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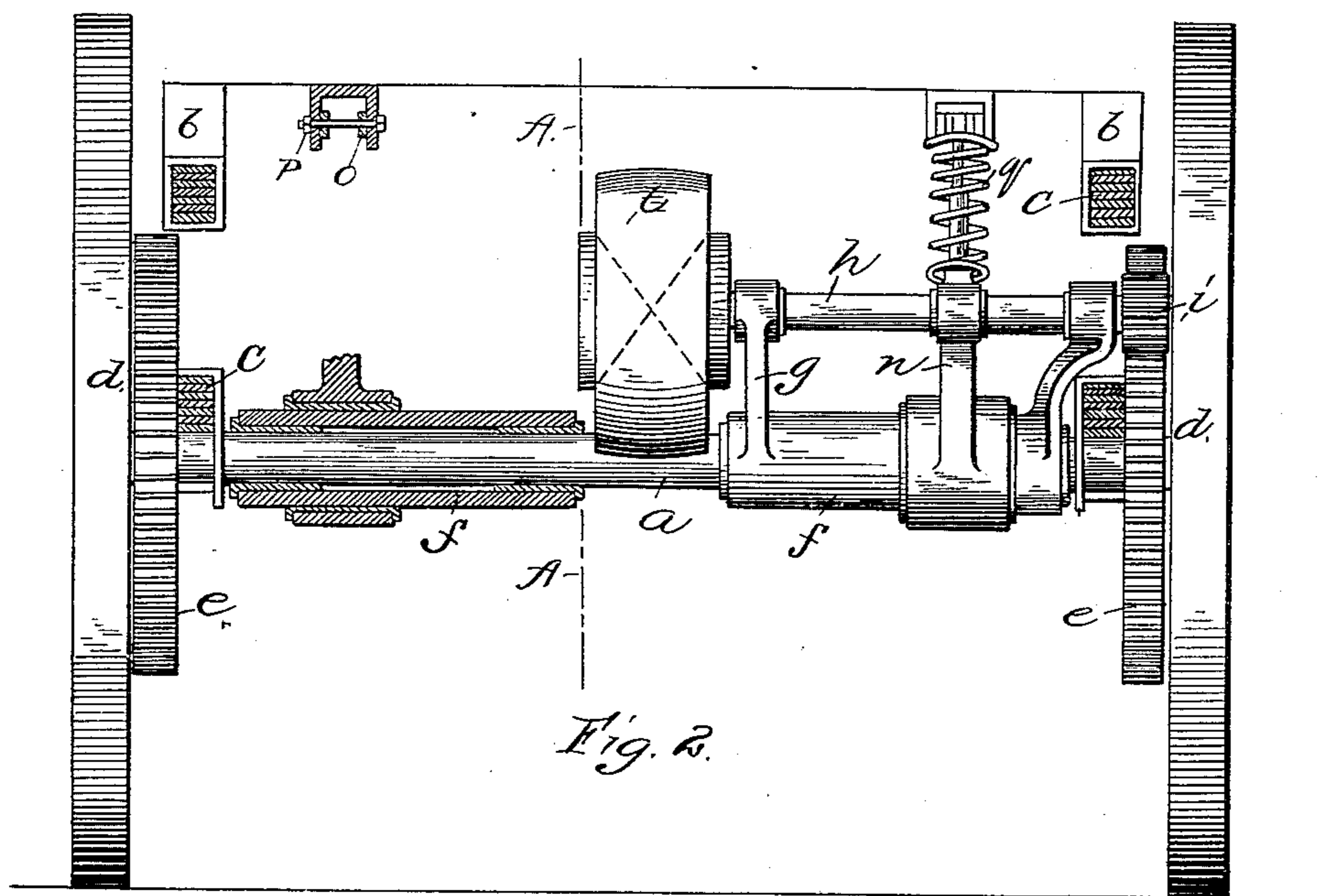
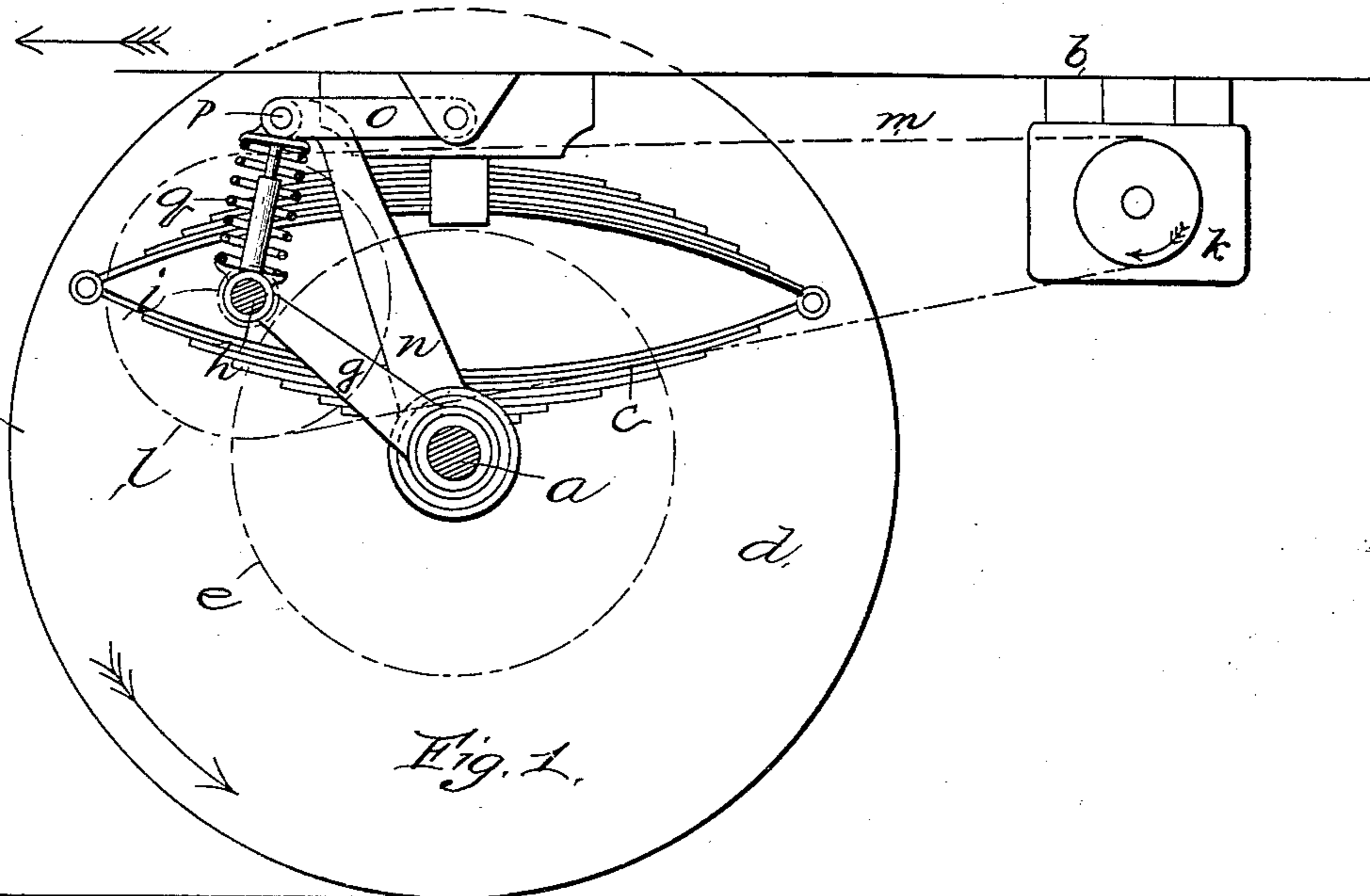
Patented Dec. 12, 1899.

G. E. SIEG.  
DRIVING MECHANISM FOR AUTOCARS.

(Application filed Mar. 8, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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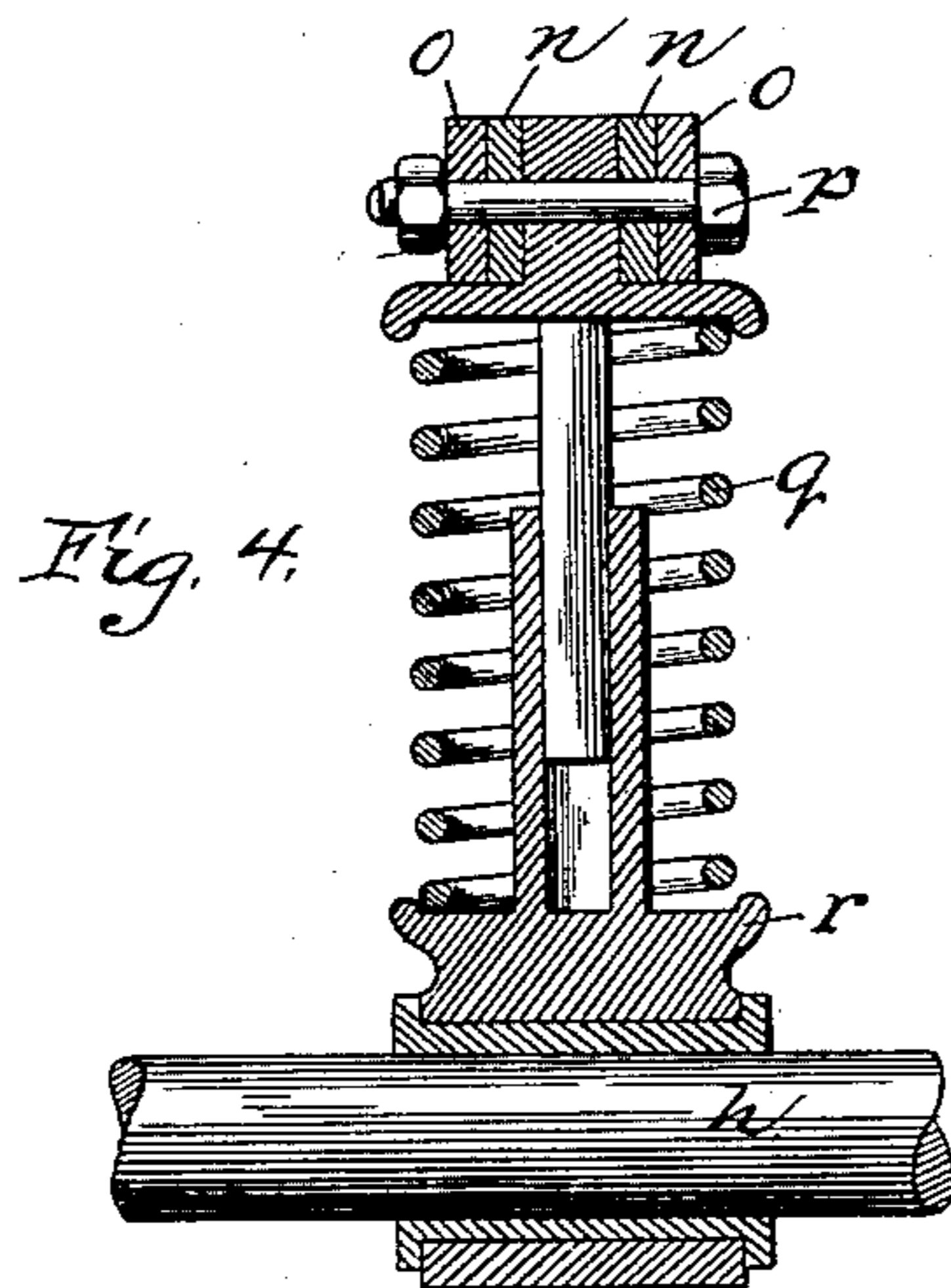
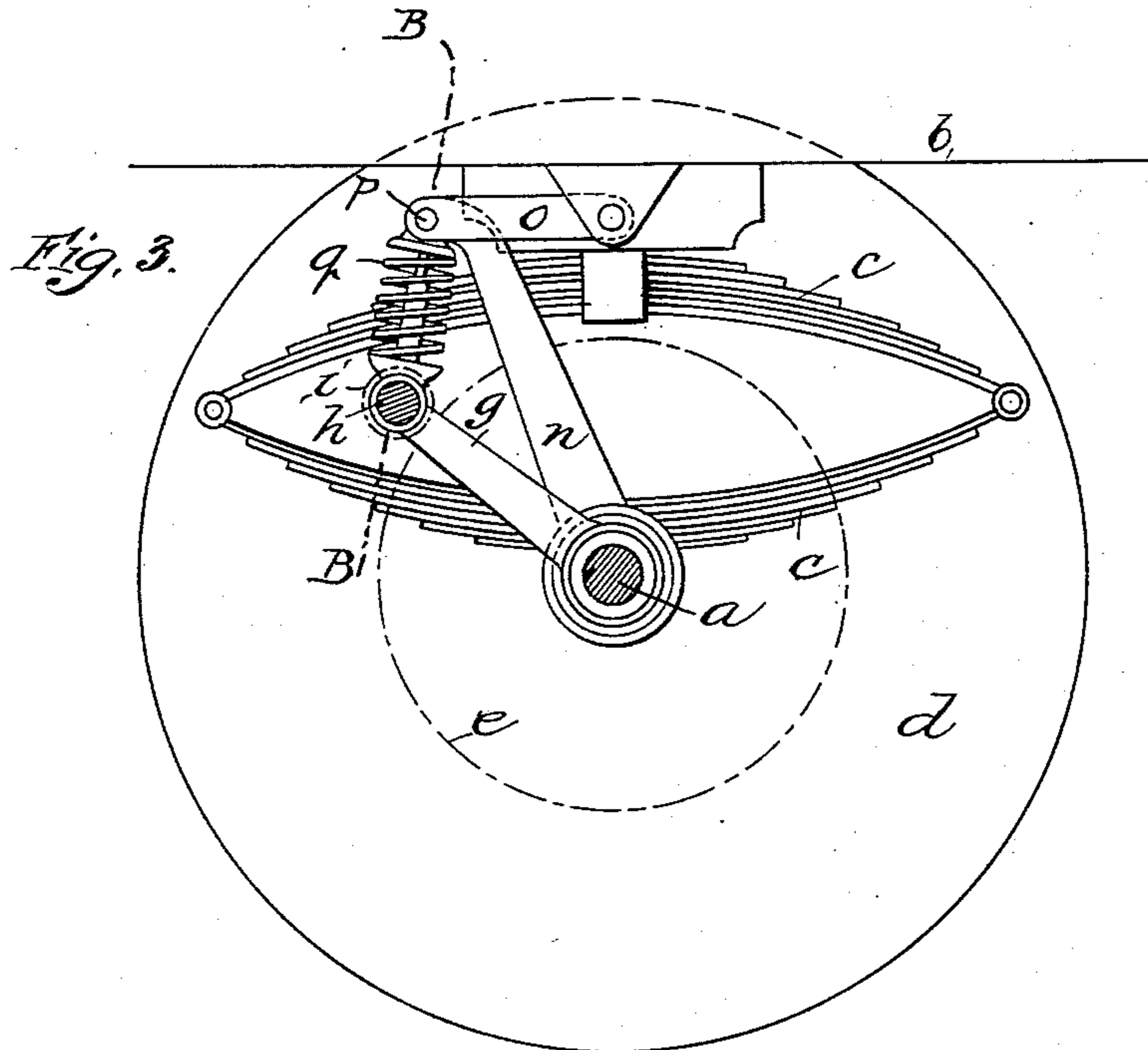
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# UNITED STATES PATENT OFFICE.

GEORG ERICH SIEG, OF KALK, GERMANY.

## DRIVING MECHANISM FOR AUTOCARS.

SPECIFICATION forming part of Letters Patent No. 638,816, dated December 12, 1899.

Application filed March 8, 1899. Serial No. 708,276. (No model.)

*To all whom it may concern:*

Be it known that I, GEORG ERICH SIEG, engineer, a subject of the King of Prussia, German Emperor, residing at Kalk, near Cologne-on-the-Rhine, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Driving Mechanism for Autocars and the Like, of which the following is a full, clear, and exact description.

This invention relates to a driving mechanism for autocars and the like in which the motor is connected rigidly or on springs with the car-body and drives, by means of belts, chains, or the like, the driving-axle, which cannot share in this spring action. This improved arrangement has for its object the influencing of the tension of the belts by means of springs in such a way that in spite of all the joltings or oscillations of the car-body not only does the belt remain constantly taut, but elongations of the belt are compensated for and too-great strains on the belt and overloading of the motor by alterations of speed in the same or impediments in the way of the car are avoided. In the present invention this is attained by the arrangement of a peculiar flexible or hinged four-cornered figure which has two spring sides situated opposite one another and two rigid ones and also a rigid diagonal, as will be hereinafter described.

The object of the present invention is shown in the accompanying drawings, in which—

Figure 1 is a mainly diagrammatic representation of this improved driving apparatus in side view; Fig. 2, a front view of same, partly in section; Fig. 3, a section on the line A A of Fig. 2; Fig. 4, a section on the line B B of Fig. 3.

The wheel-axle *a* carries springs *c*, supporting the car-body *b*. On the end of said axle the car-wheels *d* and cog-wheels *e*, firmly connected therewith, are mounted so as to be freely revoluble. The axle *a* is also inclosed by two sleeves *f*, which can also freely rotate on it and in the arms *g* of which the shafts *h* of the pinions *i*, engaging with the cog-wheels *e*, are mounted. In order that both wheels *d* may rotate independently one of the other, the shafts *h* are driven by means of differential gearing *l* from a motor *k*, firmly connected with the car-body *b*, which gearing is only shown diagrammatically in the drawings and

is at the same time assumed to consist of a belt-pulley for the belt *m*.

As shown in Fig. 1, the shaft *h* can revolve in a circle around the shaft *a*, as both are connected with one another by the arms *g*. The pinions *i* can thus never come out of engagement with the cog-wheels *e*.

In order to keep the belt or chain *m* always correctly taut, the following arrangement is adopted: Over the sleeve *f*, on each side, a freely-revoluble arm *n* is placed, which is pivotally connected with the underframe of the car by links *o*, carrying a bolt *p*. On this bolt *p* a spring *q* engages, the other end of which is received by a holder or sleeve *r*, placed on the shaft *h*, Fig. 4, and freely revoluble thereon. The arm *g*, spring *q*, link *o*, and spring *c* thus form a flexible four-cornered figure, one diagonal of which is formed of the rigid arm *n*. This four-cornered figure is attached by one corner to the wheel-axle *a* and with an adjacent one to the underframe of the carriage. Between the two other corners is located the spring *q*, which controls the tension of the belt. Instead of the links *o* any other like vertical guide may of course be employed. On the motor being started and also at each increase in the speed the spring *q* is first compressed, and thus produces a slight slackening of the belt *m*, and consequently a transmission free from jerk. The same takes place if the car when running suddenly encounters obstructions like gutter-stones (channel-stones) or short extraordinarily-steep gradients and the like. The slackening of the belt admits of the same slipping slightly, and thereby avoids overloading the motor in the most effective manner. If where electric motors are used the motor is also to be utilized as a brake, the spring *q* yields when the brake is applied and the belt is stretched more strongly. By this means any slipping which is so dangerous in this case is avoided.

Where benzin or petroleum motors are employed, several step-pulleys may be arranged on the gear-shaft in order to allow of different speeds. The spring-mounting of the gear-shaft in this case also allows of a slight slipping of the belt in the event of sudden changes in the load or of overloading of the motor, and there is therefore no reason to fear

the motor becoming stationary by reason of overloading.

In the drawings it is assumed that the motor and gear-shaft are arranged on different sides of the driving-axle; but they may be both placed on the same side with a suitable arrangement of the spring *q*. It is also not necessary that there be only one motor, as shown in the drawings, acting on a differential gear arranged as a belt-pulley; but a separate motor may be provided for each wheel, so that the two may revolve independently one of the other.

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

1. In a driving mechanism for autocars and the like, the combination with the motor-axle and driving-wheel shaft, of a shaft movable circumferentially about said driving-wheel shaft and geared thereto, a pulley carried by said movable shaft, a belt connecting said pulley with the motor-axle, and springs act-

ing on said movable shaft and tending to force it away from said motor-axle and thereby tension the belt, substantially as described.

2. A form of construction of the hereinbefore-described driving mechanism for autocars and the like in which the car-axle *a* carries on the one hand revoluble arms *g* which always maintain the gear-pinion *i* at an equal distance from the driving-shaft and therefore always in correct engagement with the cog-wheel *e* of the driving-wheel *d*, and on the other hand revoluble arms *n*, the ends of which are connected with the car-body *b* by means of links *o* or other vertical guide, springs *q* being arranged between the two groups of arms *g* and *n*, to press the gear-shaft away from the motor-axle, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORG ERICH SIEG.

Witnesses:

BERNHARD THOMMERK,  
GUSTAV JORDAN.