May 13, 1924. 1,493,682

P. KRÜGER

UNDERFRAME FOR RAILWAY CARS

Filed Aug. 29, 1923 2 Sheets-Sheet 1

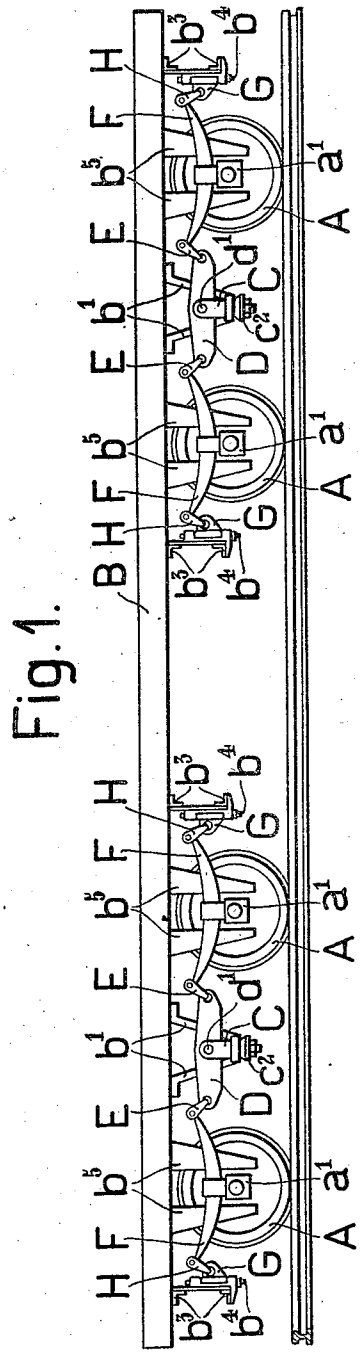


Fig. 1.

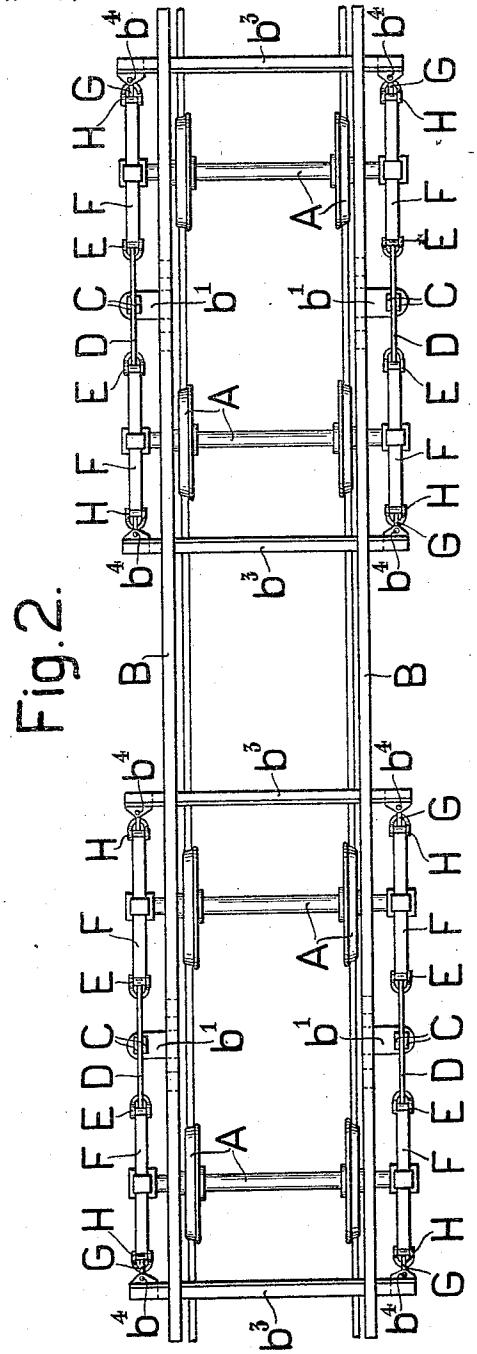


Fig. 2.

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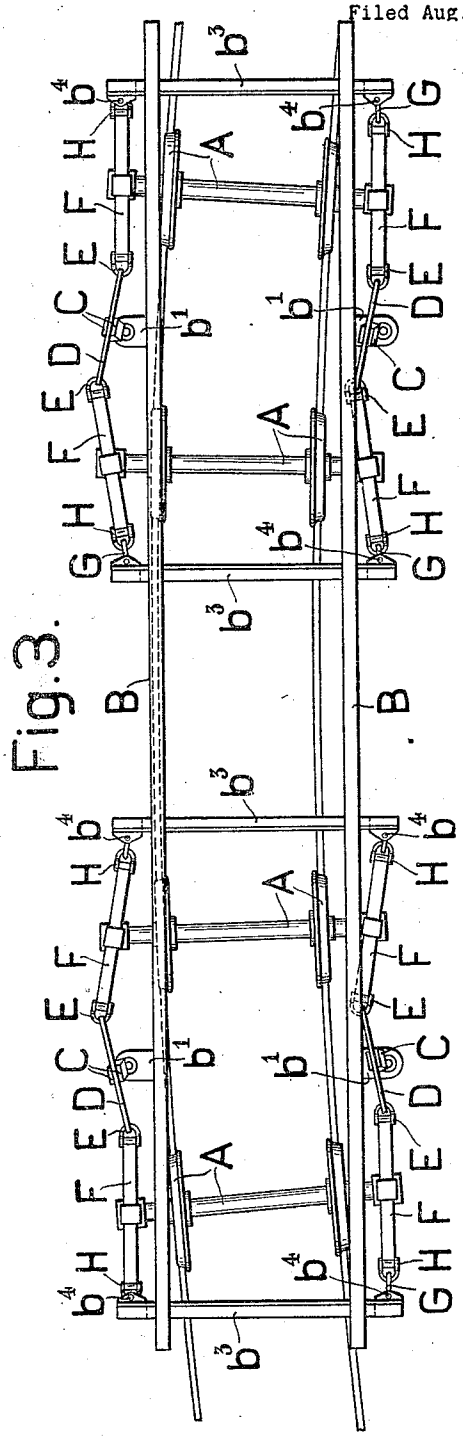


Fig. 3.

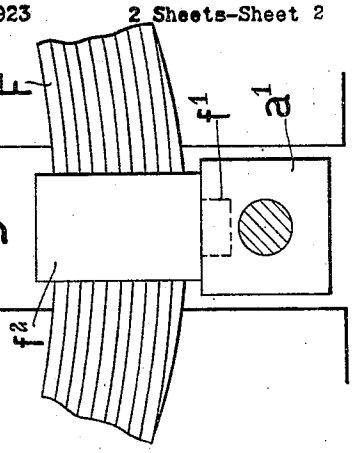


Fig. 6.

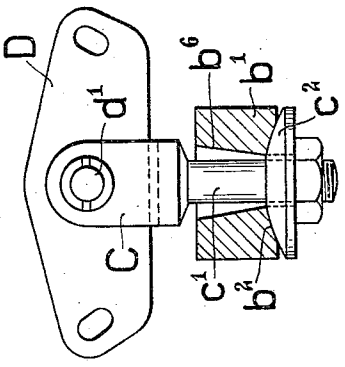


Fig. 5.

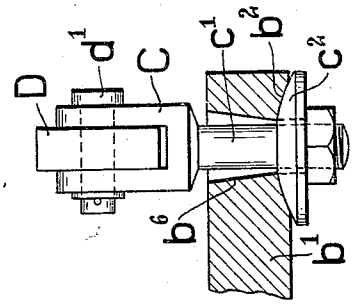


Fig. 4.

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Patented May 13, 1924. 1,493,682

UNITED STATES PATENT OFFICE.

PAUL KRÜGER, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP AKTIENGESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

UNDERFRAME FOR RAILWAY CARS.

Application filed August 29, 1923. Serial No. 660,020.

To all whom it may concern:

Be it known that I, PAUL KRÜGER, residing at Essen, Germany, a citizen of the German Republic, have invented a certain new and useful Improvement in Underframes for Railway Cars, of which the following is a specification.

This invention relates to underframes for railway cars of the kind with which two or more pairs of wheels and axle are in connection with one another through the axle springs and longitudinal compensating levers which are pivoted to the underframe.

The invention has for its object to provide an underframe of the said kind which is of a construction such as to allow the railway car to take narrow curves without considerable resistance.

The accompanying drawing illustrates, as an embodiment of the subject-matter of the invention, an underframe with two sets of two pairs of wheels and axle.

Fig. 1 is a side elevation of the underframe;

Fig. 2 is a corresponding plan;

Fig. 3 is a view similar to Fig. 2 of the underframe in a position which it adopts when taking a curve;

Figs. 4 and 5 are two different views of a detail, on an enlarged scale; and

Fig. 6 is a side elevation of another detail of the underframe.

The frame B is provided at each side with depending brackets b^1, one being arranged between the two pairs of wheels and axle A of each set of pairs of wheels and axle. Each bracket b^1 forms a thrust-bearing for a fork C. The pin c^1 (Figs. 4 and 5) of the fork C is arranged for play towards all sides in a cone-shaped bore b^6 of the bracket b^1 and carries a disc c^2 which has the shape of a flat spherical segment the curved surface of which bears from below against the curved wall of a recess b^2 of the bracket b^1. The fork C carries a two-armed longitudinal compensating lever D which is swingable in the fork on a horizontal pin d^1. The described mounting of the fork C permits the lever D to rotate around the axis of the vertical pin c^1 and to tilt within certain limits towards all sides. The compensating lever D is connected at each end through a shackle E to one end of an axle spring F. Each axle spring F, see Fig. 6, is mounted for rotation on a portion of the wheel axle projecting beyond the wheels, by means of a vertical pin f^1 of the spring strap f^2 engaging a bearing a^1 of the said axle portion. The other free end of each spring F is connected by a shackle H to an eye G which is mounted for swinging motion on a vertical spindle b^4 carried by a cross-bar b^3 of the frame B. The axle of each pair of wheels and axle, A, extends between depending arms b^5 of the frame B and has play laterally with relation to the same, so that it is adapted to be swung with relation to the frame B.

When the railway car is on straight section of the track, the pairs of wheels and axle A, the compensating levers D and the springs F will take the position shown in Figs. 1 and 2. However, when the car passes through a curve (Fig. 3), the pairs of wheels and axle, A, will be swung with relation to the frame B and besides shifted transversally with relation to the frame B. At the same time, the springs F which are rotatably supported on the wheel axles, and the longitudinal compensating levers D which are in connection with the said springs, will join in the movement of the pairs of wheels and axle and take the position illustrated in Fig. 3. When the car leaves the curve and enters a straight section, the pairs of wheels and axle as well as the springs F and the compensating levers D connected with the same will automatically return again into the position shown in Fig. 1.

Owing to the described universal movableness of the longitudinal compensating levers D and the suspension of the springs F, no jamming action whatever will arise in the springs and compensating levers during the adjustment of the pairs of wheels and axle; the said parts will therefore oppose no remarkable resistance to the adjustment of the pairs of wheels and axle, so that the railway car may take narrow curves without there being produced any considerable resistances between the wheels and the track.

Claims:

1. An underframe for railway cars, comprising a plurality of pairs of wheels and axle, axle springs and longitudinal compensating levers pivotally carried by the underframe and arranged to connect the

axle springs with one another, and means for supporting said longitudinal compensating levers so as to allow them to rotate around an axis extending vertically with relation to the plane of the track.

2. An underframe for railway cars, comprising a plurality of pairs of wheels and axle, axle springs and longitudinal compensating levers pivotally carried by the underframe and arranged to connect the axle springs with one another, and means for supporting said longitudinal compensating levers so as to allow them to rotate around a vertical axis and to tilt towards all sides.

3. An underframe for railway cars, comprising a plurality of pairs of wheels and axle, axle springs and longitudinal compensating levers being in connection with one end of the axle springs, said compensating levers being mounted for rotation around a vertical axis and tiltable towards all sides, and the other ends of the axle springs being in engagement with eyes which are mounted on the underframe for swinging motion around a vertical axis.

The foregoing specification signed at Cologne, Germany, this 19th day of July, 1923.

PAUL KRÜGER.