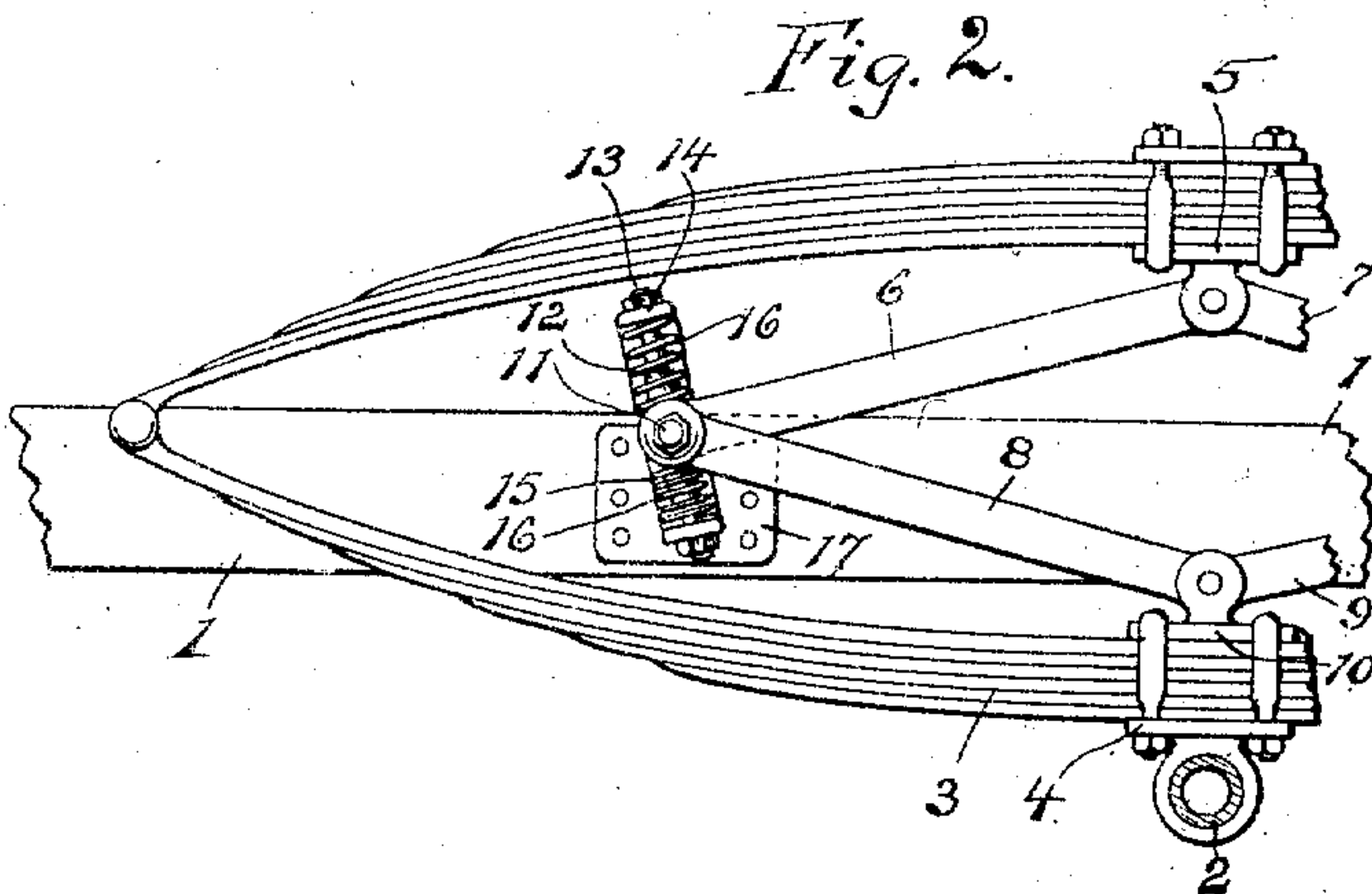
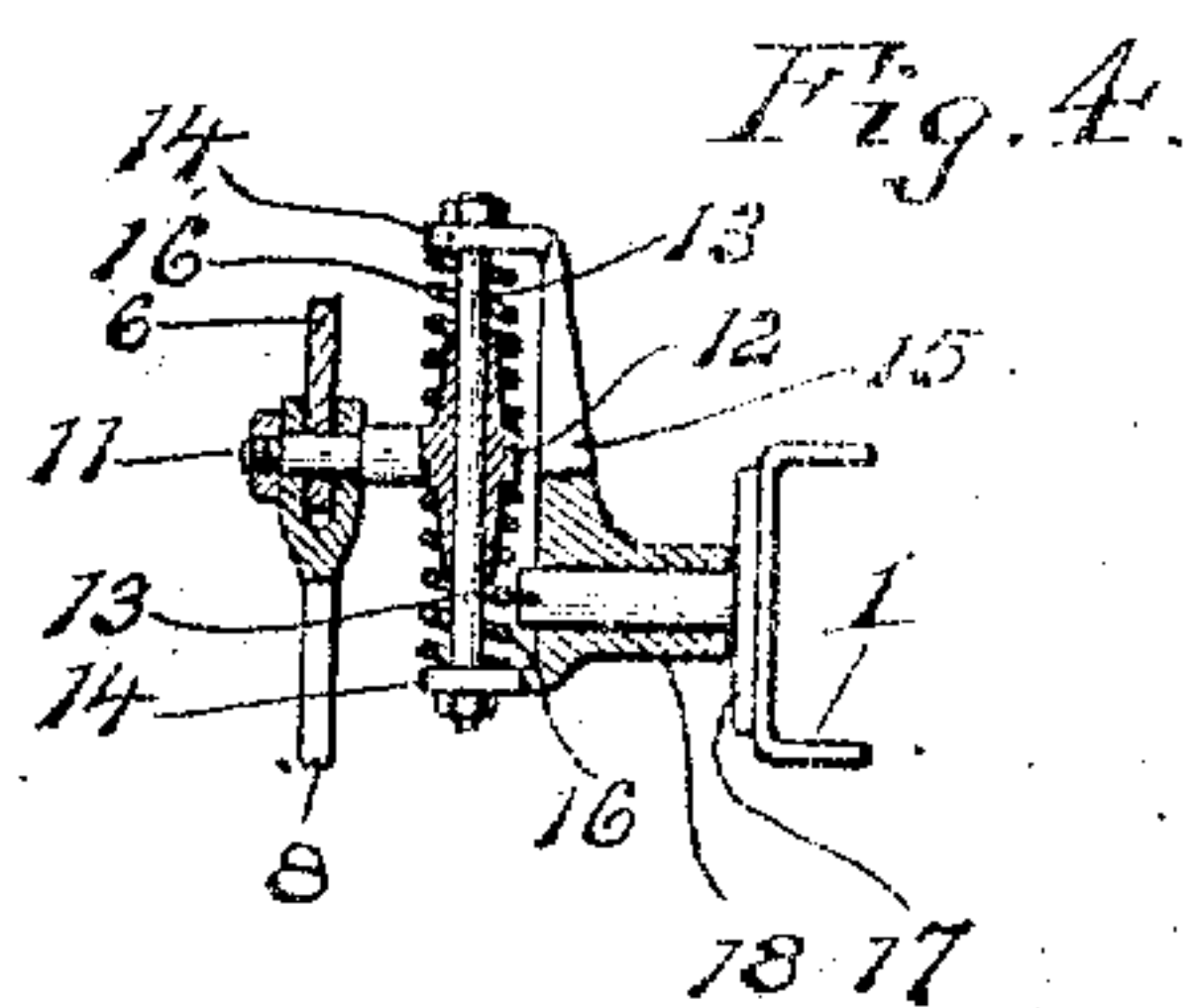
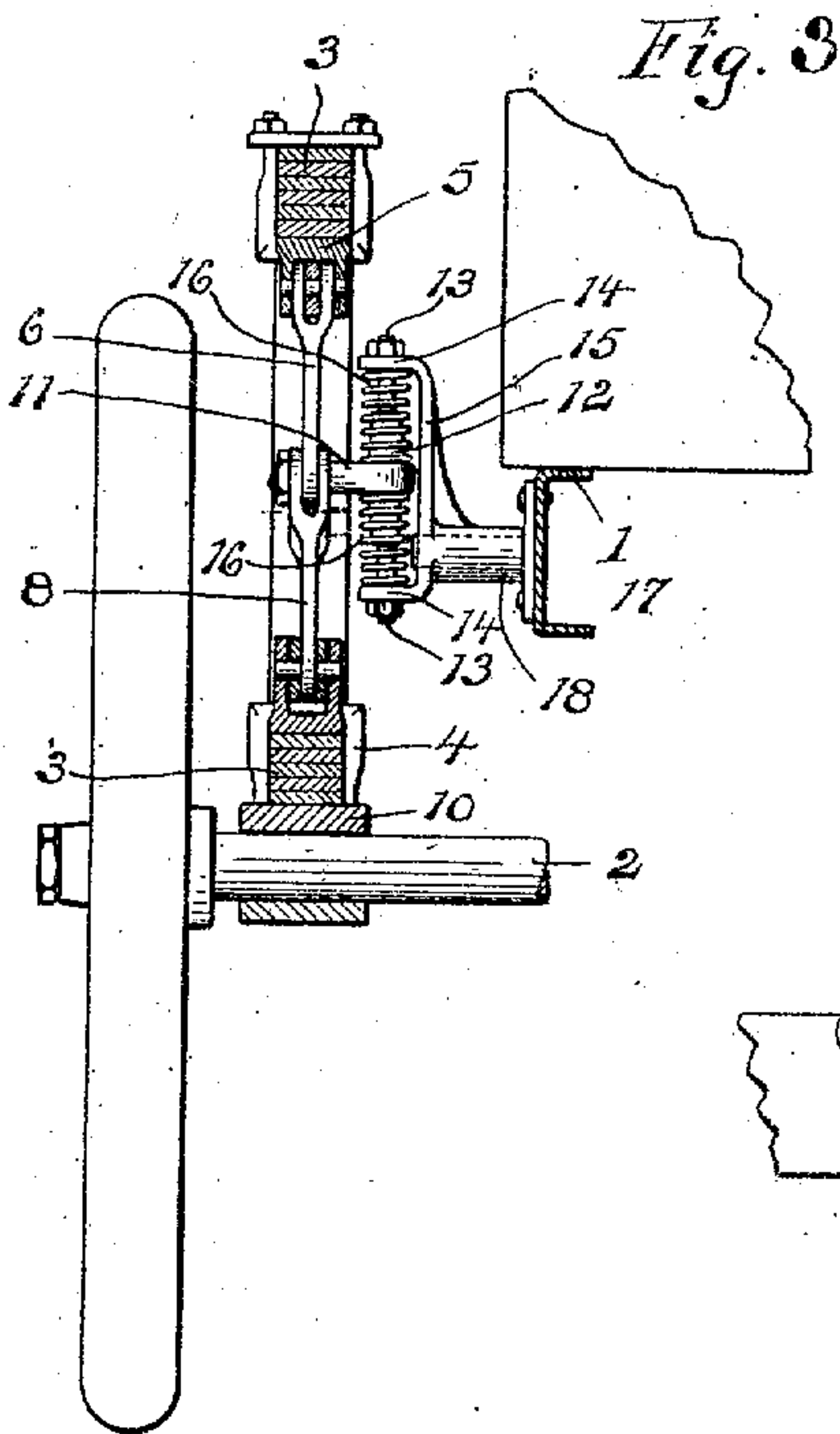
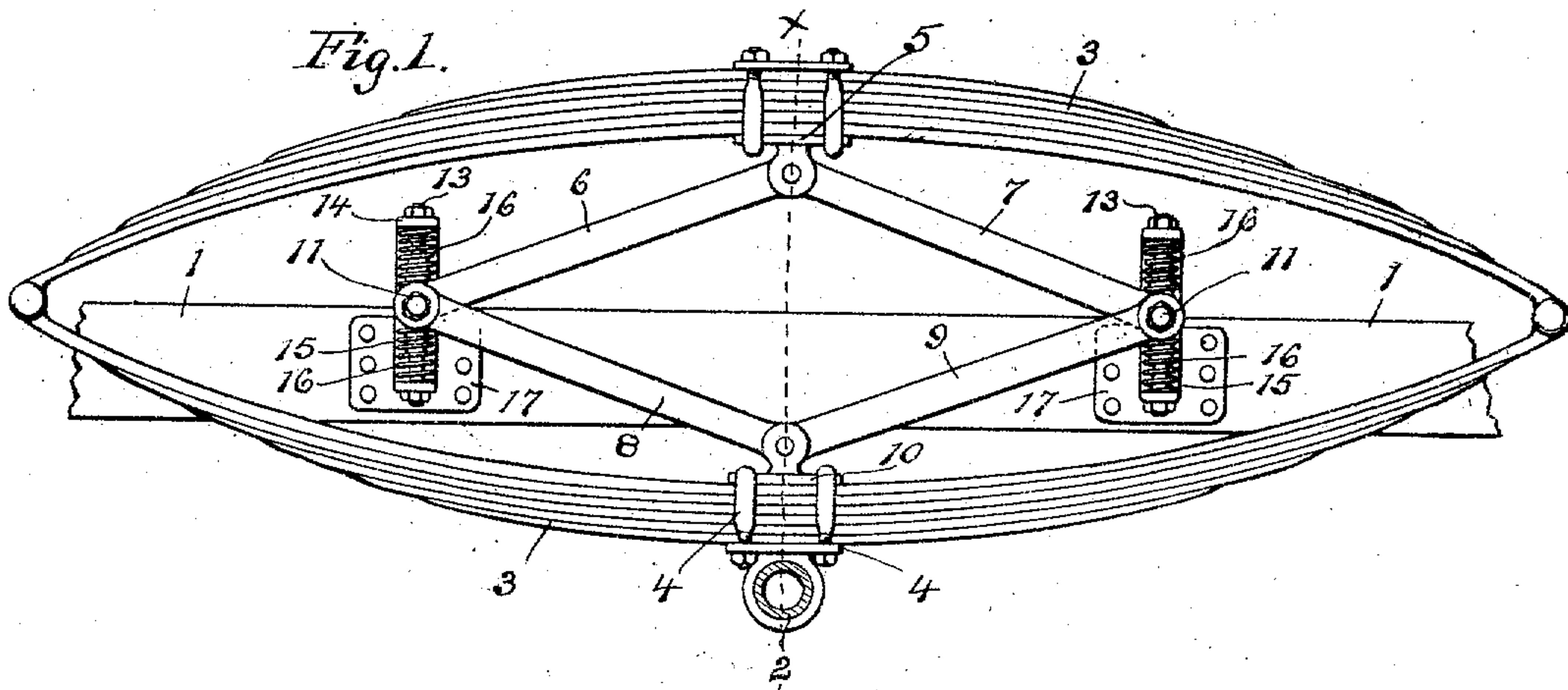


No. 887,165.

PATENTED MAY 12, 1908.

J. C. WHITTLE.
SPRING SUSPENSION.
APPLICATION FILED FEB. 25, 1907.



WITNESSES:

Anna M. Dow
Anna M. Mayet

INVENTOR:

James C. Whittle
By [Signature]
Attorneys

UNITED STATES PATENT OFFICE.

JAMES C. WHITTLE, OF FLINT, MICHIGAN.

SPRING SUSPENSION.

No. 887,165.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed February 25, 1907. Serial No. 359,239.

To all whom it may concern:

Be it known that I, JAMES C. WHITTLE, a citizen of the United States of America, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Spring Suspension, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in vehicle springs, and more especially to springs adapted for use upon motor vehicles; and its object is to provide a simple means for supporting the vehicle frame upon elliptical springs in such a manner that all shocks and vibrations will be taken up by the springs and not transmitted to the body, and further to provide certain other new and useful features in the construction arrangement and combination of parts, all as hereinafter more fully described, reference being had to the accompanying drawings in which:—

Figure 1 is a side elevation of a device embodying the invention and showing the same attached to the frame and axle of a vehicle; Fig. 2 is a similar view showing the spring partially compressed by the load; Fig. 3 is a vertical section of the same on the line $x-x$ of Fig. 1; and Fig. 4 is a sectional detail of one of the yokes connecting the toggle and sill.

1 represents the side sill of the frame of a motor vehicle, 2 the axle, and 3 an elliptical spring secured to the axle by a suitable clip 4, all being of well known construction.

Secured by suitable clips to the inner side of the upper half of the spring 3 is a plate 5 having downwardly extending ears between which are pivoted the upper ends of levers 6 and 7, and these levers together with similar levers 8 and 9 which are pivoted between ears extending upward from a plate 10 secured to the lower half of said elliptical spring by the clips which secure said spring to the axle, form a toggle connection between the upper and lower halves of said spring. The pivot pins 11 which pivotally connect the outer ends of said levers are extended laterally and each formed with a vertically extending sleeve portion 12 through which a rod 13 slides freely, said rod being secured at its ends to the laterally bent ends 14 of a yoke 15. Coiled springs 16 are sleeved upon said rod between the laterally bent ends of the yoke and the pivot pin to normally hold said pin in a mid position between said bent ends.

Trunnions each formed with a base plate 17 by means of which it is rigidly secured to the outer face of the sill 1, extend longitudinally outward from said sill and form supporting pivots for the yokes, each yoke being formed with a hub or sleeve portion 18 projecting laterally from the yoke near its lower end to receive the trunnion and turn thereon.

The yokes together with the pivot pins 11 form supporting cranks to pivotally attach the toggle levers to the sill, said trunnions being out of axial alinement with the said pins, and thus the elliptical spring is attached to the sill by the toggle levers only and any movement or vibration of the axle is reduced to the minimum by said levers. The coiled springs 16 also serve to yieldingly support the load and absorbing vibration.

As shown in Fig. 2, when the elliptical spring is compressed by the load, the toggle is straightened, the pivot pins 11 moving in a horizontal plane longitudinally of the sill and thus the yokes rock on their trunnions to permit of such movement.

If desired the coil springs 16 may be dispensed with and a plain crank used to support the sill and permit the straightening of the toggle.

Having thus fully described the invention what I claim is:—

1. The combination with an elliptical spring, of toggle levers connecting the members of said spring, and means for attaching the connected ends of said levers to a sill movable longitudinally of the sill adapted to transmit lateral movements of the sill in either direction parallel to the plane of the spring to the said lever ends.

2. The combination with an elliptical spring, of levers connected at one end to the two members of the spring and pivotally connected together at their opposite ends, members pivotally attached to the levers at their pivotal connection and to a sill to rock thereon, adapted to transmit lateral movement of the sill in either direction parallel to the plane of the spring to the said lever ends.

3. The combination with a sill and an elliptical spring, of toggle levers connecting the members of the spring, pins forming the pivots thereof extending laterally from the connected ends of said levers and means secured to the sill engaging said pins to support the sill therefrom and permitting a movement of said pins longitudinally of the sill, adapted to transmit lateral movement of the sill par-

allel to the spring in either direction to the said pins.

4. The combination with a sill and an elliptical spring, of toggle levers connecting the members of the spring, pins forming the pivots thereof extending laterally from the connected ends of said levers and means secured to the sill engaging said pins to support the sill therefrom and permitting a movement of said pins longitudinally of the sill, adapted to yieldingly transmit lateral movement of the sill parallel to the spring in either direction to the said pins.

5. The combination with a sill and an elliptical spring, of toggle levers connecting the members of said spring, trunnions secured to and extending laterally outward from the sill, members having sleeves to receive and turn upon said trunnions, and pivot pins forming the pivots connecting the connected ends of said levers carried by said members and extending laterally therefrom

out of axial alinement with the said trunnions.

6. The combination with a sill and an elliptical spring, of toggle levers connecting the members of said spring, trunnions secured to the sill, yokes having sleeve portions to receive the trunnions and turn thereon and also having laterally extending end portions, a rod secured to the laterally extending ends of each yoke, pivot pins secured to the connected ends of the levers, and each provided with a sleeve portion to slide upon said rods, and coiled springs sleeved upon said rods between the laterally extending ends of the yoke and the pins.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES C. WHITTLE.

Witnesses:

OTTO F. BARTHEL,
ANNA M. DORR.