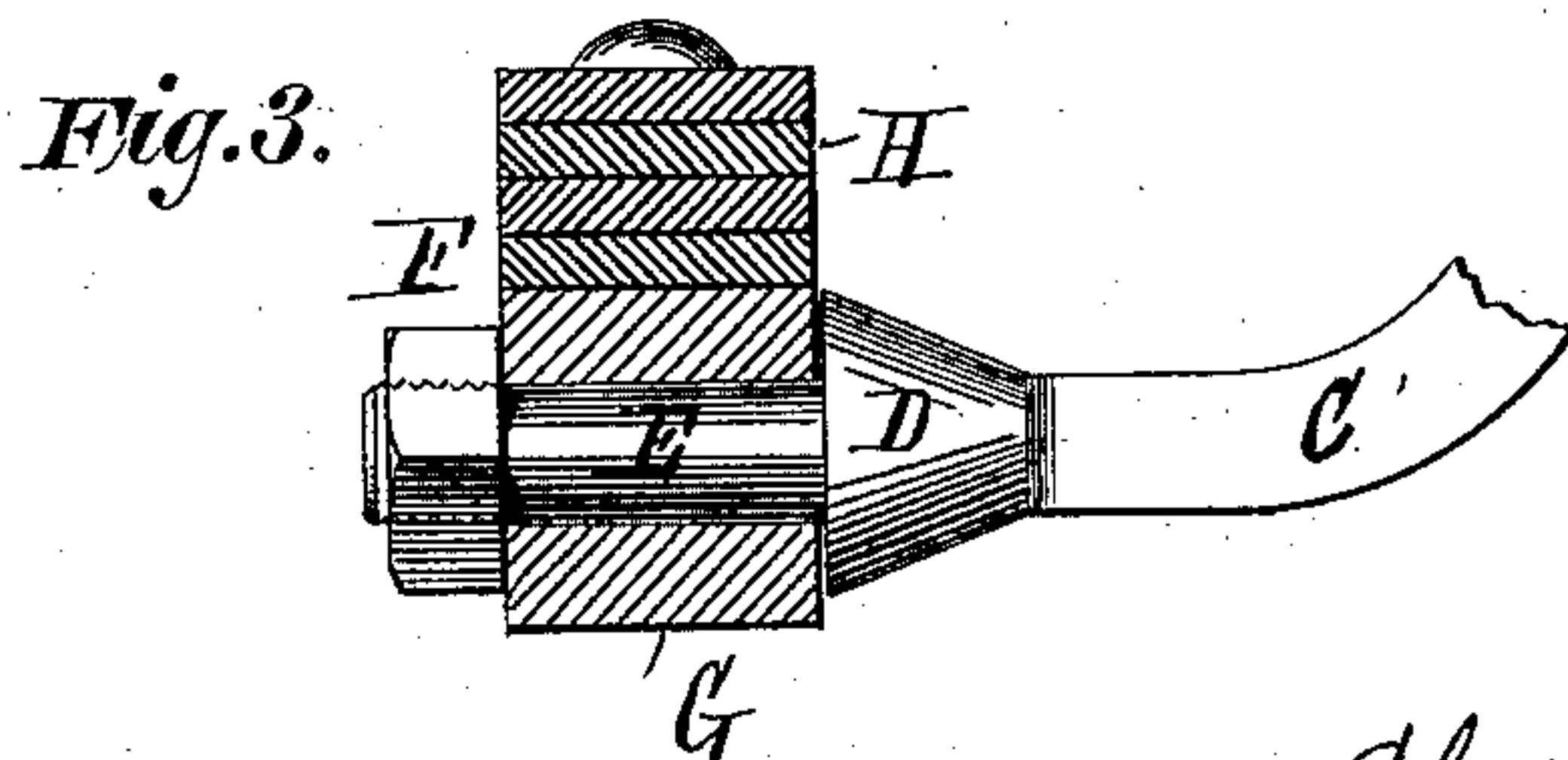
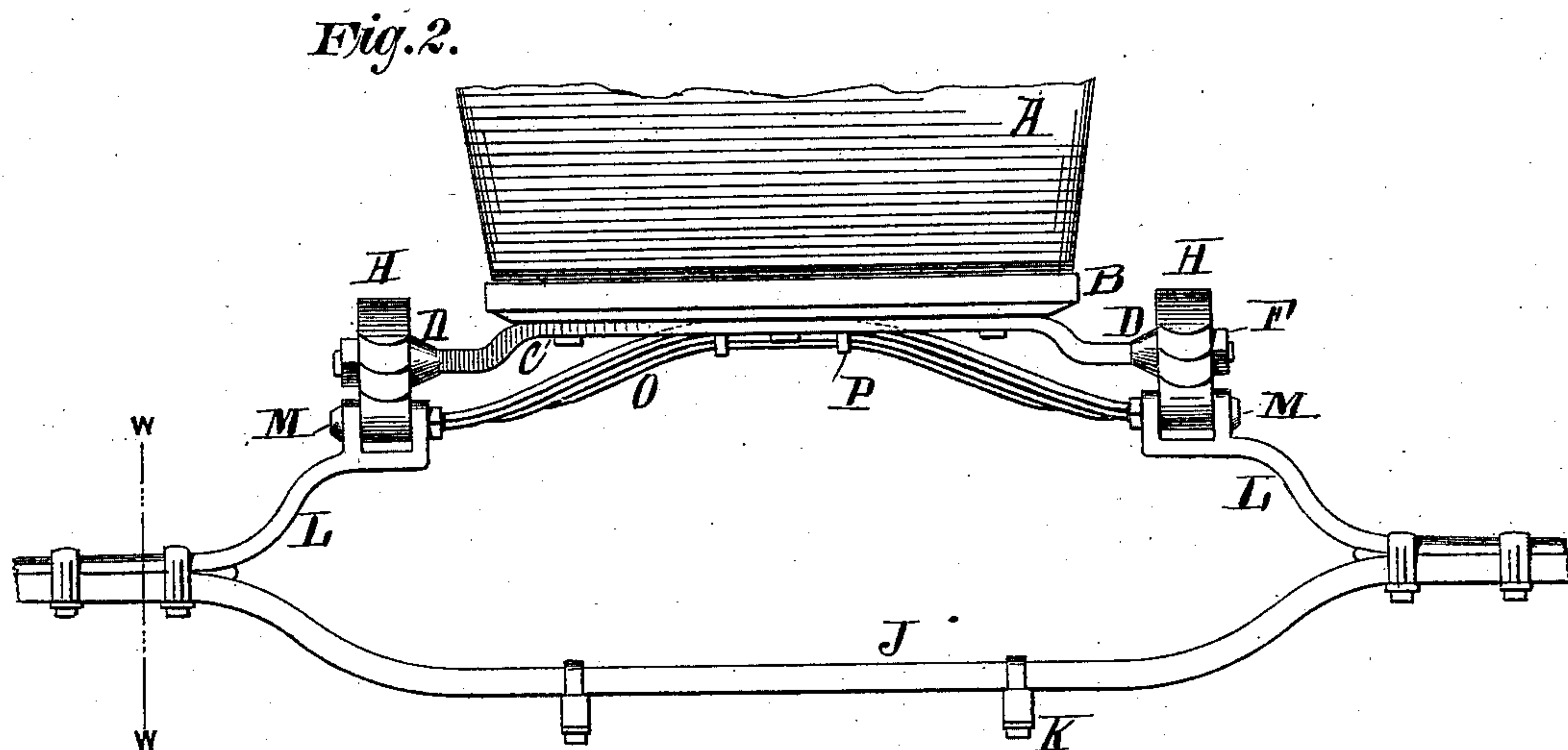
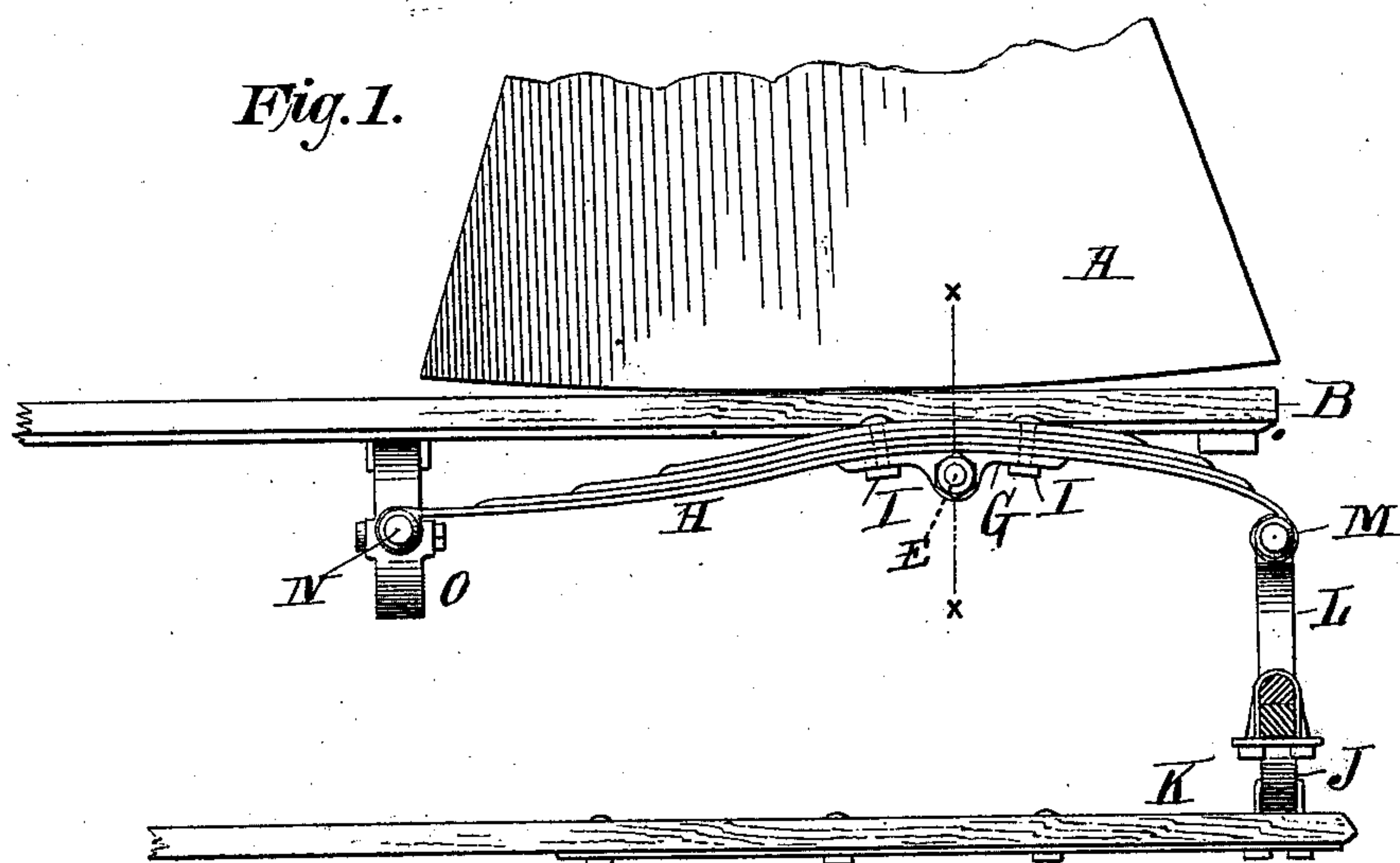


(No Model.)

C. BENSON.
SPRING VEHICLE.

No. 370,721.

Patented Sept. 27, 1887.



WITNESSES:

WITNESSES:
Gustave Dietrich
Edgar Goodwin

INVENTOR

INVENTOR
Christopher Benson
BY *Lark Benjamin*
his ATTORNEY

UNITED STATES PATENT OFFICE.

CHRISTOPHER BENSON, OF NEW YORK, N. Y., ASSIGNOR TO JAMES W. RENWICK, OF SAME PLACE.

SPRING-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 370,721, dated September 27, 1887.

Application filed April 25, 1887. Serial No. 235,989. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER BENSON, of the city, county, and State of New York, have invented a new and useful Improvement in Spring Suspension Devices for Vehicles, of which the following is a specification.

My invention relates to a spring suspension device for vehicles; and it consists in the novel construction hereinafter set forth, whereby the body of the vehicle may be placed as low as may be desired with reference to the axles, whereby the said body is provided with a highly elastic and yielding support, so that ease of motion is insured.

The construction is also such that the weight of the body keeps the leaves of the springs always closed together, and any tendency on the part of said springs to open is prevented.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a vehicle, showing my new construction, with certain parts in section on the line W W of Fig. 2. Fig. 2 is an end view of the same. Fig. 3 is a section of the supporting-block, shackle, and spring on the line x x of Fig. 1.

Similar letters of reference indicate like parts.

A is the body of the vehicle, which is supported upon the frame B. To the bottom of said body is secured the bar C, having a central elevated portion. Near the ends of said bar are fixed collars D, outside of which are smooth circular journals E, threaded at their extremities to receive the nuts F. The journals E receive the brass blocks G, which are secured to the under sides of the leaf-springs H by bolts I, as shown.

J is the axle, having a central depressed portion, to which the reach K is secured. At each side of the axle are short upwardly-extending arms L, the ends of which are forked to receive the shackle-bolts M, whereby the rear extremities of the springs H are secured to said arms. The front extremities of the springs H are shackled at N to the ends of a leaf-spring, O, which extends across the frame B, and is secured to the under side of a transverse bar of said frame by bolts P.

It will be noticed that the leaves which make up the spring H are of different lengths, and

that the same is true of the leaves of spring O. In spring H, however, the said leaves are placed so that the shortest leaves are at the top of the spring, while in spring O the shortest leaves are placed at the bottom of the spring. The weight of the body coming directly upon the bar B, which is secured to the under side of spring H, naturally reduces the upward convexity of the said spring, and so forces the leaves thereof into closer contact. The strain transmitted from springs H to spring O, is applied to the ends of the latter spring, so that the downward pressure tends to increase the upper convexity of said spring, and this also has obviously the effect of forcing the leaves of the spring O into closer contact.

It will be observed also that the body is supported at a point in rear of the center of springs H, and that the distance from the shackle N to the journals E is greater than the distance from journals E to the shackles M. This construction throws the greatest proportion of the weight of the body toward the axle and furnishes a more elastic and yielding support for the front portion of the body, at which point there is naturally more range of motion.

The aforesaid construction is adaptable to any platform spring-wagon, and may be duplicated in vehicles having two axles. It is cheaply and easily made, not liable to get out of order, its joints are closely connected, so that the possibility of loose working and rattling is reduced to a minimum, and in operation the device greatly conduces to easy riding.

By modifying the curvature of the springs or the elevation of the axle-arms the body may be suspended as low as may be desired.

I claim—

1. The combination of a vehicle-body, a supporting-frame therefor, longitudinal leaf-springs pivoted on each side of said body, a leaf-spring rigidly secured in front of said pivot and transversely to said frame, an axle, and short upwardly-projecting arms thereon, the front ends of said longitudinal springs being shackled to the ends of said transverse spring, and the rear ends of said longitudinal springs being shackled to the extremities of said axle arms, substantially as described.

2. The combination of a vehicle-body, a sup-

porting-frame therefor, a bar secured to the bottom of said body, and having at its ends journals, leaf-springs arranged above and receiving said journals on each side of said body, 5 a leaf-spring rigidly secured in front of said journals and transversely to said frame, an axle, and short upwardly and inwardly projecting arms thereon, the front ends of said longitudinal springs being shackled to the 10 ends of said transverse spring, and the rear ends of said longitudinal springs being shackled to the extremities of said axle-arms, substantially as described.

3. The combination of a vehicle-body, a supporting-frame therefor, a bar secured to the 15 bottom of said body, and having at its ends journals, a leaf-spring formed of leaves of different lengths, the shortest leaves being at the upper part of the spring upward, arranged 20 above and receiving said journals on each side

of said body, a leaf-spring formed of leaves of different lengths, the shortest leaves being at the lower part of the spring downward, rigidly secured in front of said journals and transversely to said frame, an axle, and short upwardly-projecting arms thereon, the front ends 25 of said longitudinal springs being shackled to the ends, said transverse spring and the rear ends of said longitudinal springs being shackled to the extremities of said axle-arms, substantially as described. 30

4. The combination, with the vehicle-body and supporting-frame, of the bar C, having journals E and fixed collars D, springs H, blocks G, spring O, and axle having arms L, 35 substantially as described.

CHRISTOPHER BENSON.

Witnesses:

PARK BENJAMIN,
EDGAR GOODWIN.