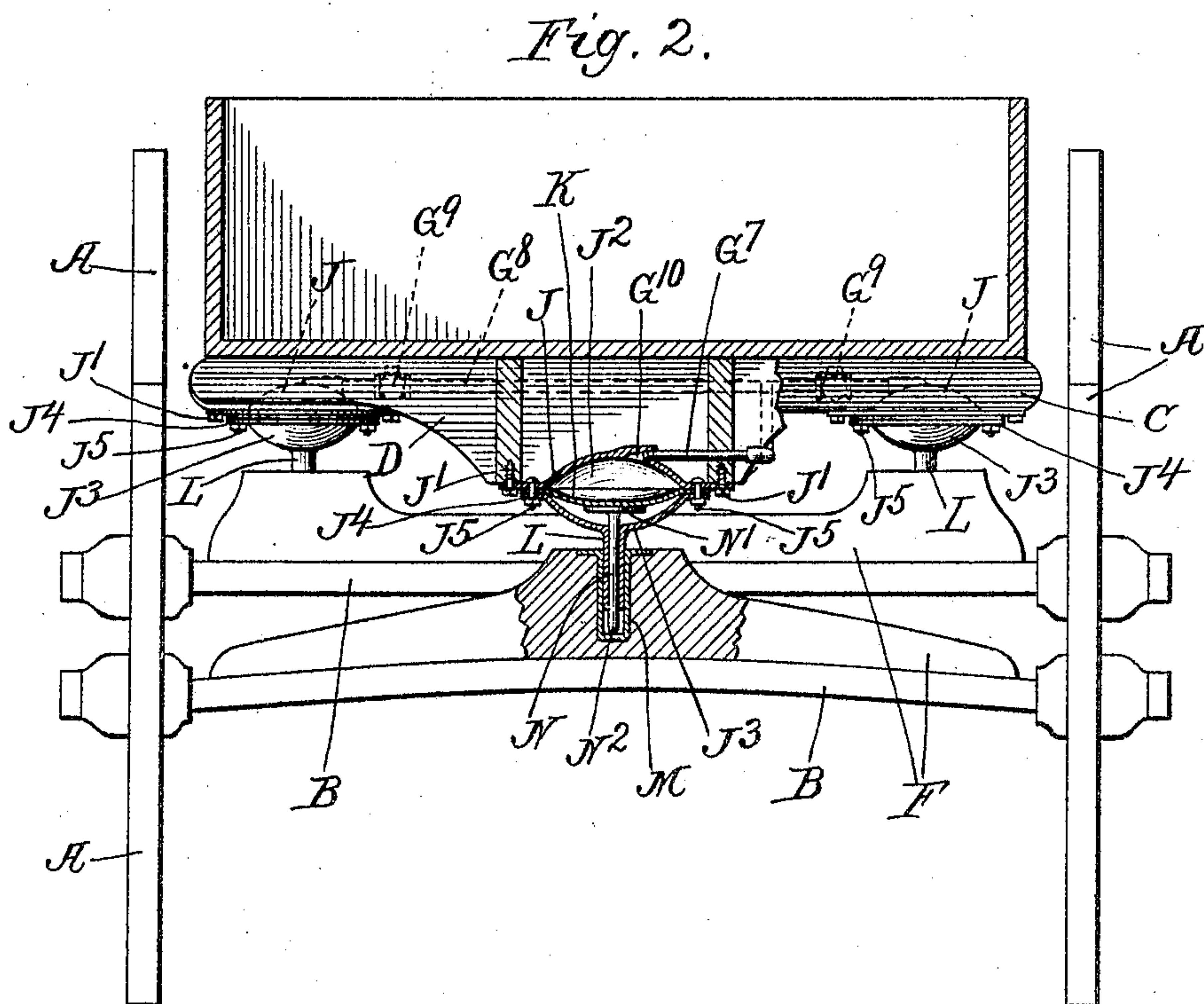
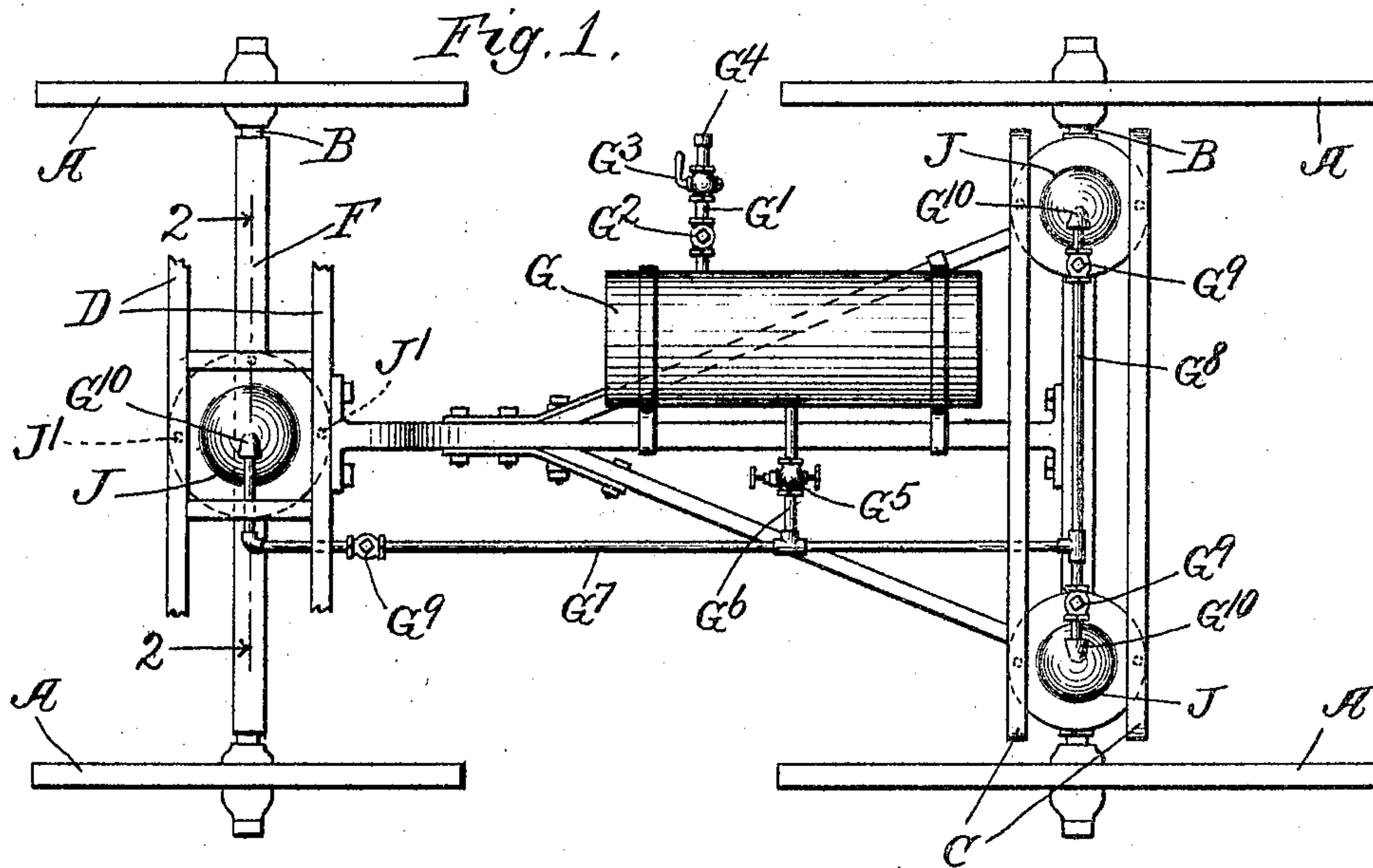


No. 770,847.

PATENTED SEPT. 27, 1904.

M. DOWNER.
AIR CUSHION FOR VEHICLES.
APPLICATION FILED NOV. 11, 1903.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

MURILLO DOWNER, OF CHICAGO, ILLINOIS.

AIR-CUSHION FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 770,847, dated September 27, 1904.

Application filed November 11, 1903. Serial No. 180,675. (No model.)

To all whom it may concern:

Be it known that I, MURILLO DOWNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Air-Cushions for Vehicles, of which the following is a specification.

My invention relates to improvements in air-cushions for vehicles. It is particularly illustrated in connection with wagons or road-vehicles.

The particular form of my invention which I have shown is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the running-gear of a vehicle to which my invention is attached. Fig. 2 is a cross-section on the line 2 2 of Fig. 1, the rear portions of the device being shown in elevation.

Like parts are indicated by the same letter in both the figures.

A A are the wheels; B B, the axles; C, the rear bolster supported on the axle, and D a cross-piece near the forward end of the vehicle-body.

F F are the raised portions on the axles, one of which receives the bolster C and the other the forward air-cushion device.

G is an air-storage cylinder supplied through the pipe G', which contains a check-valve G², a stop-valve G³, and the exterior removable cap G⁴.

G⁵ is a pressure-regulating valve in the pipe G⁶, which leads from the storage-cylinder to the pipe G⁷, which in turn connects with the pipe G⁸. These pipes G⁷ and G⁸ are provided with check-valves G⁹ just before they enter the air-cushion devices at G¹⁰. The air-cushion devices are substantially the same, though the detail shown in cross-section in Fig. 2 would obviously differ in some particulars from the others, for in this case it operates not only as an air-cushion device, but also as the king-bolt. We will describe the air-cushion device by reference to this detail.

J is an upper plate secured by the bolts J' J' to the cross-piece D and outwardly bent at J² to form a recess, as shown. J³ is a bent piece of sheet metal flanged at J⁴ and secured by the bolts J⁵ J⁵ to the piece J. J³ is shaped

so as to complete, with the piece J, a hollow somewhat globular recess. A flexible diaphragm K is interposed between these two parts, as indicated. L is a downwardly-projecting cylindrical portion of the plate J³, and it fits in the pocket M on the projecting portion F of the axle B. This cylindrical portion L does not extend to the bottom of the pocket. N is a pin longer than the cylinder L, provided at its upper end with a plate N', which receives the lower face of the diaphragm, and its lower extremity is preferably rounded at N² and rests upon the bottom of the pocket M. Obviously these parts can be greatly altered in size, shape, form, and relation to each other without departing from the spirit of my invention, and I do not wish to be limited, therefore, to the particular devices or construction shown.

The use and operation of my invention are as follows: A suitable pressure of air will be supplied to the storage-cylinder by pumping up, the same as in the case of a bicycle or automobile tire. The pressure delivered to the cushions will be determined by the pressure-regulating valve; but it will always be equal in all of them, because they are connected together. It is obvious, therefore, that the weight of the body of the vehicle can thus be suspended on these air-cushions or be supported on the air-cushions in lieu of springs. The forward air-cushion need not be, but in this case is, associated with a device which serves as the king-bolt. In other words, the parts are related so that the axle can turn on the downwardly-projecting portion associated with the air-cushion, while at the same time the vehicle-body above may have the proper vertical motion.

The parts as I have shown them are to be taken in a sense as diagrammatically shown, since I have sought only to give the general idea and not to produce a working drawing.

I claim—

1. In an air-cushion for vehicles the combination of an air-chamber consisting of two parts, one a rigid recessed part, the other a flexible part, said chamber being interposed between the vehicle-body and the running-gear, fixedly connected with one and movably

connected with the other by means of a projecting part received into a socket in the other.

2. In an air-cushion for vehicles the combination of an air-receptacle composed of two parts, the one a rigid recessed part, the other a flexible diaphragm, said receptacle being interposed between the vehicle-body and the running-gear, fixedly connected with one and provided with a projecting cylindrical part received in the socket of the other, the pin being movable within the socket and bearing at one end on the bottom of the socket and at the other engaging the diaphragm part of the air-chamber.

3. In an air-cushion for vehicles the combination of a chamber composed of two rigid concaved walls interposed between the vehicle-body and the running-gear, having a fixed connection with the one and a connection capable of vertical motion with the other, a diaphragm through said chamber, an air connection on one side of said diaphragm and a connection with the axle leading from the other side of said diaphragm.

MURILLO DOWNER.

Witnesses:

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