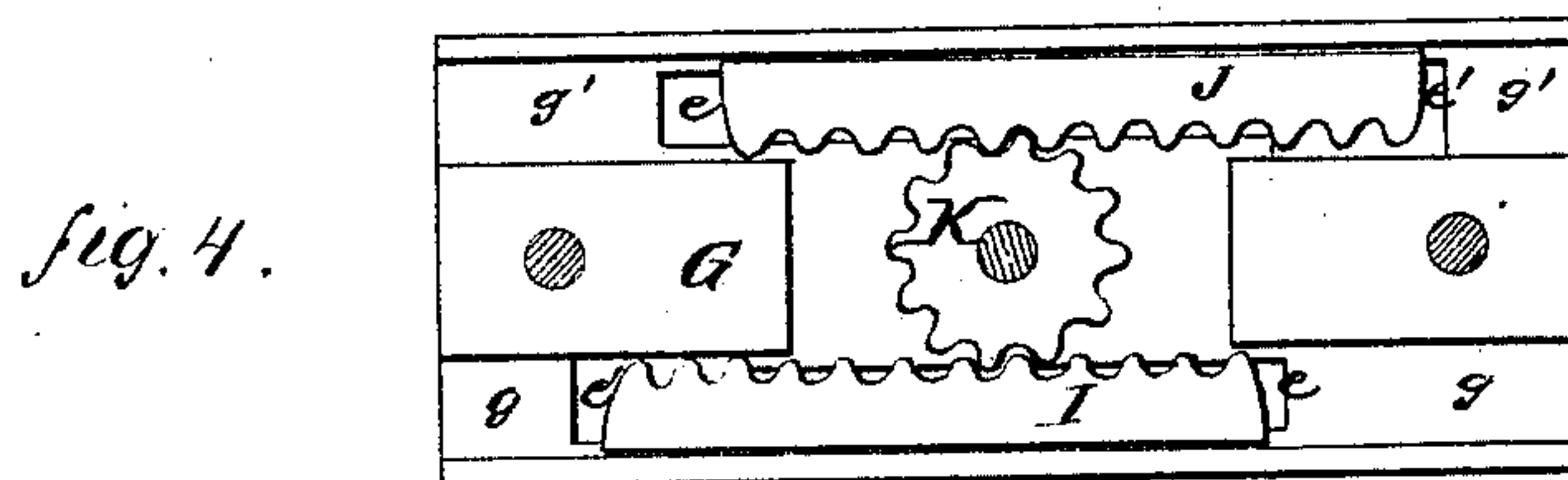
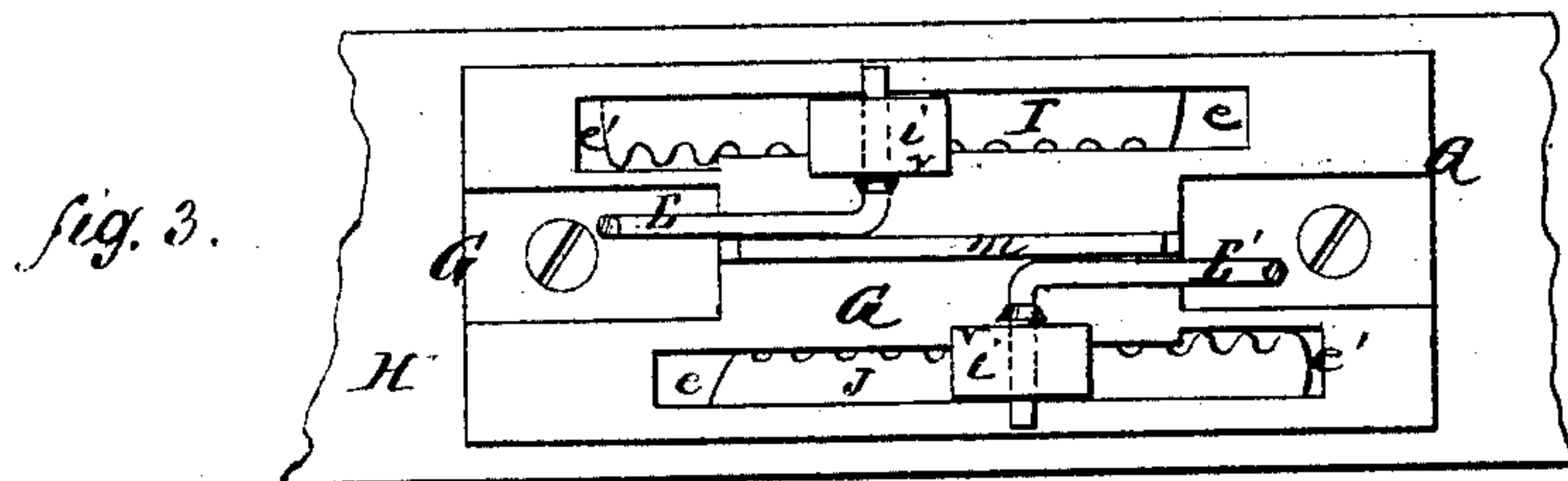
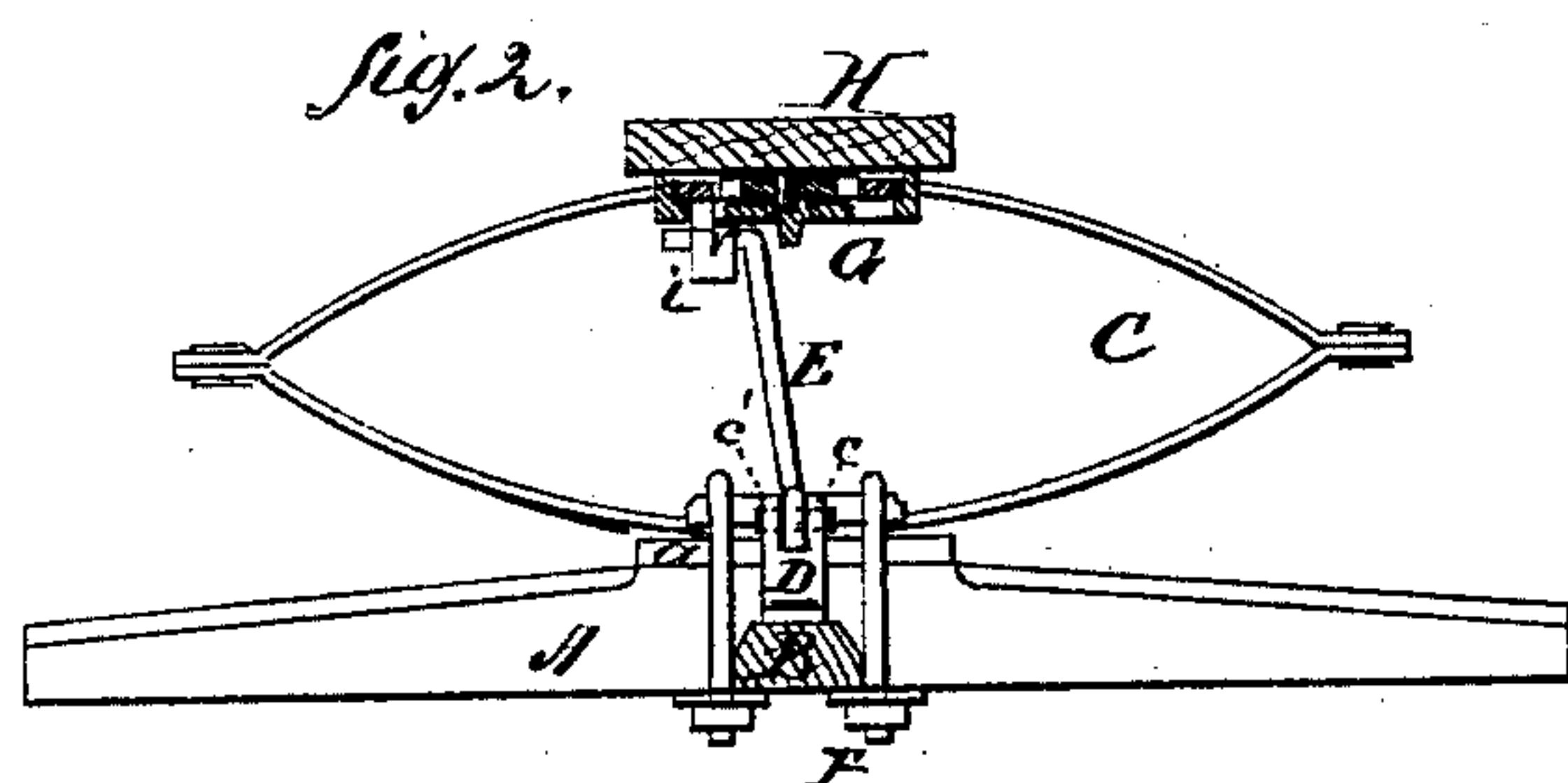
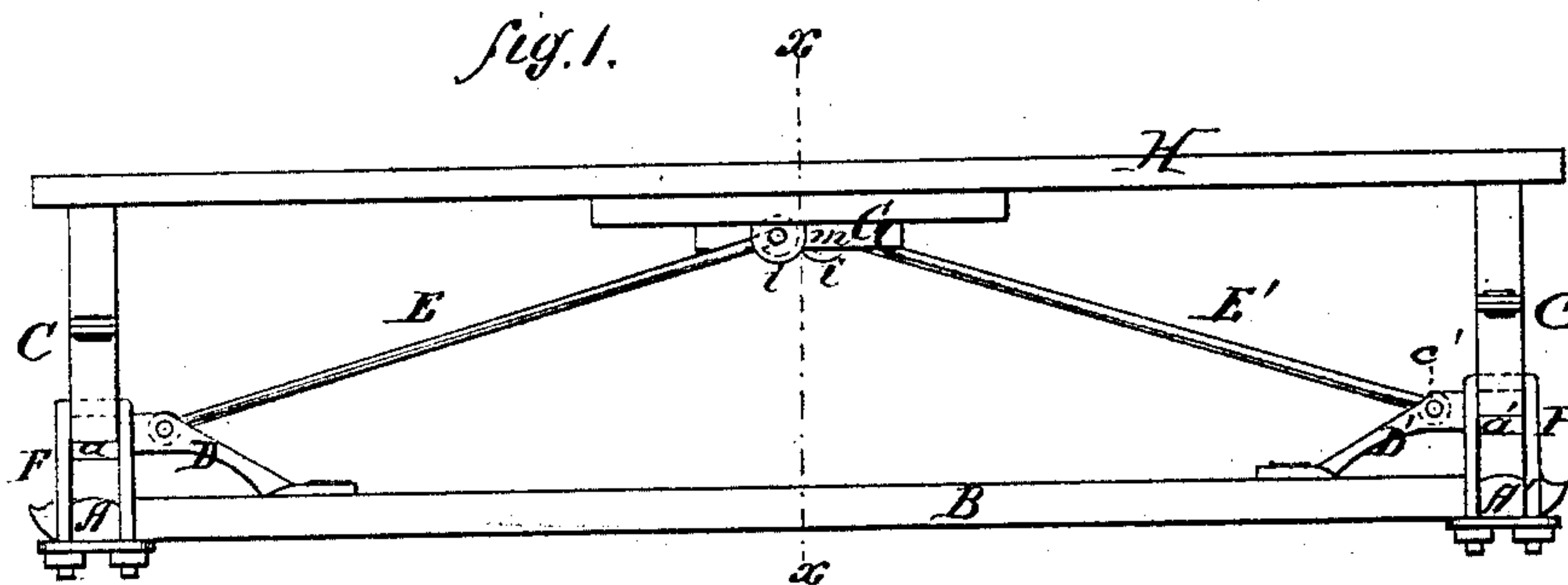


D. W. NORRIS.
Carriage Spring.

No. 113,915.

Patented April 18, 1871.



Witnesses:

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United States Patent Office.

DANIEL W. NORRIS, OF PAXTON, ASSIGNOR TO MICHAEL NEILL, OF CHATSWORTH, ILLINOIS.

Letters Patent No. 113,915, dated April 18, 1871.

IMPROVEMENT IN BRACES FOR CARRIAGE-SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DANIEL W. NORRIS, of Paxton, Ford county, State of Illinois, have invented a new Brace for Carriage-Springs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a side elevation;

Figure 2, a vertical section in line *x x* of fig. 1;

Figure 3, a plan of the under side of the plate and connected apparatus; and

Figure 4, a plan of the upper side of the same, detached from the carriage-body.

Similar letters of reference in the accompanying drawing denote corresponding parts.

Many devices have been invented for the purpose of preventing the backward and forward movement of a carriage-body from breaking or bending the elliptic springs upon which it is supported, and from wrenching off or bending the bolts which connect the springs to the carriage-body or to the axle.

The most effective device heretofore employed for the purpose consists of a pair of rods or bars, one extending from each axle to a point under the center of the carriage-body, where they are articulated to the opposite arms of a horizontal lever working on a central vertical fulcrum or bolt.

For a good example of this method of construction reference may be had to the patents of C. C. Gleason, dated September 26, 1865, No. 50,114, and others of a similar character.

The method of attaching the bars to the arms of the lever or any equivalent construction is, however, objectionable for two reasons, viz:

First, the bars, instead of moving directly backward and forward, swing at one end in a circle, whereby the joint at their other end is strained and wrenched, so as frequently to become useless in a short time; and

Secondly, the levers have "dead-points" in their rotary movements, and just in proportion as the bars are brought toward a line with the dead-points they become to that extent not merely worthless but injurious.

My invention is designed to obviate these difficulties. To this end,

It consists in the employment of a pinion and two rack-bars with a supporting and guiding-plate, in connection with two rods or bars articulated to the lower leaves of the springs, or, in a single-reach carriage, to the reach-brace, if preferred, substantially as hereinafter described.

In the drawing—

A A' are the axles;

B. the reach;

C C, the springs.

a a', the supporting-plates under the springs;

D D', the reach-braces;

F F, the straps that connect the springs and reach-braces to the axles; and

E E', the rods that extend toward the center of the carriage bottom, connecting them with the guide-plate and racks, said rods, in a single-reach carriage, being articulated to the reach-brace by means of a slot, *c*, and pin *c'*, as shown in fig. 2, and, in a double-reach carriage, to the spring itself or the plate *a a'* beneath it.

G is the guide-plate, fastened to the under side of the carriage bottom H, and supporting two sliding racks, I J, and a pinion, K, between them, gearing with both, as clearly shown in fig. 4.

The plate G is made with two parallel longitudinal grooves, *g g*, on its upper side, in which the racks move, a slot, *e e'*, being cut through the plate along the bottom of each groove; and between the slots a downward-projecting flange, *m*, is cast or formed upon the plate, for the purposes hereinafter described.

The rack-bars I J are each formed with a downward-projecting lug, *i*, having a hole through which to insert the bent ends of the rods or bars E E', as shown in figs. 1, 2, 3.

The lugs are made with an enlarged head and a square shoulder, *v*, which rests against the under surface of the plate G, along the edge of the slot.

The slots are slightly enlarged at one end, as shown at *e'*, to admit the head of the lug, which, when thus introduced into its place, slid along toward the center of the plate, and, fastened to its appropriate rod or bar E or E', cannot after be withdrawn from the slot until both rods E E' be disconnected from their racks.

In practical operation the rods or bars E E' are preferably attached to the lugs *i i* by bending their ends and inserting them into the lugs before the latter are slid forward and away from the enlarged end of the slot. After being thus attached the lug is moved toward the middle of the plate, as above described, bringing the end of the rod between the lug and the flange *m*, which keeps the parts from becoming disconnected. Thus, no screw-nut or other fastening is necessary, and the apparatus is at the same time rendered more simple, cheaper, and less liable to get out of order, than if other means were employed for effecting the permanent connection of the rods to the sliding plates.

The great advantages resulting from my improved construction consist, as above stated, in dispensing with the swinging movement at the upper end of the rods or braces E E', and also with the dead-points in the movement of the lever, so that the apparatus will work with perfect certainty and uniformity whether

the springs be much or little bent. Besides this, the reach-braces, which it has been necessary heretofore to construct of wrought-iron on account of the strain upon them, can be made of cast-iron, which will answer every purpose when the carriage is prevented from bending the springs forward or backward.

Having thus described my invention,

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

1. The combination of the brace-rods E E' with the sliding racks I J and the pinion K, substantially as and for the purpose specified.

2. The combination of the brace-rods E E', sliding racks I J having lugs *i i*, and pinion K, with a supporting-plate, G, having a flange, *m*, substantially as and for the purposes herein set forth.

3. The plate G having two parallel guide-grooves on its upper surface, a slot, *e e'*, cut through the metal along each groove, and a flange, *m*, on the under side midway between and parallel with said slots, substantially as and for the purposes described.

4. The combination of the plate G having the grooves *g g*, flange *m*, and slots *e e'* enlarged at one end, as described, with the racks I J, each having a lug, *i*, which projects through the slot and is provided with a square shoulder, *v*, that bears on the opposite side of the plate G, along the edge of the slot, substantially as and for the purposes herein set forth.

5. The slotted reach-braces D D' when articulated with the brace-rods E E', substantially as described, and for the purpose specified.

6. The combination of two brace-bars with a connecting device attached to the under side of the carriage-body, so constructed and operating that, as the brace-bars work back and forth, their upper extremities are caused to move in straight parallel lines, substantially as described, and for the purposes specified.

DANIEL W. NORRIS.

Witnesses:

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