



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.12.2004 Bulletin 2004/52

(51) Int Cl.7: **B25B 27/24, B25B 27/26**

(21) Application number: **04386020.4**

(22) Date of filing: **10.06.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL HR LT LV MK

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(30) Priority: **10.06.2003 GR 2003100260**

(54) **Tool for reassembly and disassembly of poppet valve spring assemblies**

(57) This invention relates to a tool for reassembly and disassembly of poppet valve spring assemblies of an automotive cylinder head. It includes a pressure lever (22) which slides on a horizontal steel shaft (3) and which is mounted on vertical columns (2). The columns are supporting themselves on two metal bases (1) which

are firmly attached to stud bolts of an automotive cylinder head. The tool also includes a socket (25) to which either an adaptor for reassembly or for disassembly are attached. The adaptors perform the removal and the installation of the valve locks (21) during the operation of an automotive engine repair.

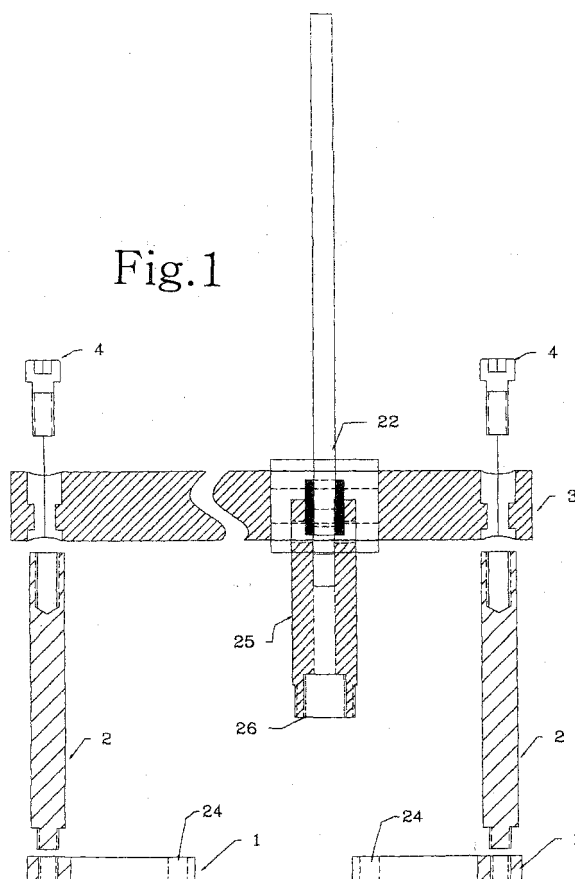


Fig.1

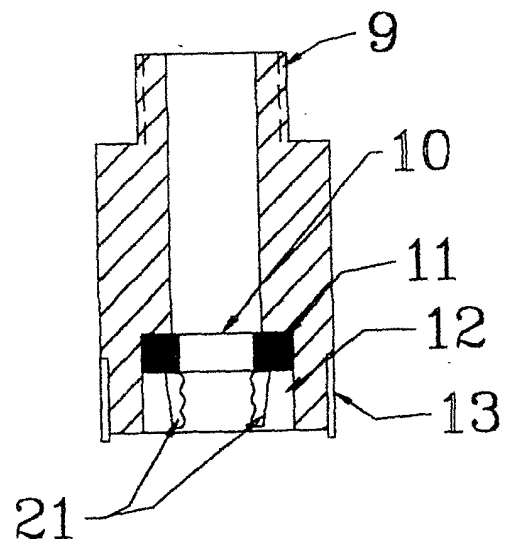


Fig.5

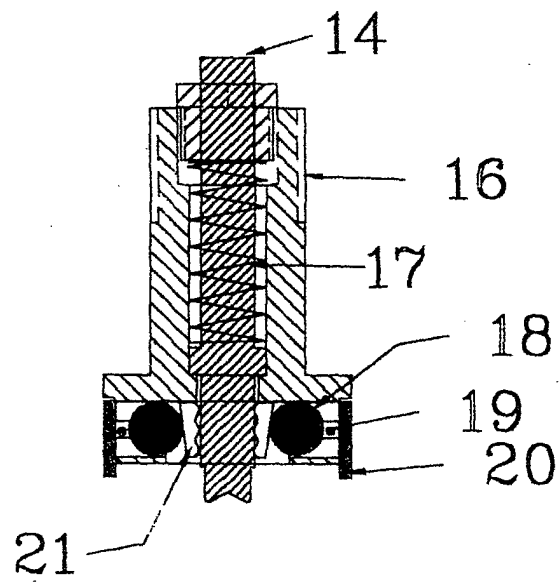


Fig.7

Description

DESCRIPTION OF THE INVENTION

[0001] This invention is a special tool for removing and installing fuses in the valves of the automotive engine's cylinder head.

[0002] This special tool for removing and installing fuses in the valves of the automotive engine's cylinder head refers to the technique of removing and installing fuses in the automotive engine valves and it is comprised by a lever pressure of the valve springs forming the motor vehicle's engine cylinder head, which slides on a steel horizontal shaft. The said shaft is lying on vertical columns which brace on two metal bases, firmly adapted to the buckets of the engine's cylinder head; the said lever bears a head socket for the end unions which aid to the removal of the valve fuses from the motor vehicle engine's cylinder head and hence their placing during the works for the engine repair.

[0003] This technique is used in different types of motor vehicle engines with a convenient adaptation of the fastening bases.

[0004] Tools for removing and installing valve fuses in the cylinder heads of motor vehicle engines, are well known. However in their implementation they only compress the valve springs of the cylinder head without retaining the fuses during their induction in the valves. This invention is distinguished by the advantages of retaining the fuse end unions both during their removal from the valves and their convenient induction and installation in the valves long after they are being repaired. Subsequently, this procedure reduces the time repair. It also offers security, exactness and speeds up the repairs.

[0005] The current patent application aims to provide safe, quick and efficient job, during the motor vehicle engine repair and especially during the repair of the valves in the cylinder head avoiding thus the risks of valve loss or valve failure.

[0006] The patent application is thoroughly presented in a draft, attached to the report.

[0007] Figure 1 shows the top view of the current patent application which is put on the thread buckets of the cylinder head and depicts the lever compression (22), sliding on the horizontal shaft. The said shaft is assembled with the screws (4) on the columns (2) and bears the head (25) with the thread of the end unions' socket (26) along with the bases (1) with the apertures (24) of the fastening screws in the thread buckets of the motor vehicle's engine cylinder head.

[0008] Figure 2 presents the oblique view of the bar pressure (22) fastening itself on the shaft (3) and the notch (23) for its induction in the shaft.

[0009] Figure 3 shows the top view of the fastening bases (1) with the apertures (24) corresponding to the thread buckets of the cylinder head where the fastening screws are adjusted.

[0010] Figure 4 shows the front view and Figure 5

shows the top view of the special end union which removes the valve fuses from the motor vehicle's engine cylindrical head. The said end union possesses a thread (9) screwed on the head (25) of the level pressure a circular magnet (11) with the bond chamber of the fuses (12) and the circular centering guide of the valve (13).

[0011] Figure 6 shows the front view and Fig. 7 shows the top view of the special end union which inducts the fuse valves in the cylinder head of the motor vehicle engine bearing a thread (16) screwed to the head (25) with the balls (18), fastening the fuses (21), forced by a spring ring (19) on the fuse shaft handle (14) guide with the valve spring compression during its induction (17) to the centering guide (20) and the sample fuses (21).

[0012] The tool for removing and replacing fuses in the valves of the motor vehicle's engine cylinder head can be operated if the bases (1) Fig. 1,2,3 are put on the thread buckets of the camshafts with their screw fasteners.

[0013] In order to extract the valve fuses, a special end union is installed, which bears a thread (9) Fig. 5 in the thread (26) of the end union's fastening head (25).

[0014] Then the lever compression is pressed (22) and the special end union is easily centralized by the aid of a ring (13) Fig. 4 and Fig. 5 and the valve stem is introduced through the magnet (11) Fig. 4 and Fig. 5 which has an aperture (10) Fig. 4 and Fig. 5. With the constant pressure of the lever, the spring valves are pressed freely and the fuses (21) Fig. 4 and Fig. 5 are automatically fastened by the magnet (11) Fig. 4 and Fig. 5 that the end union possesses in the fuse fastening chamber (12) Fig. 5.

[0015] The removed end union is replaced in order to introduce the fuse valves Fig. 4 and Fig. 5 and the specially inducted end union of the fuse valves Fig. 6 and Fig. 7 is placed Fig.6 and Fig. 7 which bears a thread (16) Fig. 7 on the thread (26) of the end unions' fastening head (25). Then the fuses are installed (21) Fig. 6 and Fig. 7 in the chamber of the fuse balls (18) Fig.6 and Fig. 7 which are fastened by the aid of the spring ring (19) Fig.6 and Fig. 7 on the shaft of the fuse guides (14) Fig.6 and Fig. 7. By pressing the lever compression (22) the inducted end union of the fuse valves is conveniently centralized by means of a ring (20) Fig. 7 and the valve stem is introduced in the ball chamber easily (18) Fig.6 and Fig. 7, it compresses both the shaft guide (14) Fig. 6 and Fig. 7 and the spring (17) Fig. 7 which drives it downwards. As a result the shaft guide (14) Fig.6 and Fig. 7 removes itself and its place is taken by the valve stem between the fuses (21) Fig.6 and Fig. 7. As the valve stem makes its way forward, when the fuses (21) Fig.6 and Fig. 7 find themselves on its notch level, they are forced by the balls (18) Fig.6 and Fig. 7 via a spring ring (19) Fig.6 and Fig. 7. Thus, they fit themselves to the notches.

Claims

1. The tool for removing and installing fuses in the automotive engine valves is comprised by a lever pressure (22) attached to a horizontal shaft (3), which bears a head (25) with the thread of the end unions' induction (26) with columns (2) and with two bases (1) supporting them with apertures (24). The said apertures are adapted to the notches of the engine's buckets. By attaching the special end union which removes the fuse valves from the cylinder head; the said head consists of a thread (9) a ring (13) a magnet (11) an aperture (10) a fuse fastening chamber (12) and by pressing the lever pressure (22) then the special end union is conveniently centralized on the valve spring collar by means of a ring (13) and the valve stem slides through the magnet (11) which bears an aperture (10) through the constant compression of the lever the spring valves are pressed and the fuses are automatically retained by the magnet (11) which the end union possesses in the fuse fastening chamber (12). By attaching the special end union to replace the fuse valves in the cylinder head; the said head is comprised by a thread (16) and it's adapted to the end union's head fastener (25), a chamber for putting the fuse balls (18) which are held together by means of a spring ring (19) on the fuse shaft guide (14) and by pressing the lever compression (22) then the end union which replaces the fuse valves is easily centralized on the collar of the spring valve by the aid of a ring (20) and the valve stem is conveniently introduced in the ball chamber (18) and by means of a spring (17) the shaft guide (14) leads the fuses to the valve stem. On the shaft's notch level the balls help the fuses to slide to the valve stem's notches with the aid of a spring ring (19).

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Fig.1

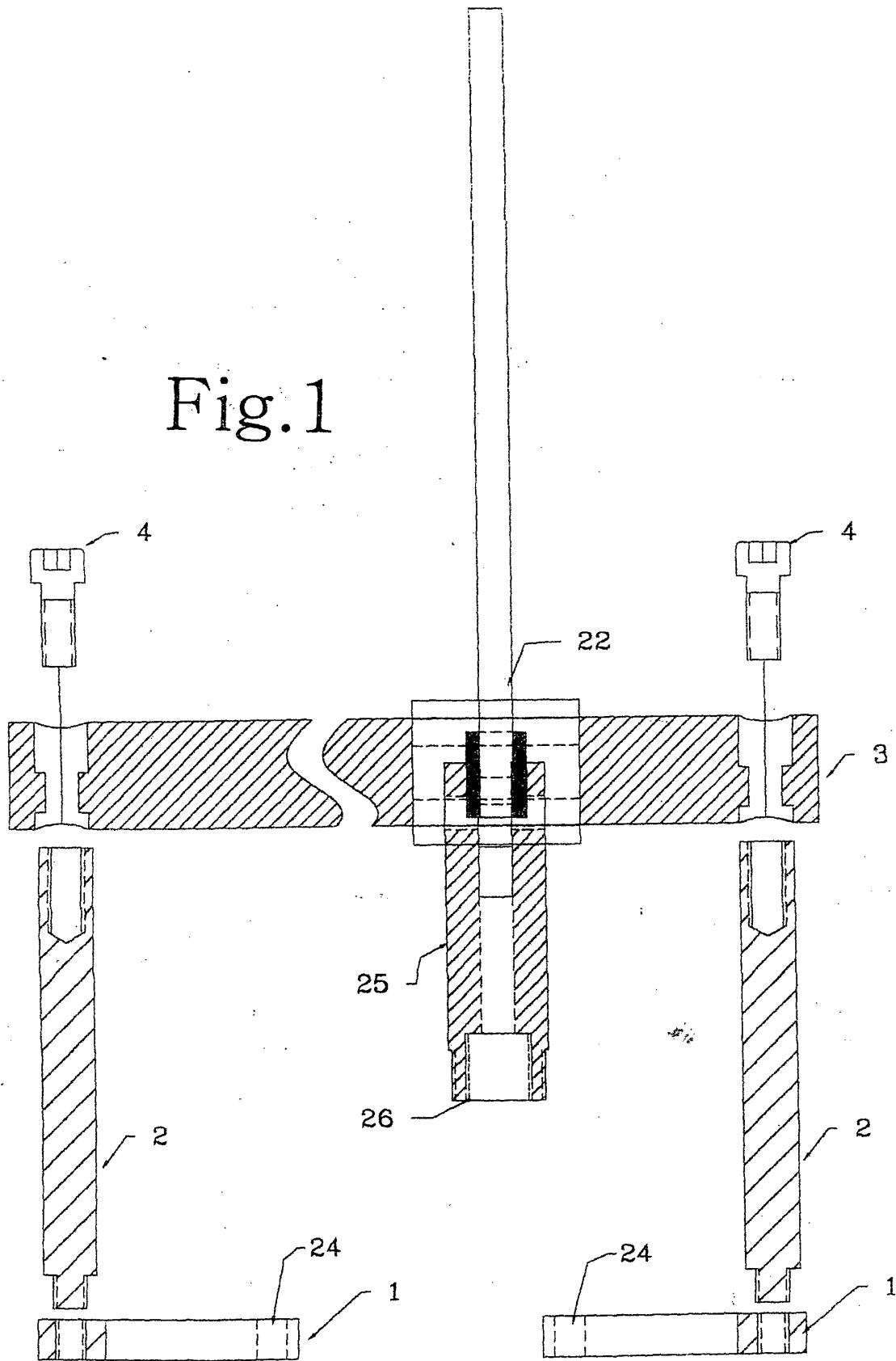


Fig.2

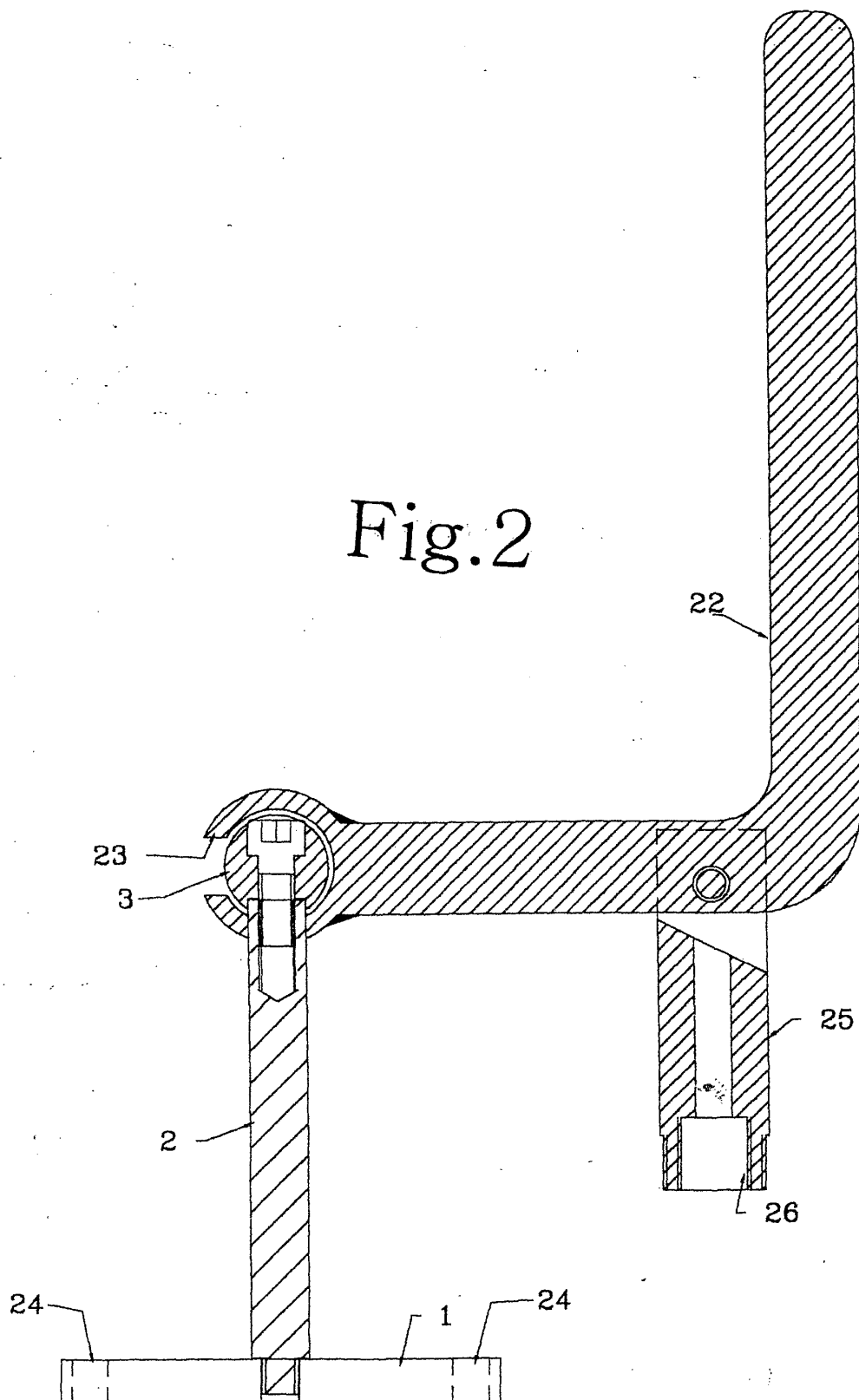


Fig.3

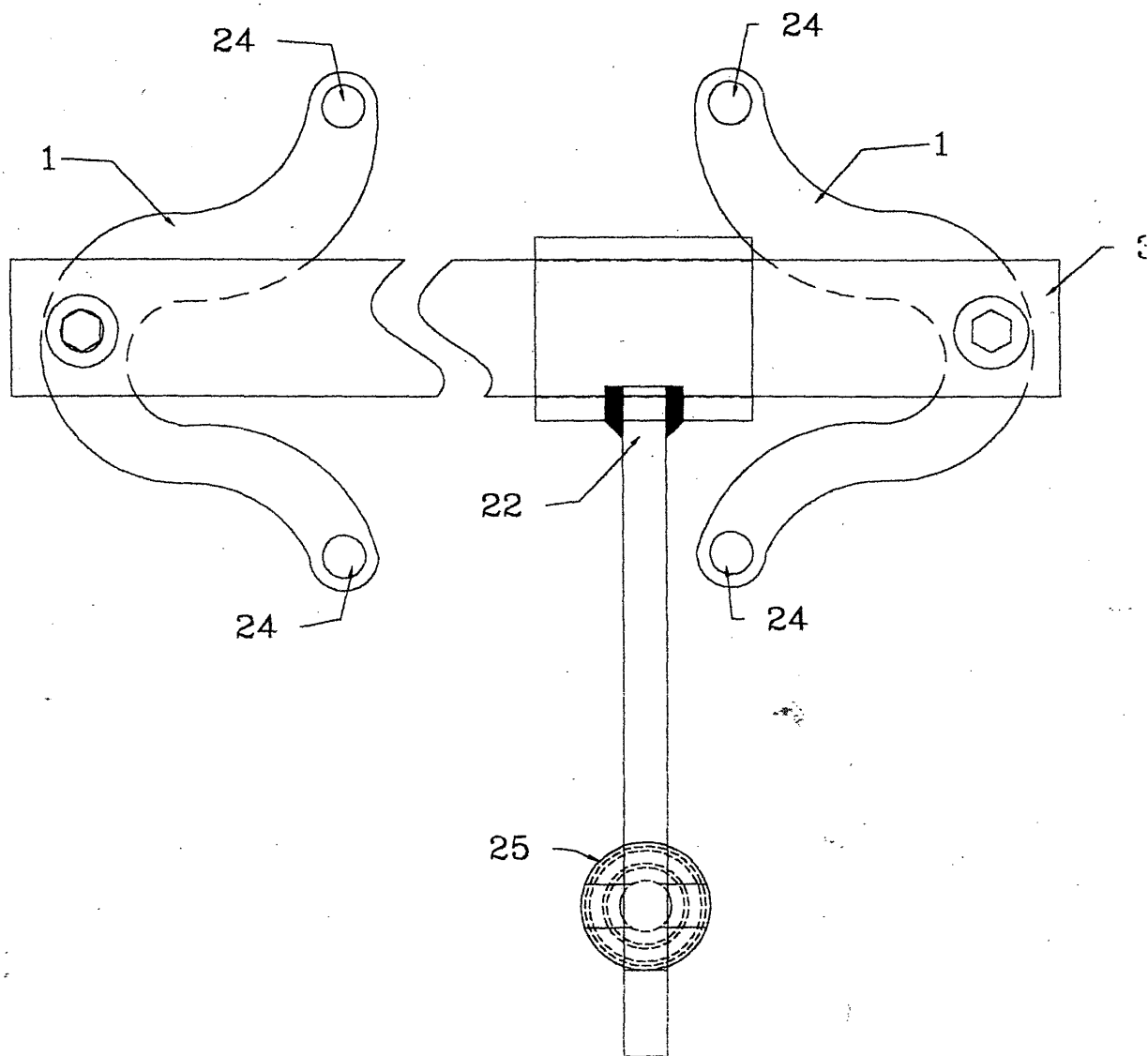


Fig.4

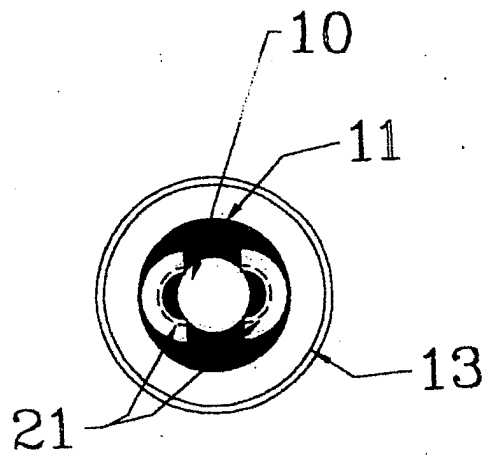


Fig.5

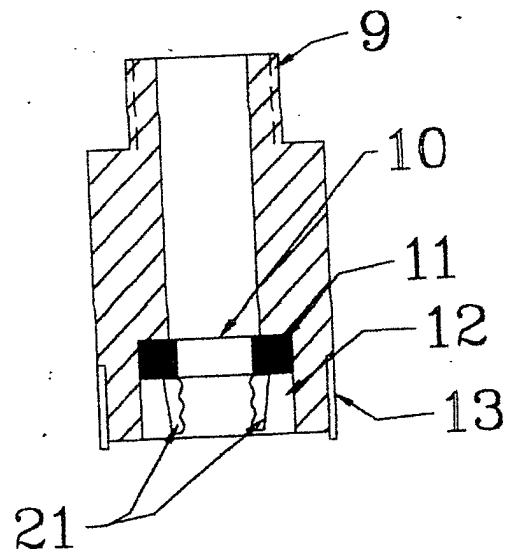


Fig.6

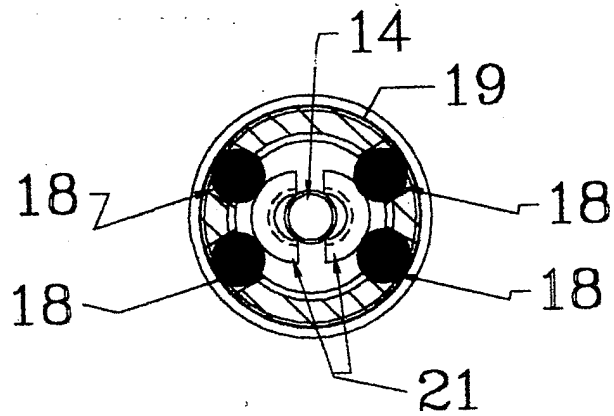
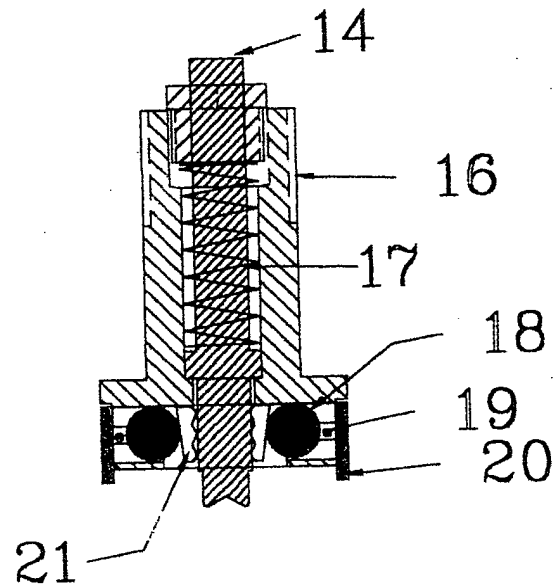


Fig.7





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 38 6020

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 September 2004	Examiner Kühn, T
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 38 6020

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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