No. 835,797. PATENTED NOV. 13, 1906.

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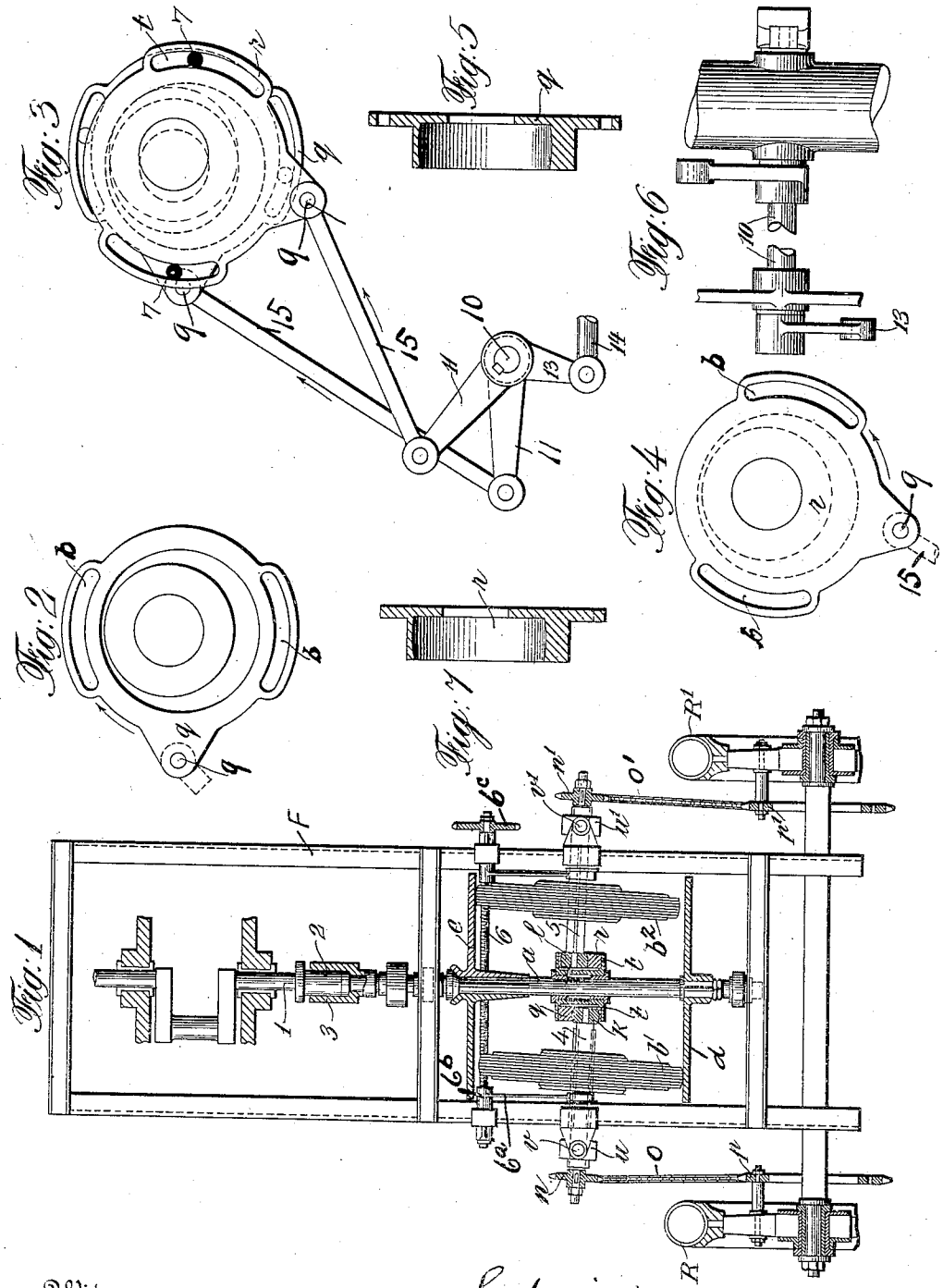
FRICTION GEARING FOR MOTOR VEHICLES, &c.

APPLICATION FILED APR. 20, 1906.



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LUDWIG MAURER, OF NUREMBERG, GERMANY.

FRICTION-GEARING FOR MOTOR-VEHICLES, &c.

No. 835,797. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed April 20, 1906. Serial No. 312,761.

To all whom it may concern:

Be it known that I, LUDWIG MAURER, a subject of the King of Bavaria, residing at Nuremberg, in the Kingdom of Bavaria, German Empire, have invented certain new and useful Improvements in Friction-Gearing for Motor-Vehicles and the Like, of which the following is a full, clear, and exact description.

This invention relates to friction-gearing of the type possessing special utility as a transmitting mechanism for motor-vehicles.

To this end the invention primarily has in view an improved type of friction-gearing disclosed, for instance, in the German Patent No. 163,274, and provides means whereby the two friction-wheels geared directly with the vehicle-wheels turned in the same direction.

Also the invention contemplates a simple and practical construction of friction-gearing having means for reversing the direction of rotation for the driven wheels without concussion or jar.

A preferred embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is a sectional plan view of a friction-gearing constructed in accordance with the present invention and shown applied to a motor-vehicle for driving the same. Figs. 2 to 7, inclusive, are a series of detail views illustrative of the eccentric shifting mechanism for the friction-wheels on the transmitting-shafts.

Like references designate corresponding parts in the several figures of the drawings.

Referring to the application of the invention shown in the drawings, the reference character F represents the framework of the motor-vehicle, within which is mounted, in the usual manner, the main crank-shaft 1 of the engine, which has a coupling connection 2 3 with the driving-shaft *a*, carrying thereon a pair of oppositely-arranged friction-disks *d* and *e*, respectively. Between the friction-disks *d* and *e* are arranged the separate oppositely-arranged transmitting-shafts 4 and 5, which, respectively, carry thereon the friction-wheels b' and b^2. The said friction-wheels b' and b^2 are splined or feathered on their respective shafts, so as to be capable of a sliding or axial movement thereon under the influence of the adjusting-arms 6^a, carried by the nuts 6^b, mounted on the right and left threaded adjusting-rod 6, carrying at one end a hand-wheel 6^c, by means of which the same can be turned to provide for the synchronous movement of the adjusting-arms for said friction-wheels b' and b^2. The construction just described permits the friction-wheels b' and b^2 to be adjusted to the desired point from the shaft-center *a*.

Both of the transmitting-shafts 4 and 5 have their outer end portions mounted loosely in suitable bearings which permit of the swinging or rocking adjustment thereof in the manner to be presently explained, and the outer extremity of the shaft 4 has a gimbal-joint connection *u v* with the chain-and-sprocket gearing *n o p* for one of the wheels R, while the outer end of the transmitting-shaft 5 likewise has a gimbal-joint connection u' v' with the chain-and-sprocket gearing n' o' p' for the directly opposite wheel R′ of the motor-vehicle.

The inner ends of the opposite transmitting-shafts 4 and 5 are preferably fitted with the bearing-buttons *k* and *l*, respectively, which loosely engage in the eccentrically-disposed sockets or openings of the rotatable adjusting-eccentrics *q* and *r*, respectively, which are arranged to turn in seats or bearings provided therefor in directly opposite sides of a bearing-box *t*, arranged centrally between the sides of the vehicle-frame and receiving therethrough the driving-shaft *a*.

The rotatable adjusting-eccentrics *q* and *r*, respectively, for the shafts 4 and 5 are held to work in unison and are retained in proper position in and upon the bearing-box *t* through the medium of the retaining tie rods or bolts 7 passing through peripheral guide-slots *b*, provided at the edges of the said eccentrics *q* and *r*, as best seen in Fig. 3 of the drawings. Also each of said eccentrics has a pivotal connection at one edge, as at 9, to one end of an adjusting-bar 15, the other end of which is pivotally connected to one end of a rock-arm 11 on an operating-shaft 10. This shaft 10 also carries a third rock-arm 13, to which is connected a controlling-rod 14, extending to a handle or other device which is manipulated for turning the two eccentrics *q* and *r*. The connections 11 15 for the two eccentrics *q* and *r* are arranged in such relation that a movement of the shaft 10 in one direction provides for the synchronous movement of the two eccentrics reversely in opposite directions, thereby providing for a synchro-

nous and reverse adjustment for the two friction-wheels b' and b^2.

In the arrangement of parts shown in Fig. 1 of the drawings the shafts 4 and 5 occupy such positions that the friction-wheel b' contacts with the driving friction-disk d and the friction-wheel b^2 contacts with the driving friction-disk e. To reverse that condition, and hence provide for reversing the direction of rotation of the vehicle-wheels R and R', it is simply necessary to manipulate the controlling-rod 14 to provide for rocking the shaft 10 in a direction for simultaneously giving the rotary adjusting-eccentrics q and r a half-turn. This will result in exactly reversing the positions of the two friction-wheels from that shown in Fig. 1 of the drawings. It will therefore be obvious that the construction provides means for quickly and easily reversing the transmitting mechanism without concussion or jar on the machinery.

I claim—

1. In a friction-gearing, a driving-shaft, a pair of spaced friction-disks carried thereby, oppositely-arranged transmitting-shafts supported for swinging movement, a friction-wheel on each transmitting-shaft for engagement with one of the disks, and eccentric shifting mechanism for supporting and shifting the inner ends of the transmitting-shafts.

2. In a friction-gearing, a driving-shaft, a pair of spaced friction-disks carried thereby, oppositely-arranged transmitting-shafts supported for swinging movement, a friction-wheel on each transmitting-shaft for engagement with one of the disks, a shifting eccentric arranged to constitute a bearing-support for one end of each of the transmitting-shafts, and means for synchronously adjusting the positions of both eccentrics.

3. In a friction-gearing, a driving-shaft, a pair of spaced friction-disks carried thereby, oppositely-arranged transmitting-shafts supported to have a swinging movement, a friction-wheel on each transmitting-shaft arranged to engage with either of the friction-disks, a rotatable adjusting-eccentric supporting the inner end of each transmitting-shaft, and a shifting mechanism having similar adjusting connections with both of the eccentrics, said adjusting connections being arranged to provide for a synchronous movement of both eccentrics in opposite directions.

4. In a friction-gearing, a driving-shaft, a pair of spaced friction-disks carried thereby, independent oppositely-arranged transmitting-shafts supported to have a swinging movement and each having an outer gimbal-joint connection with the driving-gear, a friction-wheel splined on each transmitting-shaft, common adjusting means for both friction-wheels, a suitably-supported bearing-box, a rotatable adjusting-eccentric for each transmitting-shaft arranged to receive the inner end of such shaft and supported by said box, the eccentrics for the opposite shafts being reversely set, and a shifting mechanism having similar adjusting connections with the two eccentrics, said adjusting connections being so arranged as to synchronously move the said eccentrics in opposite directions.

In witness whereof I subscribe my signature in presence of two witnesses.

LUDWIG MAURER.

Witnesses:

FRED SCHAEFER,

MAX TANVORO.