, residing at Granby, in the county of Shefford, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Vehicle-Springs; and I do hereby declare that the following is 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 consists in certain improvements in the springs of those classes of vehicles in which the springs are placed longitudinally with the body of the vehicle; and it is embodied in the device which is hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 shows a side view of a spring possessing my improvements attached to the head-bar and rear axle of a carriage. Fig. 2 shows in perspective the connection of the spring and the axle or the head-bar, and Fig. 3 shows the same both in section and elevation. Figs. 4 and 5 are separate views of parts hereinafter referred to by letter. Fig. 6 is a sectional view on line *x x*. Fig. 7 shows the top tension-plate, and Fig. 8 the rub-plate.

The spring-plates A are piled in the usual manner and in numbers suitable to the purpose required. They are supported by the slide-plates B, which have secured to their ends by rivets, or otherwise, if preferred, the knuckle-pieces D. These knuckle-pieces have formed on them the downwardly-projecting lugs E, which are pivoted to a block F by the bolt G, which passes through the block and through the lug E at each of its ends. Projecting from the under side of the block F are two steady-pins H, which stand into the top side of the axle-bed I, or into the head-bar, as the case may be, and hold the block in place. The block F, axle-bed I, and axle J are all bound together by the screwed clip K, which lies in a groove formed in the sides and top of the block F and passes down through the binder L, where it is secured by the nuts M. The inner ends of the slide-plates B are forged round to form an eye to receive the lower arm of the shackle N.

(Shown in Fig. 5.) The upper arm of these shackles passes through eyes formed in the ends of the top tension-plate O, which lies centrally on top of the spring. The end portions of the plate O are sprung away slightly from the spring-plates A, so that while the shackle N is strained tightly between the slide-plates B and the top plate O, which prevents all rattling, it is allowed to swing freely, so as to allow for their end play in the vertical action of the spring. A bolt P passes down through the centers of the top tension-plate O, the spring-plates A, and the rub-plate Q and binds the whole firmly together. This rub-plate Q is made, preferably, of spring-steel and has its end portions turned downward and away from the bottom plate of the spring, so as to act as a tension to the clips R, by which the cross-bars S, which connect the two springs of the vehicle together, are secured to the springs. The rub-plate Q is considerably wider than the spring-plates, and this extra width being on the outside prevents the front carriage-wheel from coming in contact with the spring-plates and wearing them when turning the carriage. The outer legs of the clips R pass through both the rub-plate and the cross-bars S; but the inner leg passes only through the cross-bar. The cross-bars are thus held firmly in place. The small lugs T are forged on the bottom spring-plate A, two on each side and at or near each end of the plate. Their ends are turned under the slide-plates, so as to hold them securely in place and prevent the spring-plates rising from the slide-plates.

Springs constructed as above described combine great strength with extreme pliability, and, permitting the carriage-body to be hung low, make a light, easy-riding, and well-equalized vehicle.

What I claim as my invention, in the above described spring, is—

1. The combination, with the axles, of the slide-plates pivoted at their outer ends thereto, the spring-plates seated upon the slide-plates, the central tension-plate fixed upon the spring-plates, and the links pivoting the ends of the tension-plate to the inner ends of the slide-plates, substantially as described.

2. In a vehicle-spring, the combination of

the slide-plates, the knuckles D, fixed to their outer ends and provided with the depending perforated lugs, the blocks F, seated upon the axles between the lugs, the pivotal connections between the blocks and lugs, and the clips K, embracing the blocks and axles and serving to maintain them in fixed relations.

3. In a carriage-spring, the top tension-plate O, secured to the spring-plates A by the central bolt P and clips R and having its end portions set up from the spring-plates, so as to produce a spring-tension, and connected by shackles with the inner ends of the slide-plates B, substantially as herein shown and described.

4. In a carriage-spring, the rub-plate Q, secured centrally by the bolt P to the under side of the spring, projecting from it on its outer side and having its end portions which engage with the clips R and cross-bars S set down from the spring-plates, so as to hold said clips down upon the spring-plates A, substantially as herein shown and described.

Signed at Granby, Province of Quebec, this 27th day of January, 1891.

WILLIAM ATKINSON.

In presence of—

CHARLES PORTER,
P. A. L'ECUYER.