FORM 1

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT 617472

I\We,

HELLA KG HUECK & CO.

of POSTFACH 2840
LIPPSTADT 4780
GERMANY

hereby apply for the grant of a standard patent for an invention entitled:

COUPLING DEVICE FOR SPEED GOVERNOR FOR MOTOR VEHICLES.

which is described in the accompanying complete specification

Details of basic application(s):

Number of basic application	Name of Convention country in which basic application was filed	Date of basic application
P3818310.2	DE	30 MAY 88

My/our address for service is care of GRIFFITH HACK & CO., Patent Attorneys, 601 St. Kilda Road, Melbourne 3004, Victoria, Australia.

DATED this 17th day of May 1989

HELLA KG HUECK & CO.

GRIFFITH HACK & CO.

TO: The Commissioner of Patents.

M 009111 170589

GRIFFITH HACK & CO.

Australia Patent Declaration Form

Forms 7 and 8

AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

Name(s) of Applicant(s)

In support of the application made by Hella KG Hueck & Co.

Title

for a patent for an invention entitled COUPLING DEVICE FOR SPEED GOVERNOR FOR MOTOR VEHICLES

Name(s) and address(es) of person(s) making declaration

I/We, Siegfried Schöke, Schückingstraße 8, 4780 Lippstadt and Wilhelm Berghoff, Am Eichenhügel 11, 4780 Lippstadt

do solemnly and sincerely declare as follows:-

1. I/we are authorised by the abovementioned applicant to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act was/were made in the following country or countries on the following date(s) by the following applicant(s) namely:-

Country, filing date and name of Applicant(s) for the or each basic application

in Fed. Rep. of Germany on 30th May 19 88
by Hella KG Hueck & Co.
in _____ on _____ 19 _____
by _____

3. The said basic application(s) was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Name(s) and address(es) of the or each actual inventor

4. The actual inventor(s) of the said invention is/are Friedhelm Diller, Auf der Bitterhorst 3, 4840 Rheda-Wiedenbrück

See reverse side of this form for guidance in completing this part

5. The facts upon which the applicant(s) is/are entitled to make this application are as follows:-

The applicant is the assignee of the actual inventor.

DECLARED at Lippstadt this 26th day of April 19 89

Hella KG Hueck & Co.

pp

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COUPLING DEVICE FOR SPEED GOVERNOR FOR MOTOR VEHICLES

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(56) Prior Art Documents
US 4355611
US 3157244
CA 1081561

(57) Claim

1. Coupling device for a speed governor, especially for motor vehicles, with components parts which can move in relation to each other and which can be frictionally coupled together and connect a servo drive of the speed governor with an adjustment device which is directly or indirectly connected to a throttle valve, wherein a hollow cylindrical-shaped connection member is rigidly affixed to the servo drive, and the connection member is attached to a hollow cylindrical-shaped adjustment member by means of an adjustment ~~device~~ means on the side away from the servo drive, where the adjustment member, on the end facing away from the servo drive, possesses a cover with an opening through it, one section of which carries a sliding connecting rod, with the connecting rod having, on the end nearest to the servo drive, a thickened portion which is larger than the cross-section of the opening in which the connecting rod is carried, the connecting rod possessing, on the end furthest away from the servo drive, a ~~coupling~~ device which attaches the connecting rod to the adjustment device.

AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION 617472 Form 10

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TO BE COMPLETED BY APPLICANT

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Complete Specification for the invention entitled:
COUPLING DEVICE FOR SPEED GOVERNOR
FOR MOTOR VEHICLES.

The following statement is a full description of this invention including the best method of performing it known to me:-

The present invention relates to a coupling device for a speed governor, especially for motor vehicles, with components parts which can move in relation to each other and which can be frictionally coupled together and connect a servo drive of the speed governor with an adjustment device which is directly or indirectly connected to a throttle valve.

A coupling device of this type is known from the German Utility Model under the number GM 77 35 209. A coupling device between an adjustment device for adjustment of the operation of an internal combustion engine and a servo drive connected to a control circuit has two component parts, which are displaceable in relation to each other, and an arresting device on one of the two component parts. The arresting device has a bolt at its disposal which can be moved, by means of an electromagnet, into an arresting groove on the other one of the two component parts. The one component part is designed as a cylinder which can be directly mounted on the accelerator pedal lever. The other component part is designed as a piston which is displaceable within the cylinder. The arresting device is on the external peripheral wall of the cylinder and the arresting groove is located on the piston. The piston is connected to the adjusting motor by way of a toothed rack. If the speed governor is out of operation, the adjustment device is uncoupled from the servo drive. If the speed governor is in the operational state, the bolt is forced by the electromagnet through an opening in the cylinder onto the surface of the piston. The servo drive causes the piston to follow the cylinder from the idling position until the bolt moves into the arresting groove, which is detected by means of a switch. The speed of the vehicle can thus be controlled by the speed governor. If the speed governor is switched off, the bolt is withdrawn from the arresting groove by a return spring after the electromagnet is switched off, so that once again the speed can be determined by the driver of the vehicle.

The disadvantage of this arrangement is that the construction is not simple and inexpensive because of the use of a bolt which can be moved into position by an electromagnet and also it is necessary to provide a switch to indicate the position of the bolt.

A further disadvantage is that when the speed governor is actuated, the bolt presses against the piston and the servo drive must follow the piston until the bolt engages in the arresting groove, which can lead to an undesirable delay in the action of the speed governor and increases the wear-and-tear on the component parts.

In addition, it is also a disadvantage that the vehicle driver, during a necessary acceleration manoeuvre, must first overcome the resistance of the bolt so that the unccupling of the component parts can take place.

A coupling device is known from the German Utility Model under the number GM 78 08 547, which has at its disposal a pneumatic adjustment element, the adjustment movement of which is transmitted to a connecting rod. On the side of connecting rod away from the adjustment element there is a connecting device which can be coupled to the connecting rod. Here the connecting device is configured as a ball cup.

The disadvantage of this arrangement is that there is no provision made for an uncoupling between the adjustment element and the adjustment device connected to the connecting device, so that the adjustment element, with every movement of the adjustment device is subjected to stress, which means that the expenditure of effort to actuate the adjustment device is raised and the wear-and-tear on the adjustment element is increased. In addition, it is found to be a disadvantage that the adjustment device is constructed with a screw-thread and a screwed cap, which means that a sensitive precise and rapid adjustment of the coupling device to a basic position of the adjustment element can only be achieved with great difficulty, because forces are

generated in the adjustment device by tightening the nut.

The problem to be solved by the invention is how to create a coupling device which can be manufactured and mounted simply and inexpensively, can be simply and rapidly adapted to a pre-existing adjustment device, and which will uncouple the servo drive from the adjustment device without additional expenditure of effort when the adjustment device is to be operated manually.

The present invention provides the solution to this problem by having a hollow cylindrical-shaped connection member rigidly affixed to the servo drive, and by having the connection member attached to a hollow cylindrical-shaped adjustment member by means of an adjustment device on the side away from the servo drive, where the adjustment member, on the end facing away from the servo drive, possesses a cover with an opening through it, one section of which carries a sliding connecting rod, with the connecting rod having, on the end closest to the servo drive, a thickened portion which is larger than the cross-section of the opening in which the connecting rod is carried, the connecting rod possessing, on the end furthest away from the servo drive, a coupling device which attaches the connecting rod to the adjustment device.

It is advantageous for the hollow cylindrical-shaped connection member to be rigidly affixed to the servo drive because, in this manner, the adjustment movement of the servo drive is transmitted with certainty to a component of the coupling device, in which, because of the hollow cylindrical-shaped configuration, an extra component of the coupling device is freely displaceable.

Furthermore, it is found to be advantageous to have the connection member, on the side furthest away from the servo drive, connected to a hollow cylindrical-shaped adjustment member, by means of an adjustment device because, in this manner, the total length of the coupling device can be simply, inexpensively and rapidly adjusted frictionally to the dimension which is pre-

established by the adjustment device and the servo drive and determined by the tolerances of the adjustment device. The dimension is definitively pre-established by the idling setting of a throttle valve which is connected to the adjustment device.

Because of the fact that the adjustment member, on the end facing away from the servo drive has a cover with an opening through it, one section of which carries a sliding connecting rod, the advantage is derived that the connecting rod is freely displaceable within the hollow cylindrical-shaped interior of the connection member and the adjustment member, by which means an uncoupling between the servo drive and the adjustment device can be achieved in a simple and inexpensive manner, with a saving of space at the same time.

In this connection, it is advantageous for the end of the connecting rod facing towards the servo drive to have a thickened portion which is larger than the cross-section of the opening in which the connecting rod is carried because, in this way, the connecting rod can be coupled, in a simple and inexpensive manner, to the servo drive in a force-effective direction when the speed governor is put into operation, since the adjustment device is adjusted in such a manner in the idling position of the adjustment device that the thickened portion of the connecting rod is in frictional contact with the opening through the cover. At the same time, it is always possible to use manual control of acceleration of the vehicle when the speed governor is turned on, because the connecting rod can be uncoupled in the direction towards the servo drive without the expenditure of additional effort and remains freely displaceable.

It is an advantage for the connecting rod, on its end facing away from the servo drive, to have a connection device which connects the connecting rod with the adjustment device, so that a simple and inexpensive assembly of the coupling device is achieved.

Additional advantageous configurations and developments of the

object of the present invention are described in the subsidiary Patent Claims.

In particular, it is advantageous for the adjustment device to be configured with oppositely-situated sections on the inside of the adjustment member and with sections directed outwards on the outside of the connection member and for the sections to have radially directed saw-tooth-shaped ribs which extend over a prescribed region parallel to one another in the axial direction, and for the sections to be arranged in such a way that the adjustment member is freely displaceable in the axial direction in relation to the connection member and, by means of a relative radial rotation between the adjustment member and the connection member, the ribs of the sections are positively locked into engagement because, in this manner, the coupling device can be positively locked in the axial direction, simply and inexpensively, without the expenditure of additional effort, to suit the dimension which is predetermined by the idling setting of the adjustment device.

In this connection, it is an additional advantage for the ribs which are currently oppositely-situated and directed away from one another, not only in the case of the connection member but also the adjustment member, to be offset in relation to each other in the axial direction by a predetermined amount which corresponds, in particular, to half the distance between the ribs because, in this manner it is possible to achieve a more sensitive and precise adjustment which, in particular, halves the smallest adjustable distance or else, in the case of an easily produced greater distance between the ribs - which results in decreased production costs - a finer or equally-precise adjustment is made possible.

Owing to the fact that the ribs of the adjustment member or of the connection member have at least one continuous groove extending in the axial direction, and the ribs of the adjustment member or of the connection member have at least one beading

which extends over some of the first ribs in the axial direction, where the width of the beading and the width of the groove are substantially the same, the advantage is derived that, in a simple and inexpensive manner, a fixed positioning of the adjustment member in relation to the connection member is achieved which prevents any undesired inadvertent rotation and uncoupling, so that the reliability of operation of the speed governor is increased.

Because the connecting rod, the adjustment member and the connection member are injected moulded from synthetic plastics material, the advantage is derived that the manufacture of these components is simple and inexpensive.

Identical or similarly-acting component parts are indicated by the same reference numerals in the drawings, in which:

Fig. 1a is a section through a coupling device with a servo drive in accordance with the present invention,

Fig. 1b is an end view of the coupling device in accordance with the present invention,

Fig. 2a is a section through the connection member of the coupling device in accordance with the present invention,

Fig. 2b is an end view of the connection member in Fig. 2a,

Fig. 2c is an enlarged detail at Y in Fig. 2a,

Fig. 2d is an enlarged detail at Z in Fig. 2a,

Fig. 2e is an enlarged detail at X in Fig. 2b,

Fig. 3a is a section through the adjustment member of the coupling device in accordance with the present invention,

Fig. 3b is an end view of the adjustment member in Fig. 3a,

Fig. 3c is an enlarged detail section on line A-A in Fig. 3b,

Fig. 3d is an enlarged detail section on line B-B in Fig. 3b,

Fig. 3e is a side view of the adjustment member in accordance with the present invention,

Fig. 4a is a view of the underside of the connecting rod of the object of the present invention,

Fig. 4b is a side view of the connecting rod,

Fig. 4c is a section on line C-C in Fig. 4b.

Fig. 1a is the section through a coupling device in accordance with the present invention for a speed governor which is coupled to an adjustment device (not depicted) by way of a servo drive (2) depicted here, which is directly or indirectly connected to a throttle valve.

Fig. 1b is the end view of the object of the present invention.

The servo drive (2) here, in order to reduce costs and to simplify the construction, is configured as a pneumatically actuated control element which is rigidly attached to the motor vehicle bodywork and consists of a cup-shaped base body (17) advantageously injection moulded from synthetic plastics material, a cup-shaped membrane (18), firmly attached to the rim of the base body (17), having an opening on its side facing away from said base body (17) to receive a plate-shaped component (20) injection moulded, in particular, from synthetic plastics material, which closes and seals the membrane (18). Between the base body (17) and the component (20), to provide an initial setting of the servo drive (2), there is a spiral spring (19) which returns the servo drive (2) to its initial setting when the

speed governor is switched off. In addition to this, the base body (17) is provided with an opening (not depicted) for connection of the pressure chamber (22) of the servo drive (2) to a pressure-reduction device which is actuated by a control circuit of the speed governor.

In another example of embodiment the servo drive (2) can be actuated electrically.

On the side facing away from the base body (17) the component (20) is provided with a projecting moulded-on elastic arresting component (14).

In order to facilitate the assembly, the hollow cylindrical-shaped connection member (1), as shown in Fig. 2a, possesses at its end facing towards the servo drive, a peripheral constriction (13) on its inner surface which engages with the arresting component (14) of the component (20). The dimensioning of the arresting device formed in this way is such that, during the arresting action, the membrane (18) is, at the same time, pressed tightly in between the surface of the component (20) and the end of the connection member (1) and the pressure chamber (22) is sealed off from the external atmosphere. For simple and rapid adjustment and for rapid fastening of an additional component to its end facing away from the servo drive (2), the connection member (1), as shown in Fig. 2a and Fig. 2b, is provided on its outside with two sections facing away from one another which possess, by way of example, an indicated number of radially directed saw-tooth-shaped ribs (3) which are arranged parallel to one another over a prescribed region and extend in the axial direction. The structural component which can be fastened to the connection member (1) is the adjustment member (4) which is depicted in Fig. 3a and Fig. 3b and also has a hollow cylindrical shape. The adjustment member (4) is provided on its inner surface with two oppositely-situated sections furnished with radially-directed saw-tooth-shaped ribs (3) which are arranged parallel to one another, and which, in order to obtain the greatest

possible range of adjustment, extend over the entire axial length of said adjustment member (4).

The axial spacing of the ribs (3) on the outside of the connection member (1) and on the inside of the adjustment member (4) is essentially identical.

The sections which are formed by the ribs (3) are arranged in such a manner that, in one position of the adjustment member (4) in relation to the position of the connection member (1), it is possible to displace the adjustment member (4) freely in the axial direction along the connection member (1), thus providing a simple, inexpensive and rapid adaptation of the length of the coupling device, in accordance with the present invention, to an adjustment device pre-established at the idling setting of a throttle valve.

In order to achieve a fixed axial positioning of the adjustment member (4) in relation to the connection member (1) in which, at the idling setting of the throttle valve, the adjustment device is frictionally engaged with the servo drive (2) by way of the coupling device, a relative radial rotation is effected between the adjustment member (4) and the connection member (4), so that the ribs of the sections are positively locked into engagement. In order to achieve a stricter and finer degree of adjustment, the oppositely-situated ribs (3) on the inner surface of the adjustment member (4) are offset in the axial direction for a specified distance (10), which here corresponds to approximately half the distance apart of the ribs, as shown on a larger scale in Fig. 3c and Fig. 3d which are sections on the lines A-A and B-B respectively. The ribs (3) facing outwards on the outside of the connection member (1), as shown on a larger scale in Fig. 2c and Fig. 2d, are also offset axially by the distance (10) which here corresponds to approximately half the distance apart of the ribs. If such a fine degree of adjustment is not required, with this arrangement the distance between the ribs can be increased, which simplifies the fabrication and reduces the cost, without

the precision of the adjustment being adversely affected.

In order to fix the position of the adjustment member, and to ensure that it will not be inadvertently rotated, so that the ribs (3) of the adjustment member (4) become disengaged from their positive locked position, the ribs (3) of the adjustment member (4) are provided with a groove (11) extending in the axial direction, as shown in Fig. 3b, and the first ribs (3) of the connection member (1) are provided with a beading (12) which does not project out as far as the ribs (3) but its width is substantially the same as that of the groove (11). The beading (12) engages in the groove (11) and thus prevents the adjustment member (1) from undergoing any undesired rotation. The configuration of the beading (12) is indicated in Fig. 2a and Fig. 2b. The enlarged detail X in Fig. 2e shows the beading (12) in end elevation. The enlarged detail Y in Fig. 2c and the enlarged detail Z in Fig. 2d shows the oppositely-located beadings (12) in longitudinal section. Here the beading (12) extends, for example, over the first three or four ribs (3). The number of ribs (3) over which the beading (12) extends allows for adjustment of the arresting power. In addition, the arresting power may be pre-adjusted by altering the height of the beading (12) which may be less than, equal to or greater than the height of the ribs (3).

In another embodiment, the groove (11) may be located on the connection member (1) and the beading (12) may be located on the adjustment member (4). It is also possible for the ribs to be provided with several grooves (11) and beadings (12). Fig. 3e depicts the adjustment member (4) on a reduced scale. In this case the adjustment member (4) is provided with ridges which extend in the axial direction over the whole length of its outer surface to furnish a grip for facilitating its manual rotation.

As may be seen from Fig. 1a and Fig. 3a, the adjustment member (4) has a cover (5) on its end facing away from the servo drive (2). In order to keep the production simple and inexpensive, the

cover (5) is an integral part of the adjustment member (4).

The cover (5) has an opening (6) through it to receive the connecting rod (7) which is mounted to slide in it.

Fig. 4a and Fig. 4b are two different views of the connecting rod (7).

The connecting rod (7) has an integrally moulded thickened portion (8) on its end closest to the servo drive (2). The thickened portion (8) is formed here, for example, as a ball head. At the other end of the connecting rod (7) furthest away from the servo drive (2) there is a connection device (9) for simple and inexpensive attachment to the adjustment device. To allow for simple assembly, the connection device (9) consists of a ball cup (15) which here, for example is provided with an elastic retaining collar (16) to receive a ball head. In another example of embodiment, the ball cup (15) could have a plurality of retaining collars (16).

Fig. 4c is a cross section on line C-C in Fig. 4b through the ball cup (15) and the retaining collar (16).

Fig. 3b depicts the configuration of the keyhole-shaped opening (6) in the cover (5) of the adjustment member (4) in which the connecting rod (7) is mounted to slide.

The opening (6) consists of a first portion (6), which is larger in diameter than the diameter of the thickened portion (8) of the connecting rod (7) in order to allow for the insertion of the connecting rod (7) through the opening (6) in the cover (5) in the direction towards the servo drive (2).

The opening (6) has a second portion which is tapered in to be narrower than the diameter of the connecting rod (7) so that it acts as a retaining element. The third portion of the opening (6) is located centrally in the cover (5) of the adjustment

member (4) and accommodates the connecting rod (7) which can slide backwards and forwards through it.

The servo drive (2) of the speed governor is therefore always coupled to the adjustment device when the thickened portion (8) of the connecting rod (7) is frictionally engaged in the opening (6) in the cover (5) of the adjustment member (4).

The functioning of the coupling device in accordance with the present invention will now be described briefly.

During the mounting of the coupling device, the pre-assembled servo drive (2) which is rigidly connected with the connection member (1) is affixed to a part of the bodywork of the motor vehicle or to the engine block. The connecting rod (7) is inserted through the opening (6) in the cover (5) of the adjustment member (4) where it is positioned centrally by means of the retaining element. The adjustment member (4) is then pushed on over the connection member (1) and the connecting rod (7) is firmly attached to the adjustment device by way of the coupling device (9). The adjustment device has a spring-loaded connection with the throttle valve at the idling setting. For adjustment of the coupling device in accordance with the present invention on the adjustment device, the adjustment member (4) is pushed on axially over the connection member (1) until the thickened portion (8) of the connecting rod (7) is frictionally engaged in the opening (6) in the cover (5) of the adjustment member (4). The adjustment member (4) is then rotated radially in relation to the connection member (1) so that the ribs (3) are positively locked into engagement and the beading (12) is seated in the groove (11). In this simple manner it is possible to adapt the coupling device to the dimension which is predetermined by the adjustment device and the tolerances of said adjustment device.

If the speed governor is not operational, then the connecting rod (7) is able to slide freely in the hollow cylindrical-shaped

interior of the connection member (1) and the adjustment member (4) when the accelerator pedal is actuated, without the servo drive (2) having any force applied to it.

If the speed governor is operational, then, depending upon the vehicle speed which is to be regulated, the pressure chamber (22) of the servo drive (2) is subjected to a reduction of pressure which causes the connecting rod (7) to be drawn in the direction towards the servo drive (2). The connecting rod (7) is thereby subjected to a spring force by the adjustment device in the direction towards the idling setting of the throttle valve so that the thickened portion (8) is at all times frictionally engaged with the adjustment member (4).

If an emergency situation, for example, should require the acceleration of the vehicle, then the connecting rod (7) is freely displaceable in the opening (6) without any force being exerted on the servo drive (2).

If the speed governor is switched off, then the servo drive (2) once again resumes it initial position because of the effective force of the spring (19) and the speed of the vehicle can be controlled over the whole range by the actuation of the accelerator pedal.

In order to achieve the simple and inexpensive manufacture of the connecting rod (7), of the adjustment member (4) and of the connection member (1), these components are injection moulded from synthetic plastics material. However, these components can be fabricated from other materials, for example, metal. In another form of embodiment, the connection device (9) can be directly or indirectly articulated with the throttle valve.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS :

1. Coupling device for a speed governor, especially for motor vehicles, with components parts which can move in relation to each other and which can be frictionally coupled together and connect a servo drive of the speed governor with an adjustment device which is directly or indirectly connected to a throttle valve, wherein a hollow cylindrical-shaped connection member is rigidly affixed to the servo drive, and the connection member is attached to a hollow cylindrical-shaped adjustment member by means of an adjustment ~~device~~ means on the side away from the servo drive, where the adjustment member, on the end facing away from the servo drive, possesses a cover with an opening through it, one section of which carries a sliding connecting rod, with the connecting rod having, on the end nearest to the servo drive, a thickened portion which is larger than the cross-section of the opening in which the connecting rod is carried, the connecting rod possessing, on the end furthest away from the servo drive, a ~~coupling~~ device which attaches the connecting rod to the adjustment device.

2. The coupling device according to Claim 1, wherein the adjustment ~~device~~ means is configured with oppositely-situated sections on the inside of the adjustment member and with sections directed outwards on the outside of the connection member and the sections have radially directed saw-tooth-shaped ribs which extend over a prescribed region parallel to one another in the axial direction, and the sections are arranged in such a way that the adjustment member is freely displaceable in the axial direction in relation to the connection member and, by means of a relative radial rotation between the adjustment member and the connection member, the ribs of the different sections are positively locked into engagement.

3. The coupling device according to Claim ', wherein the oppositely-situated ribs on the inner surface of the adjustment member and the ribs facing outwards on the outside of the

connection member, are offset in the axial direction for a specified distance, which corresponds to approximately half the distance apart of the ribs.

4. The coupling device according to Claim 2, wherein the ribs of the adjustment member or of the connection member have at least one continuous groove extending in the axial direction, and the ribs of the adjustment member or of the connection member have at least one beading which extends over some of the ~~first~~ ribs in the axial direction, where the width of the beading and the width of the groove are substantially the same.

5. The coupling device according to Claim 1, wherein the servo drive is rigidly affixed to a part of the bodywork of a motor vehicle or to an engine block.

6. The coupling device according to Claim 1, wherein the connection member possesses a peripheral constriction on its inner surface which engages with ~~the~~ an elastic arresting component of ~~the~~ a component for connecting it to the servo drive.

7. The coupling device according to Claim 1, wherein the opening has a keyhole-shaped configuration and consists of a first portion which is larger in diameter than the diameter of the thickened portion of the connecting rod and a second portion which is tapered ~~in~~ to be narrower than the diameter of the connecting rod and a third portion which is located centrally in the cover of the adjustment member through which the connecting rod ~~which~~ can slide backwards and forwards.

8. The coupling device according to Claim 1, wherein the thickened portion is configured as a ball head.

9. The coupling device according to Claim 1, wherein the ~~connecting device~~ connection member is configured as a ball cup provided with an elastic retaining collar to receive a ball head.

10. The coupling device according to Claim 1, wherein the ~~connecting device~~ connection member is articulated with the accelerator pedal lever which is part of the adjustment device.

11. The coupling device according to Claim 1, wherein the servo drive is configured as a pneumatically actuated control element which consists of a cup-shaped base body, a cup-shaped membrane, a spring and a plate-shaped component which seals the membrane.

12. The coupling device according to Claim 1, wherein the connecting rod, the adjustment member and the connection member are injection moulded from synthetic plastics material.

13. The coupling device according to Claim 1, wherein the cover is an integral part of the adjustment member.

14. The coupling device according to Claim 6 and Claim 11, wherein the membrane is pressed tightly in between the surface of the plate-shaped component and the end of the connection member.

15. The coupling device according to Claim 1, wherein the servo drive may be actuated electrically.

DATED THIS 17TH DAY OF MAY 1989
HELLA KG, HUECK & CO.
By its Patent Attorneys:
GRIFFITH HACK & CO.
Fellows Institute of Patent
Attorneys of Australia

FIG 1b

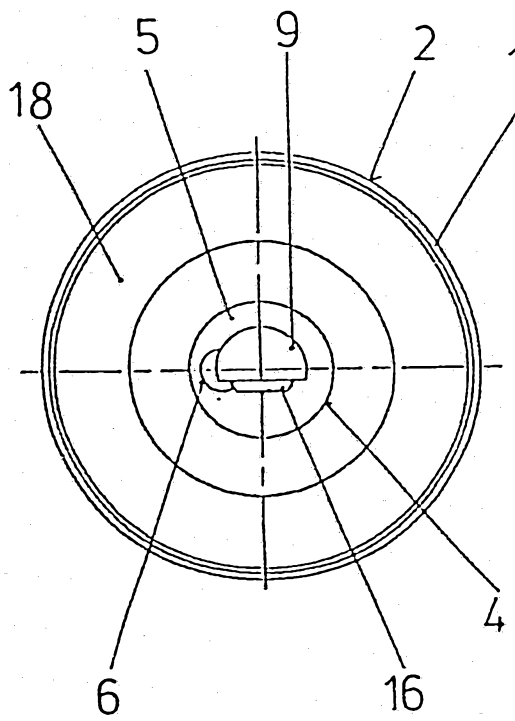
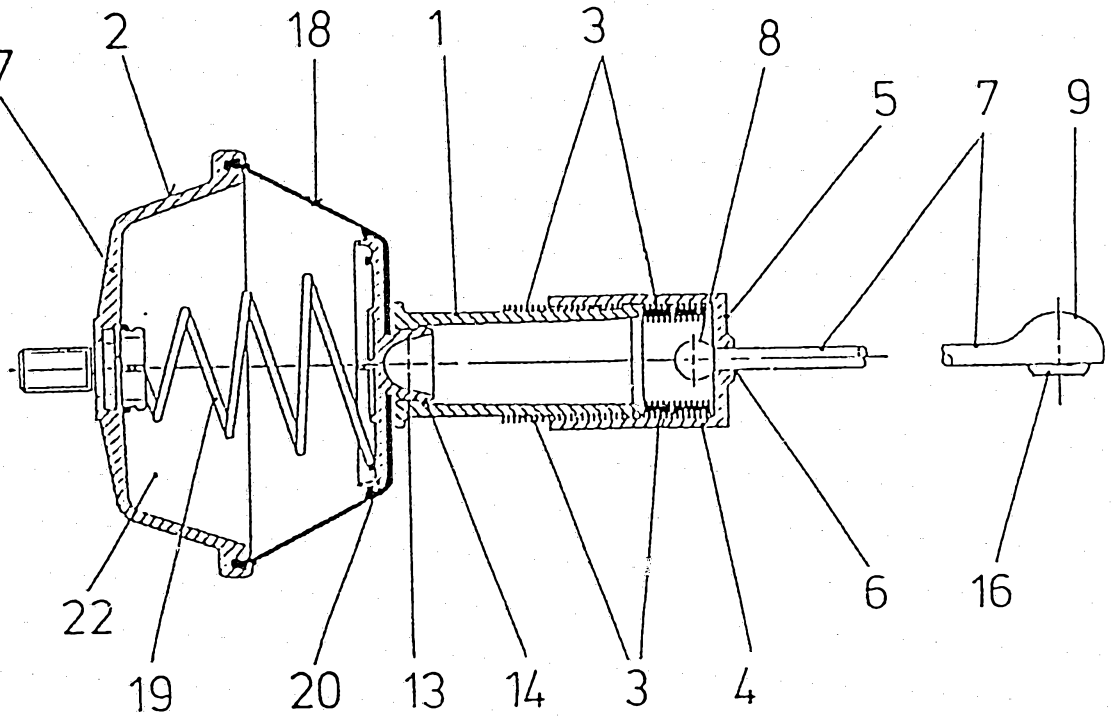


FIG 1a



34 883/89

FIG 2b

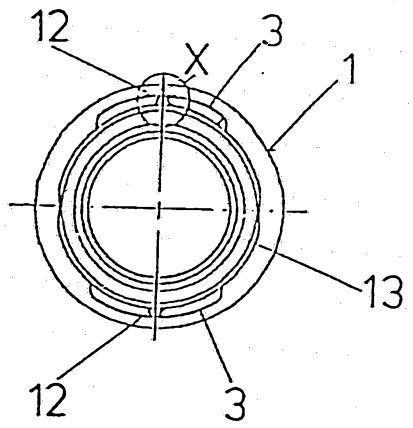


FIG 2a

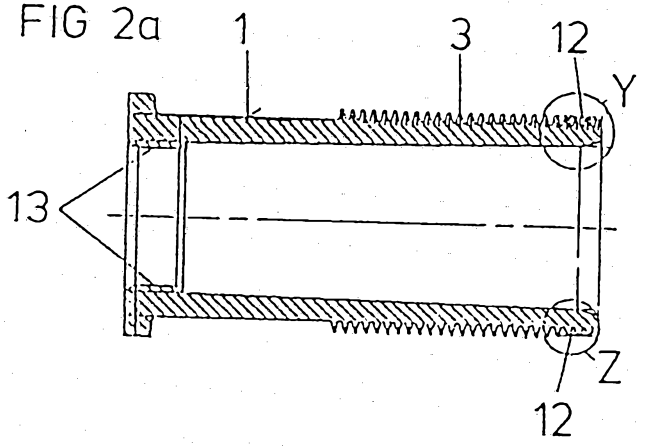


FIG 2c Y

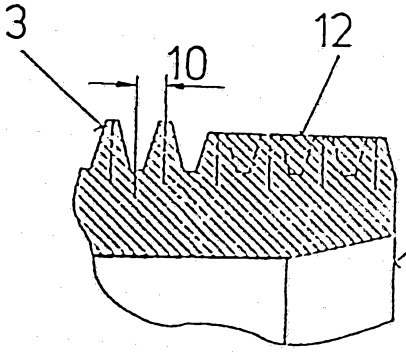


FIG 2d Z

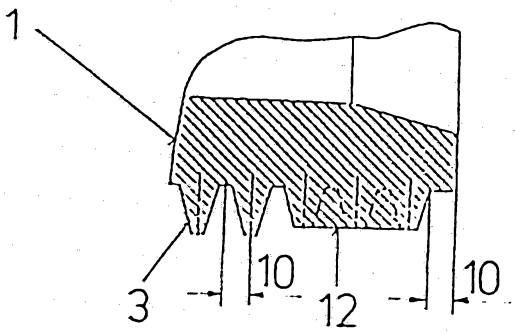


FIG 2e X

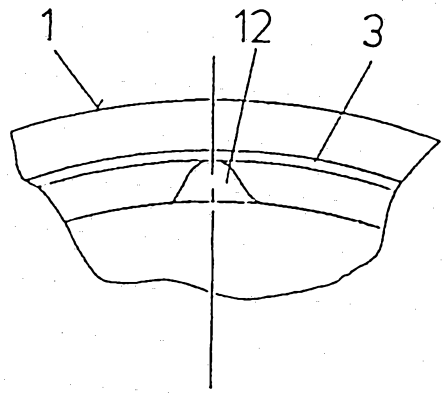


FIG 3a

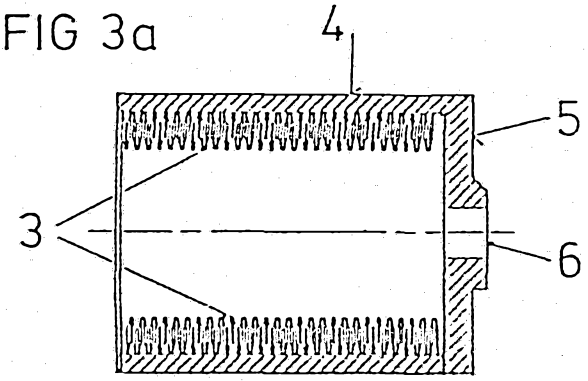


FIG 3b

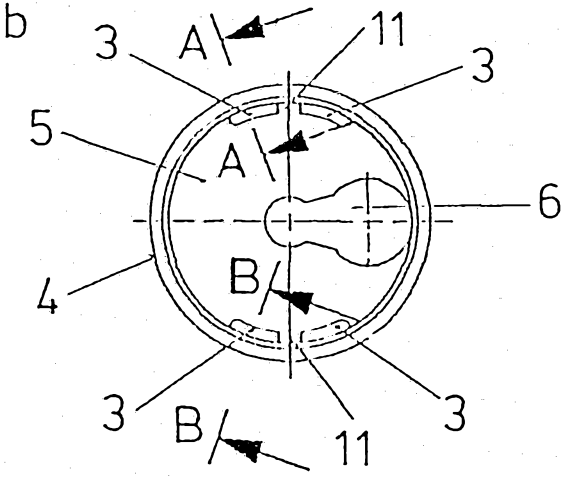


FIG 3c

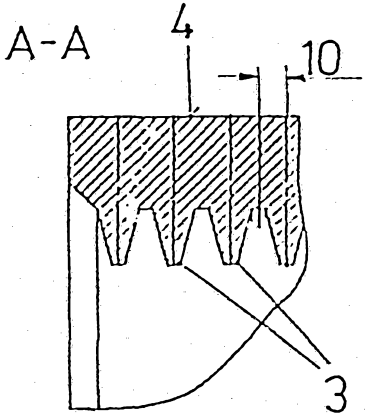


FIG 3d

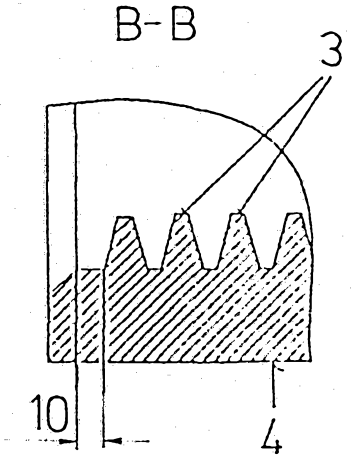


FIG 3e

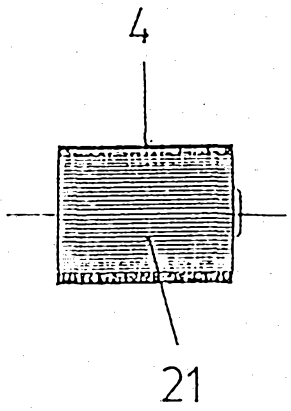


FIG 4a

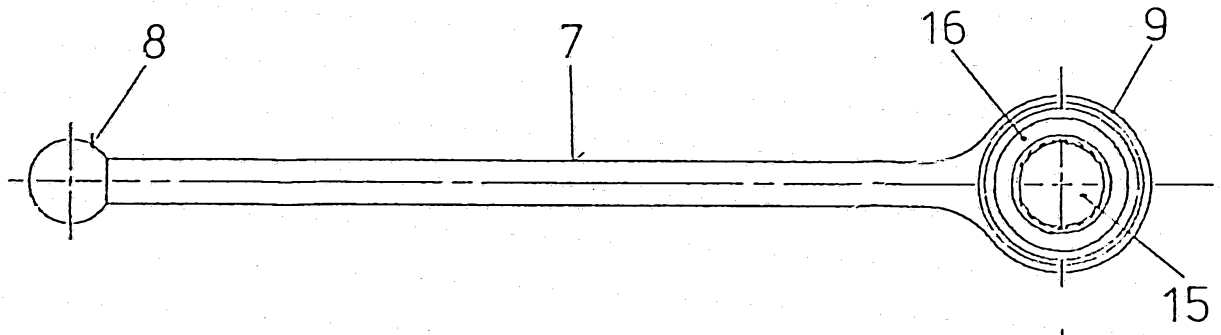


FIG 4b

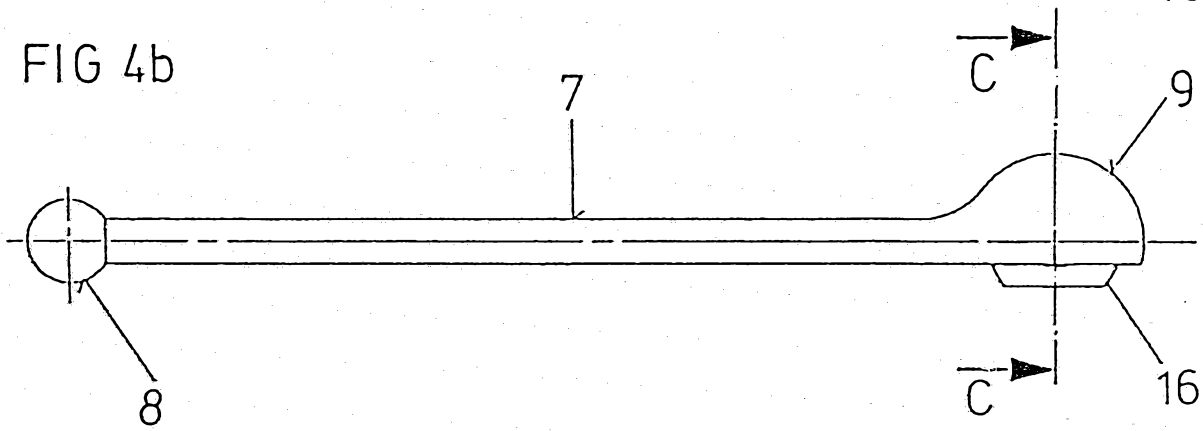


FIG 4c

C-C