

No. 669,247.

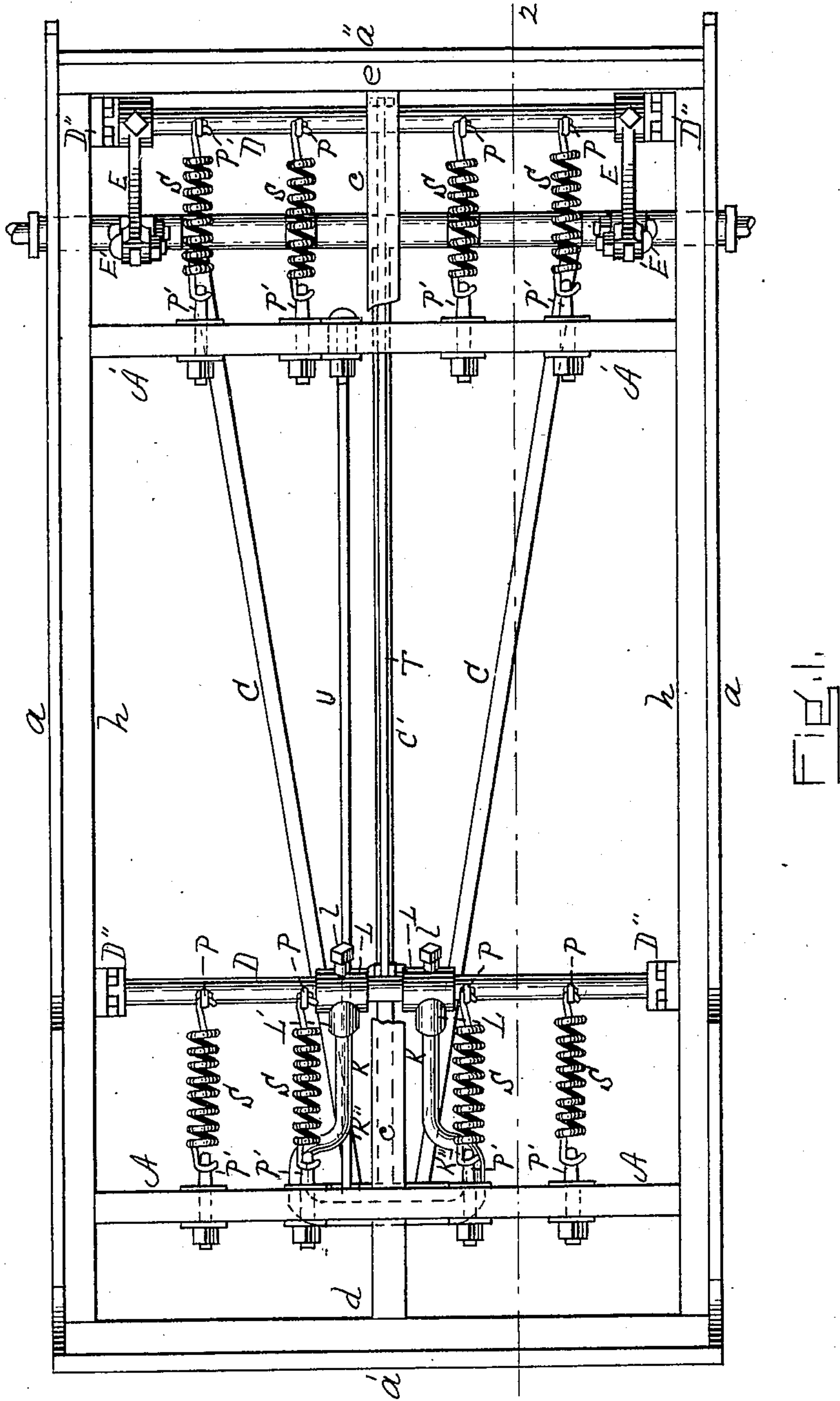
Patented Mar. 5, 1901.

D. TRUE.
SPRING GEAR FOR VEHICLES.

(Application filed June 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES
A. M. Conney.
E. P. Small.

INVENTOR
David True
By his Att'y.
Henry Williams

D. TRUE.
SPRING GEAR FOR VEHICLES.

(Application filed June 13, 1900.)

(No Model.)

2 Sheets—Sheet 2.

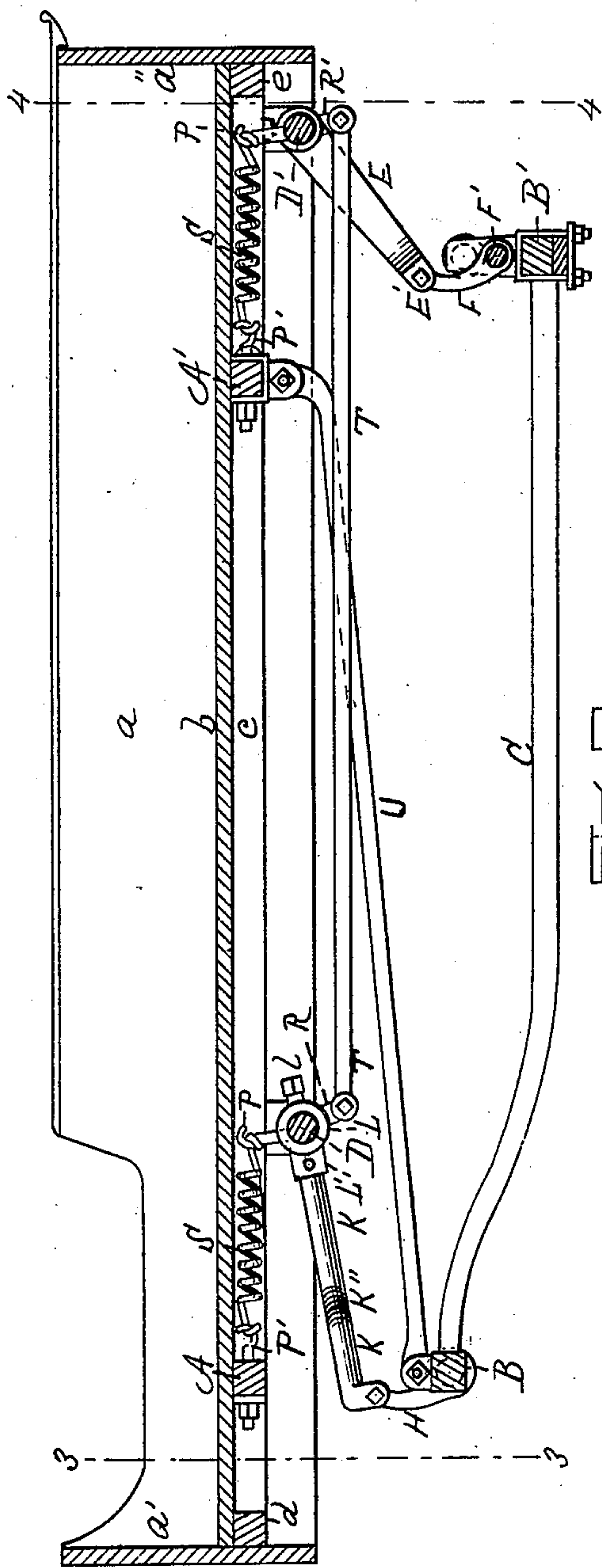


FIG. 2.

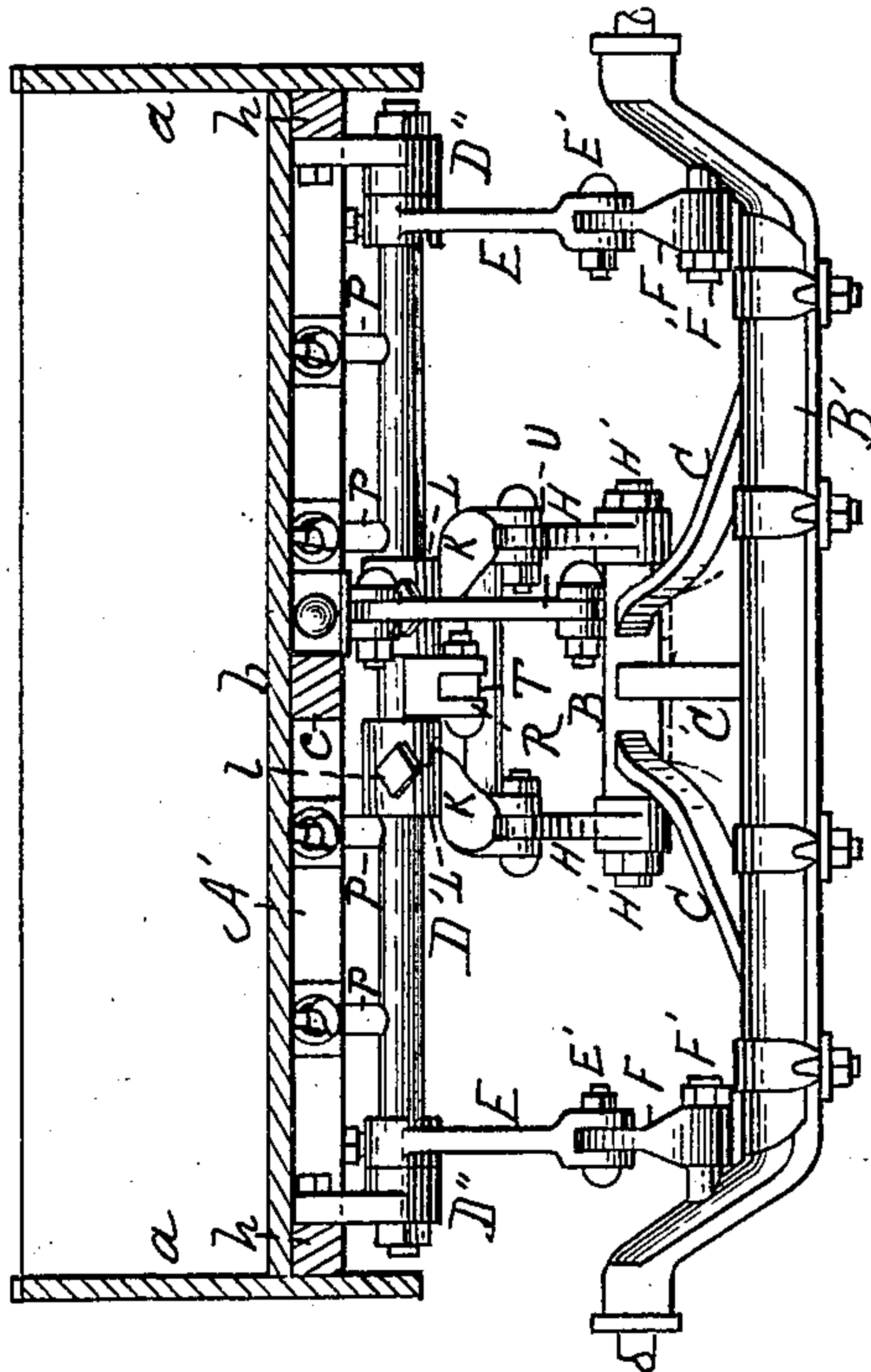


FIG. 4.

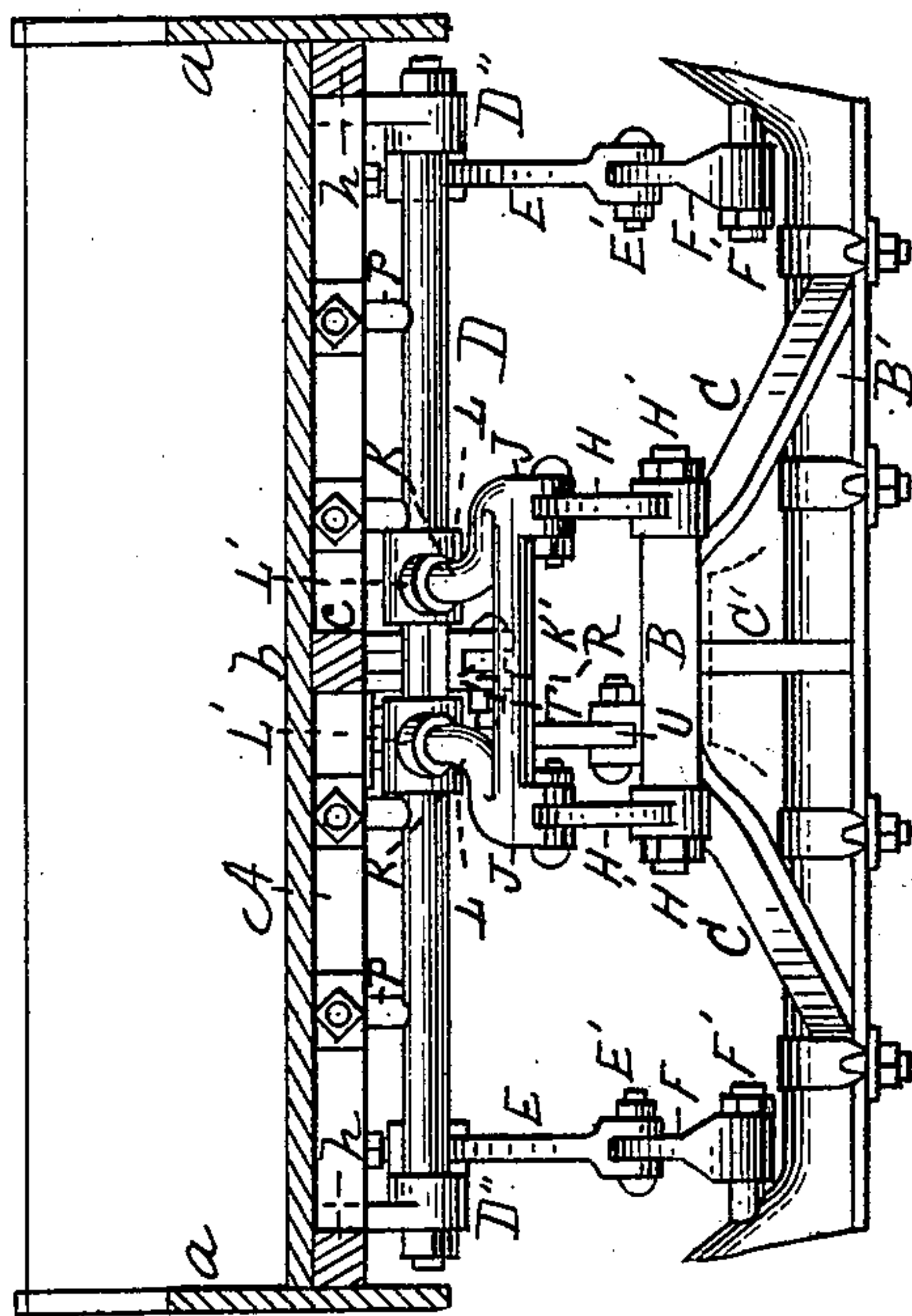


FIG. 3.

WITNESSES.
A. W. Bonney.
E. P. Small.

INVENTOR
By his Atty., David True,
Sherry Williams.

UNITED STATES PATENT OFFICE.

DAVID TRUE, OF AMESBURY, MASSACHUSETTS.

SPRING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 669,247, dated March 5, 1901.

Application filed June 13, 1900. Serial No. 20,140. (No model.)

To all whom it may concern:

Be it known that I, DAVID TRUE, a citizen of the United States, residing in Amesbury, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Spring-Gear for Vehicles, of which the following is a specification.

This invention relates to that class of spring-gear for vehicles, more especially for carriages and wagons, in which the movement of the carriage-body with relation to the running-gear is a purely vertical one, the body being caused by the springs to be moved vertically, remaining always at horizontal planes, and all portions of the body moving up and down at the same time; and the invention relates particularly to improvements in the style of spring-gear illustrated and described in my application for Letters Patent of the United States filed January 27, 1900, Serial No. 3,002, and allowed March 29, 1900, to which reference is made, such improvements having for their principal objects to connect the shackles with the rear axles above the latter, and thereby prevent the lodgment of stones or clogging from the collection of dust or dirt at that point, to provide an improved connection between the front rotative rod and the front axle, to provide for rotation in the same direction to the two rotative rods which directly act on the springs, and to enhance the efficiency of the contrivance.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a spring-gear embodying my improvements, with the sides, front, and end of a carriage-body applied, a portion of the central longitudinal bar being represented as broken out. Fig. 2 is a longitudinal vertical section taken on line 2, Fig. 1, the floor of the body being shown in position. Fig. 3 is a cross vertical section taken on line 3, Fig. 2, dotted lines, showing the position of the connection with the front axle, which is not illustrated in the drawings. Fig. 4 is a cross vertical section taken on line 4, Fig. 2.

Similar letters of reference indicate corresponding parts.

a represents the sides, *a'* the front or dash-board, and *a''* the back or end-gate, of the car-

riage-body, and *b* is the floor, all constructed as usual. *c* represents a longitudinally-arranged mid-bar extending from the front to the rear of the frame, such frame comprising the front bar *d*, rear bar *e*, and side bars *h*.

A and *A'* represent, respectively, cross-bars extending across the frame beneath the floor near the front and rear ends of the vehicle and approximately over the front and rear axles, the rear axle being lettered *B'*. Supported in suitable boxes *D''*, sustained by the side bars *h*, are rods *D D'*, said rod *D* being set somewhat at the rear of the front axle, which is under the bar *B*, below described, and said bar *D'* being at the rear of the rear axle *B'* and preferably quite close to the end of the carriage-body. The exact distances, however, of these rotative rods from the axles may be somewhat varied. Rigid on the rear rod *D'* are forwardly-extending arms *E*, the lower ends of which are pivotally connected at *E'* with shackles *F*, preferably curved, the lower ends of said shackles being hinged at *F'*, Figs. 3 and 4, to the upper side of the axle *B'*. By connecting the lower ends of the shackles with the upper side of the axle instead of extending them and connecting them with the lower side, as in the invention described in my former application, above referred to, I do away with the danger of collecting dust and dirt and effecting the lodgment of stones between the shackle and the under side of the axle, especially when the wagon is loaded and the body moves down against the power of the springs. It is apparent that clogging at that point limits the operation of the springs by preventing the lower ends of the shackles from swinging up to the extent permitted by the rear axle.

C C are reach-rods connecting the rear axle *B'* with the bar *B* and converging toward their forward ends. This bar has its ends pivotally connected by means of suitable pins with the lower ends of the shackles *H*, the upper ends of which are pivotally connected with the ears *J* on the cross-piece *K'*, which connects the lower ends of the curved rod *K*, the upper ends of which are held in sockets *L'*, extending from and integral with collars *L*, held rigidly on the rotative rod *D* by suitable set-screws *l*. By connecting the lower ends of the shackles *H* with the bar *B* at the

extreme opposite ends of the latter I avoid the danger of the movement of the shackles being interfered with and clogged by dust, dirt, or stones effecting lodgment on the surface of the bar. The curved rods K and cross-piece K' are preferably integral and are intended as an improvement over the bow-shaped frame H described in the application above referred to. This structure K K' in connection with the short bar B avoids the great spread of the bow-shaped frame, and by means of the inward bends at K'' the upper ends of the rods K are connected with the rotative rod D at but a short distance from each other, so that the structure allows of a certain amount of twist or spring and yields when one wheel passes over a stone or obstruction higher than the other.

The rods D D' are provided with the substantially radial hooks P, and the cross-bars A A' in front of said rods are provided with adjustable hooks P', the sets of hooks P and P' being connected by the horizontally-disposed springs S of any suitable number. From the under sides of the rotative rods D and D' ears or projections R R' extend, said ears or projections being connected at their outer ends by the rod T. A guy-rod U is pivotally secured at its opposite ends to the cross-bar A and the bar B. By means of this arrangement, in which the rods D D' are both at the rear or both at the same side of the bars A A' instead of being both between them, and said rotative rods are connected by the rod T, the rods rotate as the carriage is depressed or as it rises in the same direction with each other instead of reversely or toward each other, as in the invention described in the application above referred to.

As will readily be understood the depression of the frame by the application of weight forces the shackles F H forward and depresses the bars E and K, thus rotating the rods D D' rearwardly and extending the springs. As the carriage-body rises this operation is reversed.

A central brace-rod C' preferably extends from the bar B to the rear axle B'.

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

1. In a spring-gear for vehicles, a frame above the axles for supporting the carriage-body; a pair of rotative rods or shafts supported by and having their bearings in said frame; mechanism connecting said rods or shafts whereby rotation of one imparts similar rotation or rotation in the same direction to the other; springs intermediate with and connecting said rods or shafts and the frame; the stationary portion of the running-gear; and arms rigid on said rods or shafts and connected with the stationary portion of the running-gear, substantially as described.

2. In a spring-gear for vehicles, the frame above the axles for supporting the carriage-body; the front and rear cross-bars A, A' sup-

ported by said frame; the two rotative rods or shafts D, D' supported by and having bearings in said frame and located respectively on corresponding sides of the cross-bars; mechanism connecting said rods or shafts whereby rotation of one imparts similar rotation or rotation in the same direction to the other; springs intermediate with and connecting the rods or shafts D, D' with the cross-bars A, A' respectively; the stationary portion of the running-gear; and arms rigid on said rods or shafts and connected with the stationary portion of the running-gear, substantially as set forth.

3. In a spring-gear for vehicles, the frame above the axles for supporting the carriage-body; the front and rear cross-bars A, A' supported by said frame; the two rotative rods or shafts D, D' supported by and having bearings in said frame and located respectively at the rear of said cross-bars; mechanism connecting said rods or shafts whereby the rotation of one imparts similar rotation or rotation in the same direction to the other; springs intermediate with and connecting the rods or shafts D, D' with the cross-bars A, A' respectively; the stationary portion of the running-gear; and arms rigid on said rods or shafts and connected with the stationary portion of the running-gear, substantially as described.

4. In a spring-gear for vehicles, a frame above the axles for supporting the carriage-body; the forward cross-bar A and the rear cross-bar A' supported by said frame; the forward rotative rod or shaft D supported by the frame between said cross-bars; the rear rotative rod or shaft D' supported by the frame at the rear of the rear cross-bar A'; mechanism connecting said rods or shafts; springs intermediate with and connecting said rods or shafts and said cross-bars; the stationary portion of the running-gear; and arms rigid on said rods or shafts and connected with the stationary portion of the running-gear, substantially as set forth.

5. In a spring-gear for vehicles, a frame above the axles for supporting the carriage-body; a pair of rods or shafts supported by and having their bearings in said frame; mechanism connecting said rods or shafts whereby rotation of one imparts rotation to the other; springs intermediate with and connecting said rods or shafts with the frame; a frame rigid on one of said rotative rods or shafts; the horizontal bar B supported by the axle; and shackles as H pivotally connected at their upper ends with said frame and at their lower ends with said bar B, the connections of the shackles with the bar being at the extreme opposite ends of the latter, substantially as and for the purpose set forth.

6. In a spring-gear for vehicles, a frame above the axles for supporting the carriage-body; a pair of rods or shafts supported by and having their bearings in said frame; mechanism connecting said rods or shafts whereby rotation of one imparts rotation to

the other; springs intermediate with and connecting said rods or shafts with the frame; the running-gear including the bar B; the semirigid spring-frame extending from one of
5 the rotative rods and comprising the cross-piece K' and the pair of longitudinal rods K bending toward each other and thereby narrowing said frame at a point between the ends

thereof; and the shackles H pivotally connecting said spring-frame with the bar B, substantially as set forth.

DAVID TRUE.

Witnesses:

HENRY W. WILLIAMS,
A. N. BONNEY.