

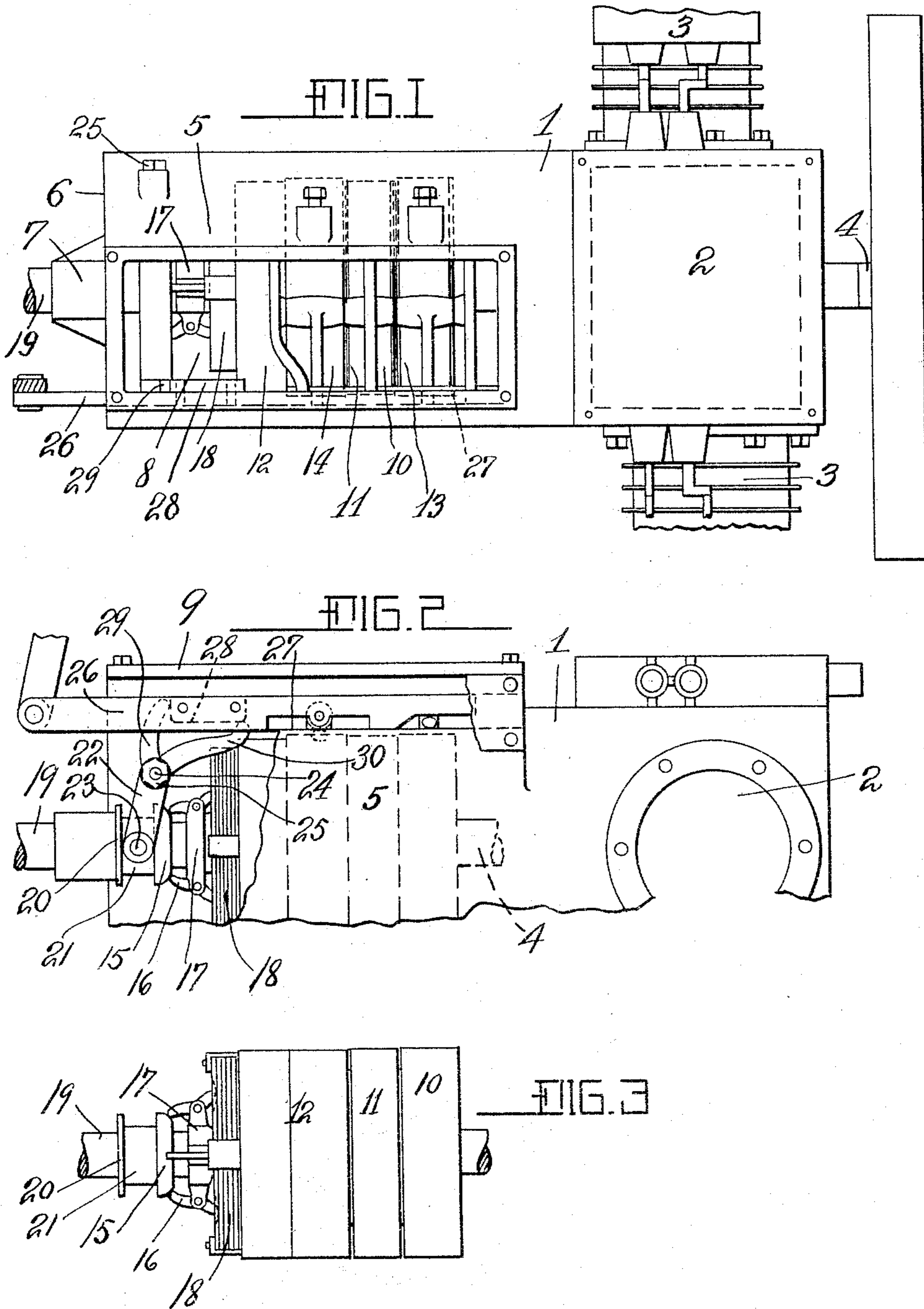
J. D. MAXWELL.

CLUTCH AND CLUTCH OPERATING MECHANISM.

APPLICATION FILED JUNE 3, 1907. RENEWED SEPT. 19, 1908.

905,446.

Patented Dec. 1, 1908.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CLUTCH AND CLUTCH-OPERATING MECHANISM.

No. 905,446.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Original application filed December 31, 1904. Serial No. 239,161. Divided and this application filed June 3, 1907, Serial No. 377,000. Renewed September 19, 1908. Serial No. 453,824.

To all whom it may concern:

Be it known that I, JONATHAN D. MAXWELL, of Tarrytown, New York, have invented certain Improvements in Clutch and

5 Clutch-Operating Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings designating like parts.

10 This invention relates to clutches, and clutch operating mechanism for power-transmitting apparatus, and my improvements are of particular utility when embodied in explosion engines for automobiles,

15 although I wish it understood that I contemplate the utilization of my invention in any field for which it is adapted by reason of the nature of my improvements.

The object of my invention is to simplify

20 and make more compact the transmitting and controlling portions of such engines so that there will be few parts to replace, and these will be accessible and of a character which can readily be made interchangeable,

25 enabling them to be kept in stock in large quantities, and replaced quickly, to avoid long delays incidental to replacement of parts in automobiles as constructed at present.

30 The various features of my invention will be illustrated and described fully in the accompanying drawings and specification and pointed out in the claims.

In the drawing, Figure 1 is a plan view

35 of an explosion engine for automobiles, in the construction of which my improvements have been embodied; Fig. 2 is a view in side elevation of the same looking from bottom to top of Fig. 1, parts being shown in section

40 and parts broken away for the sake of clearness; and Fig. 3 is a view in side elevation of the speed changing apparatus removed from the gear case at the left of Fig. 2.

In the embodiment of my invention selected for illustration and description as a convenient form to enable ready and complete understanding of my improvements, the part designated by the reference numeral 1

45 is a casing, which may be cast of aluminum or other suitable material, and in the instance illustrated has a crank chamber 2 to which are bolted the cylinders 3, and through which passes the crank shaft 4.

The reference numeral 5 designates the

gear case, which I prefer to form integral 55 with the crank chamber 2, as illustrated, although I do not limit myself to such construction nor to the general contour and arrangement of the gear case, which in the instance illustrated is shown as having a

60 removable head 6 provided with a bearing 7.

At 8 I have shown a handhole through which access can be had to the operating parts, a plate 9, shown in Fig. 2, serving as a closure for the handhole.

65 Upon the shaft 4 are gear drums 10, 11 and 12 connected operatively with the shaft through the medium of planetary gearing of a well-known type, but these are not claimed herein, as they, with their control-

70 ling bands 13, 14, are made the subject matter of my application Serial No. 239,161 filed December 31, 1904, from which this application has been divided.

A cone 15 is provided to operate the dogs 75 16 mounted upon a carrier 17, and thereby throw in a plate clutch 18, connected operatively with the shaft portion 19, the construction of which parts need not be herein described, as they form the subject matter of

80 my application for Letters Patent, Serial No. 280,450, filed September 28, 1905. The cone 15, has a collar 20, with a groove 21, and in accordance with my invention, I provide, to actuate the cone, a yoke lever 22,

85 having pins 23 working in the collar groove 21, the yoke lever being mounted upon a bearing bolt 24, which passes through the gear case and is provided with nuts 25 to enable removal of the bolt from outside the

90 gear case, after which the yoke lever may be readily withdrawn through the handhole 8.

The action of the cone is controlled by the operator through the medium of a slide 26 moving on a slideway 27, best seen in Fig. 2, 95 near the handhole 8, at the upper part of the gear case, the slide moving longitudinally with relation to the gear case, and having a cam block 28 fitting snugly between the arms 29, 30 of the yoke lever 22. When

100 actuated by leftward movement of the slide 26 and its cam block 28, the arm 29 of the lever will, through the medium of the pins 23 working in the collar groove 21 of the cone 15, force the cone to the right to operate the dogs 16 against the plate clutch 18 and thereby will couple the shaft members 4 and 19, together, through the gear drums,

101

enabling the member 4 to rotate the member 19. When the slide 26 is thrown toward the right, the cam block 28 engages the arm 30 of the lever 22 and draws the lever arm 22 toward the left, carrying with it the cone 15 and releasing the dogs so that the disks of the clutch 18 are no longer crowded into operative engagement. It will be observed that the cam block 28 acts also as a locking device to retain the cone in operative position by overlying and preventing movement of the lever arm 29 and the block acts again in a similar capacity, at the other end of its path, to hold the lever arm 30 and thus prevent accidental throwing in of the cone 15 and clutch 18.

Having thus described my invention, I do not limit myself to the specific construction illustrated nor in general otherwise than as set forth in the claims read in connection with this specification.

What I claim as new and desire to secure by Letters Patent is:—

1. The combination with a driving member, a driven member, a clutch having an operating collar, and a case containing said instrumentalities and provided with a slideway, of a bearing bolt transfixing said case and withdrawable from the exterior thereof, a yoke lever mounted on said bolt and having members respectively arranged to engage and actuate said collar and to be positioned near said slideway, and a slide on said slideway and having a cam to engage and actuate said yoke lever, substantially as described.

2. The combination with a driving member, a driven member, a clutch having an operating collar, and a case containing said instrumentalities and provided with a slideway, of a bearing bolt transfixing said case and withdrawable from the exterior thereof, a yoke lever mounted on said bolt and having members respectively arranged to engage and actuate said collar and to be positioned near said slideway, and a slide on said slideway and having a cam to engage and actuate said yoke lever, said cam serving at one end of its path to act as a lock for the yoke lever member operated by said cam while moving to said locking position; substantially as described.

3. The combination with a driving member, a driven member, a clutch having an operating collar, and a case containing said instrumentalities and provided with a slideway, of a bearing bolt transfixing said case

and withdrawable from the exterior thereof, a yoke lever mounted on said bolt and having members respectively arranged to engage and actuate said collar and to be positioned near said slideway, and a slide on said slideway and having a cam to engage and actuate said yoke lever; said cam serving at each end of its path to act as a lock for the yoke lever member respectively operated by said cam while moving to said locking position; substantially as described.

4. The combination with a clutch, a controlling slide, and an operating yoke lever having a forked lever arm, of a cam block on said slide and embraced by said yoke, said block being movable with said slide to actuate said fork and acting at all points in its path to maintain said lever and clutch in adjusted position, substantially as described.

5. The combination with a clutch, a controlling slide, and an operating yoke lever having a forked lever arm, of a cam block on said slide and embraced by said arm, said block being movable with said slide to actuate said fork and acting at all points in its path to maintain said lever and clutch in adjusted position, and said yoke lever and slide being free relatively to each other for removal, substantially as described.

6. Clutch and clutch operating mechanism comprising a clutch, a yoke-lever to operate said clutch, a slide having a cam block to actuate said yoke-lever, and a case for said instrumentalities, said clutch and yoke-lever being mounted within said case, and the latter having an exterior slideway and an aperture through which said cam protrudes into position to operate said yoke-lever, substantially as described.

7. Clutch and clutch operating mechanism comprising a clutch, a yoke-lever to operate said clutch, a slide having a cam block to actuate said yoke-lever, and lock it in adjusted position, and a case for said instrumentalities, said clutch and yoke-lever being mounted within said case, and the latter having an exterior slideway and an aperture through which said cam protrudes into position to operate said yoke-lever, substantially as described.

Signed at Tarrytown in the county of Westchester and State of New York, this ninth day of May, 1907.

JONATHAN D. MAXWELL.

Witnesses:

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