

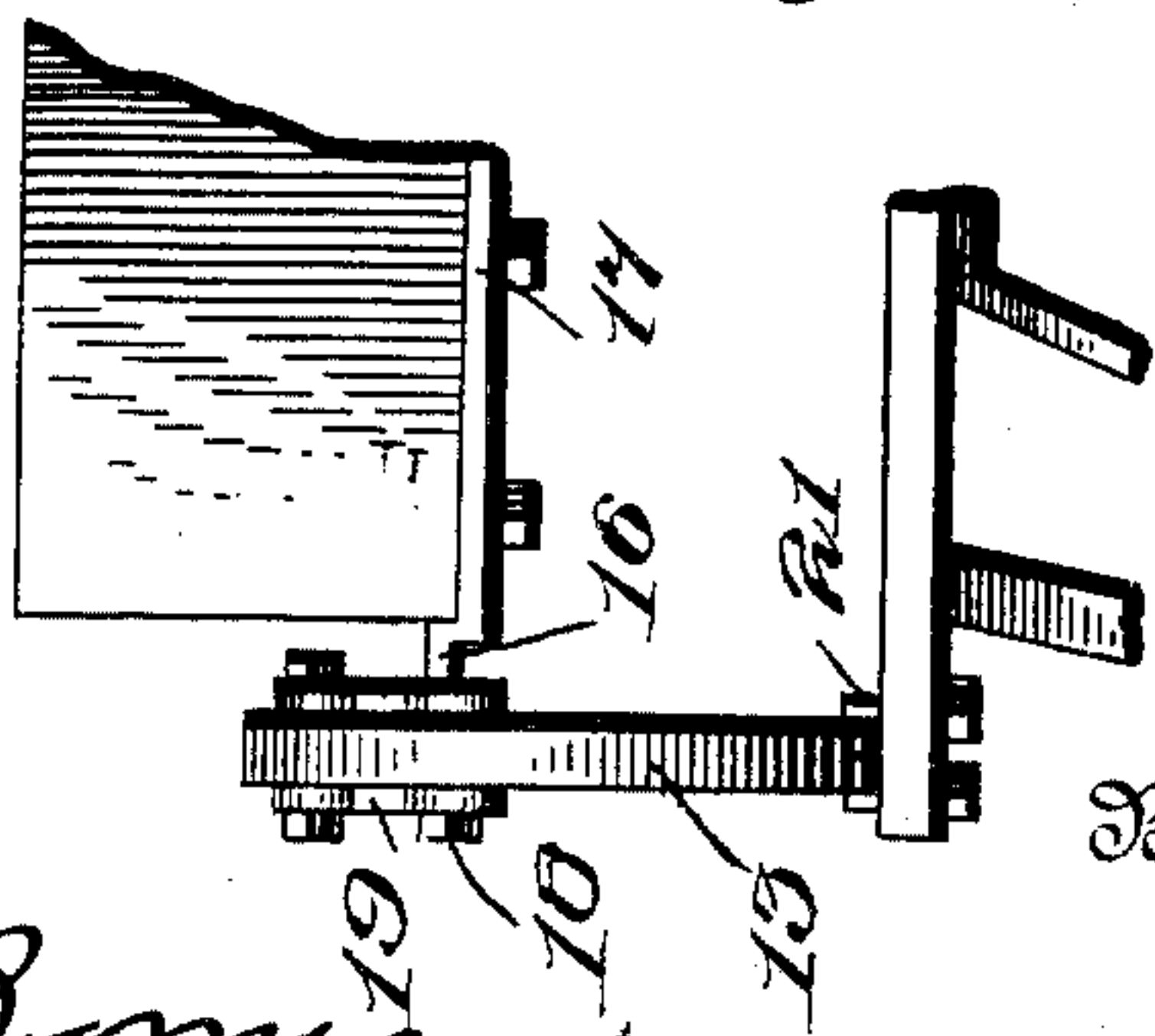
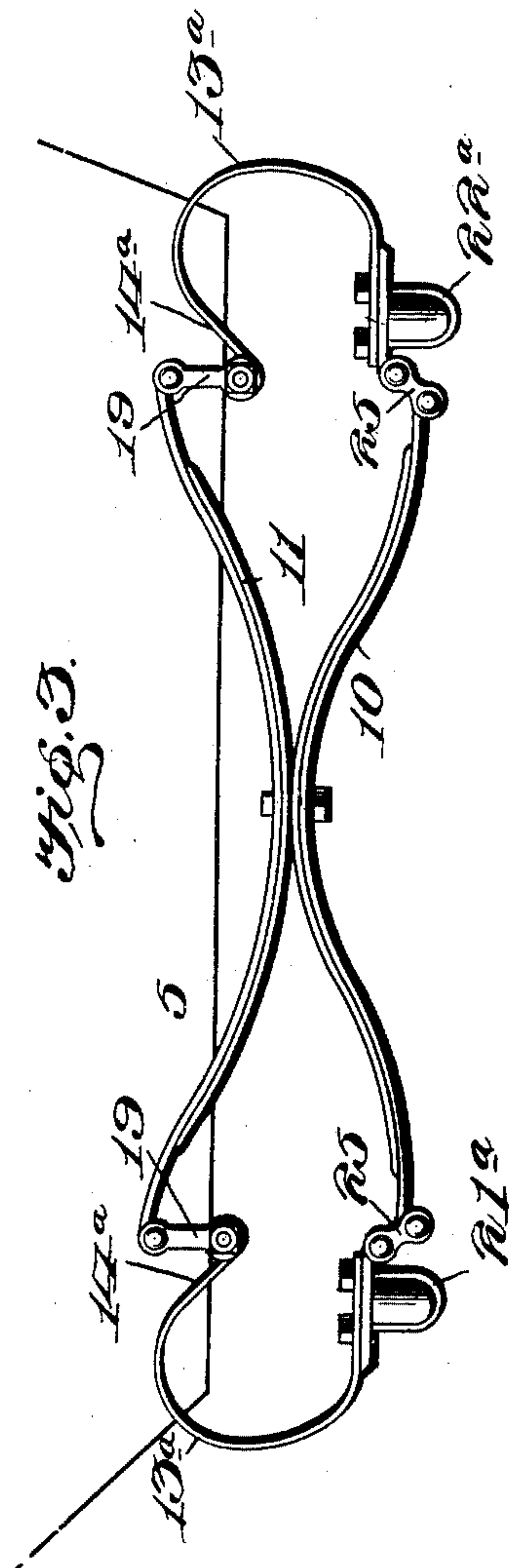
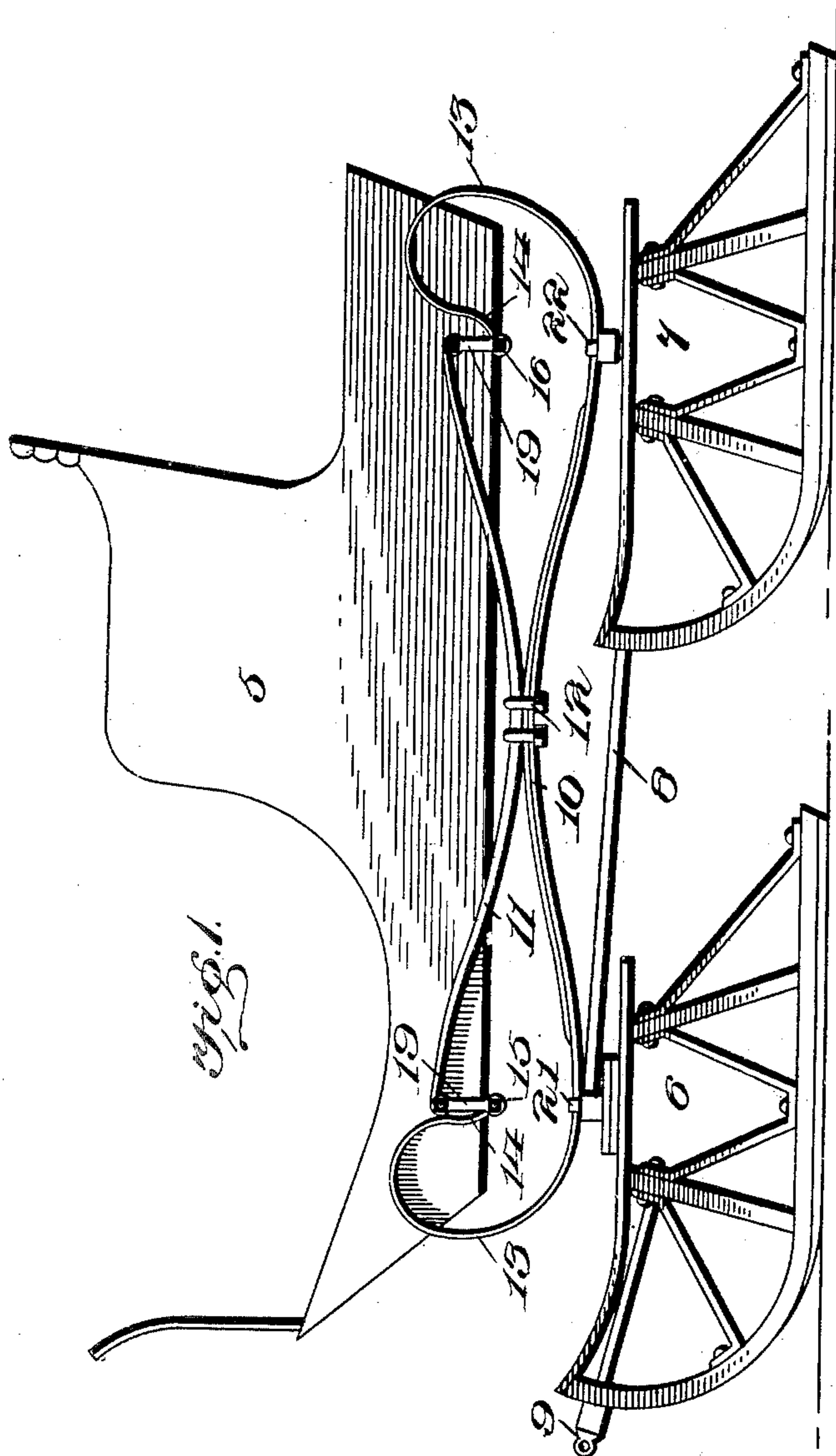
No. 675,634.

Patented June 4, 1901.

J. P. LARSON.
VEHICLE SPRING.

(Application filed Dec. 19, 1900.)

(No Model.)



Witnesses

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By

Fig. 3.

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UNITED STATES PATENT OFFICE.

JACOB P. LARSON, OF NELSON, MINNESOTA.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 675,634, dated June 4, 1901.

Application filed December 19, 1900. Serial No. 40,421. (No model.)

To all whom it may concern:

Be it known that I, JACOB P. LARSON, a citizen of the United States, residing at Nelson, in the county of Douglas and State of Minnesota, have invented a new and useful Vehicle-Spring, of which the following is a specification.

My invention relates to improvements in vehicle-springs; and one object in view is to provide a supporting-spring which yieldingly sustains the body in a condition to swing back and forth in the direction of its length and to give in a vertical direction, whereby the motion of the horse is minimized to a great extent and the comfort of the occupant of the vehicle correspondingly promoted.

A further object is to provide a strong and durable spring-support which has its members connected to the body in a peculiar way for the purpose of balancing the same and the load therein.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the construction, arrangement, and combination of parts will be defined by the claims.

In the drawings, Figure 1 is a side elevation of a bob-sleigh equipped with the one form of spring-support for the body as contemplated by my invention. Fig. 2 is a detail rear elevation of a part of the body and a part of the spring, illustrating the means employed by me for connecting said parts. Fig. 3 is a side elevation of a slightly different form of construction.

The same numerals are used to indicate corresponding parts in all the figures of the drawings.

For the purposes of this specification I will describe my device as constituting the support for the body of a sleigh; but I wish it to be distinctly understood that my spring is designed for the support of a vehicle-body of any character whatsoever.

The body 5 of the vehicle—as, for instance, a cutter or sleigh—is equipped with the usual dashboard and one or more seats for the accommodation of the occupants, said body being of any usual or preferred construction. In the drawings I have shown the body supported upon the front bob 6 and the rear bob 7 by a supporting-spring embodying my pres-

ent improvements. It is customary to connect the front and rear bobs by an intermediate reach, (indicated by the numeral 8,) and to the front bob is also connected the draft appliance 9. No novelty for these parts is claimed in this application, and the bobs, the reach, and the draft appliance may be of the usual construction. On each side of the sleigh is provided one of my improved supporting-springs, the same consisting of a bottom member 10 and a top member 11. Each member consists of a series of layers applied or united laterally together to reinforce one another, and each member of the spring is curved in the direction of its length, substantially as shown by Fig. 1 of the drawings. The curved members of the spring are adjusted to meet one another substantially at the middle portion of the spring-support, and said curved members are arranged in reversed order, so that the end portions of the parts will diverge laterally. The meeting middle portions of the reversely-curved spring members rest flat against each other and are joined together by the employment of a suitable number of clips 12 or other suitable means which will firmly hold them together. The divergent ends of the upper and lower spring members are connected by means of bowed springs and links, and the body is secured to these connections. In the form shown in Figs. 1 and 2 this is accomplished by having the end portions of the lower spring member 10 curved or bowed upwardly, as at 13, and the free extremity of each bowed portion depending and deflected or bent, as at 14, so as to clear a hanger which connects the contiguous terminals of the spring members to the body. The ends of said bowed portions are arranged directly beneath the ends of the upper member 11, and said ends are connected by links 19, which are pivotally secured thereto. The body is supported upon the springs preferably in the following manner: Arms 17 extend transversely across and are rigidly secured to the under side of the body. These arms project beyond the sides of the same and are formed into oppositely-arranged pairs of hangers 15 and 16, disposed, respectively, near the front and rear ends of the body. Each hanger is extended or offset laterally from the side of the vehicle-body, and to it are pivoted, as at

18, the lower end of the link 19 and the depending end of the bowed spring connection 13. The lower spring member 10 extends across the axles or other portions of the front and rear bobs 6 7, and this spring is fastened securely to the bobs by the front and rear clips 21 22, respectively, the same being arranged to embrace the bob-axles and the lower spring member at points intermediate of the length thereof.

From the foregoing description it will be apparent that the upper spring member is connected at its ends to the links near the front and rear ends of the body, and the lower spring member is fastened to the front and rear bobs, the bowed ends of said lower spring member being pivotally connected to the hangers that unite the body and the lower spring member to the upper spring 11 through the intermediate links. The described arrangement of the members constituting the spring-support and the employment of the links between the body and the ends of the upper spring member impart a certain amount of resiliency to the body 5, which is thus sustained to vibrate in a vertical direction and to be capable of a limited amount of movement in the direction of its length. The employment of the links between the free ends of the members which form the supporting-spring imparts the desired longitudinal movement to the sleigh or other vehicle body, while the form and arrangement of said spring members allow the body to have the desired vibration in a vertical direction. The deflected extension 14 of the bowed end portions on the lower spring member secures the attachment of the links to said ends 14 at points below the pivotal connection of the body to the upturned ends of the spring member 11. This construction of the spring member 10 and the attachment of the parts in the manner recited is advantageous, because the body may be balanced to good advantage on the spring-support.

In Fig. 3 is illustrated a slightly different form of construction, which provides a support of a more yielding nature than that above described. In this form the usual bottom and top spring members 10 and 11 are provided; but instead of providing the lower member with the prolonged upwardly-extending portions both members are of substantially the same length, being secured together at their centers and having outwardly-divergent portions, the ends of the lower being directly beneath those of the upper member. The bowed-spring connections in this form are in the form of separate springs 13^a. These springs 13^a are of the same configuration as the end portions 13, (shown in Fig. 1,) being provided with the depending and offset upper ends 14^a, that are pivotally connected to the ends of the upper member and to the vehicle-body by means of the links 19 and the hangers 16, respectively, as before described. The lower ends of the springs 13^a are secured to the axles by means of clips 21^a 22^a, the shanks of

which pass through said springs. Fastened to the axles by means of the same clips that secure the springs 13^a are brackets 24, to which are pivotally connected the ends of the lower member 10 by means of the links 25. By this last form of construction it will be seen that the body is supported in exactly the same manner as in the first-described form; but the links 25 will permit free longitudinal movement of the ends of the lower member 10, which member will therefore be more yieldingly supported than in the first-mentioned form.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a lower spring member, an upper spring member fastened at or about its center flat upon the lower spring member, the two spring members diverging in opposite directions from their point of attachment to each other, a bowed-spring and link connection between the ends of the two members, and means for connecting the body of the vehicle to the bowed-spring and link connection.

2. The combination with a lower spring member, of an upper spring member fastened at or about its center to the lower spring member, the two spring members diverging in opposite directions from their point of attachment to each other, and bowed springs connected at their lower ends to the ends of the lower spring member and having a link connection at their opposite ends with the upper spring member, and means connecting the body of the vehicle to said bowed-spring and link connections.

3. The combination of a supporting spring member secured intermediate its ends, bowed springs secured at their lower ends and having their upper ends arranged contiguous to the opposite ends of the supporting spring member, links pivotally connected at their opposite ends to the ends of the supporting spring and bowed springs respectively, and a body pivotally connected to said springs at their connected ends.

4. The combination with a lower spring member, of an upper spring member fastened at or contiguous to its center to the lower spring member, bowed-spring connections between the ends of the two spring members, the ends of the upper spring member being connected to the contiguous ends of the bowed springs by means of pivotal links, and a body having a pivotal connection with the upper

ends of said bowed springs and with the ends of the pivotal links.

5 5. The combination with a lower spring member, of an upper spring member fastened at or about its center to the lower spring member, the two spring members diverging in opposite directions from their point of attachment to each other, bowed springs secured at or contiguous to their lower ends, pivotal
10 links secured at or contiguous to the lower ends of the bowed springs and connected to the ends of the lower spring member, links pivotally connecting the upper ends of the bowed springs and the ends of the upper
15 spring member, and means for securing a vehicle-body to the upper ends of the upper spring member and the connecting-links thereof.

20 6. The combination with a lower spring member, of an upper spring member fastened at or about its center to the lower spring mem-

ber, the two spring members diverging in opposite directions from their point of attachment to each other, bowed springs rigidly secured contiguous to their lower ends, pivotal 25 links secured at or contiguous to the lower ends of the bowed springs and connected to the ends of the lower spring member, links pivotally connecting the upper ends of said bowed springs and the ends of the upper spring member, and hangers secured to the vehicle-body 30 near the front and rear ends thereof, said hangers being pivotally connected to the ends of the upper spring member and the connecting-links thereof.

35 In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JACOB P. LARSON.

Witnesses:

C. H. LARSON,

L. C. HANSON.