

# PATENT SPECIFICATION

310,641



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Complete Left: Jan. 2, 1929.

Complete Accepted: May 2, 1929.

## PROVISIONAL SPECIFICATION.

### Motor Car Change Speed Gear Operating Mechanism.

We, THE ALVIS CAR & ENGINEERING COMPANY LIMITED, a British Company, GEORGE THOMAS SMITH-CLARKE, a British Subject, and WILLIAM MARSHALL DUNN, a British Subject, all of Holyhead Road, Coventry, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This invention relates to motor car change speed gear operating mechanism of the gate change kind in which each selector in the gear box is coupled to an external selecting fork, and movement of the gear lever in one direction selects the fork to be moved, whilst motion in the other direction moves the fork.

Often the gear lever has to be located at a distance from these selecting forks, or, alternatively, the lever cannot be conveniently arranged. The object of the present invention is to provide connecting means between the lever and the selecting forks which will overcome these difficulties.

According to this invention, the selecting forks are arranged horizontally and are adapted to be engaged by an arm on a sliding and twisting rod moved in both these manners by the gear lever.

In one construction, the gear box is mounted at a considerable distance from the gear lever and the selectors in the gear box are each attached to the usual rod which projects through the gear box, and each of such rods carries a selecting fork. These rods and forks are so arranged that the forks lie horizontally and the jaw portions lie one above another, forming practically a continuous channel which is open laterally.

Carried at the side of the chassis frame and supported either thereon or on parts of the mechanism is a rod which is free to twist as well as to slide in its supporting bearings, preferably ball bearings, and one end of this rod carries an arm which projects into the channel formed by the selecting forks, and the arm also carries locking mechanism of some well known kind used to lock the selecting forks which are not in operation.

The back end of the rod either carries the gear lever directly, or it carries an upward finger terminating in a cup engaged by a ball on the bottom end of the gear lever.

The parts are so arranged that lateral movement of the gear lever twists the rod which moves the horizontal arm in relation to the selecting forks and brings it into engagement with the one desired. Fore and aft movement of the gear lever moves the rod endwise, and the required selecting fork and its gear wheels and the like in the gear box are moved to effect engagement or change of gear.

Thus the gear lever can be arranged in the most convenient position and the connection between it and the selecting forks offers little or no resistance, and is not liable to be deranged by distortion of the chassis frame.

Dated this 16th day of April, 1928.

ERIC W. WALFORD,  
Fellow of the Chartered Institute of  
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19, Hertford Street, Coventry,  
Agent for the Applicants.

## COMPLETE SPECIFICATION.

### Motor Car Change Speed Gear Operating Mechanism.

We, THE ALVIS CAR & ENGINEERING COMPANY LIMITED, a British Company, GEORGE THOMAS SMITH-CLARKE, a British Subject, and WILLIAM MARSHALL DUNN, a British Subject, all of Holyhead Road, Coventry, Warwickshire, do hereby

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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 motor car

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change speed gear operating mechanism of the kind in which each striking fork in the gear box is connected with an external selecting fork, all the latter  
 5 lying side by side and forming a practically continuous channel in which lies an arm on a rod extending lengthwise of the chassis and adapted to be twisted by the change speed lever to engage the arm  
 10 with the desired selecting fork and to be moved lengthwise to slide that fork.

The object of the invention is to provide a satisfactory and very direct application of operating mechanism of this kind  
 15 to a motor car chassis wherein the gear box is located considerably in front of the change speed lever, the latter being arranged, as usual, on the side of the chassis frame.

20 According to this invention, the twisting and sliding rod extends along the side of the chassis frame and is carried partly thereon and partly on some portion of the gear mechanism, the rear end carrying or  
 25 being engaged by the change speed lever, whilst the forward end carries the arm engaging the selecting forks.

In the accompanying drawings illustrating the invention applied to a gear  
 30 box mounted on the front of an engine and having its gear control lever behind the engine,

Figure 1 is a fragmentary elevation,

Figure 2 is a fragmentary plan,

35 Figure 3 is an end view of part of the gear box showing the external selecting forks partly in section, the arm for engaging them and the locking means for those not in operation, and

40 Figure 4 is a fragmentary plan of Figure 3.

Like numerals indicate like parts throughout the drawings.

45 As shown in Figures 1 and 2, the gear box 2 is mounted at a considerable distance from the gear lever 3 and each striking fork in the gear box (not shown) is attached to the usual rod 4 which projects through the gear box, and each of  
 50 such rods carries a selecting fork 5. These rods and selecting forks are so arranged that the latter lie horizontally with the jaw portions one above another, forming practically a continuous vertical channel  
 55 which is open laterally (see Figures 3 and 4).

60 Carried at the side of the chassis frame 6 and supported at the rear end thereon and at the other on the gear box or other part of the gear mechanism is a longitudinally disposed rod 7 which is free to twist as well as to slide in its supporting bearings 8, preferably ball bearings, and  
 65 the forward end of this rod carries a horizontal arm 9 which projects at 10 into the

channel formed by the selecting forks. This arm 9 preferably actuates also a mechanism of some well known kind for locking the selecting forks which are not  
 70 in operation.

In this construction, a yoke 11 pivoted at 12 has transverse members 13, one engaging the top and the other the underside of the arm 9. Vertical projections  
 75 14, one on the free end of each arm of the yoke 11, are adapted to engage the jaws of the selecting forks and, according to which of the latter the horizontal arm 9 engages, these projections either  
 80 co-act to lock the remaining forks or perform this function singly.

The rear end of the rod either carries the change speed lever 3 directly, or (as shown) it carries an upward finger 15  
 85 terminating in a cup 16 engaged by a ball 17 on the bottom end of the change speed lever.

The parts are so arranged that lateral movement of the gear lever 3 partly  
 90 rotates the rod 7 which moves the horizontal arm 9 in relation to the selecting forks 5 and brings it into engagement with the one desired, the others being locked as previously described. Fore  
 95 and aft movement of the gear lever moves the rod endwise, and the required selecting fork and its gear wheels and the like in the gear box are moved by the arm 9 to effect engagement or change of gear.

Thus the gear lever can be arranged in  
 100 the most convenient position at the side of the chassis and the connection between it and the selecting forks is very direct.

Having now particularly described and  
 105 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. Motor car change speed gear operating mechanism of the kind referred to,  
 110 wherein the twisting and sliding rod extends along the side of the chassis frame and is carried partly thereon and partly on some portion of the gear mechanism, the rear end carrying or being  
 115 engaged by the change speed lever, whilst the forward end carries the arm engaging the selecting forks, substantially as and for the purpose described.

2. The complete change speed gear  
 120 operating mechanism for a motor car, substantially as described and as illustrated in Figures 1 and 2 of the accompanying drawings.

Dated this 1st day of January, 1929.

ERIC W. WALFORD, M.I.A.E.,

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[This Drawing is a reproduction of the Original on a reduced scale.]

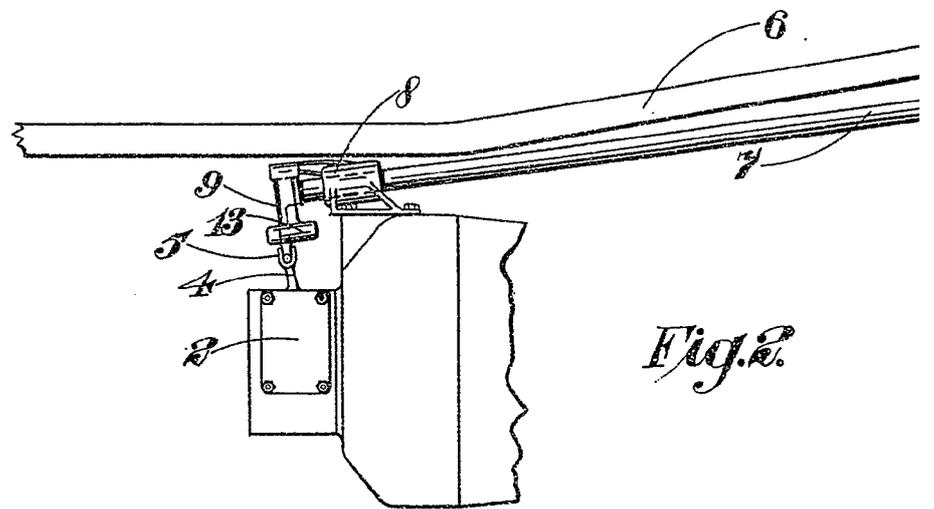
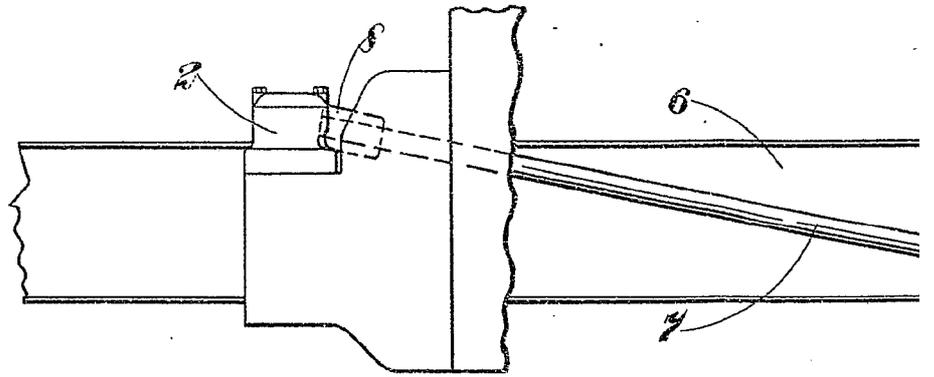


Fig. 2.

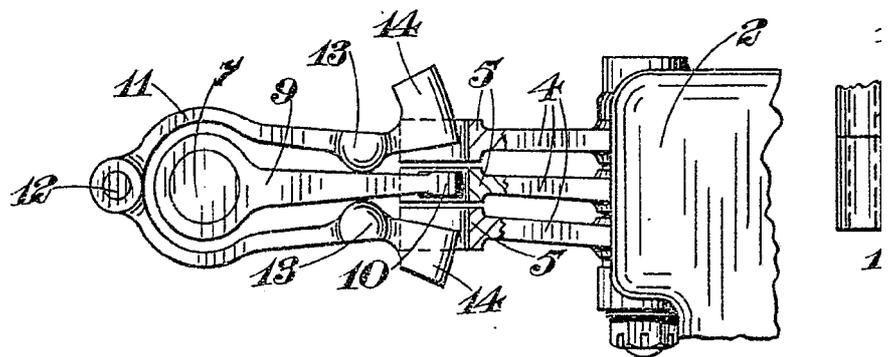
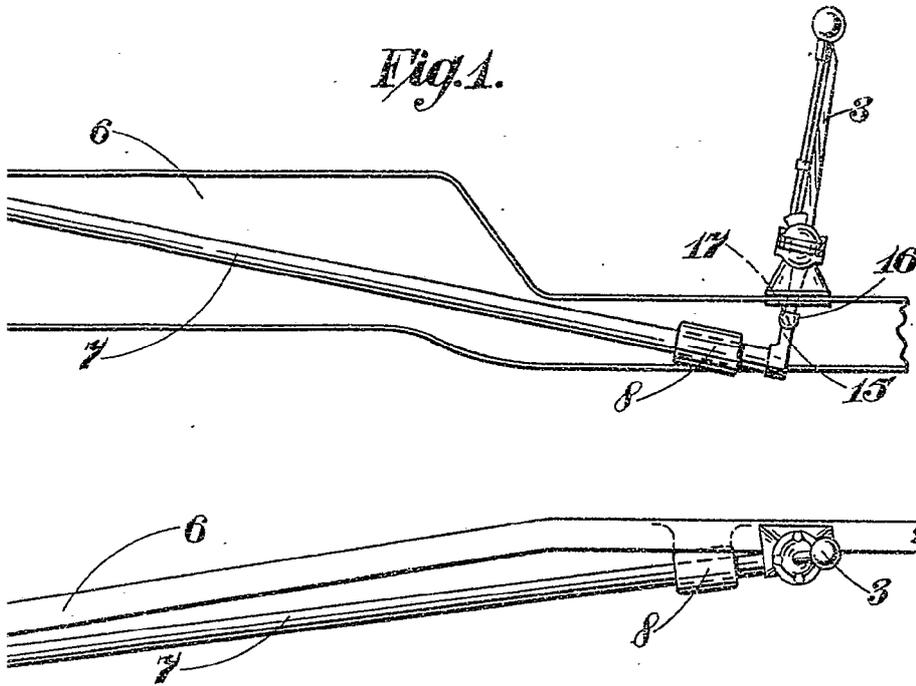
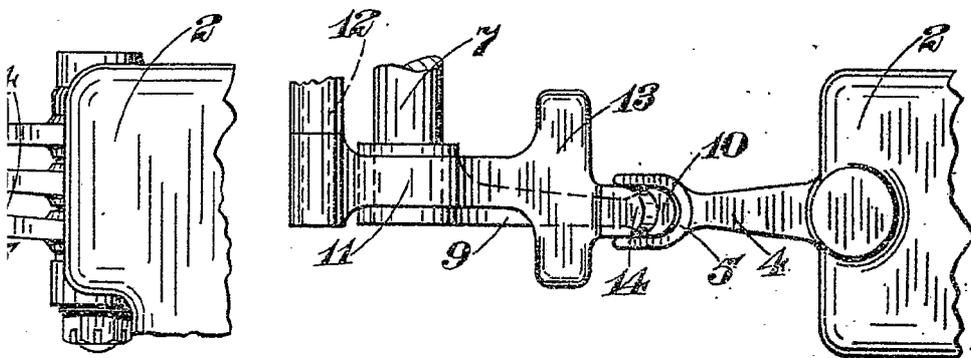


Fig. 3.

*Fig. 1.*



*Fig. 2.*



*Fig. A.*

[This Drawing is a reproduction of the Original on a reduced scale.]

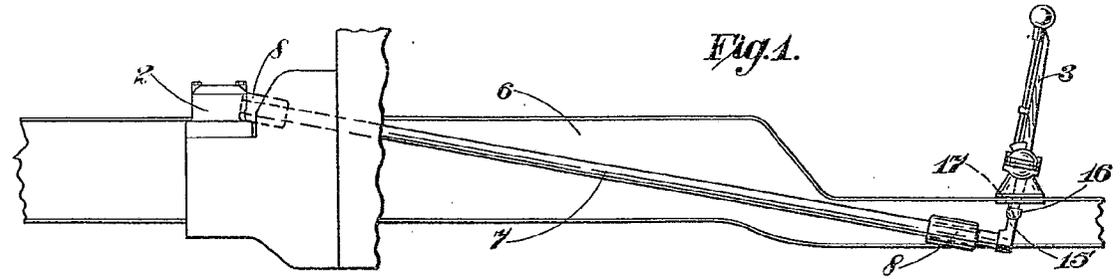


Fig. 1.

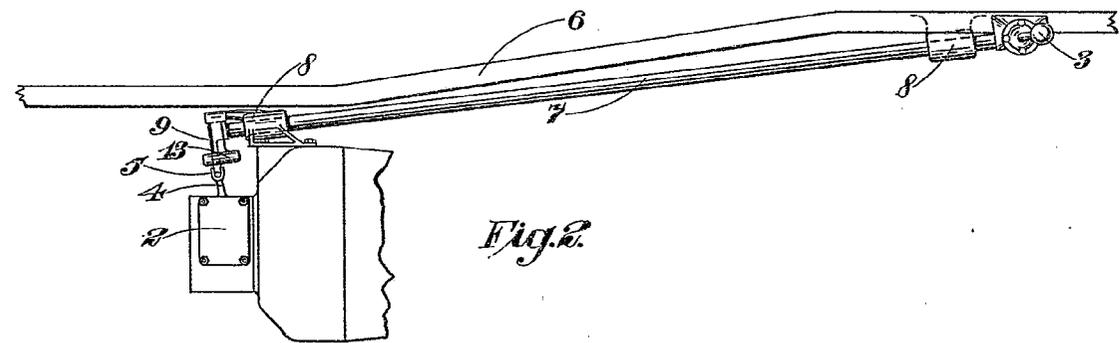


Fig. 2.

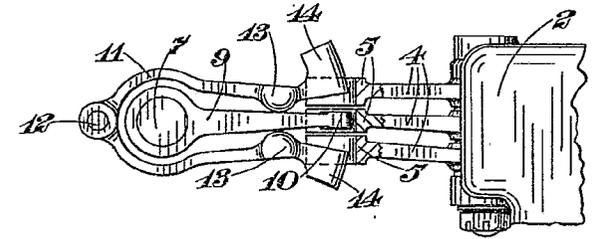


Fig. 3.

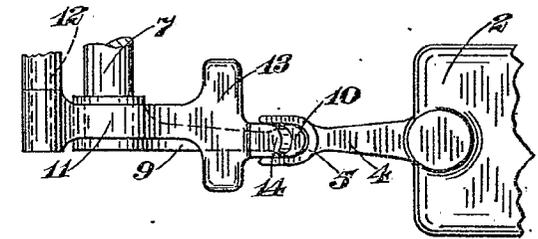


Fig. 4.