

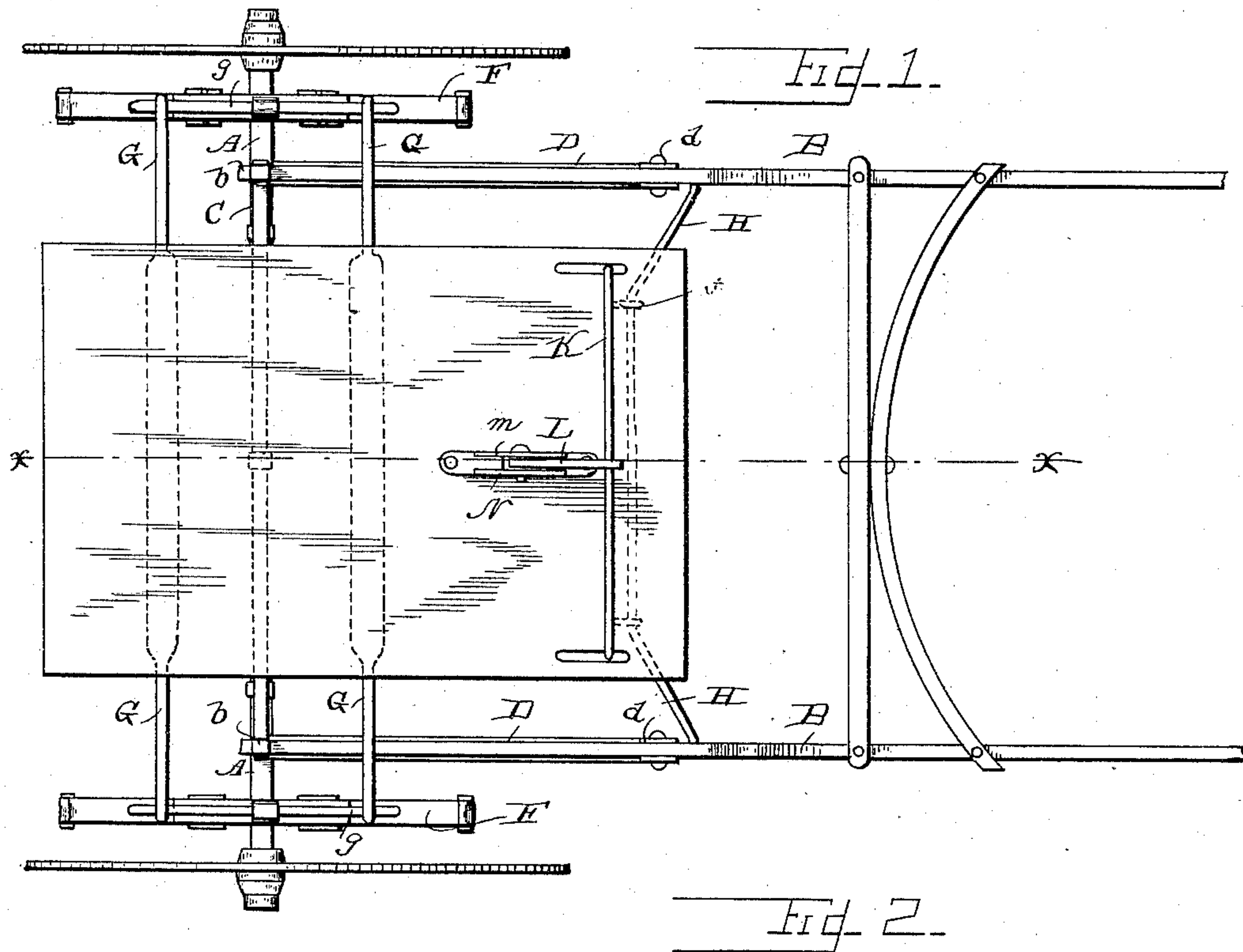
(No Model.)

2. Sheets—Sheet 1.

E. A. OLIVER.
SULKY.

No. 474,684.

Patented May 10, 1892.



Witnesses
Jesse Heller.
Philip C. Masi.

Inventor
Elam A. Oliver
by E. W. Anderson
his Attorney

(No Model.)

2 Sheets—Sheet 2.

E. A. OLIVER.
SULKY.

No. 474,684.

Patented May 10, 1892.

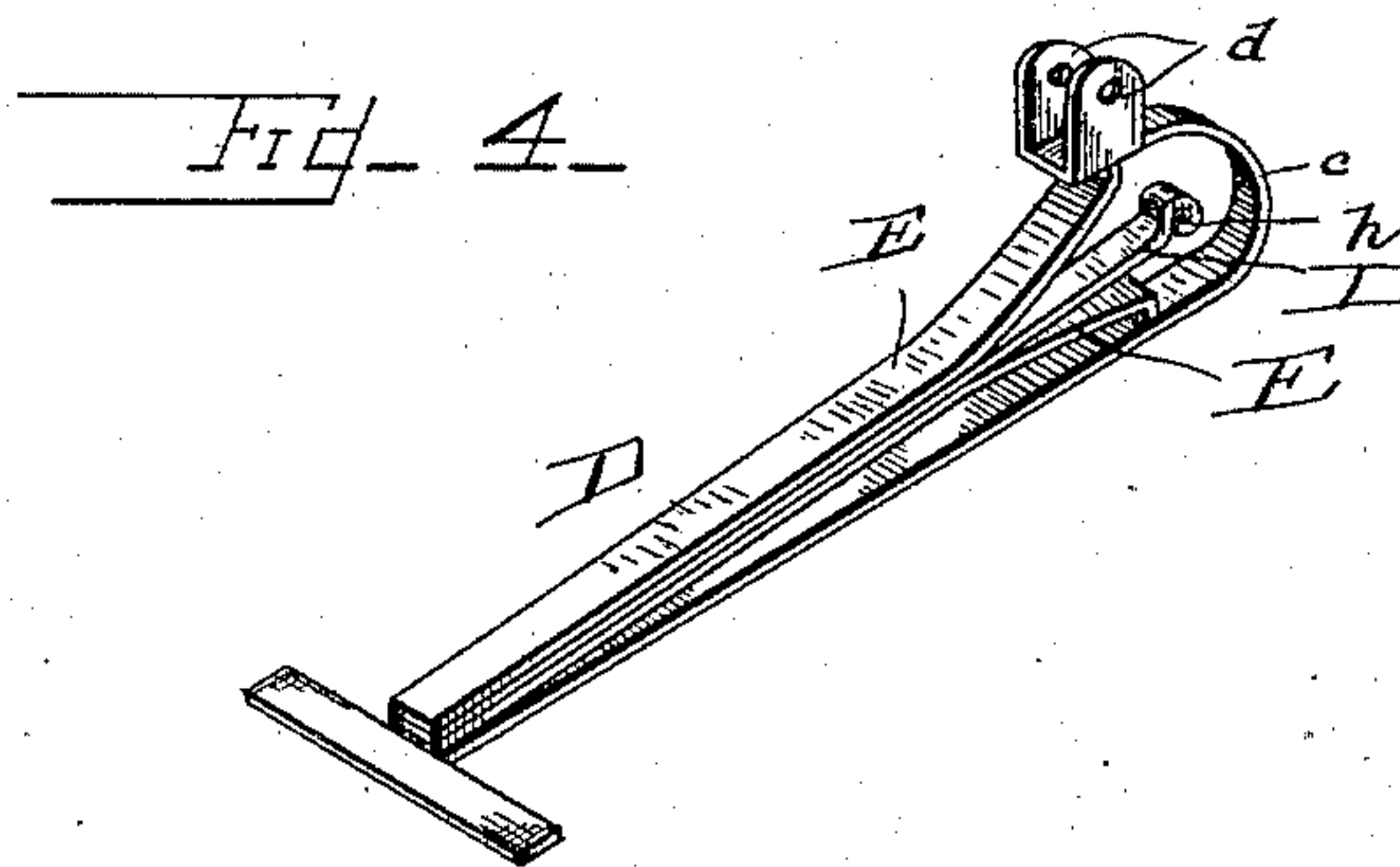
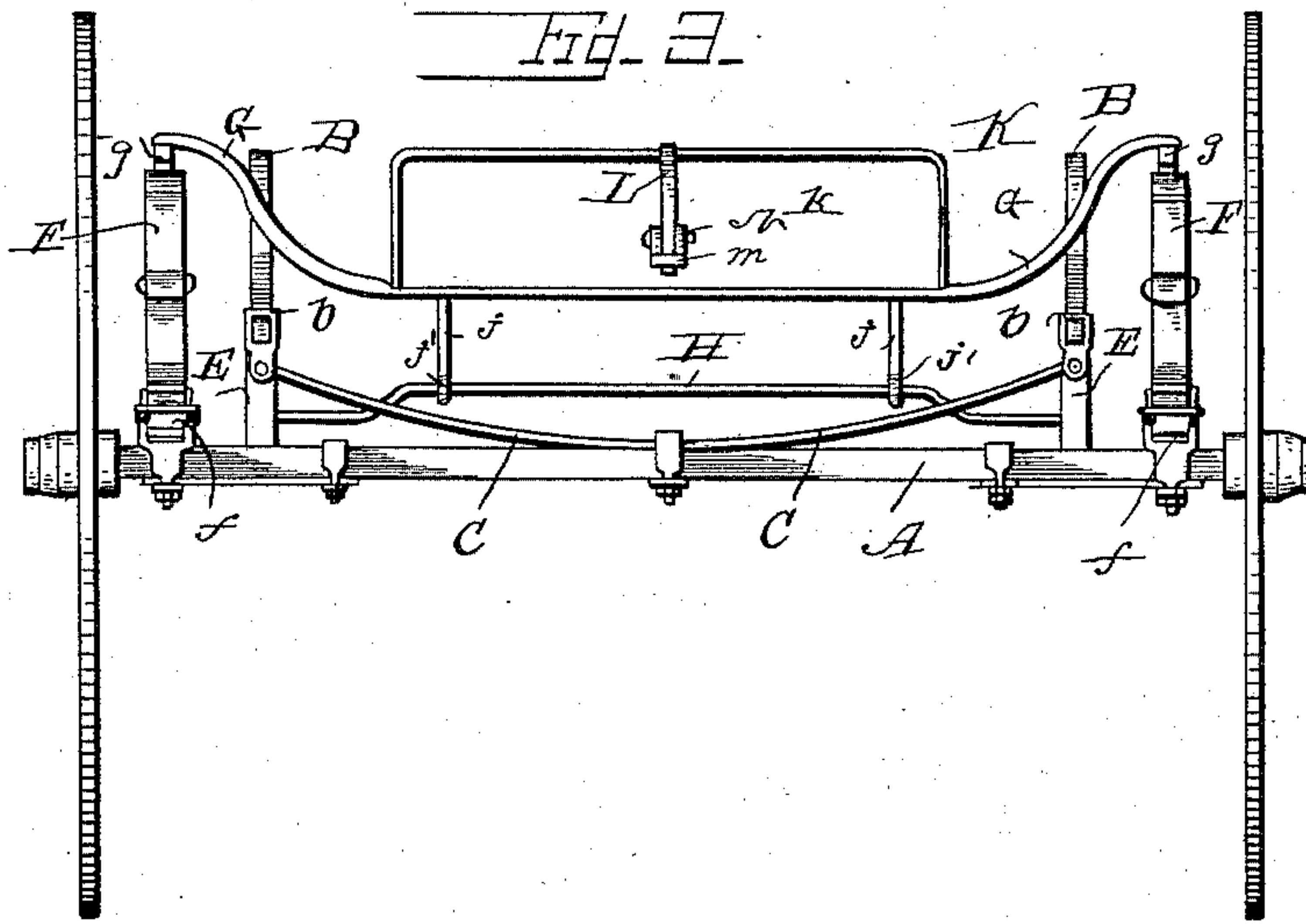


FIG. 5

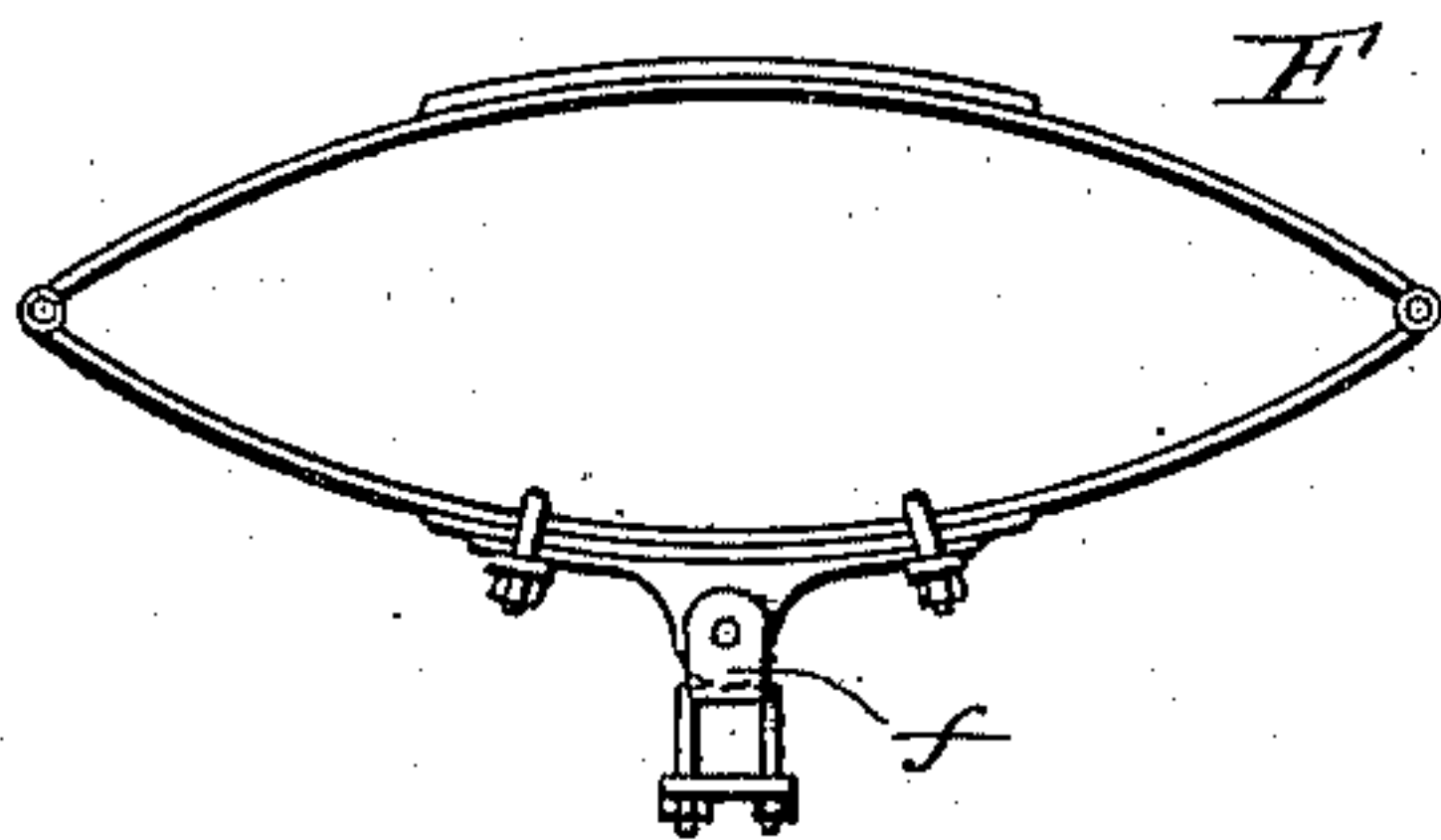
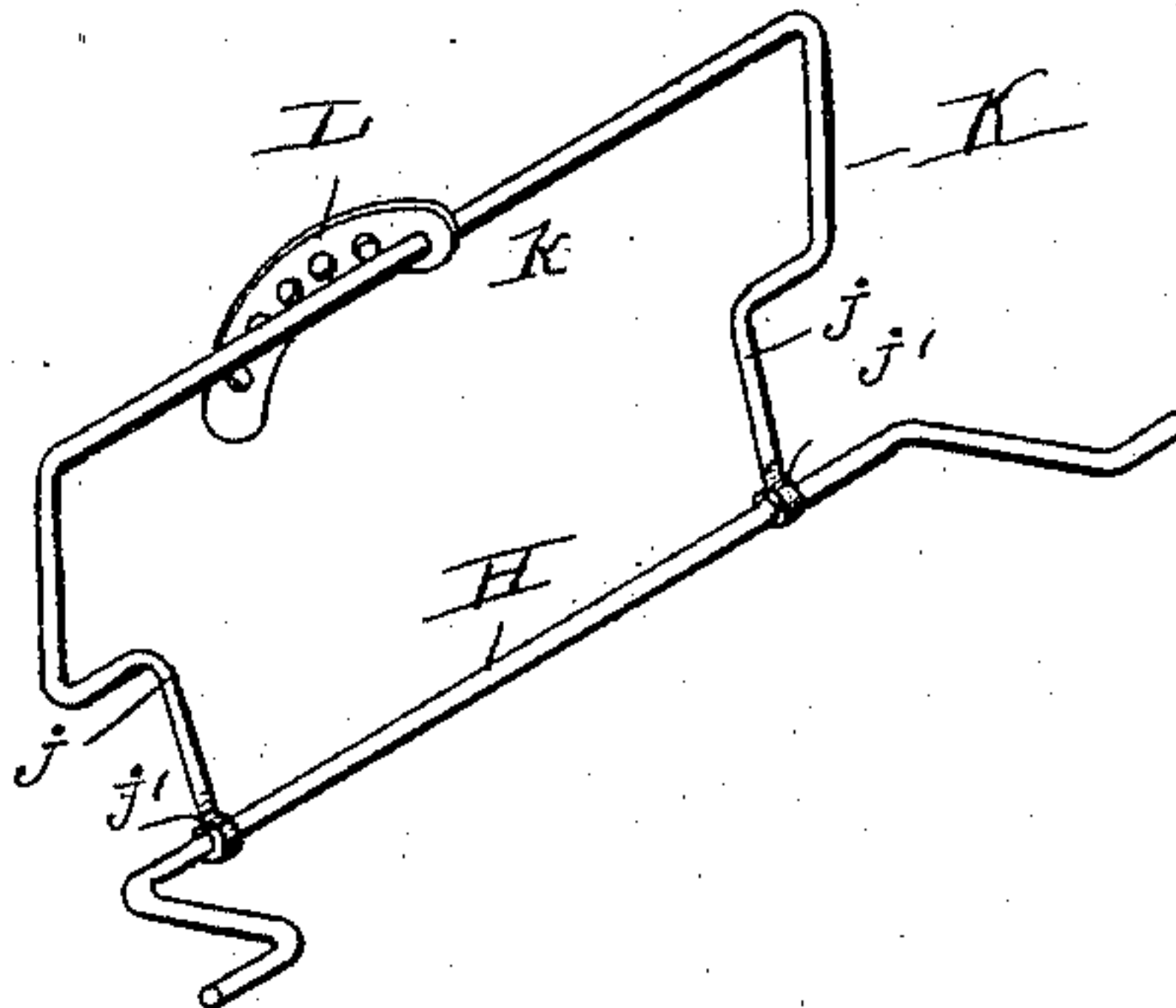


FIG. 6



Witnesses
Jesse Heller.
Philip Massi

Inventor
E. A. Oliver
by E. W. Anderson
his Attorney

UNITED STATES PATENT OFFICE.

ELAM A. OLIVER, OF BELLEVILLE, WISCONSIN.

SULKY.

SPECIFICATION forming part of Letters Patent No. 474,684, dated May 10, 1892.

Application filed January 16, 1892. Serial No. 418,306. (No model.)

To all whom it may concern:

Be it known that I, ELAM A. OLIVER, a citizen of the United States, and a resident of Belleville, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Carts; and I do declare the following to be 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a top plan view of the cart. Fig. 2 is a vertical longitudinal section of same. Fig. 3 is a rear elevation. Fig. 4 is a detail view of shaft-coupling and spring. Fig. 5 is a detail view of side spring and shackle; and Fig. 6 is a detail view of transverse bar, the connecting device, and perforated segment.

This invention has relation to certain new and useful improvements in road-carts; and it consists in the novel construction and combination of parts, as hereinafter specified.

In the accompanying drawings, the letter A designates the axle, and B B the thills or shafts, the rear ends of which are held in shackles or couplings *b b*, which are loosely or pivotally connected to the ends of a half or leaf spring C, bolted on the axle.

D D are the shaft-couplings, which consist of bars clipped at their rear portions to the axles and having their forward ends, which are extended a short distance beyond the front end of the body, bowed or curved upwardly, as shown at *c c*, and are provided each at this point with a shackle or clip *d*, between the arms of which the respective shafts are pivotally supported. Bolted or otherwise secured to these couplings are springs E E, consisting, preferably, each of two spring-plates, the upper of which at its forward end is bowed upwardly into engagement with the clip *d*, the lower plate being bowed downward and bearing against the coupling-iron. It will be seen, therefore, that the shafts are connected with the axle only through the medium of the springs D D and C, so that the movement of the animal is taken up by the

springs and is not communicated to the body. The springs D D also serve to take the jar of the vehicle off from the horse.

F F are the side springs, which are preferably of the usual elliptic form and which are connected to the axle by the shackles or couplings *ff*. The springs are pivotally supported in these couplings in such a manner as to permit them a forward and back rocking or oscillating movement while preventing them from any side movement. This connection keeps the body of the cart and the springs level when the horse is in motion and permits the raising and lowering of the body, as presently described. The bolsters *g g* of these springs are connected by the curved bars G G, on which the rear portion of the body is supported. The forward end of the body is supported upon the transverse bar or iron H, the ends of which are bowed downwardly and have loose bearings in eyes *h*, formed in the forward ends of spring bars or plates I, held between the plates of the springs D D.

K is the device for connecting the body with the bar H, and comprises an iron having a horizontal looped portion *k*, in which the body rests, and the downwardly-extending arms *jj*, having eyes or loops *j'* at their lower ends, which loosely engage the bar H.

L is perforated arm or segment on the upper horizontal portion of the loop *k* and which works in a bracket M in the body. This body has a bifurcated lug *m*, the arms of which are perforated, said perforations being designed to register with any one of the perforations in the arm L. By raising or lowering the arm L and securing it by a pin or bolt through the registering perforations the forward end of the body may be supported at any desired angle or height, according to the height of the animal.

By the construction above set forth the body is rendered almost entirely free from the motion of the horse and also from that of the supporting-wheels.

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

1. In a two-wheeled vehicle, the combination, with the axle and the half-spring se-

95

100

cured thereon, said spring having the shafts loosely connected thereto, of the coupling-bars for said shafts, and the springs for said bars, said coupling-bars and springs forming the support for the forward portion of the body, substantially as specified.

2. In a two-wheeled vehicle, the shaft couplings and supports comprising a half-spring secured on the axle and having a loose connection with the rear end portions of the shafts, the coupling-bars having the upwardly-bowed forward ends upon which the shafts are loosely supported, and the springs connected to said bars, said coupling-bars and springs forming the support for the forward portion of the body, substantially as specified.

3. A road-cart having the rear portion of its body supported upon oscillating springs and its forward portion upon an adjustable bar carried by springs, substantially as specified.

4. The combination, with the axle and the springs having an oscillating support thereon, of the vehicle-body having its rear portion supported upon transverse bars connected to said springs and its forward portion upon a transverse bar having a vertical adjustment

and having end bearings on springs, substantially as specified.

5. The combination, with the bar H, having the downwardly-bowed ends having loose bearings in spring-bars I, of the support K, having the downward-extending arms loosely connected to said bar and an upper horizontal looped portion in which the body rests, and an adjusting device, substantially as specified.

6. The road-cart comprising the axle and supporting-wheels, the half-spring on said axle, the shafts loosely connected to said spring, the forwardly-extended couplings on which the shafts are loosely supported, their springs, the elliptic springs having an oscillating support on the axle, the cross-bars connecting said springs, the body having its rear portion supported on said bars, and the adjustable spring-support for the forward portion of the body, substantially as specified.

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

E. A. OLIVER.

Witnesses:

D. E. WILLIAMS,
J. M. WILLIAMS.