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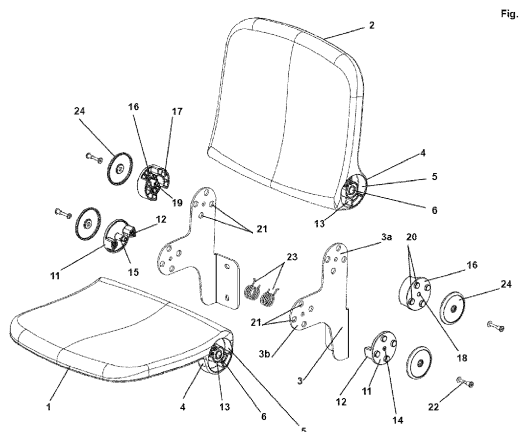
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(54) **STADIUM SEAT**

(57) The subject of the invention is a stadium chair with a hinge and locking mechanism, having a seat and backrest and an assembly frame. The seat (1) and the backrest (2) with the same shape of the thickenings (4) and the mounting sockets (5), generally rectangular in shape, have on two tangential vertices thickenings (4) containing the mounting sockets (5) of the hinge or lock, having in the middle the hole (6) is surrounded by a sleeve (7) and a concentric collar (8). Hinges (11) or locks (16) in the shape of a circle are embedded in the sockets (5), where the hinges (11) are equipped with pins (12) with a shape corresponding to the shape of preferably half of the free spaces (13) formed between the walls (9) and flanges (8) of sockets (5) and having a through hole in

the middle (14) extended towards the pins (12) with a sleeve (15), and the locks (16) are equipped with pins (17) with a shape corresponding to the shape of the free spaces (13) formed between the walls (9) and flanges (8) of the sockets (5) and have a through hole (18) in the middle. The hinges (11) and the locks (16) have projections (20) on the side opposite the pins (12) and (17). The mounting frame consists of two shaped two-arm brackets (3), the horizontal arms (3b) of which include the mounting sockets (5) located in the thickenings (4) of the rear part (4) of the seat (1), and the vertical arms (3a) cover the mounting sockets (5) located in the thickenings (4) of the lower part of the backrest (2).



Description

[0001] The subject of the invention is a stadium chair with a tilting seat or backrest with a mechanism of hinges and locks for attaching both parts of the chair, where the backrest and seat have the same mounting sockets.

[0002] A stadium chair with a foldable backrest is known from the American invention US20210321776. This chair requires a complex hinge with a spring to ensure the tilting movement of the backrest. The chair has a fixed seat that cannot be folded.

[0003] A stadium chair with a foldable seat is known from application JPH09140501. The backrest of the chair is fixed and cannot be folded. The backrest and seat are of a different shape, and the seat is folded using a hinge mechanism equipped with a spring.

[0004] Also known from document US2008217979 is a stadium chair with a foldable seat, where the seat and backrest are of the same shape. The seat and backrest are attached to a common mounting frame, and a single hinge mechanism equipped with a spring is responsible for the seat tilt.

[0005] The stadium chair according to the invention solves the problem of assembling seats in various configurations, as needed, using one construction set including a hinge and locking unit, and in particular, it provides the possibility of mounting a tilting seat while maintaining a constant position of the backrest or a tilting backrest while maintaining a constant position of the seat.

[0006] The chair according to the invention has an assembly frame, a seat and a backrest, each of which has, on the frame side, a socket for a hinge/lock. The socket has the shape of a round recess with a hole surrounded by a sleeve in the middle. Around the sleeve, at a certain distance, there is a flange connected to the side walls of the socket by means of two opposite walls having a substantially trapezoidal shape, one of which has a recess for a spring. Both the backrest and seat sockets can be equipped with a hinge or lock - depending on your needs. The hinge is in the shape of a circle and has two pins tangent to the edges, with a shape corresponding to the shape of half of the free spaces created between the walls and flanges of the seat. Moreover, the hinge has a hole in the middle, which is extended towards the pins with a sleeve. The lock also has the shape of a circle and has two pins tangent to the edges, with a shape corresponding to the shape of the free spaces created between the walls and flanges of the backrest. The lock has a hole in the center, which is extended towards the pins with a sleeve. The hinge and lock have protrusions on the side opposite the pins. The mounting frame has two arms with holes at the ends corresponding to the protrusions and sleeves of the socket and lock. Hinge and lock projections, located in the frame holes, block the rotational movement of the hinge and lock.

[0007] Preferably, the hinges are mounted such that their pins are placed in the free spaces of the seat sockets, and the locks are mounted such that their pins are

placed in the free spaces of the backrest sockets.

[0008] Preferably, the hinges are mounted such that their pins are placed in the free spaces of the backrest sockets, and the locks are mounted such that their pins are placed in the free spaces of the seat sockets.

[0009] Preferably, a separate lighting unit with a photovoltaic cell is mounted below the seat.

[0010] Preferably, the lighting unit has a control module to which a battery, a dusk sensor and an LED are connected. The lighting unit is powered by a photovoltaic panel connected to the control module, located on the lower surface of the seat.

[0011] Preferably, a spring is mounted in the sockets in which the hinges are mounted, one end of which is placed in a recess located in one of the socket walls, and the other is based on one of the hinge pins.

[0012] Preferably, the sleeves of lock and hinge are attached to the sockets with a screw.

[0013] Preferably, masking caps with a diameter equal to the diameter of the hinge or lock are placed between the screw and the frame arms.

[0014] Preferably, the horizontal arms of the frame have extensions at their ends located at an obtuse angle in relation to the arms at the ends of which armrests are attached.

[0015] The advantage of the chair according to the invention is that both a chair with a tilting backrest and a chair with a tilting seat can be assembled using one set of parts. The entire set consists of only four types of parts, so the production of the chair does not require high production capacity. The frame of the chair is made of bent sheet metal, which does not require any welds. The whole thing is easy to assemble, easy to transport and universal for both traditional stepped bleachers in open spaces and drawer bleachers, most often found in halls. The chair according to the invention therefore allows for assembly to bleachers in very different conditions and very different configurations using one set of parts.

[0016] The invention is presented in an embodiment in the drawing, where:

Fig. 1 shows an exploded view of a chair according to the first embodiment, with a foldable seat and a locked backrest;

Fig. 2 shows a side view of the chair according to the first embodiment with the seat unfolded;

Fig. 3 shows a side view of the chair according to the first embodiment with the seat folded;

Fig. 4 shows an exploded view of a chair with a foldable seat and a locked backrest according to the second embodiment, where the frame arms are equipped with armrests;

Fig. 5 shows a side view of the chair according to the second embodiment with the seat unfolded;

Fig. 6 shows a side view of the chair according to the second embodiment with the seat folded;

Fig. 7 shows an exploded view of a chair according to the third embodiment, with a foldable backrest and a locked seat;

Fig. 8 shows a chair according to the third embodiment with the backrest folded out;

Fig. 9 shows a chair according to the third embodiment with a folded backrest;

Fig. 10 shows a detailed view of the seat/backrest socket;

Fig. 11 shows a detailed view of the hinge;

Fig. 12 shows a detailed view of the lock.

Fig. 13 shows a general view of the chair with a folded seat according to the fourth embodiment, where the seat is equipped with a lighting set from the bottom;

Fig. 14 shows a block diagram of the lighting set;

Example 1

[0017] The stadium chair in the first variant, with a tilting seat, consists of a rigid assembly frame **3** and a seat **1** and a backrest **2**, which have a rectangular shape, and each of them has a thickening **4** on the same side in the part of the connection with the other part, which the thickening contains sockets **5** for the hinge mechanism of the seat **1**, where the socket **5** has the shape of a round recess having a hole **6** in the center surrounded by a sleeve **7** and a concentric collar **8** with a diameter smaller than the diameter of the socket **5** and the collar **8** is connected to the perimeter of the socket **5** by means of two opposite walls **9** having an essentially trapezoidal shape, one of which has a recess **10**. The circular-shaped hinge **11** has two pins **12** tangent to the edges, the shape of which corresponds to the shape of half of the free spaces **13** formed between the walls **9** and the flanges **8** of the seat **1**. Moreover, the hinge has a hole **14** in the middle, extended towards the pins **12** with a sleeve **15**, on which sleeve **15** a spring **23** is placed, the arm of which is adapted to the recess **10** of the socket **5**, a lock **16** in the shape of a circle having two pins **17** tangent to the edges, with a shape corresponding to the shape of the free spaces **13** formed between the walls and flanges of the backrest **2**, and the lock **16** is located in the socket **5** located in the thickening **4** of the backrest **2**, it has a hole **18** in the middle, which is extended towards its pins **17** with a sleeve **19**, and the pins **17** have a shape corresponding to the shape of the free spaces **13** created between the walls **9** and flanges **8** of the sockets **5** of the backrest **2**, where the locks **16** have protrusions **20** on the side op-

posite the pins **17**, and the rigid mounting frame **3** has two arms **3a** and **3b**, at the ends of which there are holes **21** corresponding to the protrusions **20**. The hinges **11** are mounted in such a way that their pins **12** are placed in the free spaces **13** of the horizontally located seat **1** on both sides, and its protrusions **20** are placed in the holes **21** of one of the arms **3b** of the rigid mounting frame, and their sleeves **15** are placed in the sleeves **7** and pass through the hole **6** of the socket **5** and are fastened with a screw **22**, and the locks **16** are fastened in such a way that their pins **17** are placed in the free spaces **13** of the vertically located backrest **2** on both sides, and its protrusions **20** are placed in the holes **21** of the second arm **3a** rigid assembly frame **3**, and their sleeves **19** are placed in sleeves **7** and pass through the hole **6** of the socket **5**. Both the hinge **11** and the lock **16** are covered with masking caps **24** on the outer side of the frame **3** and are fastened with screws **22**.

Example 2

[0018] The stadium seat in the third embodiment has the same features as the stadium seat in the first embodiment, except that the arm **3b** of the frame **3** has at its end extensions **25** placed at an obtuse angle in relation to the arms **3b**, at the ends of which armrests **26** are attached.

Example 3

[0019] The second variant of the stadium chair has a foldable backrest **2** and a non-foldable seat **1**. The chair has a similar structure and the structure of the hinge **11** and the lock **16** as in example 1, with the difference that the hinges **11** are mounted in such a way that their pins **12** are placed in free spaces **13** of the sockets **5** of the backrest **2**, and the locks **16** are mounted so that their pins **17** are placed in the free spaces **13** sockets **5** of the seat **1**.

[0020] Chairs of this type are usually installed in public facilities, such as sports halls, on drawer/sliding stands - where the chairs are placed on sliding drawers and in order to close them, it is necessary to fold the chair backrest.

Example 4

[0021] The stadium chair according to the fourth variant has all the features of the first variant, with the difference that additionally, the seat **1** in the lower part is equipped with a lighting set including a lighting unit **27** and a photovoltaic cell **32**, where the unit **27** is a housing in which a battery **28** connected to the system is located. **29**, which in turn is connected to a twilight sensor **30** located outside the housing and an LED diode **31**, as well as to a photovoltaic cell **32**, where the photovoltaic cell **32** is placed on the underside of the seat **1**.

[0022] The lighting kit, which is installed to the seat **1**

from the underside using known methods, in this case by gluing, works in such a way that when the exposure falls below a certain level, the twilight sensor **30** located on the bottom of the housing sends a signal to the control system **29**, which in turn turns on the LED **31**, powering it from the battery **28**. A photovoltaic cell **32** is also connected to the control system **29**, from which the system **29** charges the battery **28**.

[0023] Each chair equipped with a lighting set provides lighting independently of the others, which reduces the risk of failure of the entire system and provides lighting in the event of, for example, sudden switching off of the lighting in a public facility or after dark.

List of markings:

[0024]

- 1 - seat
- 2 - backrest
- 3 - mounting frame
- 3a/3b - mounting frame arms
- 4 - seat/backrest thickening
- 5 - mounting socket
- 6 - socket hole
- 7 - sleeve in the seat/backrest socket
- 8 - collar in the seat/backrest socket
- 9 - walls connecting the collar with the perimeter of the seat/backrest
- 10 - recess for mounting the spring
- 11 - hinge
- 12 - hinge pins
- 13 - free spaces between the walls connecting the seat/backrest sockets
- 14 - hinge hole
- 15 - hinge hole sleeve
- 16 - blockade
- 17 - lock pins
- 18 - lock hole
- 19 - lock hole sleeve
- 20 - hinge/lock lugs
- 21 - through holes in the mounting frame arms
- 22 - screw
- 23 - spring
- 24 - masking overlays
- 25 - frame arm extensions
- 26 - armrests
- 27 - lighting unit
- 28 - battery
- 29 - control system
- 30 - dusk sensor
- 31 - LED diode
- 32 - photovoltaic panel

Claims

1. A stadium chair with a hinge and locking mechanism,

having a seat and a backrest and an assembly frame, **characterized in that** the seat (1) and the backrest (2) of essentially the same shape have thickenings (4) containing sockets (5) of hinge or lock, having a hole (6) in the center surrounded by a sleeve (7) and a concentric flange (8), in which sockets (5) hinges (11) or locks (16) in the shape of a circle are mounted, where the hinges (11) are equipped with pins (12) with a shape corresponding to the shape of preferably half of the free spaces (13) formed between the walls (9) and flanges (8) of the sockets (5) and having a through hole in the middle (14) extended towards the pins (12) with a sleeve (15), and the locks (16) are equipped with pins (17) with a shape corresponding to the shape of the free spaces (13) formed between the walls (9) and flanges (8) of the sockets (5) and have a through hole (18) in the middle and, in addition, the hinges (11) and the locks (16) have protrusions (20) on the side opposite the pins (12) and (17), while the mounting frame consists of two shaped two-arm brackets (3), whose horizontal arms (3b) include sockets seating (5) located in the thickenings (4) of the rear part (4) of the seat (1), and the vertical arms (3a) include mounting sockets (5) located in the thickening (4) of the lower part of the backrest (2).

2. A stadium chair according to claim 1, **characterized in that** the hinges (11) are mounted such that their pins (12) are placed in the free spaces (13) of the sockets (5) of the seat (1), and the locks (16) are mounted such that their pins (17) are placed in the free spaces (13) of the sockets (5) of the backrest (2).
3. A stadium chair according to claim 2, **characterized in that** the seat (1) is equipped with a lighting set including a lighting unit (27) and a photovoltaic cell (32).
4. A stadium chair according to claim 3, **characterized in that** the unit (27) is a housing containing a battery (28) connected to a control system (29) which is connected to a dusk sensor (30) placed outside the housing and an LED diode (31) and a photovoltaic cell (32).
5. A stadium seat according to claim 1, **characterized in that** the hinges (11) are mounted such that their pins (12) are placed in the free spaces (13) of the sockets (5) of the backrest (2), and the locks (16) are mounted such that their pins (17) are placed in the free spaces (13) of the seats (5) of the seat (1).
6. A stadium seat according to claim 1, **characterized in that** a spring (23) is mounted in the sockets in which the hinges (11) are mounted, between the sleeve (7) and the flange (8), one of the ends of which is placed in the recess (10) of one of the walls (9),

and the second one is based on one of the pins (12) of the hinge (11).

7. A stadium seat according to claim 1, **characterized in that** the sleeves (15) of the hinge (11) or sleeves (19) of the lock (16) are attached to the sockets (5) with a screw (22). 5
8. A stadium seat according to claim 1, **characterized in that** between the screw (22) and the arms (3a, 3b) of the brackets (3) pads (24) are placed with a diameter equal to the diameter of the hinge (11) or lock (16). 10
9. A stadium chair according to claim 1, **characterized in that** the arms (3b) of the frame (3) have an extension (25) located at an obtuse angle in relation to the arms (3a), with armrests (26) mounted at the ends of which. 15

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Fig. 1

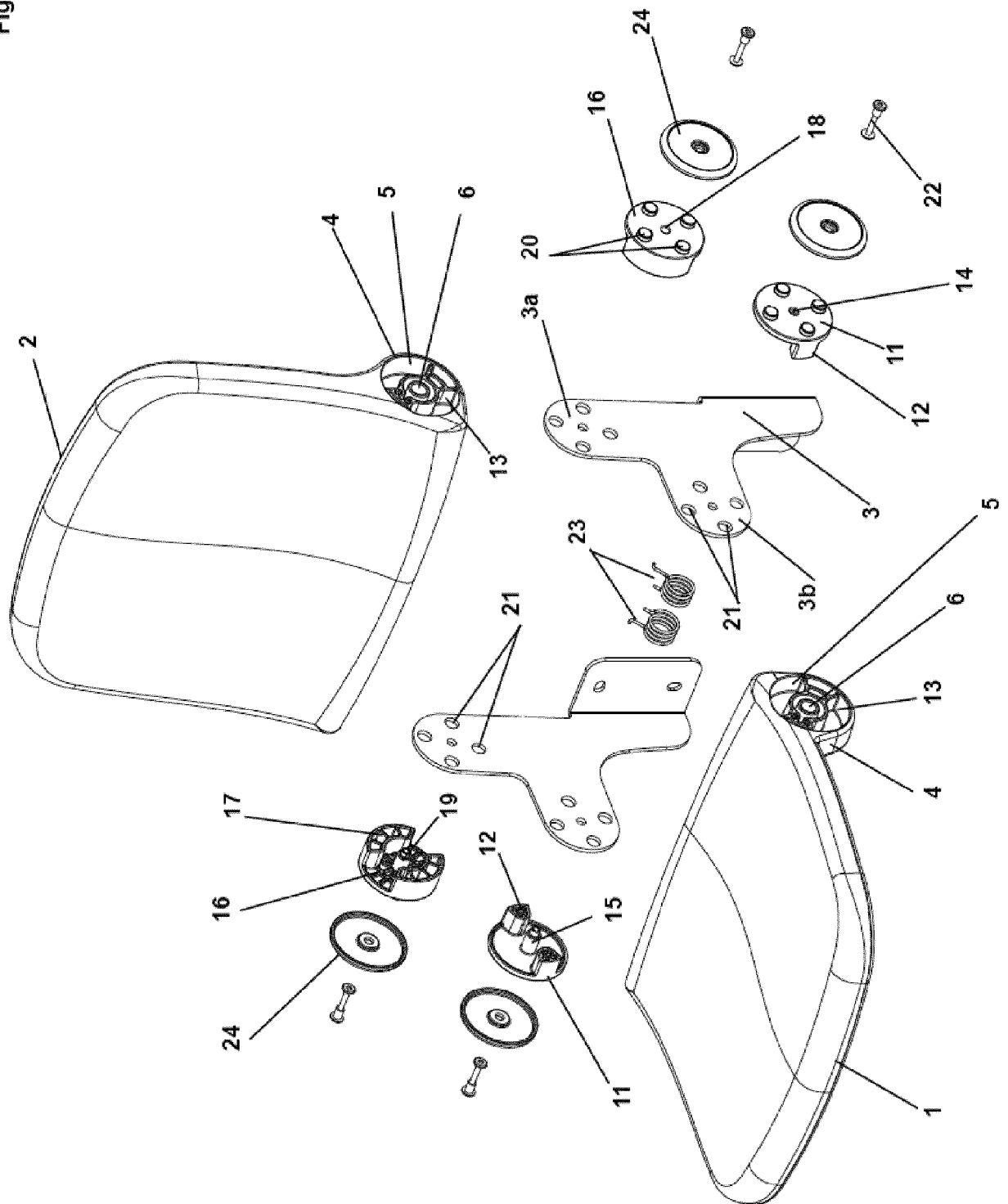


Fig. 2

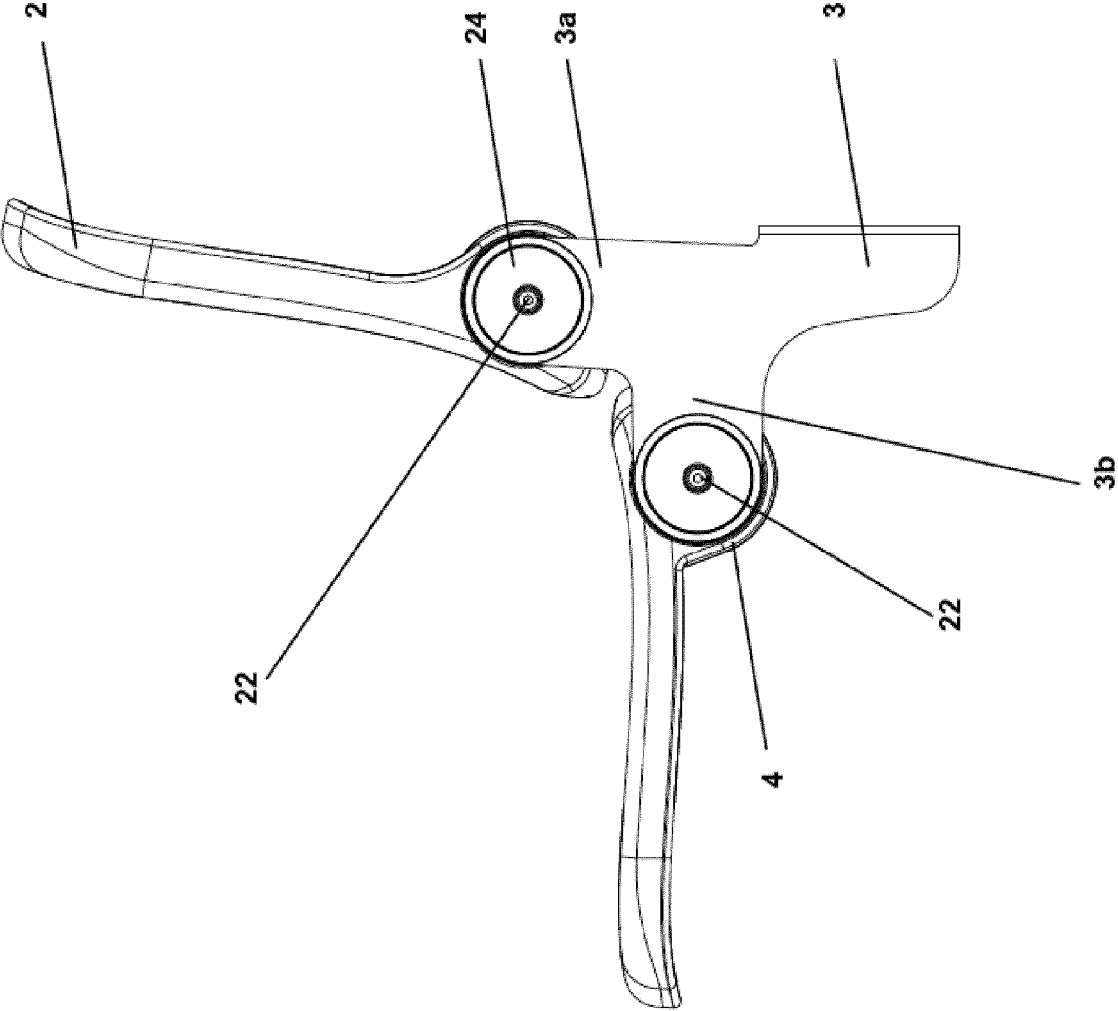


Fig. 3

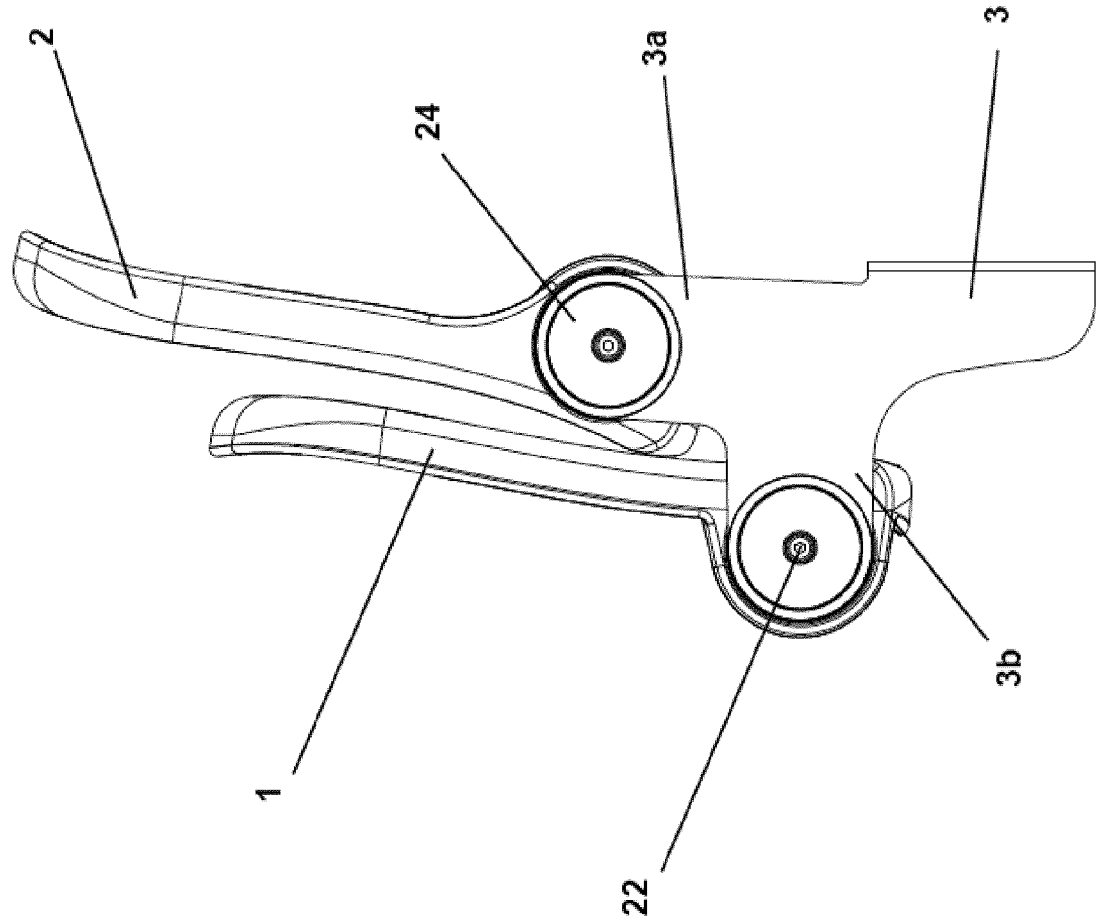


Fig. 4

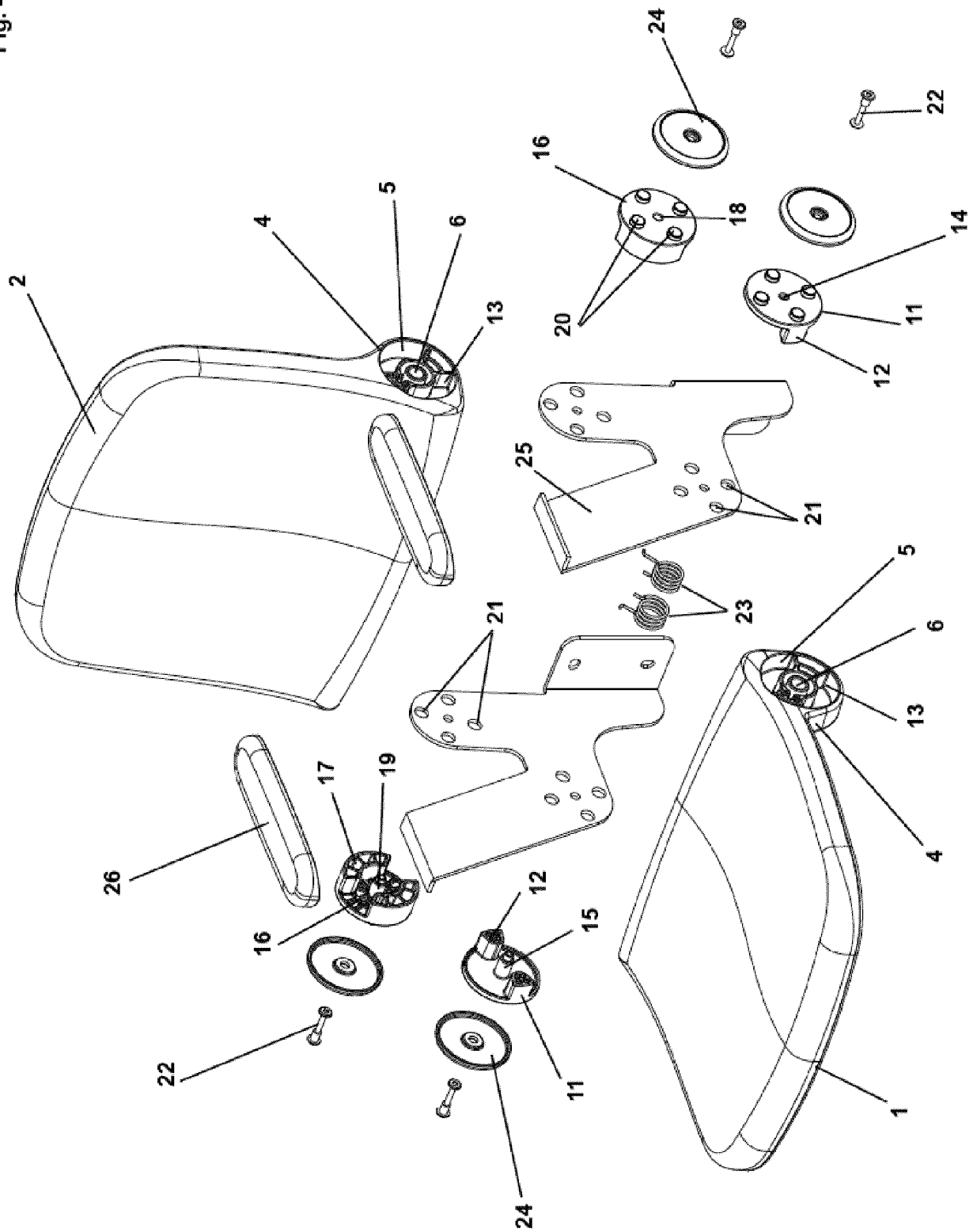


Fig. 5

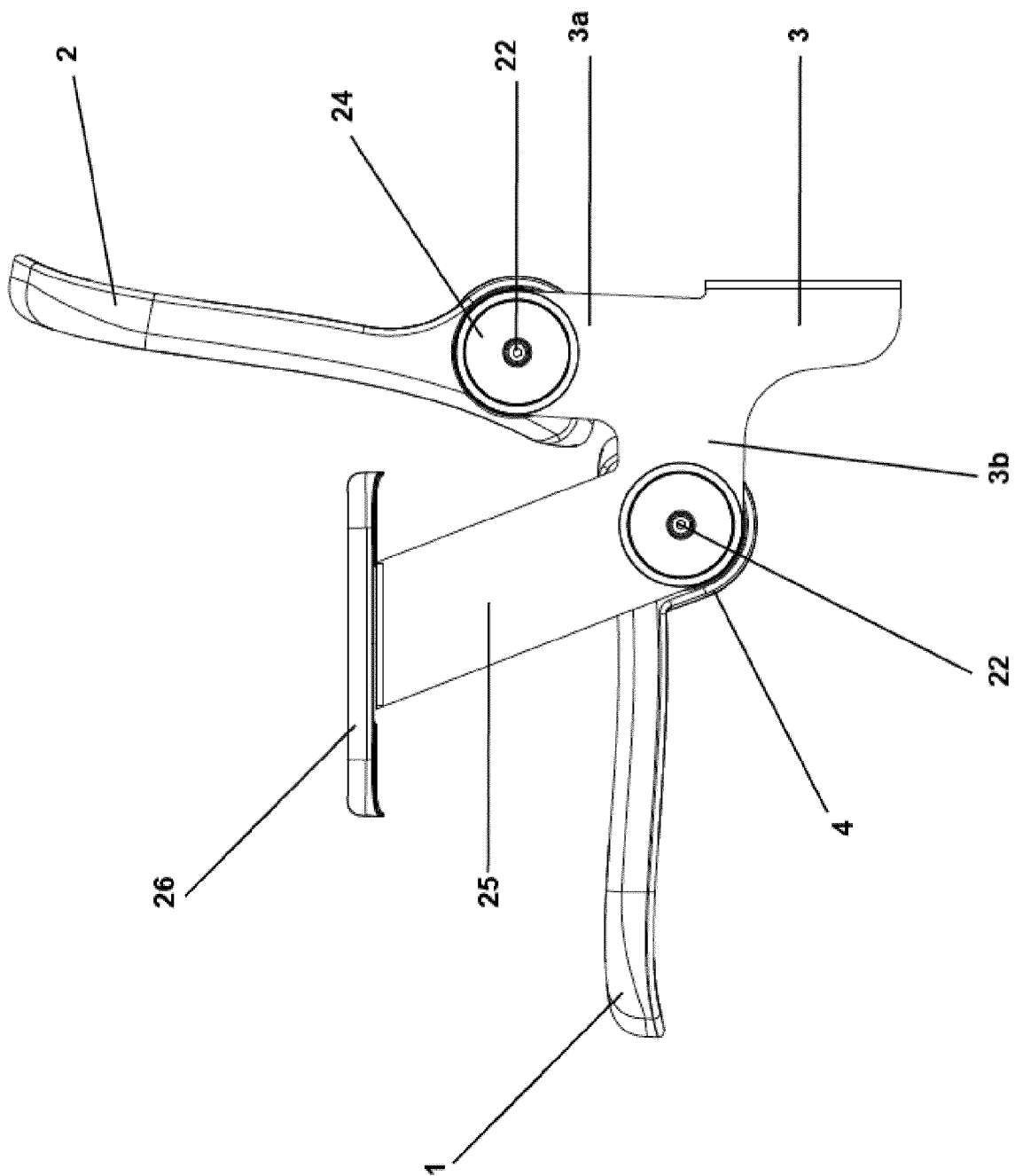


Fig. 6

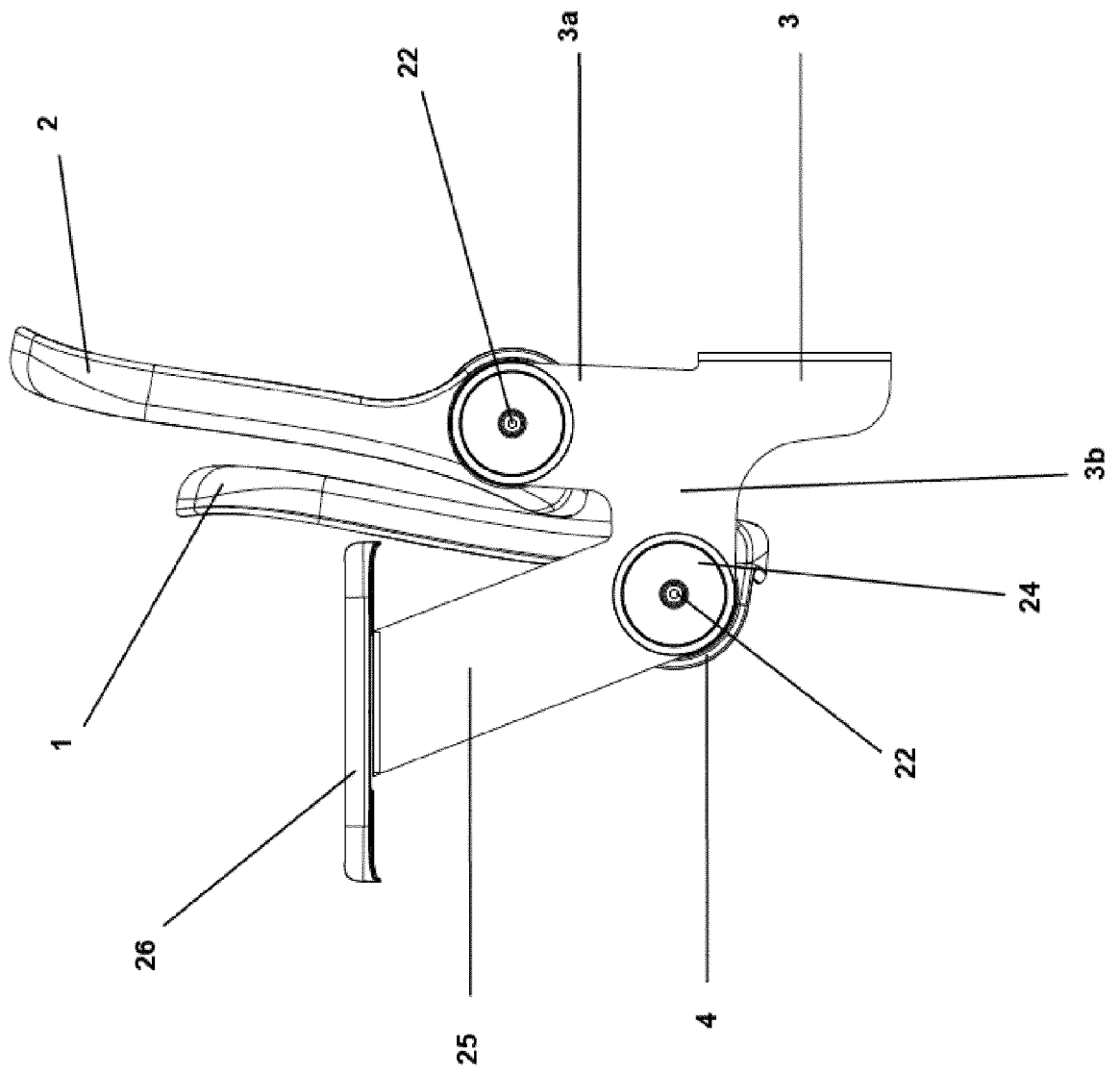


Fig. 7

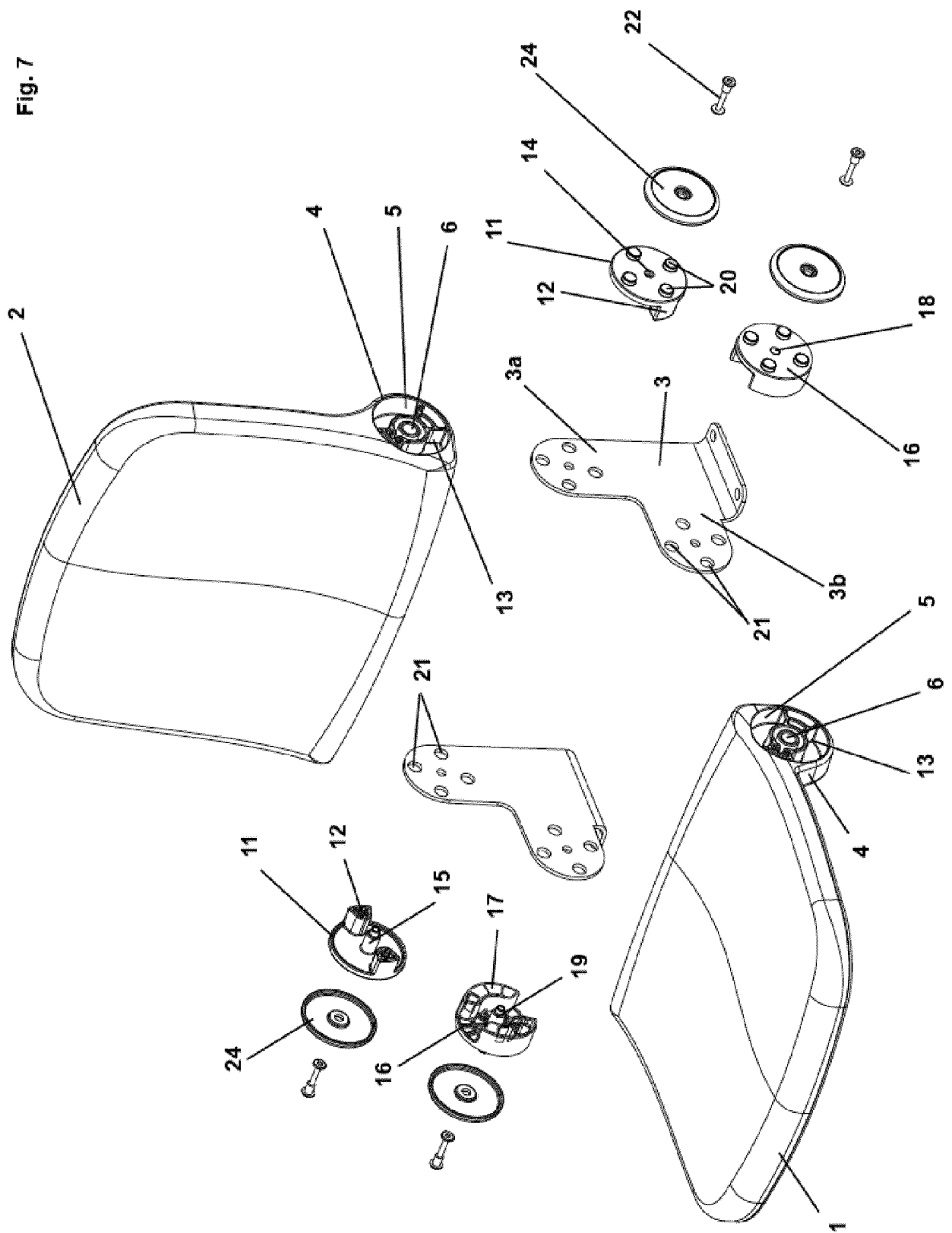


Fig. 8

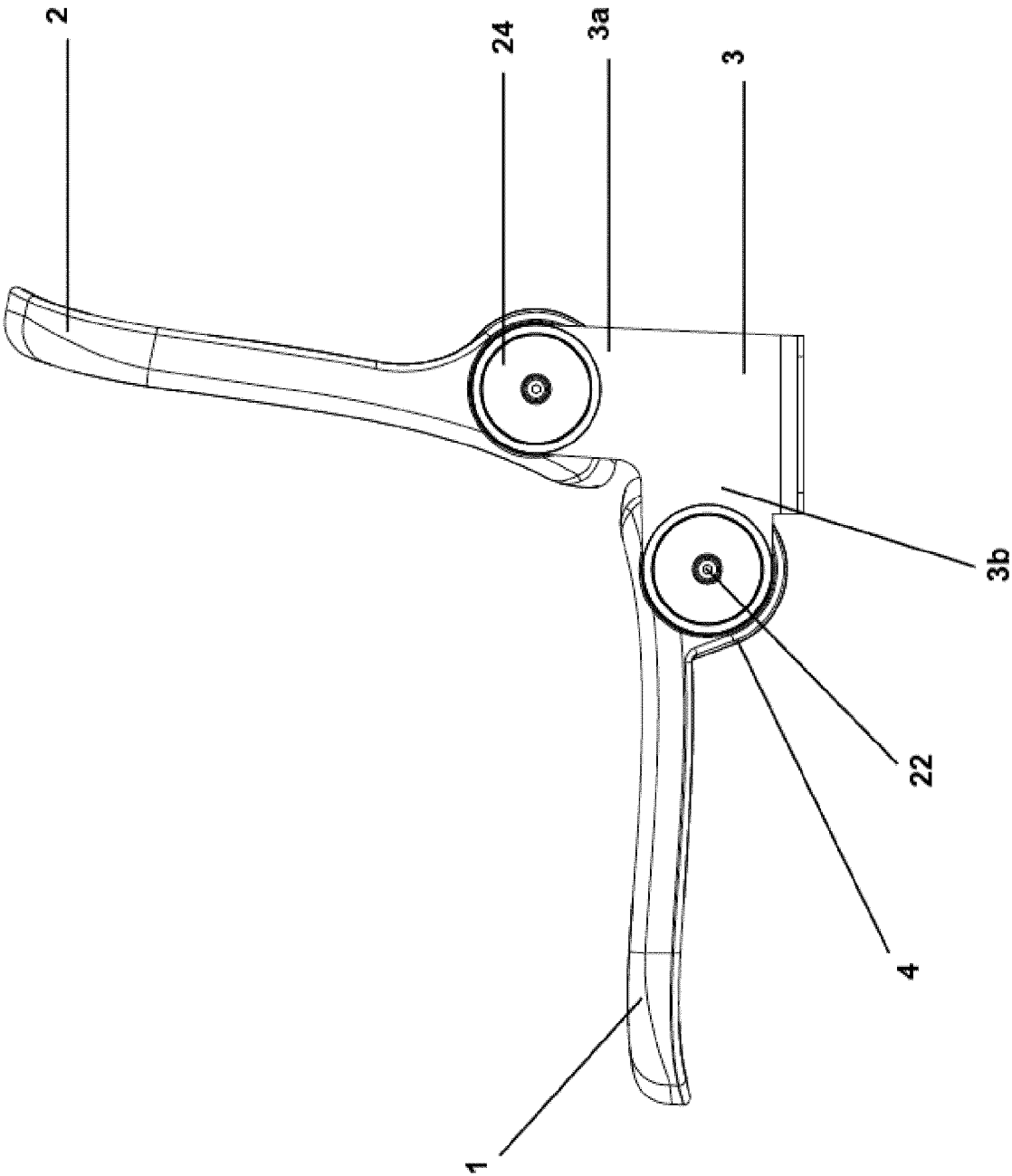
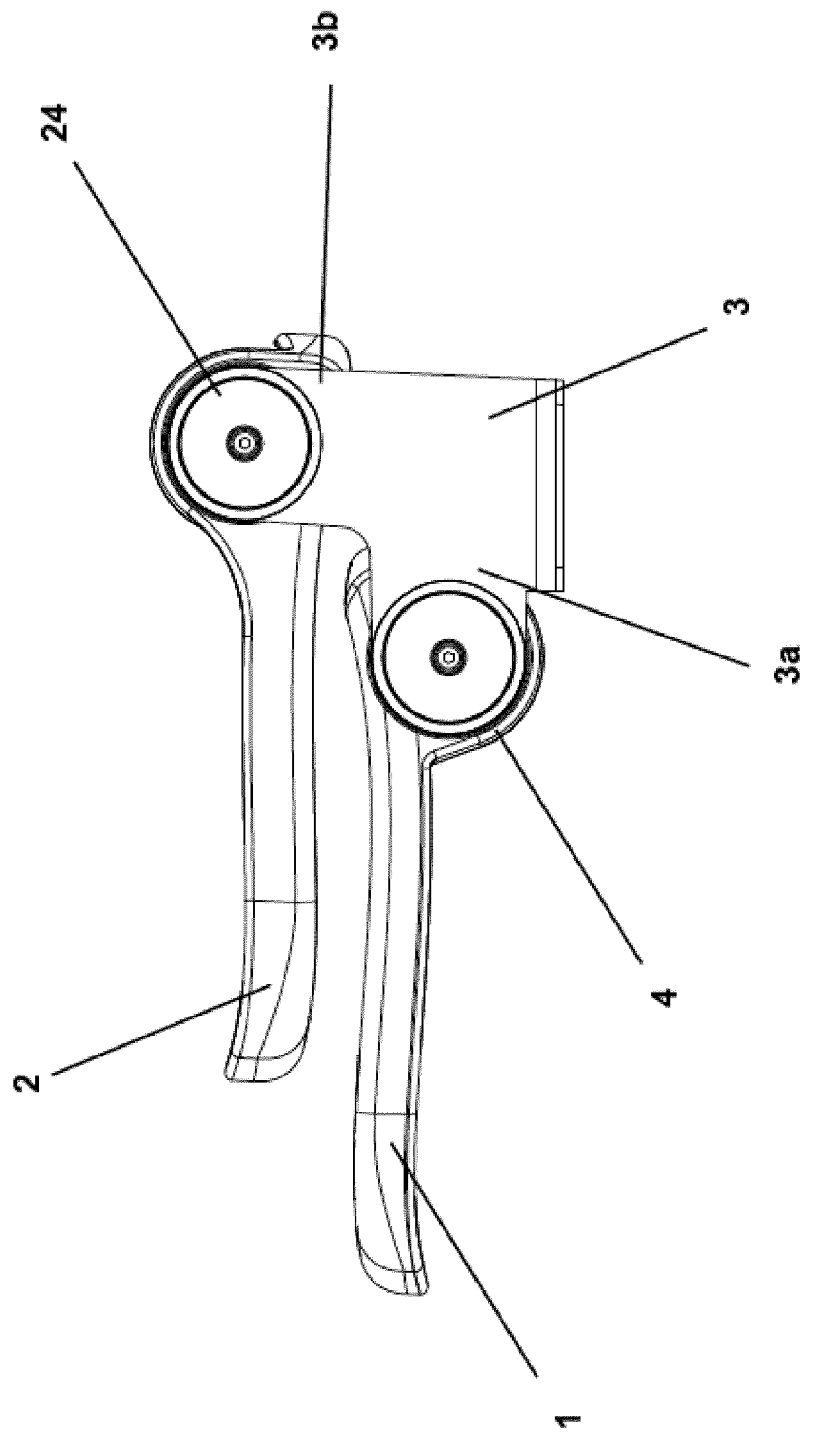


Fig. 9



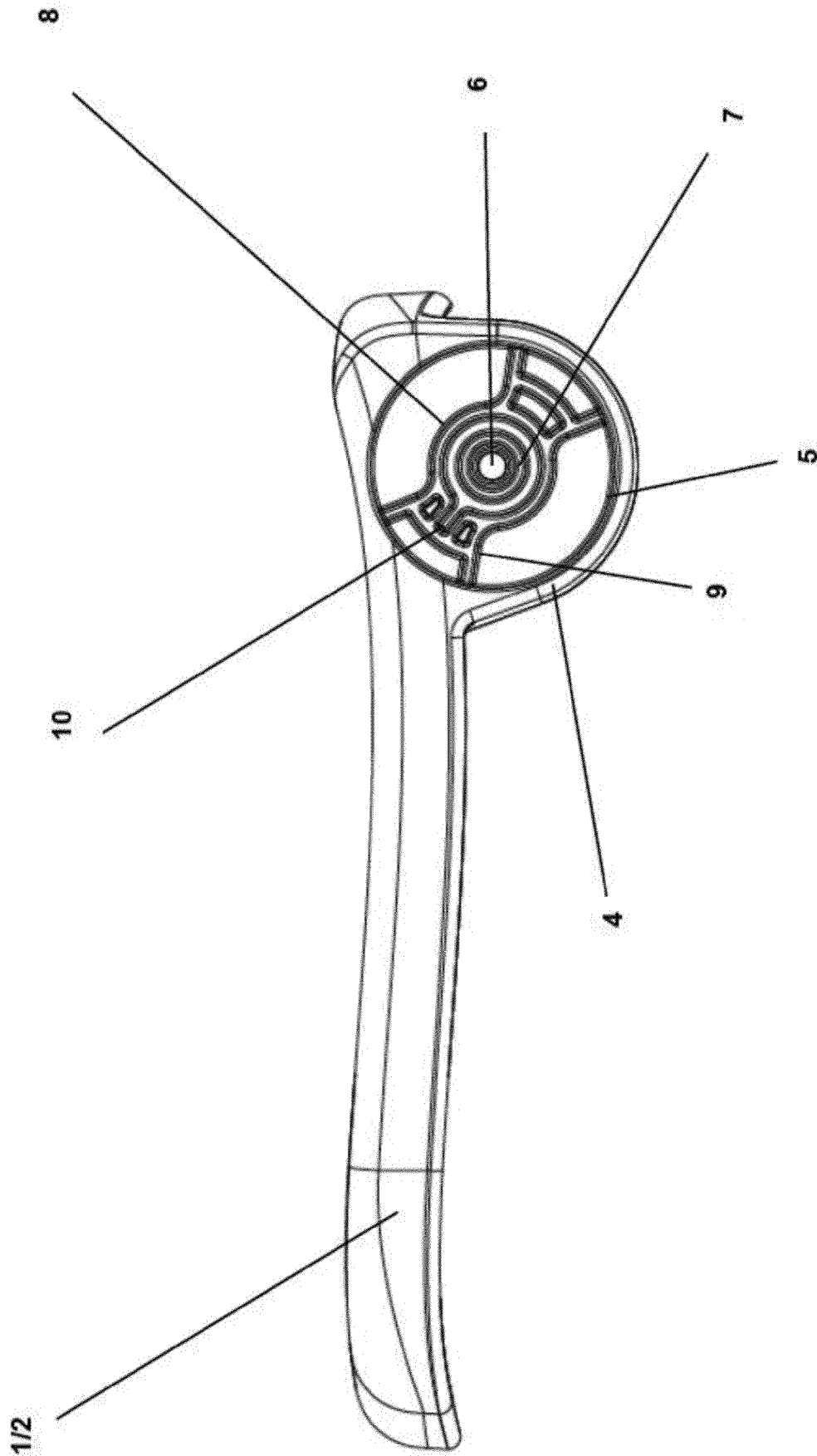


Fig. 10

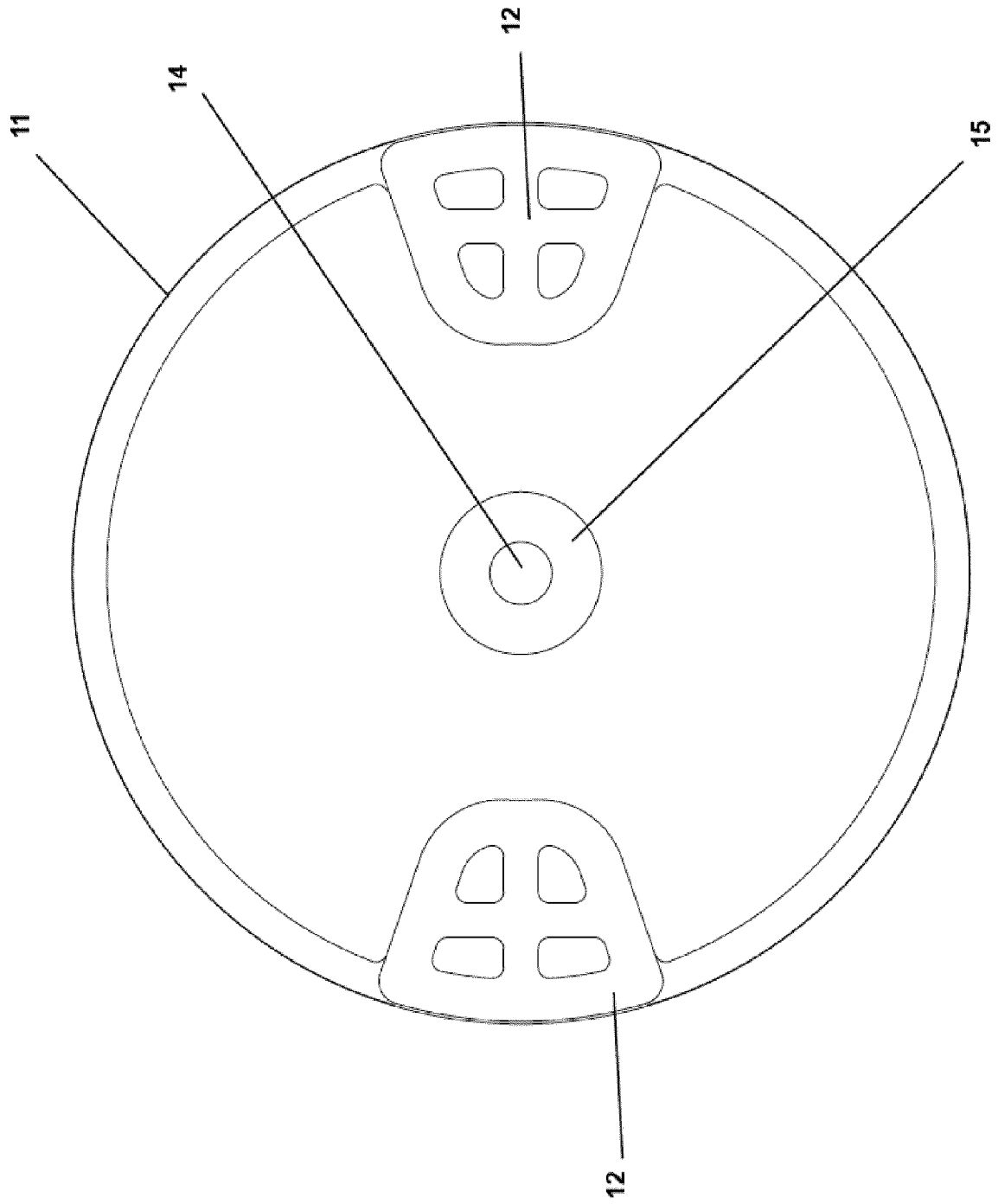


Fig. 11

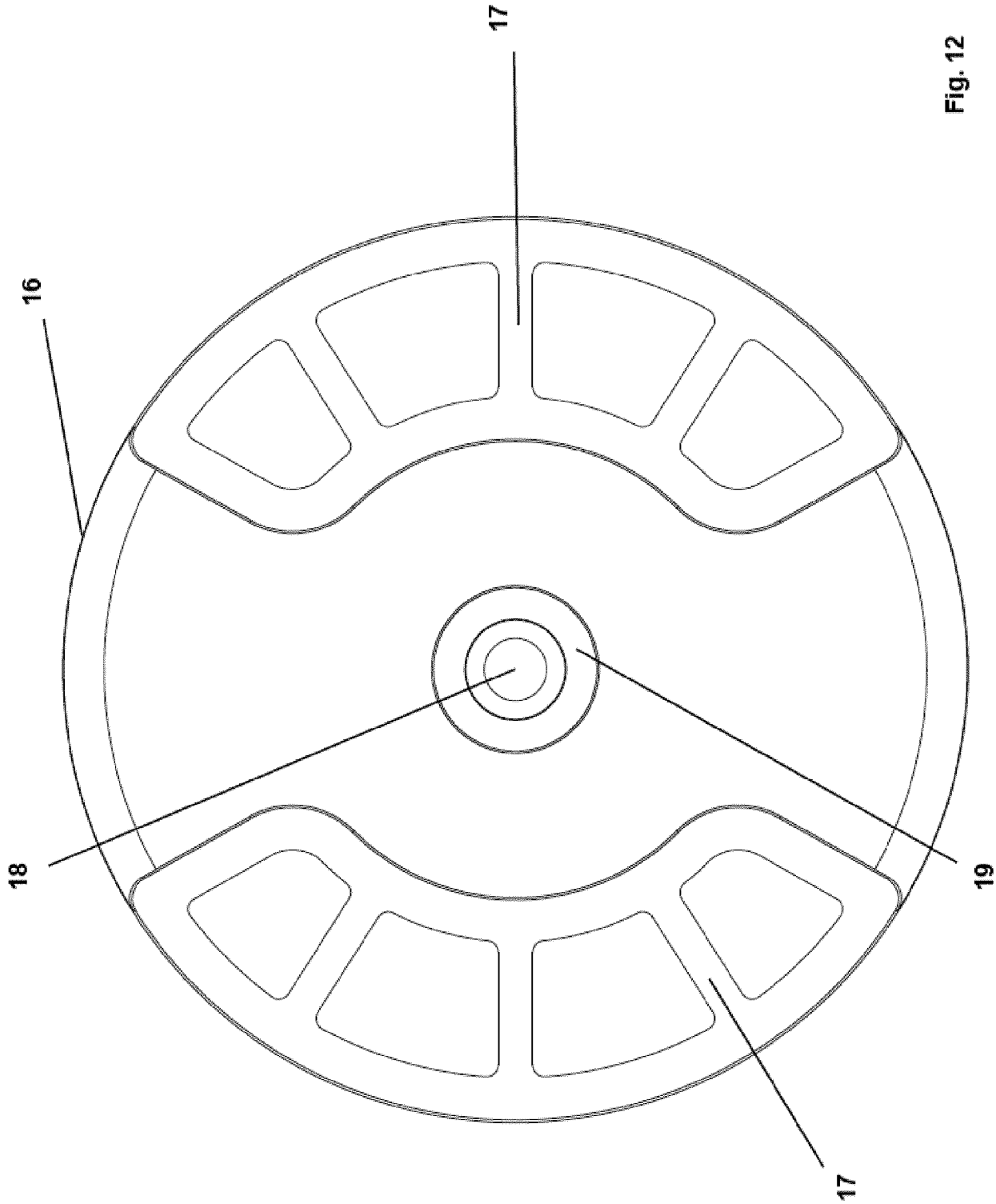
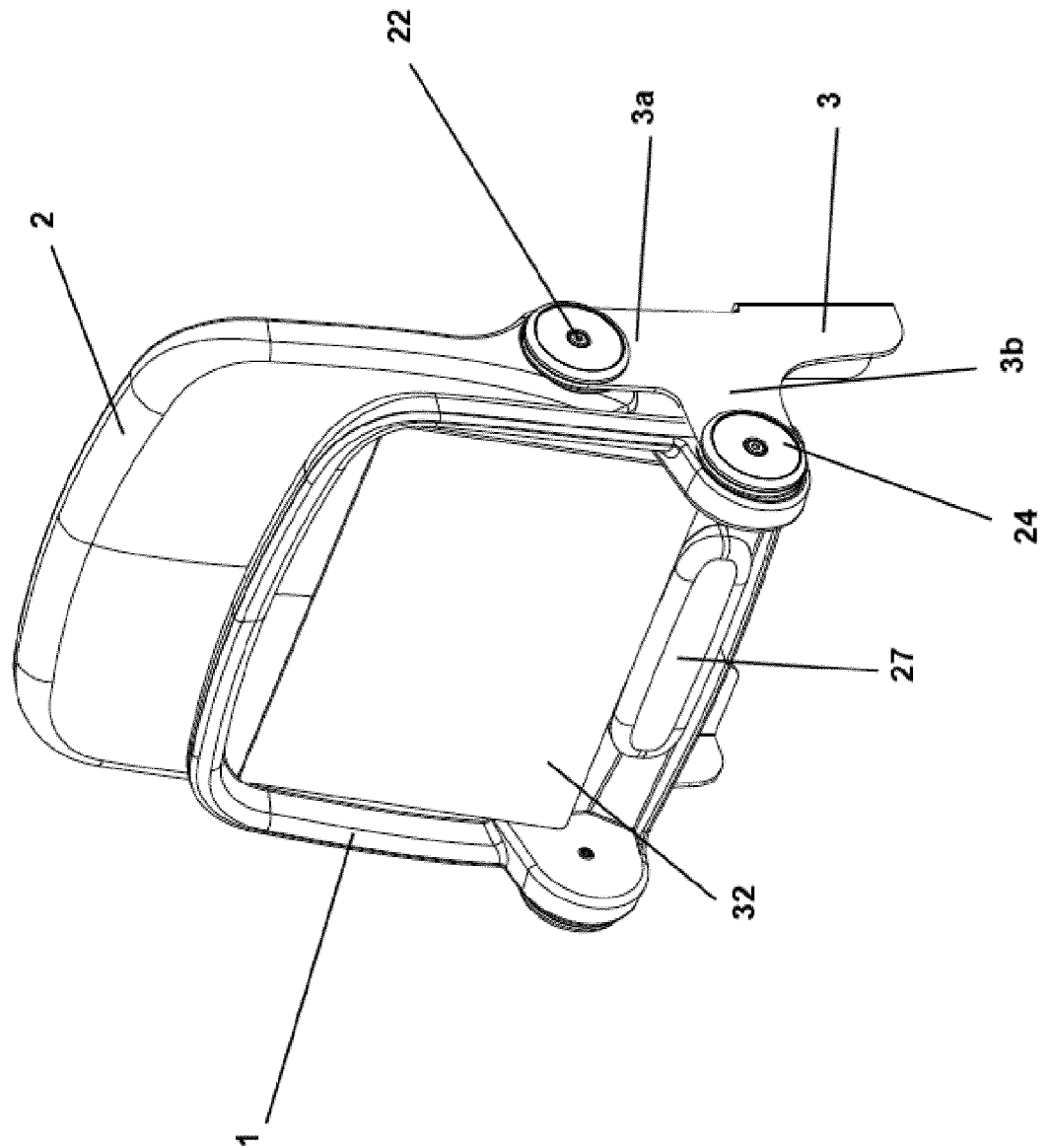


Fig. 12

Fig. 13



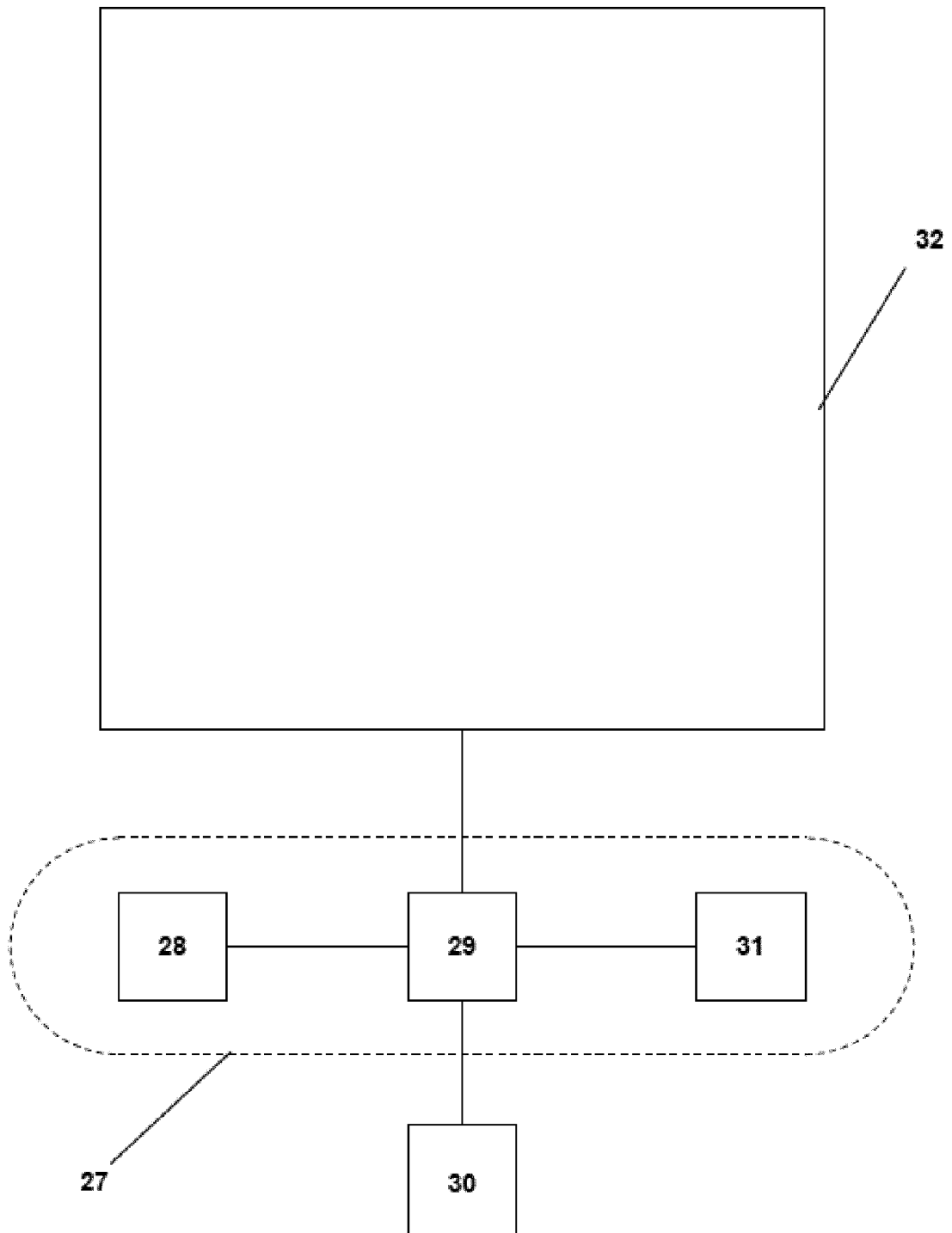


Fig. 14



EUROPEAN SEARCH REPORT

Application Number

EP 24 15 7596

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
			A47C E04H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 June 2024	Examiner Amghar, Norddin
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05 - 06 - 2024

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