No. 730,688. PATENTED JUNE 9, 1903.

S. OTIS.

BOLSTER AND TRUCK MECHANISM FOR VEHICLES.

APPLICATION FILED SEPT. 29, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

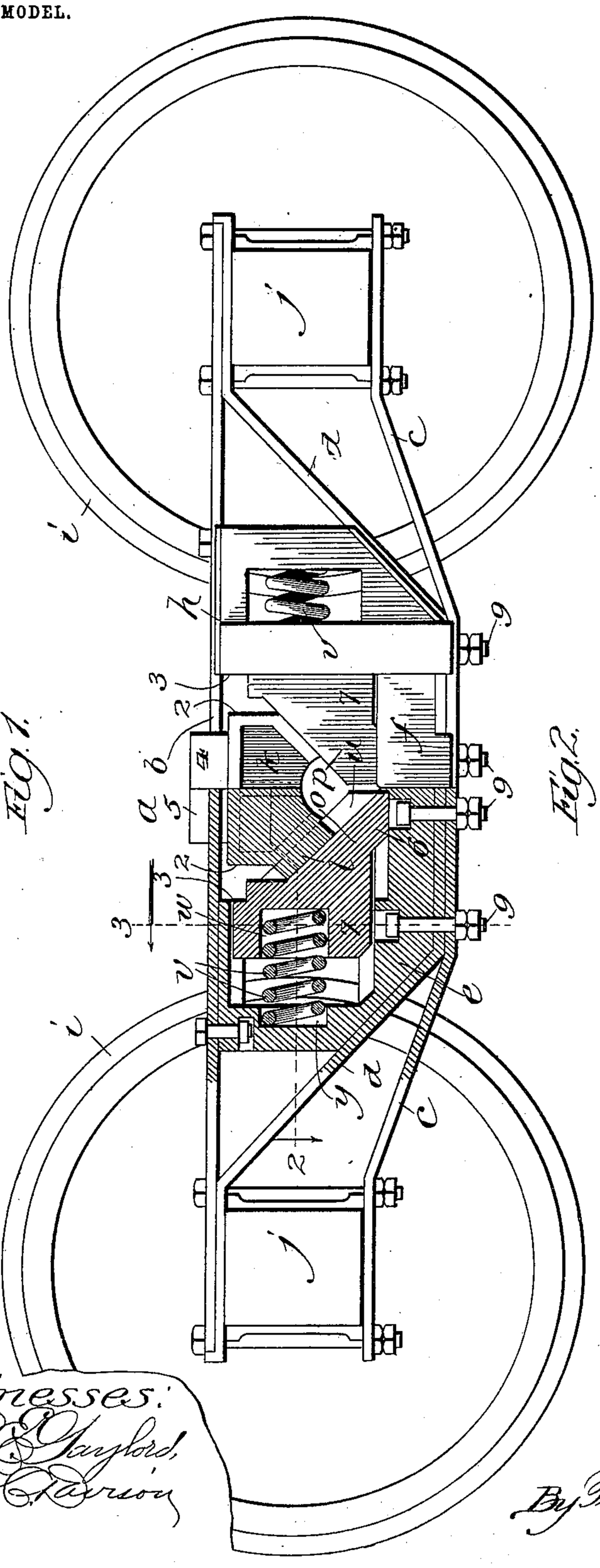

Fig. 1.

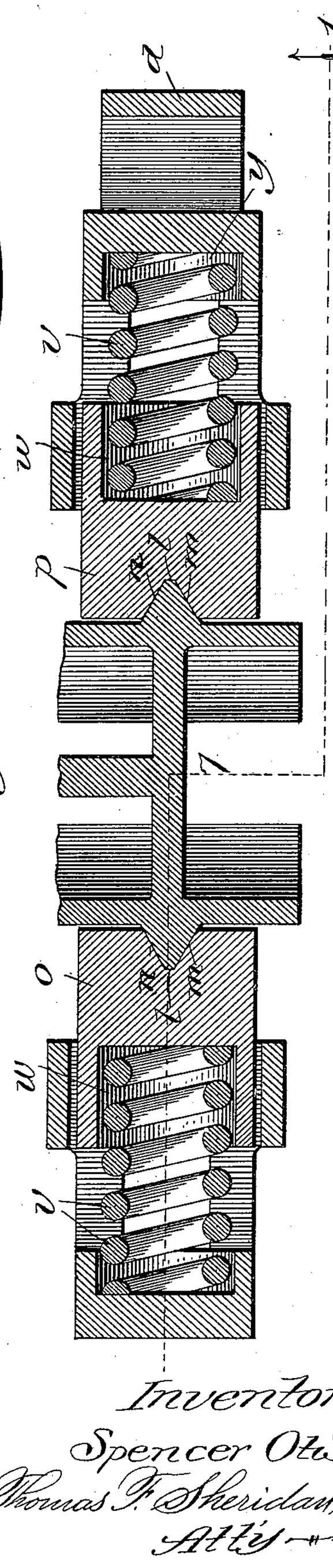

Fig. 2.

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Fig. 6.

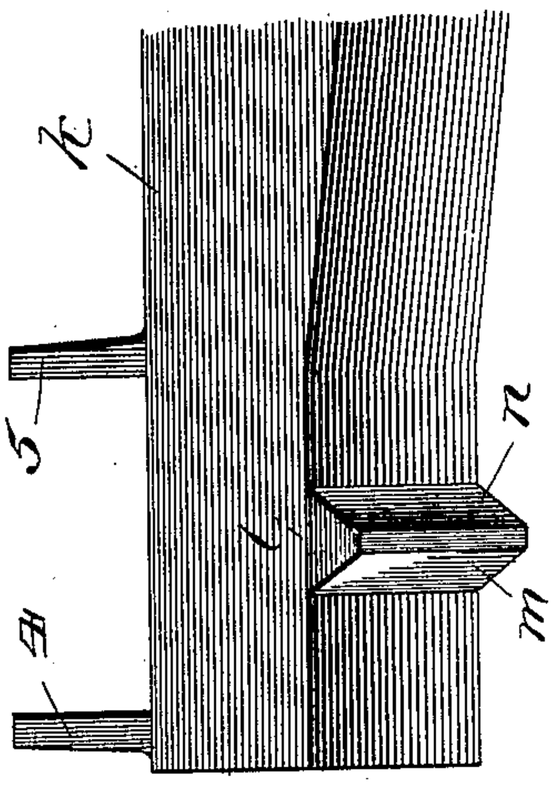


Fig. 7.

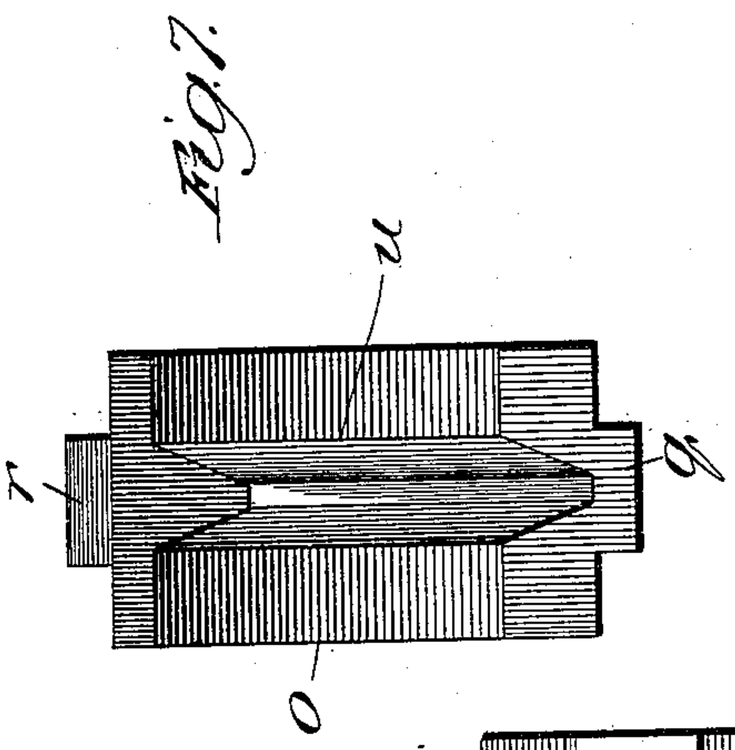


Fig. 4.

Fig. 5.

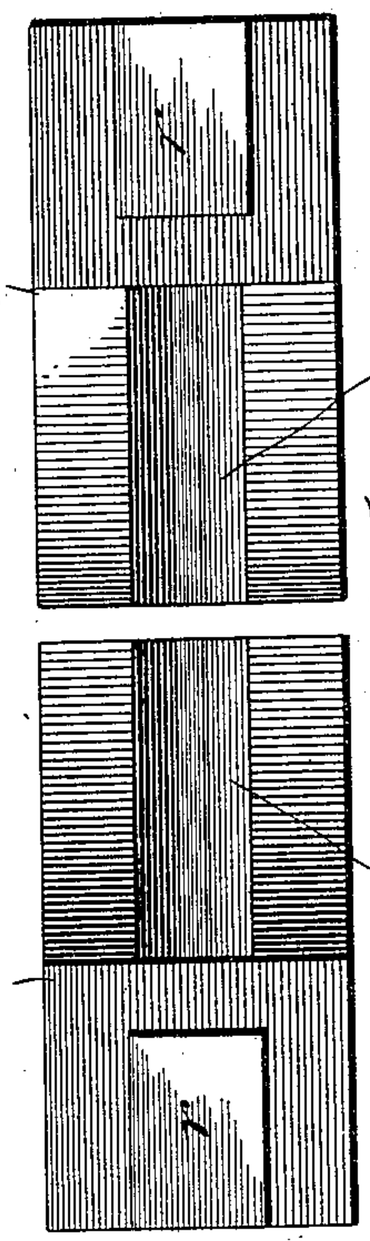
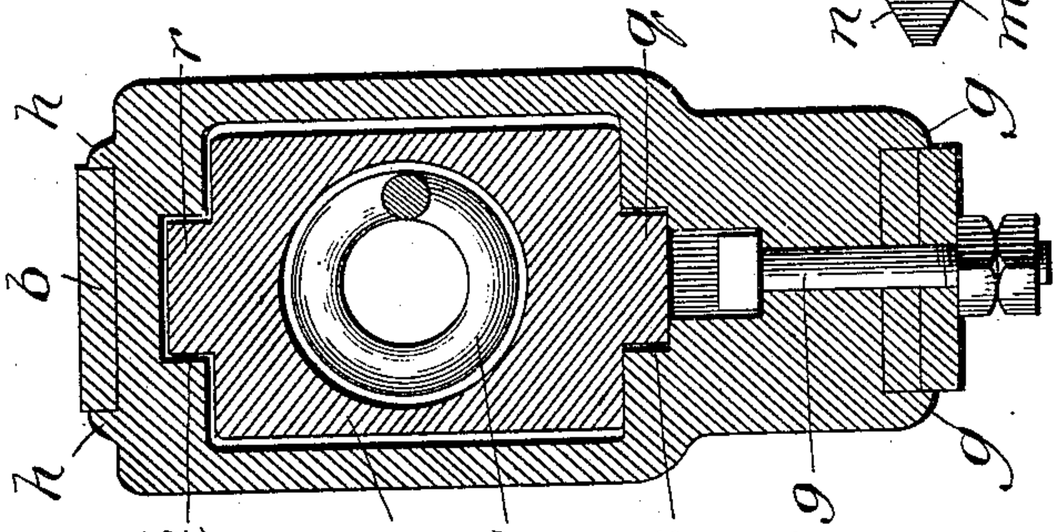


Fig. 3.



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No. 730,688. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

SPENCER OTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL PATENT HOLDING COMPANY, OF RAPID CITY, SOUTH DAKOTA, AND CHICAGO, ILLINOIS, A CORPORATION OF SOUTH DAKOTA.

BOLSTER AND TRUCK MECHANISM FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 730,688, dated June 9, 1903.

Application filed September 29, 1902. Serial No. 125,298. (No model.)

To all whom it may concern:

Be it known that I, SPENCER OTIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bolster and Truck Mechanism for Vehicles, of which the following is a specification.

My invention relates to that class of trucks for vehicles having truck or gear frames, a bolster mounted therein, and instrumentalities for supporting the bolster and forming a horizontally-yielding connection between it and the truck or gear frames.

It relates, further and particularly to the means for yieldingly supporting the bolster or similar element in the truck-frames and to the construction of the bolster and the integral friction mechanism with which it is provided for coöperating with the yielding bolster-supporting mechanism of the truck in providing the desired yielding cushioning resistance to the movements of the bolster and vehicle-body resting thereon in all substantially horizontal and downward directions.

The principal object of my invention is to provide a simple, economical, and efficient bolster and truck mechanism for vehicles.

A further object is to provide a bolster having friction mechanism arranged at each end thereof adapted to permit and provide a yielding cushioning resistance to the motion of the bolster in all substantially horizontal or downward directions.

A further object is to provide a vehicle-truck having a bolster mounted therein adapted to move in any direction with relation thereto and support the vehicle-body, and means for yieldingly resisting or cushioning and positively limiting the movement of the bolster in all substantially longitudinal, transverse, and downward directions.

A further object is to provide a bolster having integral friction mechanism at each end thereof adapted to frictionally engage coöperating friction mechanism in the truck and provide, in connection therewith, a cushioning resistance to the movements of the bolster in all substantially horizontal or downward directions.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a car bolster and truck constructed in accordance with my improvements; Fig. 2, an enlarged sectional plan view of one end of the bolster and a portion of the side frame of the car-truck, taken on line 2 of Fig. 1 looking in the direction of the arrow; Fig. 3, an enlarged sectional elevation of the side frame of the truck, showing one of the friction-blocks mounted therein, taken on line 3 of Fig. 1 looking in the direction of the arrow; Fig. 4, a plan view of one end of my improved bolster; Fig. 5, a plan view of a pair of sliding friction-blocks hereinafter described; Fig. 6, a side elevation of one end of my improved bolster, and Fig. 7 an end elevation of one of the sliding friction-blocks shown in Fig. 5.

In constructing a vehicle bolster and truck in accordance with my improvements I provide a truck-frame consisting of side frames *a*, which, as shown, comprise an upper bar *b*, lower and intermediate truss-bars *c* and *d*, bolster-columns *e* and *f*, mounted in such side frames and connected thereto by means of bolts 9. The bolster-columns are provided with downwardly-extending flanges *g* and upwardly-extending flanges *h* for engaging the bars of the side frame and holding the bolster-columns firmly in place, all of which portions of the side frames may be made in one integral casting, if desired. A pair of these side frames and connections constitute what I term the "truck-frame" and may be joined together in any desired and well-known manner, as by means of cross-ties, (not shown,) and are mounted upon journals (not shown) of the truck-wheels *i* in suitable bearings in the boxes *j* in any ordinary or well-known manner.

A bolster *k* is provided and mounted in the

truck-frame, as shown in Figs. 1 and 2. It is very desirable to provide means for yieldingly supporting the bolster in the truck-frame, so as to permit it to have vertical longitudinal and transverse play and at the same time provide the desired yielding or cushioning resistance to the end thrusts and downward and transverse movements thereof. It is also desirable to change or convert the downwardly-directed force of the vehicle-body and load to a substantially horizontal direction when it reaches the truck, thus economizing the space above, beneath, and endwise of the bolster. To accomplish these objects, the bolster is provided at each end with preferably integral transverse supporting friction angular tongues *l*, extending downwardly and inwardly at an angle beneath the ends of the bolster, so as to form a wedge-shaped base therefor. These friction-tongues are provided with side surfaces *m* and *n*, extending downwardly and inwardly at an angle to each other.

Grooved friction-blocks *o* and *p* are provided and movably mounted in the side frames of the truck, so as to slide horizontally therein when the bolster moves in any substantially horizontal or downward direction. These sliding blocks are held movably in place in the truck-frames by means of downwardly-projecting guides *q* and upwardly-projecting guides *r*, mounted, respectively, in grooves or ways *s* and *t* in the side frames or bolster-columns. These grooved sliding blocks are provided with upper grooved friction surfaces or ways *u*, extending downwardly and toward the inner ends of such blocks at an angle corresponding to and in frictional engagement with the friction-surfaces of the bolster-supporting tongues. Spiral springs *v* are mounted between the sliding blocks and the truck-frames in pockets *w* in the ends of the sliding blocks and pockets *y* in the side frames or bolster-columns.

From the foregoing it will be readily seen that the friction-tongues of the bolster rest upon the sliding friction-blocks in frictional engagement with the inclined ways or grooves thereof, and that the spiral springs provide a yielding cushioning resistance to the movement of the bolster in all substantially horizontal or downward directions, also that the side surfaces of the sliding friction-blocks and side surfaces of the friction-tongues being in frictional engagement form a yielding frictional resistance to the end thrusts of the bolster, as well as to its movements transversely or downwardly.

To permit the desired limited transverse movements of the bolster, its sides 2 are arranged a sufficient distance from the inner walls 3 of the bolster-columns or side frames to allow the desired play, and in order to limit its end thrusts the bolster is provided with upwardly-projecting tongues 4 and 5, adapted to contact the side frame. To prevent the sliding friction-blocks from tipping or becoming unduly clogged, they are each provided with two bearing-surfaces 6 and 7, which are in sliding engagement with the bolster-columns or side frames.

I claim—

1. In mechanisms of the class described, a bolster having a main body portion provided with a transverse supporting-tongue extending downwardly and inwardly at an incline, substantially as described.

2. In mechanisms of the class described, a bolster having a main body portion provided with integral transverse angular supporting-tongues at each end extending downwardly and inwardly at an incline, substantially as described.

3. In mechanisms of the class described, a bolster having a main body portion provided with integral transverse supporting angular tongues at the ends thereof extending downwardly and inwardly at an angle to the main body portion, each of such tongues having side faces extending downwardly and inwardly at an angle to each other, substantially as described.

4. In mechanisms of the class described, the combination of a truck-frame, a bolster provided with supporting friction-tongues extending downwardly and inwardly at an incline, mechanism yieldingly mounted at each side of the bolster and movable at an angle from the perpendicular center thereof for supporting such bolster, and spring mechanism arranged intermediate such bolster-supporting mechanism and the truck-frame, substantially as described.

5. In mechanisms of the class described, the combination of a truck-frame, a bolster mounted in such frame and provided with integral supporting angular tongues, and spring and friction mechanism mounted at each side of the bolster and intermediate it and the side frames for yieldingly supporting and forming a cushion for the bolster, substantially as described.

6. In mechanisms of the class described, the combination of a truck-frame, a bolster mounted in such frame provided with integral transverse tongues at each end extending downwardly and inwardly, friction mechanism mounted at each side of the bolster in frictional engagement with such tongues, and spring mechanism mounted intermediate such friction mechanism and the truck-frame, substantially as described.

7. In mechanisms of the class described, the combination of a truck-frame comprising two side frames, a bolster mounted in such side frames, supporting friction mechanism for each end of such bolster arranged in fixed relation thereto and provided with downwardly and inwardly extending friction-surfaces, friction-blocks slidably mounted in the side frames in frictional engagement with the friction-surfaces of such supporting friction

mechanism, and spring mechanism arranged intermediate such sliding friction-blocks and the side frames, substantially as described.

8. In mechanisms of the class described, the combination of a pair of side frames, a bolster mounted in such side frames movable in all directions substantially horizontal or downward and provided with friction mechanism comprising tongues extending downwardly and inwardly at an angle, and grooved friction-blocks slidably mounted in the side frames in frictional engagement with such tongues, substantially as described.

9. In mechanisms of the class described, the combination of a pair of side frames, a bolster mounted in such side frames provided with integral supporting-tongues, grooved friction-blocks slidably mounted in the side frames provided with upper friction-surfaces arranged in frictional engagement with such tongues and extending downwardly at an incline corresponding to the angle of the friction-surfaces of the bolster-tongues, and spring mechanism arranged intermediate such friction-blocks and the side frames, substantially as described.

10. In mechanisms of the class described, the combination of a pair of side frames, a bolster mounted in such frames provided with integral transverse angular tongues at each end extending downwardly and inwardly, grooved friction-blocks slidably mounted in the side frames and provided with upper inclined surfaces arranged in frictional engagement with the surfaces of the supporting friction-tongues, and spring mechanism arranged intermediate the sliding blocks and side frames, substantially as described.

11. In mechanisms of the class described, the combination of a truck-frame comprising two side frames, a bolster mounted in such side frames provided with integral supporting friction-tongues extending downwardly and inwardly, horizontally-movable grooved friction-blocks slidably mounted in the side frames and in frictional engagement with the supporting-tongues of the bolster, and means for holding the friction-blocks and bolster-supporting tongues in yielding frictional engagement, substantially as described.

12. In mechanisms of the class described, the combination of a truck-frame comprising a pair of side frames, a bolster mounted in such side frames provided with integral supporting angular tongues, horizontally-movable grooved friction-blocks slidably mounted in the side frames and provided with inclined friction-surfaces in frictional engagement with the surfaces of such supporting-tongues, and spring mechanism arranged intermediate such sliding friction-blocks and the side frames, whereby the movement of the bolster with its supporting friction-tongues in any substantially horizontal or downward direction is yieldingly resisted by the pressure of the friction-blocks in a substantially horizontal direction, substantially as described.

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