(19) DANMARK

(10) **DK/EP 3626532 T3**

Patent- og Varemærkestyrelsen

(12) Oversættelse af europæisk patentskrift

(51) Int.Cl.: ***B 60 P 7/13 (2006.01)*** ***B 63 B 25/28 (2006.01)*** ***F 16 G 11/12 (2006.01)***

(45) Oversættelsen bekendtgjort den: **2024-02-05**

(80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2023-11-15**

(86) Europæisk ansøgning nr.: **19183779.8**

(86) Europæisk indleveringsdag: **2019-07-02**

(87) Den europæiske ansøgnings publiceringsdag: **2020-03-25**

(30) Prioritet: **2018-09-24 DE 202018105479 U**

(84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

(73) Patenthaver: **SEC Ship's Equipment Centre Bremen GmbH & Co. KG, Speicherhof 5, 28217 Bremen, Tyskland**

(72) Opfinder: **THIELE, Wolfgang, Vehrels 18, 28259 Bremen, Tyskland**
Bederke, Christian, Süderbroker Straße 1, 28259 Bremen, Tyskland

(74) Fuldmægtig i Danmark: **HØIBERG P/S, Adelgade 12, 1304 København K, Danmark**

(54) Benævnelse: **Indretning til at fastsurre containere på dækket af et skib**

(56) Fremdragne publikationer:
DE-A1- 4 033 704
DE-A1-102014 104 104
DE-U1- 9 014 696
DE-U1-202017 103 865

Device for lashing containers on board ships

The invention relates to a device in accordance with claim 1. Furthermore, the invention relates to a unit consisting of a clamping screw and one such device.

A device in accordance with the preamble of claim 1 and a unit including one such device are known from DE 20 2017 103 865 U1.

The device shown in Fig. 4 of DE 20 2017 103 865 U1 represents a rocker pivoting about a pivot point. Said pivot point specifically refers to a bore having a pin put therethrough, said pin connecting the rocker with a clamping screw. The bore defines a pivot axis which the rocker is able to pivot about. There is one receptor each located on each side of the bore, said receptors being pivotably mounted at the housing by means of a joint. Lashing rods may be fitted each into one of the receptors. Using one of its lashing rod knobs, the respective lashing rod is hooked behind a shoulder of the respective receptor.

Specifically, the shoulders are circumferentially arranged in a pocket opening towards outside. The lashing rods are inserted into the pocket through said opening. The circumferential shoulders define one plane each, which plane also has the pivot axis formed by the joint of receptors passing across.

When lashing two containers stacked one on top of the other using such an assembly, the stevedore will proceed as follows:

Usually, the rocker remains attached to the clamping screw and will furthermore not be demounted from said clamping screw unless possibly arising maintenance and repair work needs to be done. The clamping screw is attached to a foundation using the one end thereof opposing the rocker; to be more precise, it is usually attached to a lashing eye by means of a shackle. Before or afterwards, the stevedore fits a lashing rod in a lower corner fitting of the upper container while fitting another lashing rod in the upper corner fitting of the bottom container (or vice versa). It is then that the lashing rods are hooked

one after the other in their respectively related receptor. In doing so, the stevedore will select one of the lashing rod knobs for coarsely matching the length so as to have it hooked behind the shoulder of the receptor. If necessary, the stevedore also causes a lashing rod to be hooked into the related corner fitting and, subsequently, into the related receptor before proceeding with the second lashing rod. It is not until now that the assembly so formed is clamped by means of the clamping screw.

Depending on the geometric conditions, the lashing rods are not necessarily arranged in parallel to each other. It is therefore considered appropriate to have the receptors in turn be pivotably mounted to the housing of the rocker as is described above. Tests in practice have shown, however, that the path followed by the pivot axis for the receptors in the plane as is defined by the shoulders makes it difficult for the latching rods to be hooked into the receptors, and especially for the second lashing rod to be hooked when the first lashing rod has been fitted already. In particular cases it occurred that, after having been fitted already, the first lashing rod fell out from the receptor again before or during the second lashing rod was being fitted in the first place.

Being of similar purport, Documents DE 40 33 704 A1 and DE 90 14 696 U1 show a clamping screw including a rocker having one fixed receptor each on both sides thereof for one lashing rod knob each. This will result in the same disadvantages as were discussed above with reference to DE 20 2017 103 865 U1.

Taking this as a basis, the problem underlying the invention is to find ways of facilitating the process of causing the lashing rods to be hooked into the receptors.

In order to solve this problem, the inventive device is characterized in that a pivot axis formed by the respective joint does not run through an imaginary plane defined by the shoulder but rather runs in parallel to said plane.

The inventive assembly causes a certain leverage arm to be created between pivot axis and shoulder. Once a lashing rod is fitted into the receptor, a certain torque will be introduced into the receptor by said lashing rod. Tests have shown that this surprisingly

simple measure causes the receptor to be always positioned advantageously and also positively prevents the lashing rod from falling out of the receptor. As a result, the process of causing the lashing rod to be hooked is accordingly facilitated.

In accordance with the invention, the plane defined by the shoulder of the one receptor and the plane defined by the shoulder of the second receptor are running in parallel to each other when said receptors are in a neutral position. In this case, the shoulders are arranged at different levels which may turn out to be advantageous when inserting the lashing rods. In accordance with the invention, however, the shoulders do form a common plane and are, therefore, arranged on a same level. It is thus possible for the housing of the device to be formed symmetrically and for the receptors to be formed in a manner so as to be identical to each other. With the design and production of the device thus being simplified, warehousing may be additionally reduced.

In accordance with another embodiment of the invention, the pivot axis of the one receptor and the pivot axis of the other receptor define a plane that runs parallel to the plane(s). This, too, is to further add to the concept of symmetry as mentioned above.

A distance between shoulders and pivot axis which is to particularly facilitate the fitting of the lashing rods is between 5 mm and 100 mm, and, preferably, 25 mm.

A pre-tensioned spring arranged between the receptors engages the receptors. In this manner, the spring keeps the receptors in a desired position as long as no lashing rods have yet been inserted into the pockets.

In order to solve the above problem, the inventive unit is characterized in that the shoulders are arranged on the side of the respective joint facing away from the clamping screw. In other words, when imagining the installation scenario of the unit, the shoulders are arranged above the joints. This results in a leverage which facilitates the fitting of the lashing rods.

In accordance with a further embodiment of the unit which might also be conceivable as an independent unit, the clamping screw is provided with a nut having three or more spheres which are distributed across the circumference thereof and which are each biased inwards by a spring and which cooperate with at least one longitudinal groove on a threaded spindle. Depending on the number and displacement of the longitudinal grooves in each case, this results in at least three different lock-in positions for securing the clamping screw against unintended loosening.

The invention will be discussed in detail below with reference to one of the embodiments as are shown in the drawing, in which:

Fig. 1 is a perspective view showing a clamping screw including the device having the inventive features,

Fig. 2 is a plan view showing the clamping screw including device as in accordance with Fig. 1,

Fig. 3 is a section in level III-III in accordance with Fig. 1 showing the clamping screw including device as in accordance with Fig. 1,

Fig. 4 is longitudinal section in plane IV-IV as in accordance with Fig. 3 which illustrates the device in accordance with Fig. 1,

Fig. 5 is a section in plane V-V as in accordance with Fig. 2 which is the clamping screw as in accordance with Fig. 1.

The drawing shows a clamping screw 10 having a rocker 11 attached thereto. The clamping screw 10 has a shackle 12 at the one end thereof opposing the rocker 11, by means of which shackle 12 it is fastened to a lashing eye on deck onboard a ship in the known manner. In the present disclosure, in accordance with the usual installation scenario onboard the ship, the end of the clamping screw 10 including shackle 12 is

referred to as the lower end, while the end including the rocker is referred to as the upper end.

The shackle 12 is attached to a threaded spindle 13 cooperating with a nut 14 of a clamping crew body 15. On its (upper) end opposing the nut 13, the clamping screw body 15 has another nut 16 cooperating with another threaded spindle 17. The threaded spindle 13 and nut 14, on the one hand, and the other nut 16 and other threaded spindle 17, on the other hand, are formed to be counteracting to each other, that is e. g. the threaded spindle 13 and nut 14 are formed to have a right-hand thread while the other nut 16 and the other threaded spindle 17 are formed to have a left-hand thread as it is per se known of clamping screws.

The threaded spindle has a head 18 at its free end protruding from the clamping screw body 15, which said head 18 is provided with a transverse bore (in a direction transverse to the longitudinal axis of the clamping screw 10). A pin 19 is guided through said transverse bore, which pin pivotably supports the rocker 11. Said rocker 11 has a housing 20 which, in the present case, has two rocker plates 21 and 22. There is one rocker plate 21 and 22, respectively, which are each located on each side of the head 18. The rocker plates 21, 22 are each provided with a bore 23, through which the pin 19 is guided and suitably secured against axial displacement in a manner per se known. In this manner, the rocker 11 is pivotably supported at the head 18 of the threaded spindle 17 and, thus, at the clamping screw 10.

Not being illustrated in further detail, another bore is guided through the head 18 of the threaded spindle 17 which is guided in a direction transverse to the longitudinal axis of the clamping screw 10 and in a direction transverse to the transverse bore for the pin 19. A spring 25 (Fig. 3) is guided through said bore, the function of which will be discussed in further detail below.

The rocker 11 furthermore has two receptors 26 and 27, with one receptor each being arranged on both sides of the head 18. The receptors 26, 27 together with the pin 18 thus form a two-armed lever. The receptors 26, 27 are similarly pivotably supported

between the rocker plates 21, 22. For that purpose, the receptors 26, 27 are provided with pin stubs 28 engaging with corresponding bearing bores 29 in the rocker plates 21, 22 and being axially secured against slipping out therefrom in a suitable and known manner.

The receptors 26, 27 are each provided with a pocket which opens towards outside (away from the pin 19) which serves for receiving a lashing rod as is per known but not shown in further detail. At their upper side facing away from the clamping screw 10, the pockets 30, 31 have a smaller diameter 32 which is matching with the diameter of the lashing rods. Via a shoulder 33, said smaller diameter 32 transitions to a greater diameter 34 which corresponds to the diameter of lashing rod knobs as are arranged in an axial sequence in certain intervals at the lower end of a lashing rod. An outer slot 35 through which the respective pocket 30, 32 opens towards outside is, however, always matching with the diameter of the lashing rod while being narrower than a lashing rod knob. In this manner, the lashing rod is prevented from laterally slipping out from the pocket 30, 31 by accident.

Opposite said slots 35, the receptors 26, 27 have grommets 44 which are engaged by the spring 25 as already mentioned above. In this manner the pretensioned spring 25 is under pressure and thus keeps the receptors 26, 27 in a desired position as long as no lashing rods have yet been inserted in the pockets 30, 31. The desired position is a position where the longitudinal axis of the pockets 30, 31 runs approximately in parallel to the longitudinal extension of the clamping screw 10 as is shown in the drawing. In the present disclosure, said position is also referred to as a neutral position.

Together with the bearing bores 29, the pin stubs 28 form a pivot axis 36 about which the receptors 26, 27 may each turn opposite the rocker plates 21, 22. Furthermore, the shoulders 33 of the pockets 30, 31 each describe a circular arc section, which defines a plane which is suggested in Figs. 1, 2 and 4 by line 37. As is evident from Figs. 1, 2 and 4, the pivot axis 36 does not lie in this plane 37 but is arranged in parallel thereto. To be more precise, the pivot axis is offset therefrom by an appropriate distance A, away from the clamping screw. The shoulders 33 are thus arranged above the pivot axes 36 when

defining the side facing the clamping screw 10 as the bottom side as has already been defined above.

In the embodiment shown distance A is the same for the shoulders 33 of both pockets 30, 31. In other words, the shoulders 33 of both pockets 30, 31 define a common plane which extends, across just said distance A, in parallel toward a plane 38 defined by the pivot axes 36 of both pin stubs 28, which is suggested by a line in Figs. 2 and 4. Said variant is preferred, not only because it is possible to use two identically formed receptors 26, 27 (which are mounted to each other by an offset of only 180 °), thus resulting in a simplified manufacturing process and reduced warehousing. In the alternative, it is also conceivable to provide different receptors 26, 27 having shoulders 33 at a different distance toward the pivot axis 36. The distance A may be between 5 mm and 100 mm. The distance may also be between 5 mm and 25 mm or between 25 mm and 100 mm. A distance of 25 mm has proven to be especially favorable.

Furthermore, in the present embodiment, the rocker 11 is formed as an equal-armed lever, that is to say, by having an identical distance between pin stubs 28 and pin 19. In the alternative, it is also possible to form the rocker 11 to have different distances between the pin stubs 28 of the one receptor 26 and those of the other receptor 27, that is to say, as an unequal-armed lever.

Another aspect as is also conceivable to work independently of the present invention is shown in detail in Fig. 5. The clamping screw 10 is formed with a clamping screw body 15 which is provided with three rods 39 connecting the nuts 14 and 16. Accordingly, said rods 39 are circumferentially arranged and offset to each other by 120 °. The lower nut 14 has provided therein three spheres each of which is centrally arranged between two rods 39, which spheres are arranged in bores 41 at the inner circumference of the nut 14 and pretensioned by a spring 42 in the direction toward the threaded spindle 13. The threaded spindle 13 has provided therein a longitudinal nut 43 with which said spheres 40 are able to engage and may thus secure the clamping screw against unintentional loosening (unintentional turning of the threaded spindle 13 against

the clamping screw body 15). In this manner, there are three different positions possible for securing the clamping screw using only one longitudinal nut 43.

Of course, two longitudinal nuts may be also provided at 90 ° or 180 °, as a result of which six different positions are available for securing. Furthermore, three longitudinal nuts offset by 120 ° may cooperate with only one spring-loaded sphere. However, the variant shown is preferred.

10	clamping screw
11	rocker
12	shackle
13	threaded spindle
14	nut
15	clamping screw body
16	nut
17	threaded spindle
18	head
19	pin
20	housing
21	rocker plate
22	rocker plate
23	bore
25	spring
26	receptor
27	receptor
28	pin stub
29	bearing bore
30	pocket
31	pocket
32	diameter
33	shoulder
34	diameter
35	slot
36	pivot axis
37	plane
38	plane
39	rod
40	sphere
41	bore
42	spring
43	longitudinal nut

PATENTKRAV

1. Indretning (11) til at fastsurre containere om bord på skibe med et hus (20) og en første modtager (26) til en første surringsstangsknop på en første surringsstang og en anden modtager (27) til en anden surringsstangsknop på en anden surringsstang, som hver især har en skulder (33) til surringsstangsknoppen, idet den første modtager (26) og den anden modtager (28) hver især er drejeligt monteret på huset (20) ved hjælp af et led (28, 29), kendetegnet ved, at en drejeakse (36) dannet af det respektive led (28, 29) ikke forløber i et imaginært plan (37) defineret af skulderen (33), men snarere parallelt med dette plan (37), og at en forspændt fjeder (25) under spænding griber ind i modtagerne (26, 27) og er anbragt mellem modtagerne (26, 27).

2. Indretning (11) ifølge krav 1, kendetegnet ved, at det plan (37), der er defineret af skulderen (33) af den ene modtager (26), og det plan (37), der er defineret af skulderen (33) af den anden modtager (27), forløber parallelt med hinanden eller danner et fælles plan (37), når modtagerne (26, 27) befinder sig i en neutral position.

3. Indretning (11) ifølge krav 1 eller 2, kendetegnet ved, at drejeaksen (37) af den ene modtager (26) og drejeaksen (37) af den anden modtager (27) definerer et plan (38), der forløber parallelt med planet eller planerne (37).

4. Indretning (11) ifølge et hvilket som helst af kravene 1 til 3, kendetegnet ved, at en afstand (A) mellem drejeaksen (36) og det plan (37), der er defineret af skuldrene (33), er mellem 5 mm og 100 mm, fortrinsvis 25 mm.

5. Enhed bestående af en spændeskrue (10) og indretningen (11) ifølge et hvilket som helst af kravene 1 til 5, kendetegnet ved, at skuldrene (33) er anbragt på den side af det respektive led (28, 29), der vender væk fra spændeskruen (10).

6. Enhed ifølge krav 5, kendetegnet ved, at spændeskruen (10) er forsynet med en møtrik (14), som har tre eller flere kugler (40), der er fordelt rundt i omkredsen og hver er forspændt indad af en fjeder (42), og som samvirker med mindst én langsgående rille

(43) på en gevindspindel (13).

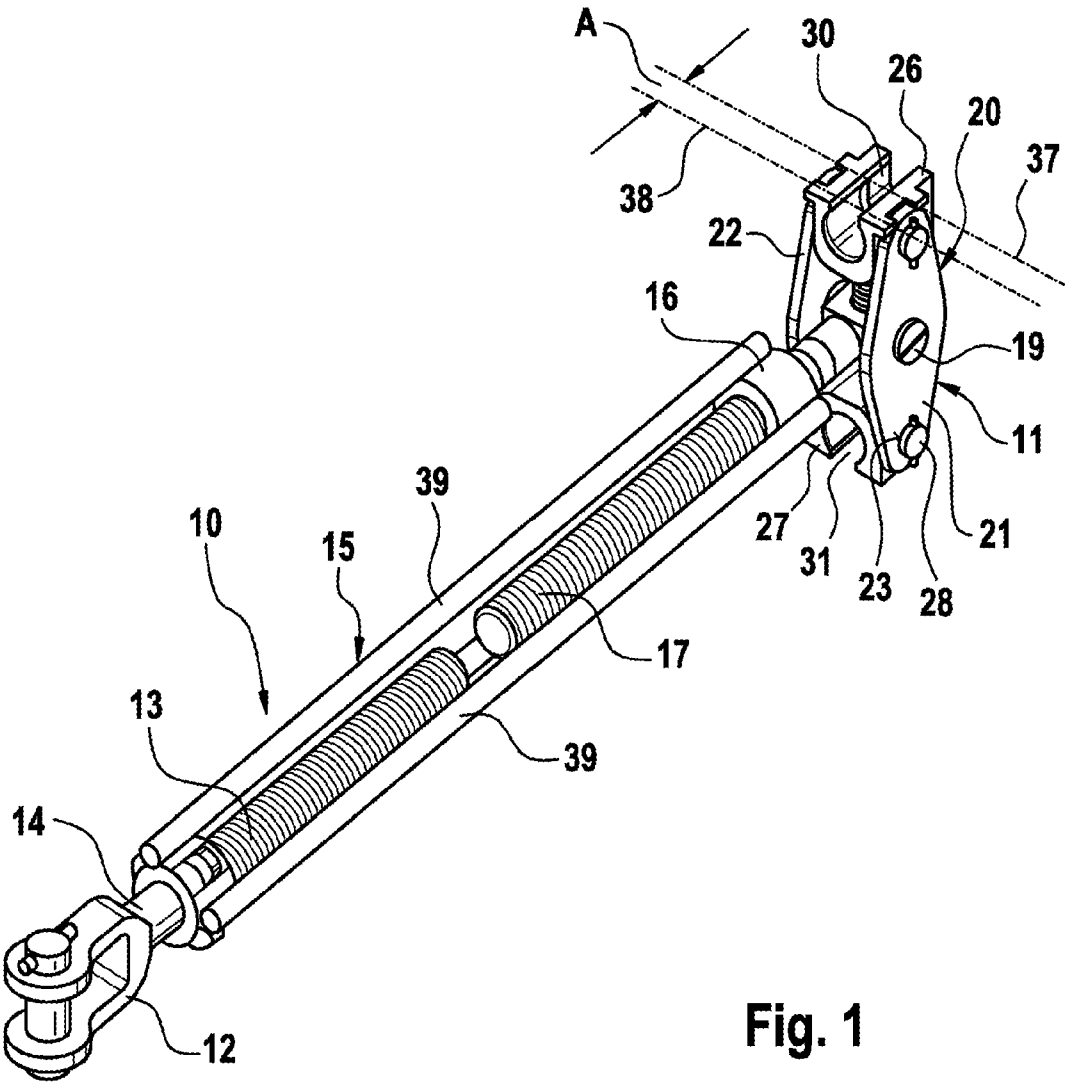

Fig. 1

Fair copy

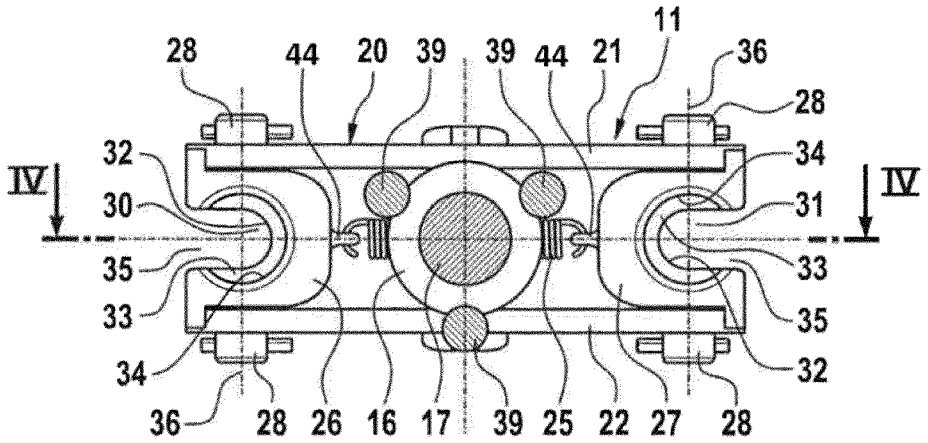
28
44
20
39
39
44
21
11
36
28
32
34
IV
30
31
IV
35
33
33
35
34
32
36
28
26
16
17
39
25
22
27
28

Fig. 3

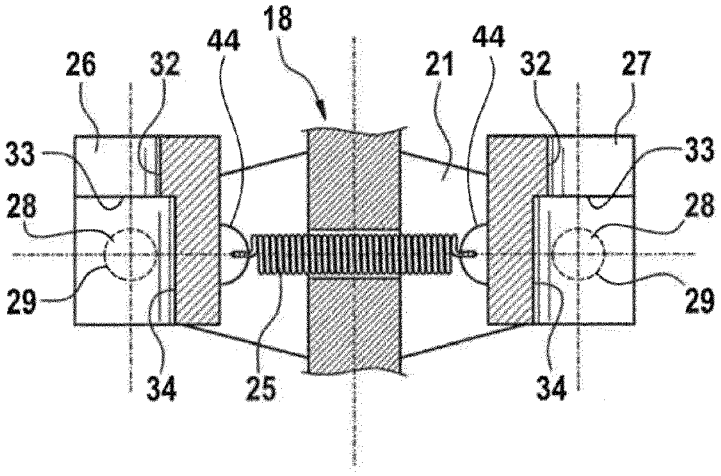
18
44
44
26
32
21
32
27
33
33
28
28
29
29
34
25
34

Fig. 4

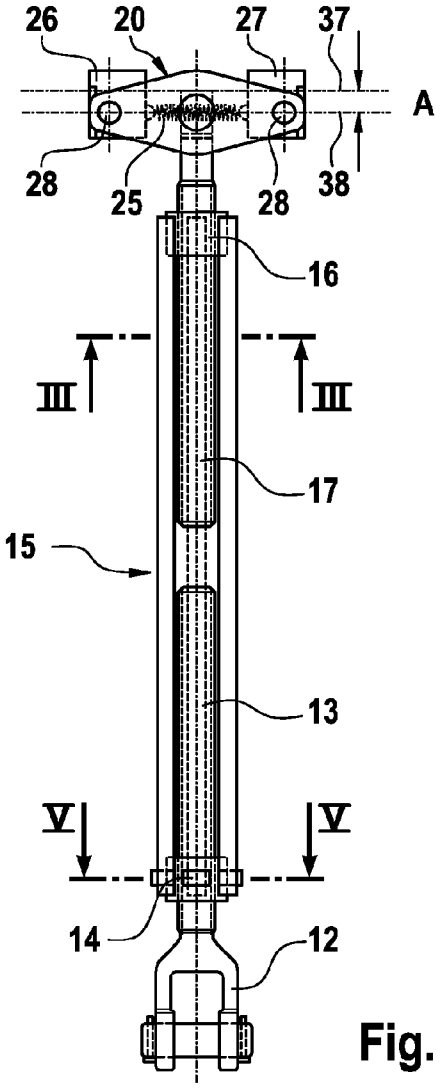
26
20
27
37
A
28
25
28
38
16
III
III
17
15
13
V
V
14
12

Fig. 2

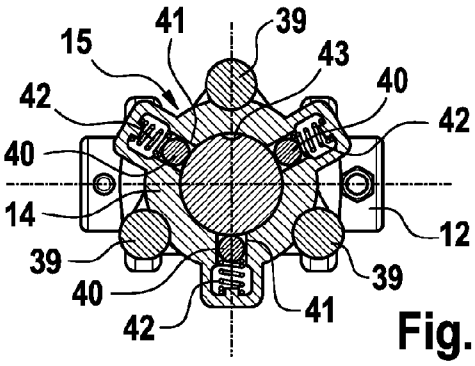
41
39
15
43
40
42
42
40
14
12
39
39
40
41
42

Fig. 5