PATENT SPECIFICATION

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236,239

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Complete Accepted: Nov. 19, 1925.

COMPLETE SPECIFICATION.

Improvements in or relating to Four Wheel Brake Control in Vehicles.

We, LANCIA & C., an Italian company, of 99, via Monginevro, Turin, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to improvements in four-wheel brake compensated control mechanisms of the type in which spur wheel differential mechanisms are used for transmission between the controlling member and the brake-operating members.

The invention consists in that the pressure for applying the brake is exerted on a member on which are mounted and to which is geared, through spur wheel differential mechanism, an arm or lever connected to the two brakes of one pair of wheels, and a pivoted member the angular motion of which is transmitted by a second spur wheel differential mechanism to two arms or levers separately connected to the brakes of the other pair of wheels the shafts of which also are mounted upon said first mentioned member.

On the accompanying drawing is illustrated by way of example a construction of the gear according to the present invention.

Figures 1 and 2 are diagrammatic views, in elevation and plan respectively, of the four-wheel brake control of a motor-car ;

Figure 3 is a vertical section along the axis of rotation, of the controlling member comprising a differential gear, and

Figures 4 and 5 are transverse sections respectively on the lines X—X and Y—Y of Figure 3.

As shown in Figures 1 and 2, the front wheel brakes are actuated by means of rods 1, 1^1 and arms 2, 2^1, and the rear wheel brakes are actuated by means of rods 3—3^1, arm spindles 4—4^1, and a wire cable 5, by the action of a pivoted member 6 which is actuated by a rod 7 and a lever 8.

The ends of the wire cable 5 are connected to levers on the spindles 4, 4^1, the said cable engaging the pivoted member 6 by means of a roller pivoted perpendicularly to the pivot axis of the member 6, so that the pull exerted by the said member is differentially divided between the two runs of the cable 5. The levers 8, 2 and 2^1 are actuated by means of a central element 9 rigidly connected to a pedal 10.

The member 9 is in the shape of a box (Figures 3—5) in a compartment of which are pivoted two pinions 11 and 12 meshing in part with each other, the pinion 11 meshing with a pinion 13 solid with a sleeve 14 which is integral with the arm 8, while the pinion 12 meshes with a pinion 15 co-axial with the sleeve 14.

The pinion 15 is carried by a sleeve solid with a bridge 16 in which are pivoted two pinions 17 and 18 meshing in part with each other, the first one of said pinions meshing with a pinion 19 solid with a shaft 20 on which is keyed the lever 2^1, while the pinion 18 meshes with a pinion 21 solid with a spindle 22 having the arm 2 solid therewith.

The intermediate portion of the bridge 16 is embraced between two stop teeth 23 and 24 carried by the box 9 (Figure 4) in such a manner that said box 9 after it has moved through a given angle moves the bridge 16 with it.

In usual conditions, that is when the pedal 10 is operated, the box 9 rotates around the axis of the shaft 20 which is also the rotary axis of the arms 2—2^1 and 8 and drives the axes of the pinions

11 and 12 which tend to rotate both the pinion 13 solid with the lever 8 and the pinion 15 solid with the bridge 16 which in turn moves with it the pivot studs of the pinions 17 and 18 which tend to rotate the pinions 19 and 21 solid with the levers 2 and 2^1.

When the rear brakes are applied, under the balanced action due to the arrangement of the wire cable 5, the arm 8 cannot move further and the pinion 11 then rolls on the pinion 13 and drives the pinion 12 in the direction for driving pinion 15 and bridge 16 in the same direction as the motion previously imparted to the box 9.

Such a motion of the bridge 16 causes the front wheel brakes to be applied, a differential action being imparted to the spindles of the arms 2—2^1 by the gear set 17—18—19—21.

The pressure produced on the pedal 10 is thus transmitted in a differential manner to the arms 2 and 2^1 and 8, and thus all the wheels are braked in a balanced manner.

Should one of the brake control wires for the rear wheels be broken, the engagement of the bridge 16 which is required to actuate the front wheel brakes is produced by the tooth 24 of the box 9 which then moves with it the said bridge 16 and produces the front wheel brake operation.

In a similar manner, should one of the front wheel brake rods be broken, the engagement intended to stop the pinion 15 is provided by the tooth 23 against which bears the bridge 16.

In any case the described double-differential gear provides a balanced action for all of the four wheel brakes.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

1. A compensated control with differential mechanism for four-wheel brakes in which the pressure for applying the brake is exerted on a member on which are mounted and to which is geared, through spur wheel differential mechanism, an arm or lever connected to the two brakes of one pair of wheels, and a pivoted member the angular motion of which is transmitted by a second spur wheel differential mechanism to two arms or levers separately connected to the brakes of the other pair of wheels the shafts of which are also mounted upon said first mentioned member.

2. A compensated control as claimed in Claim 1, in which the operating member is coupled to a box rotatable about the pivot axis of the brake-actuating arms, the said box carrying the planet wheels of a differential mechanism which connects the rear brake levers to the bridge of the satellites of a differential mechanism mounted in the same box and connecting the levers for operating the front brakes.

3. A compensated control as claimed in Claim 2, in which the box is connected by an angular lost motion with the bridge of the satellites of the differential gear for operating the front wheel brakes, in order that one of the pairs of brakes may be actuated in the event of the transmission member of the other pair being broken.

4. The four wheel brake control for vehicles substantially as described or substantially as illustrated in the accompanying drawings.

Dated this 29th day of June 1925.

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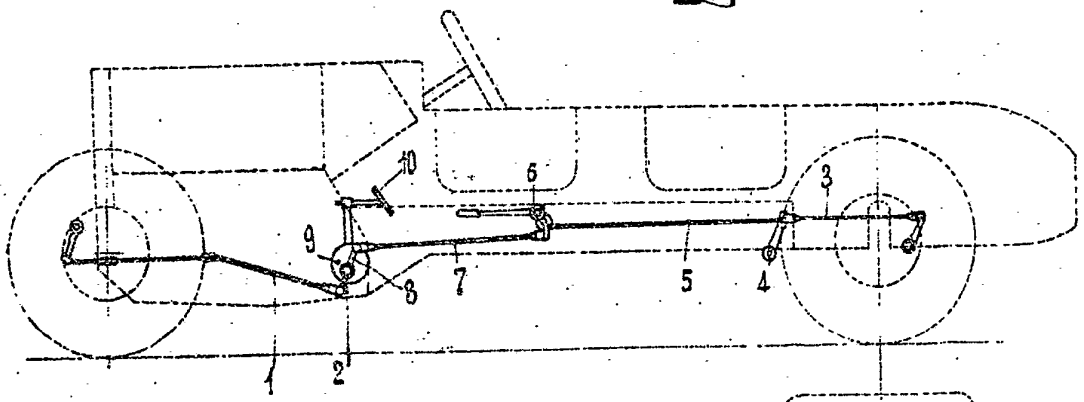
FIG. 1



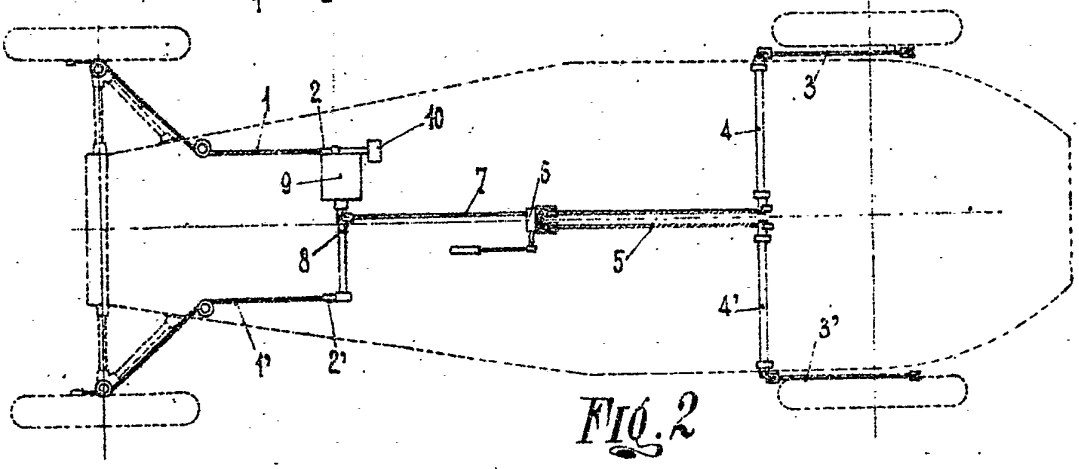


FIG. 2

FIG. 4

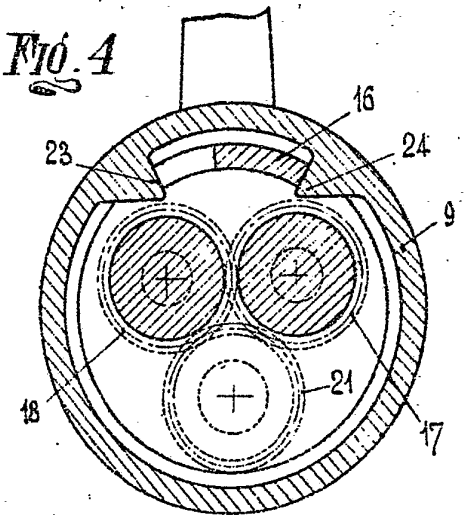
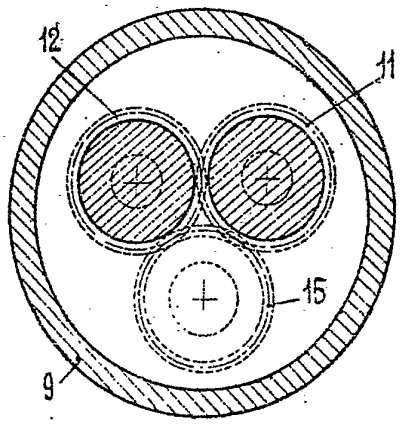


FIG. 5



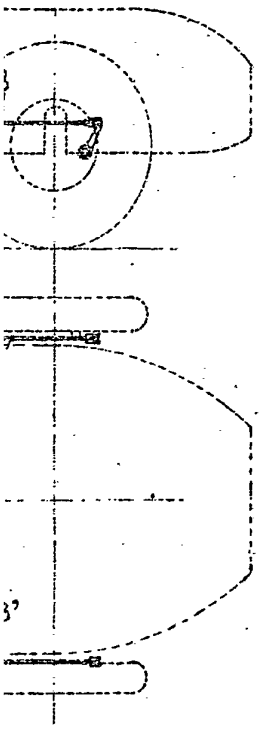


Fig. 5

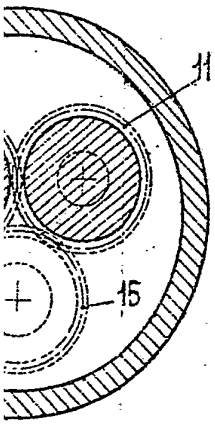
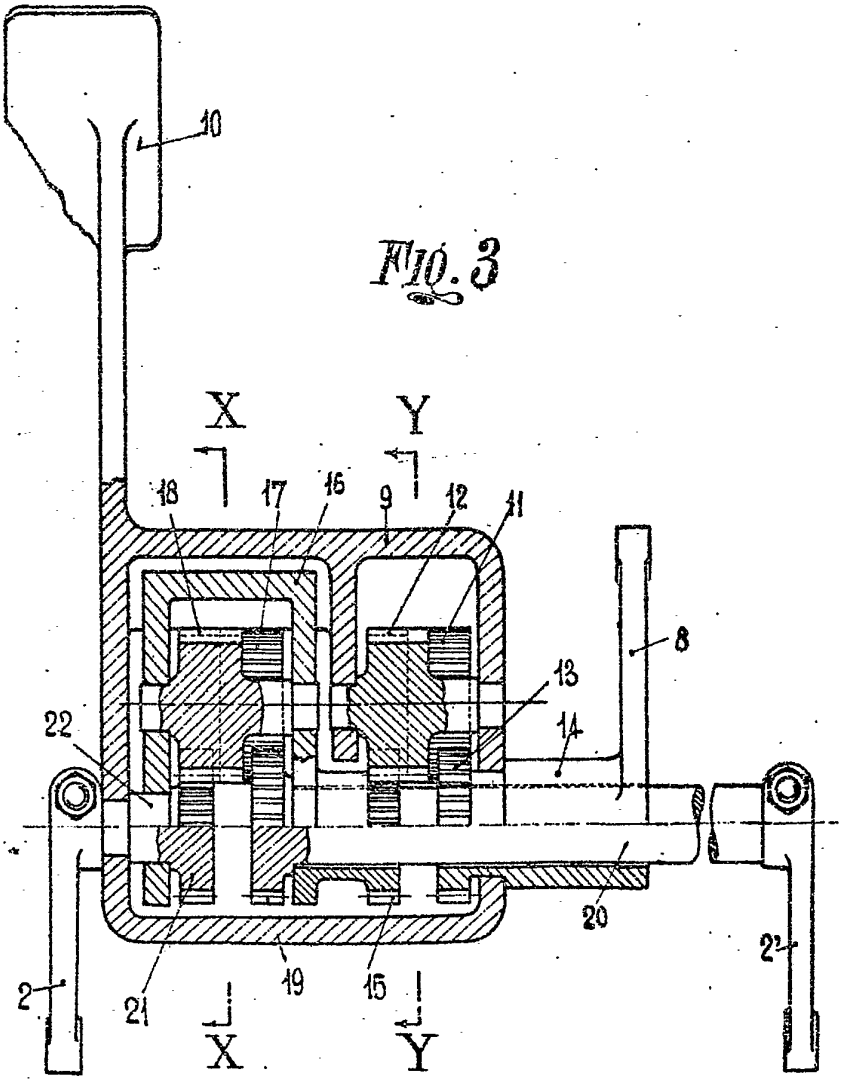
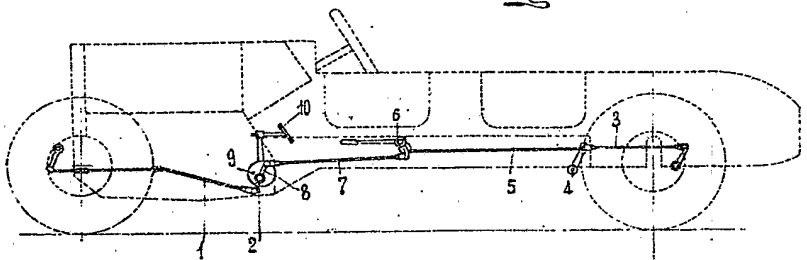


Fig. 3



Charles & Read Ltd. Photo Litho.

FIG. 1



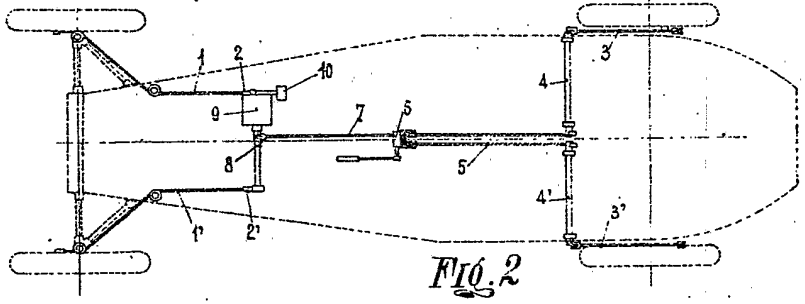


FIG. 2

FIG. 3

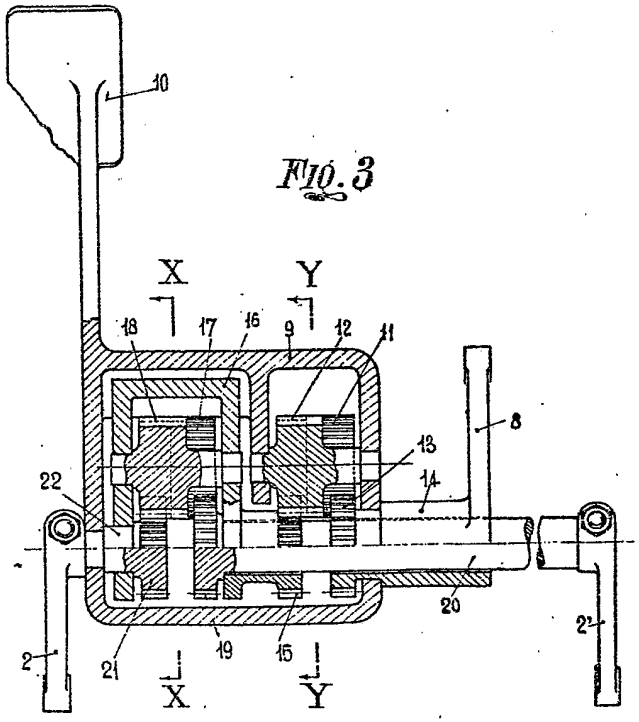


FIG. 4

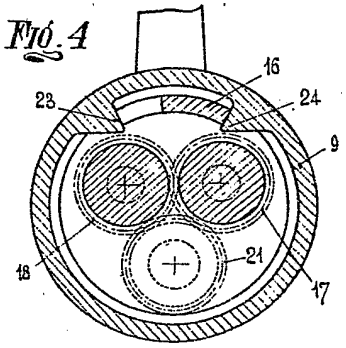
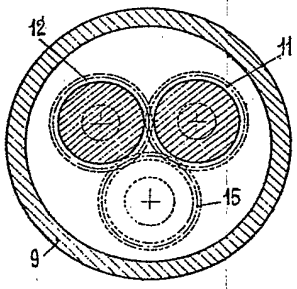


FIG. 5



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