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(54) **WINDER**

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(57) **ABSTRACT**

A winder has at least two winding assemblies, in which each winding assembly is arranged on its own carriage. This winder is an improvement over conventional winders, such as those used to wind copper pipes.

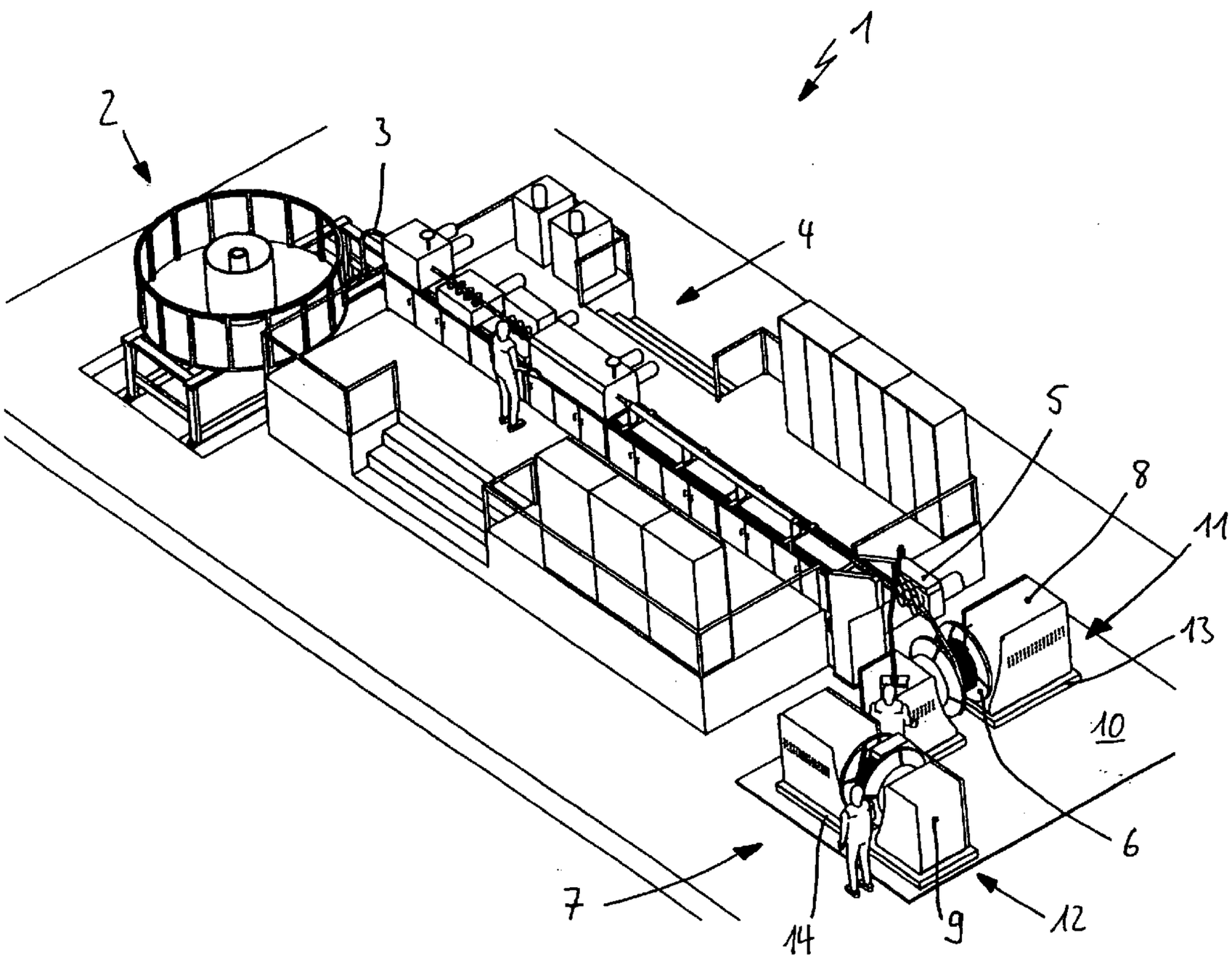

Fig. 1

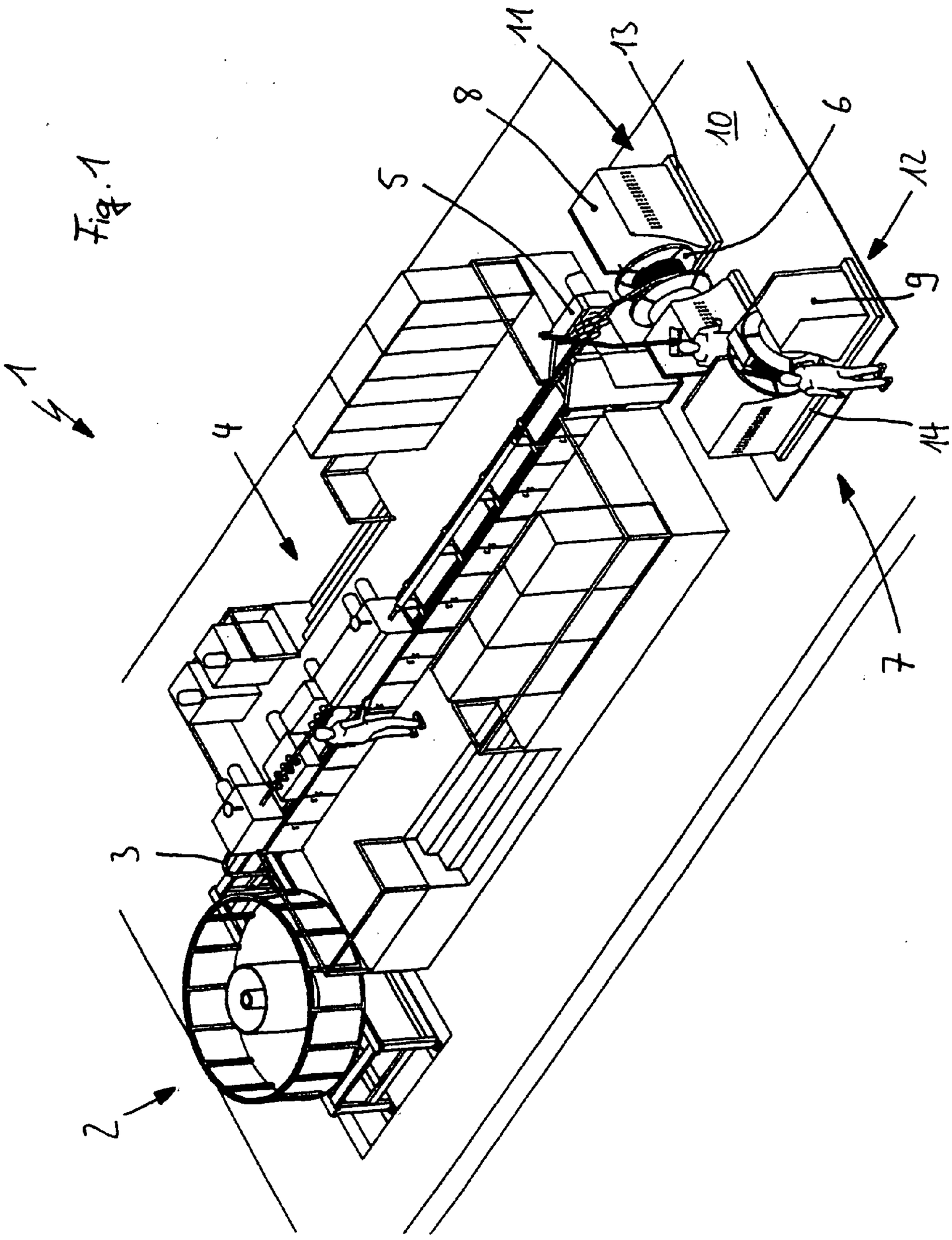

Fig. 2

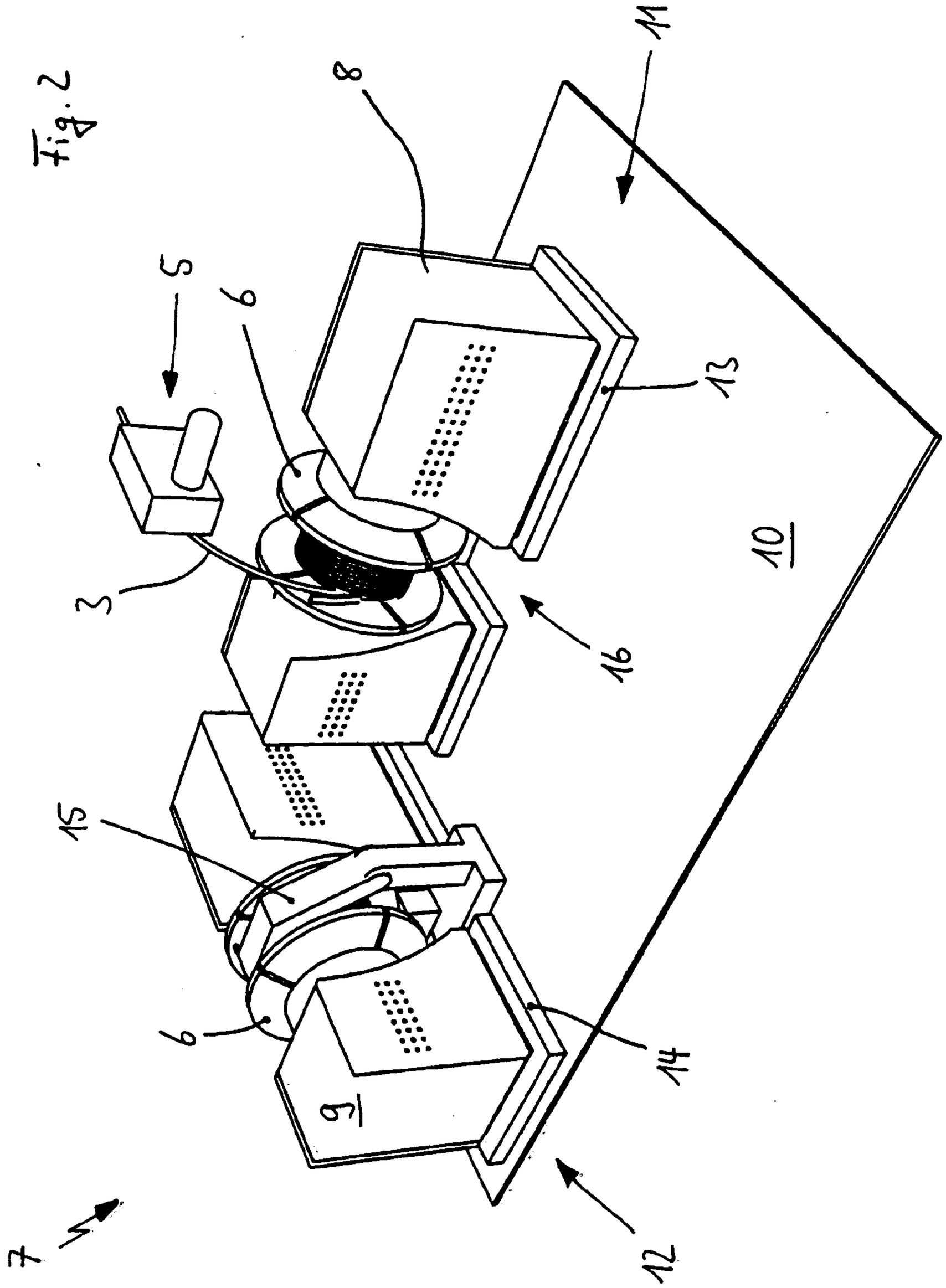

Fig. 3

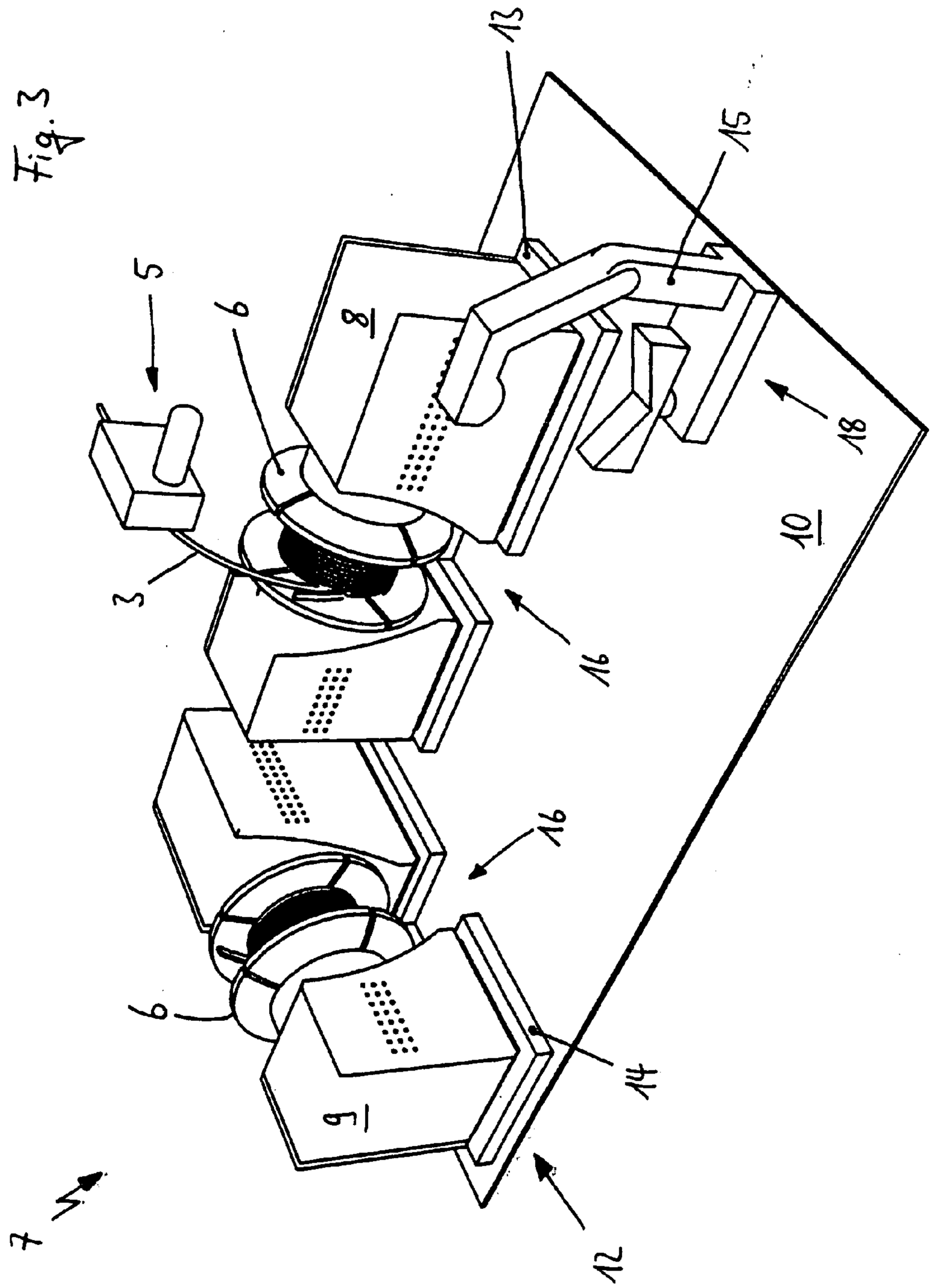

Fig. 4

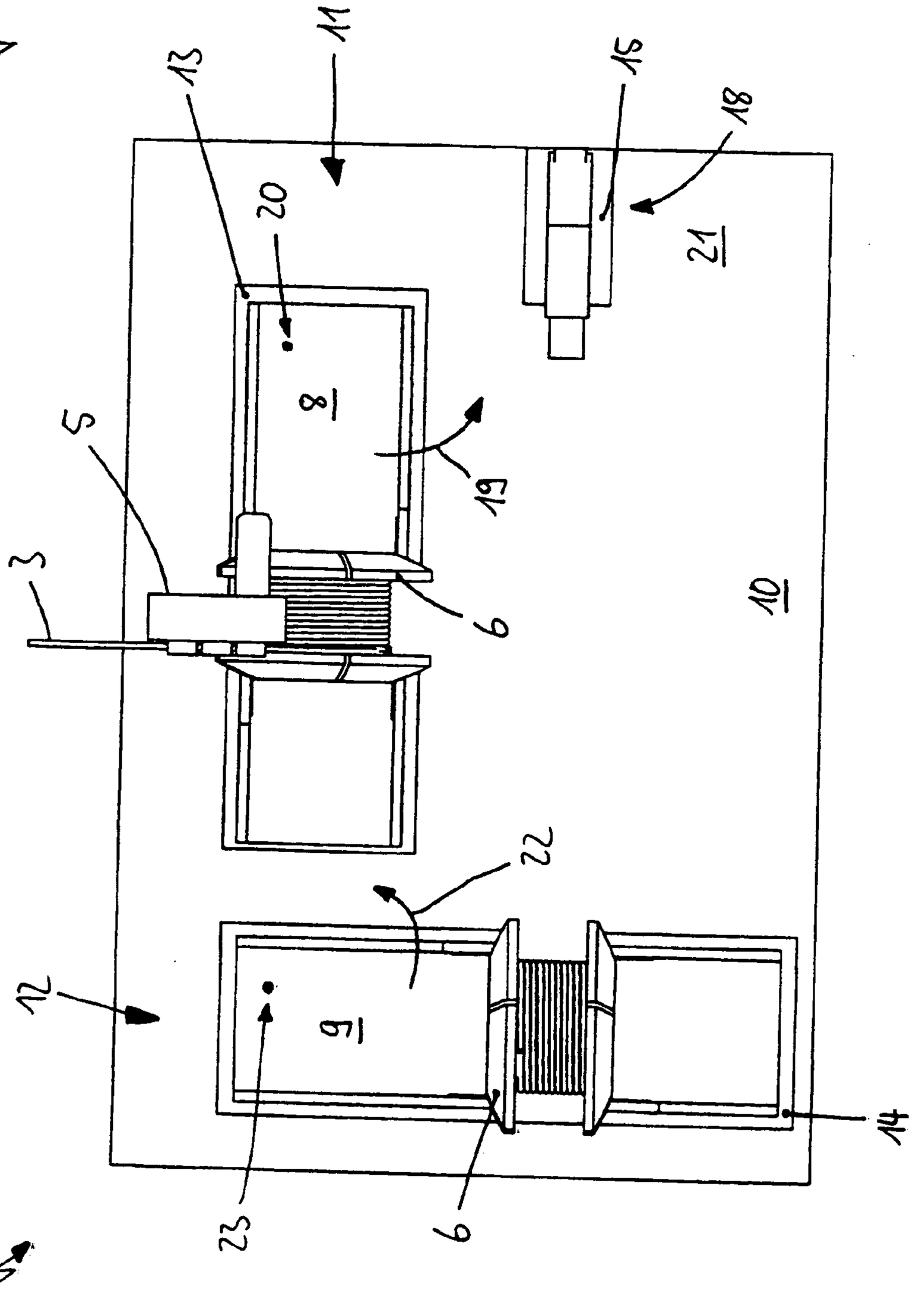

Fig. 5

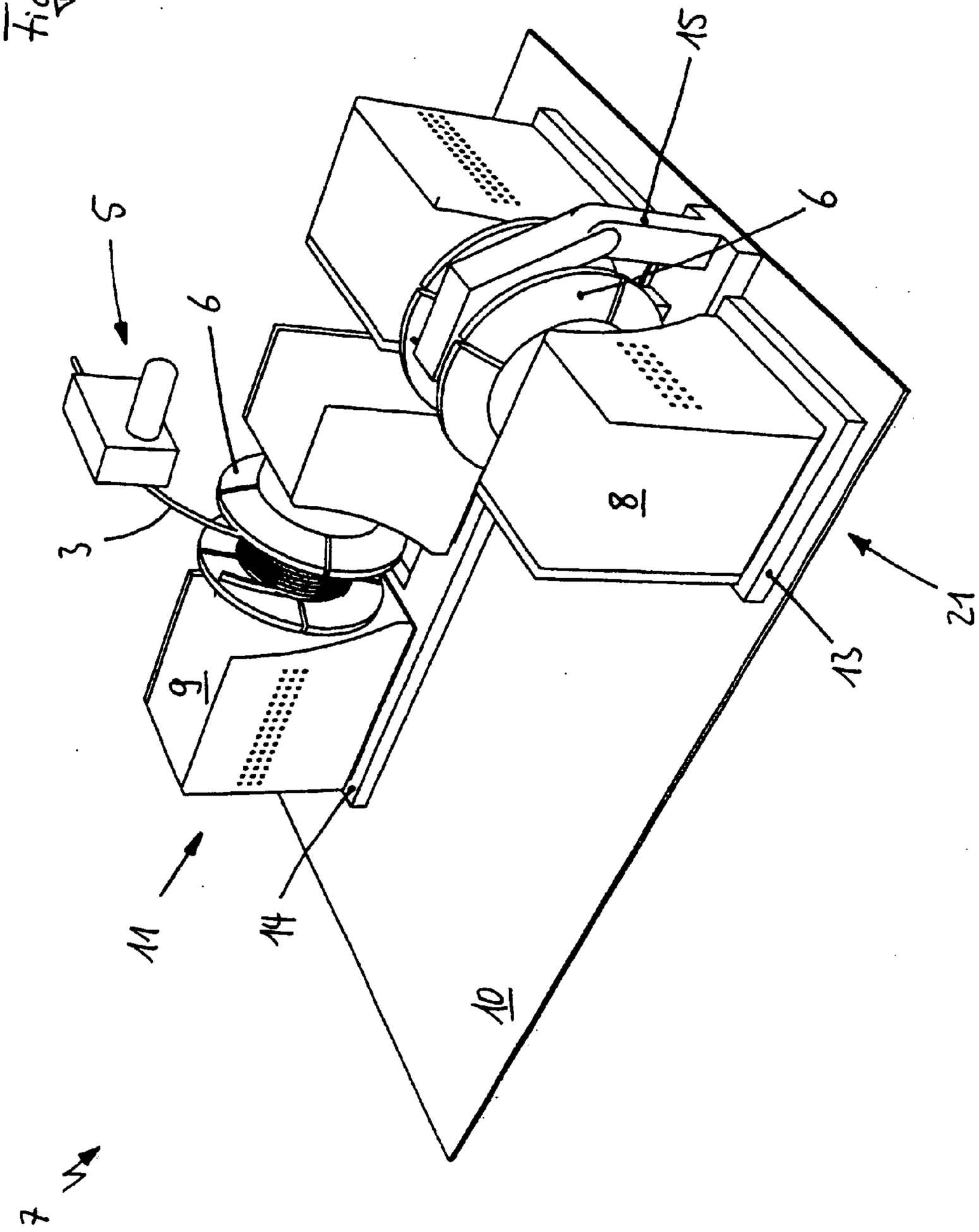

Fig. 6

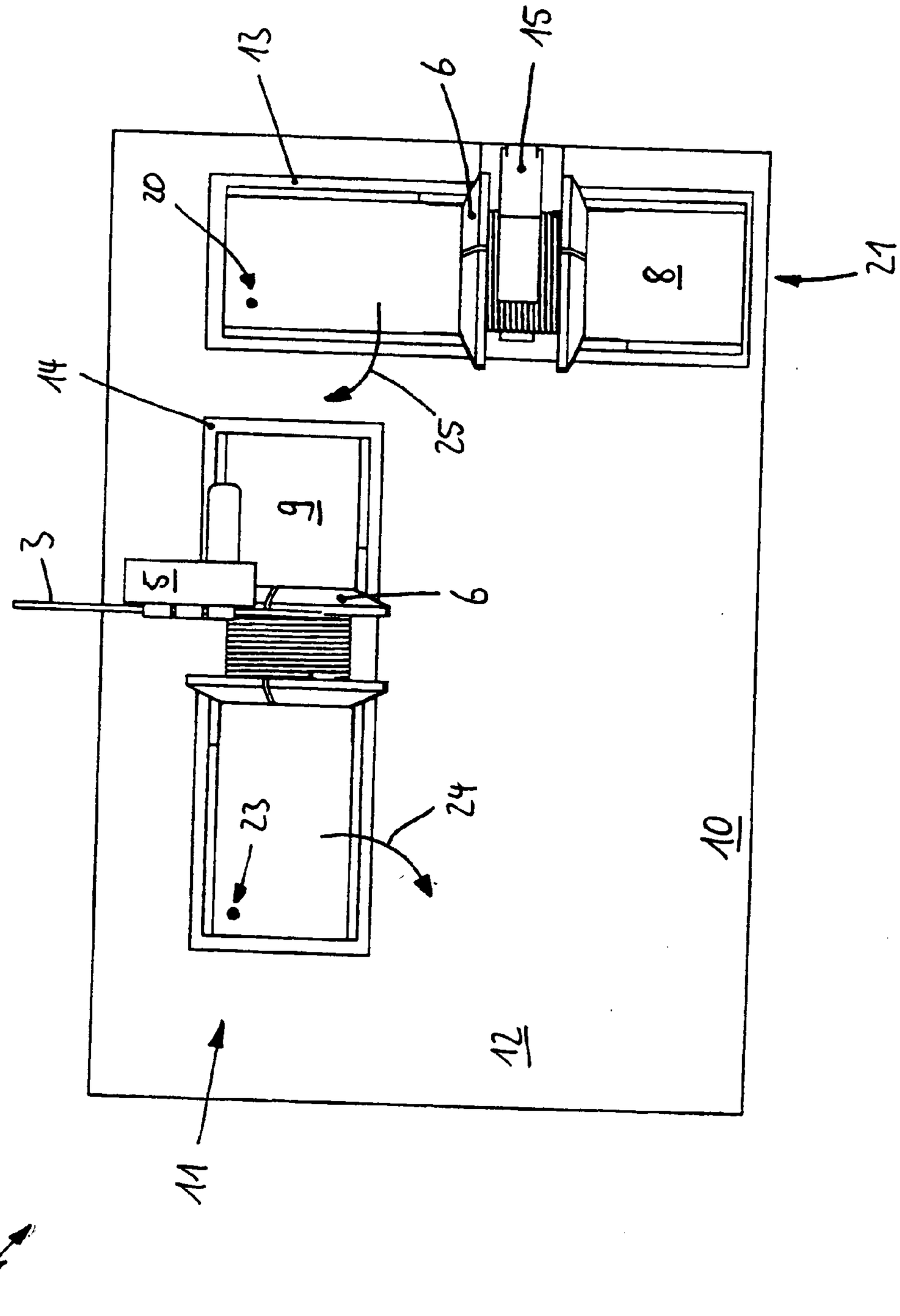

Fig. 7

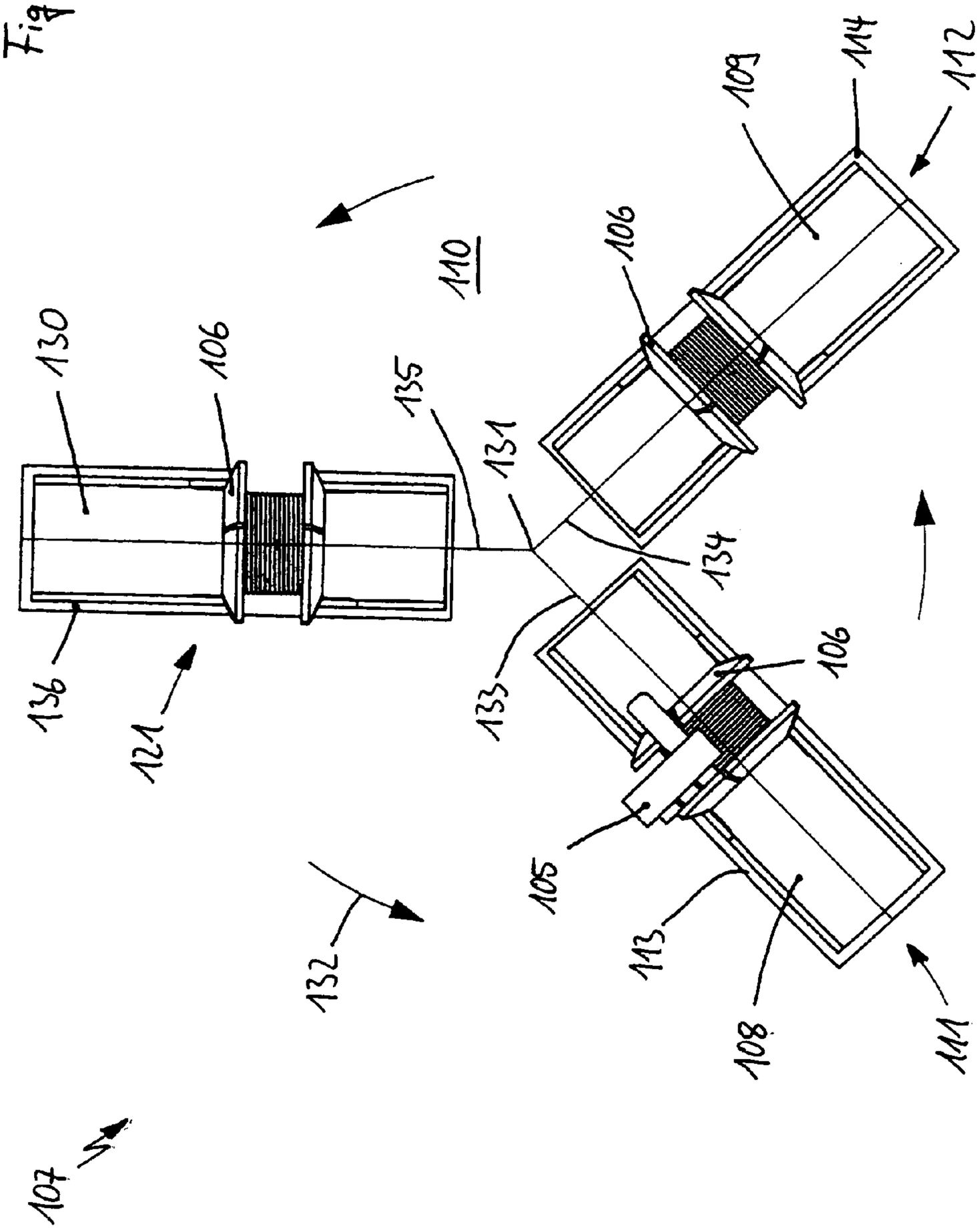
109
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Fig. 8

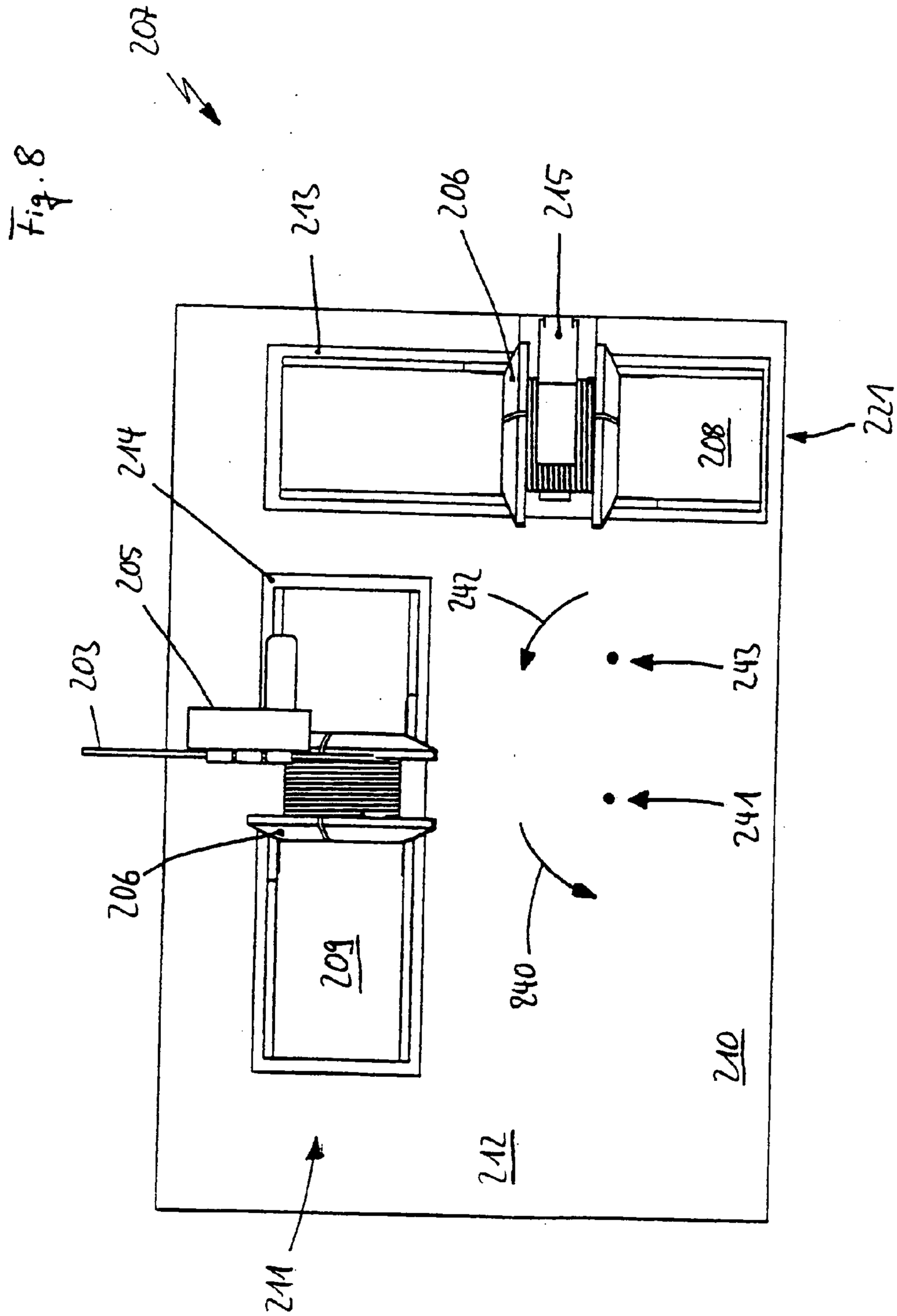
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Fig. 9

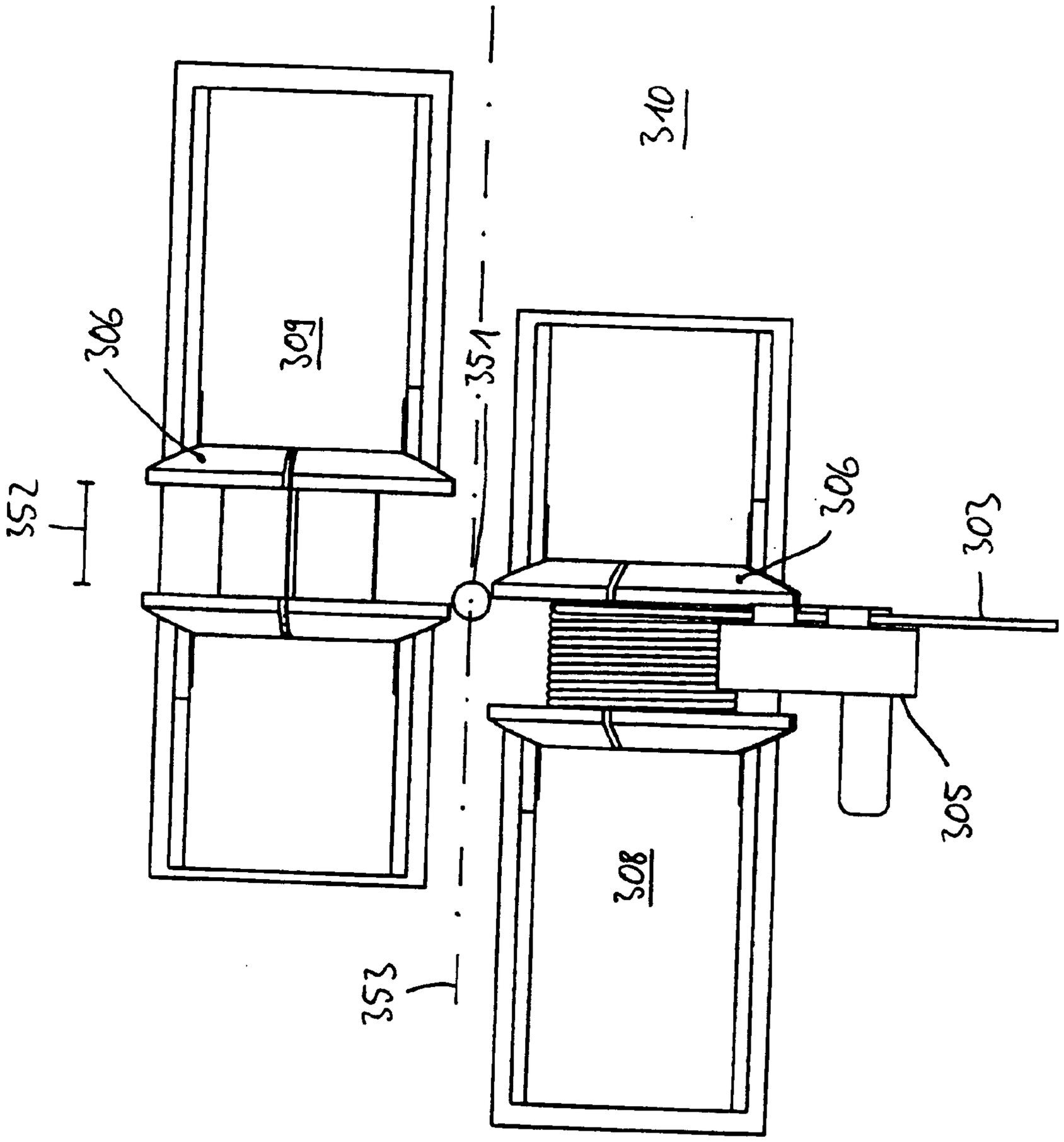


Fig. 10

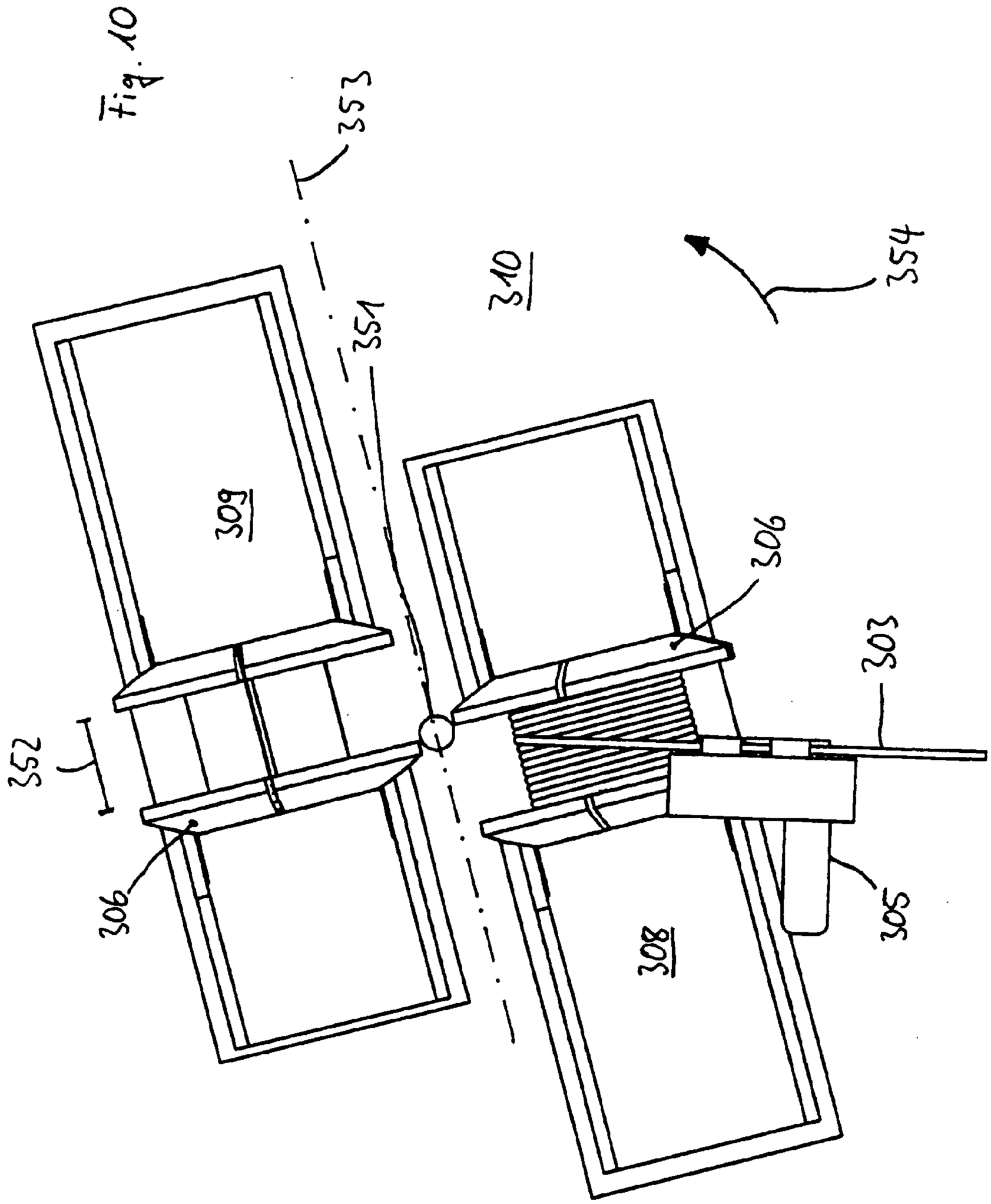


Fig. 11

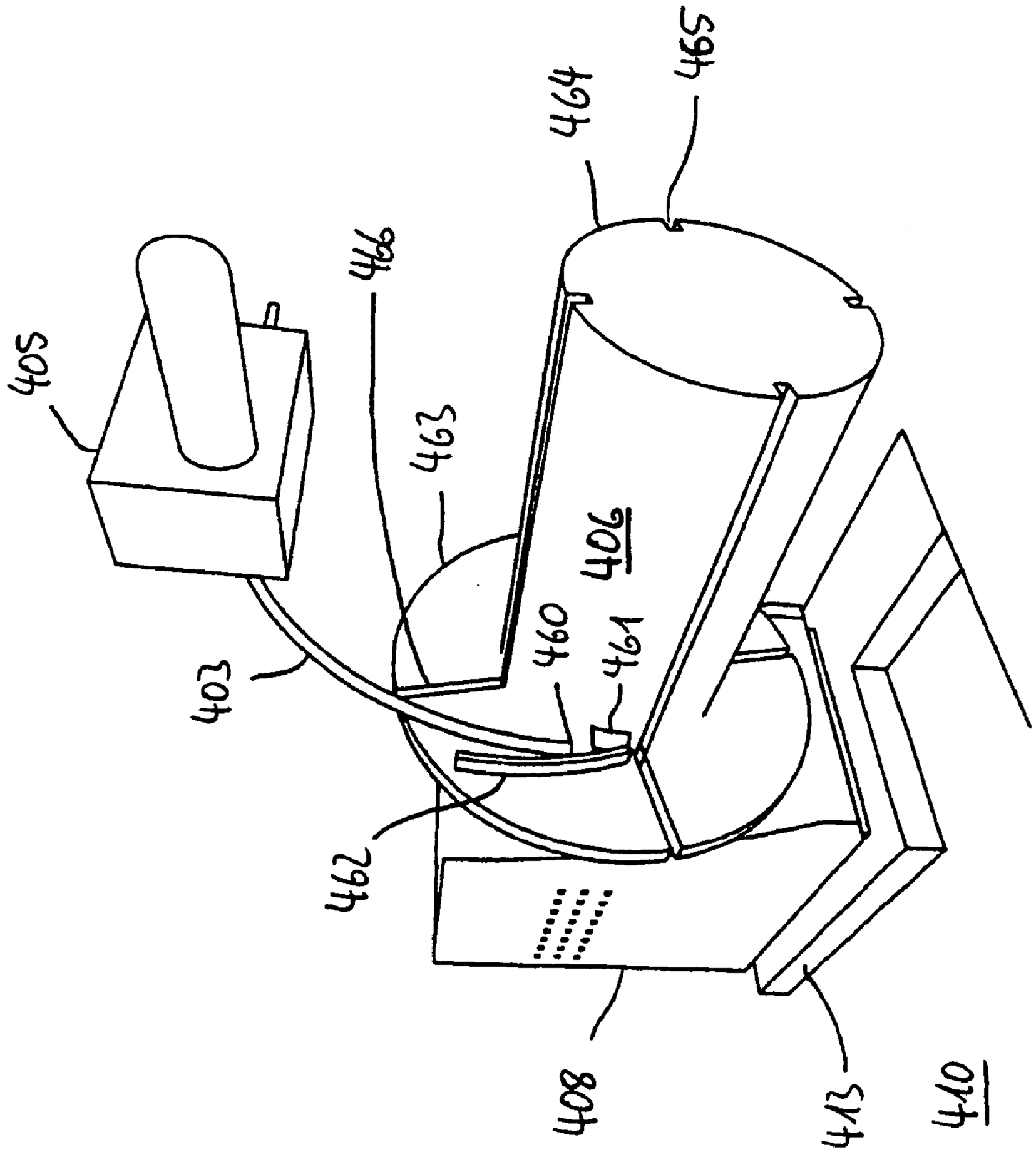
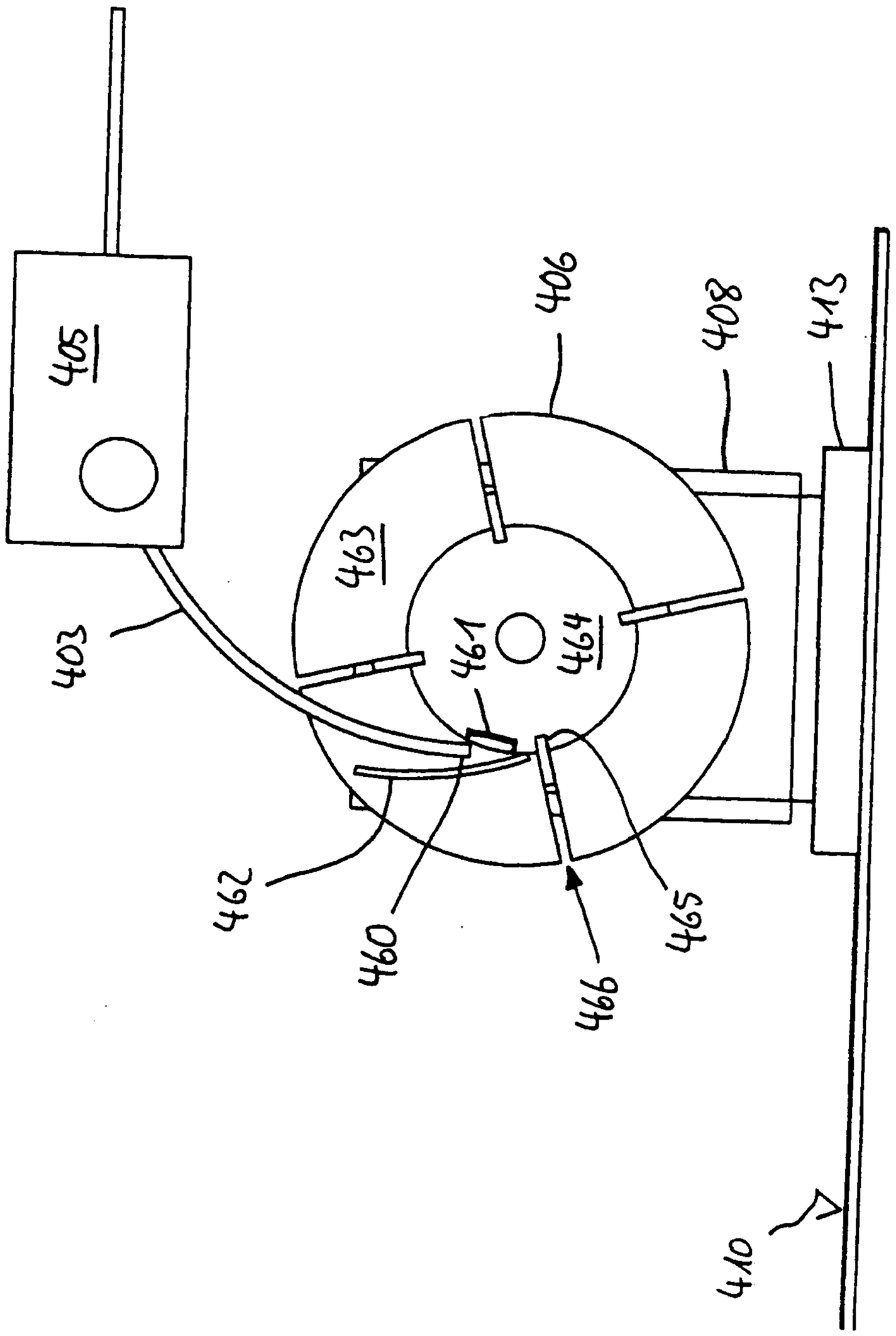


Fig. 12



# WINDER

## BACKGROUND OF THE INVENTION

[0001] The invention relates to a winder, such as are used for example to wind copper pipes. Winders of such kind may include two winding assemblies, in which case they are also called double winders and arranged on a turntable so that they may be turned alternatingly towards a corresponding feed device, such as an upstream bending apparatus, which enables winding to be carried out on one of the winding assemblies while intermediate or auxiliary activities, such as tying the bobbin and removing the bobbin from winding assembly, may be performed on the other assembly while it is facing away from the apparatus. In particular, the invention relates to winders having at least two winding assemblies, and which may be shafted between a winding position and an auxiliary work position. Moreover, the invention also relates to winders having at least one movable winding assembly. Additionally, the invention relates to winders having a winding element for winding a workpiece, the winding element including at least one winding flange and at least one workpiece retaining mechanism.

## SUMMARY OF THE INVENTION

[0002] The task of the present invention is to enable faster swapping between winding assemblies on winders with two winding assemblies.

[0003] For this purpose, the invention suggests a winder having at least two winding assemblies, and which differs from other solutions in that each winding assembly is arranged on its own carriage.

[0004] This enables the winding assemblies to be displaced by the smallest possible distances, particularly a rotation through less than 180°, and to move the displacement caused by a turntable, so that assemblies may be swapped faster and machine idle times may be reduced correspondingly.

[0005] The carriages are preferably driven separately. This enables drive units to be used that are smaller overall than if one drive unit were used to move both winding assemblies at the same time. As a result, an exceptional amount of weight and similar may be saved in terms of the drive units, which in turn means that considerably faster displacement speeds may be achieved for comparable drive unit costs, or conversely that less expensive drive units may be used to achieve comparable displacement speeds. The movements of the two carriages may also be carried out at different times and optimized with reference thereto, so that the referenced times may be minimized. In a design of this kind, it is also conceivable to use an identical drive motor, which initializes an acceleration of one carriage with its maximum force at certain times, and governs the acceleration of another carriage at other times, which enables assembly costs to be further cut and in particular also reduces the size of the overall arrangement, which in turn means that smaller forces are required to accelerate and slow them down.

[0006] The carriages may preferably be displaced about different centers of rotation. In this way, very small turning radii may be selected, so that the turning moments occurring during the movement may be minimized. This allows correspondingly smaller carriages and/or correspondingly faster movement speeds.

[0007] In particular, it is also advantageous to arrange the centers of rotation below the winding assemblies, if possible below the center of gravity of the winding assemblies, which enables the moments required for the movement to be considerably reduced, which is correspondingly advantageous.

[0008] On the other hand, it is also possible to move the carriages along linear tracks, particularly along straight tracks. In theory, the tracks may be constructed in almost any form, particularly if complex space constraints are to be considered.

[0009] Additionally or alternatively, the two winding assemblies may be displaceable between a winding position and an auxiliary work position, these two positions being offset by an angle less than 180° with respect to each other. In particular, the two assemblies may be offset by an angle less than 180° with respect to each other when one of the two assemblies is in the winding position and the other of the two assemblies is in the auxiliary work position. This enables to the paths between these two positions to be minimized, depending on the other features of the invention described in the preceding.

[0010] In particular, these two positions may be situated at an angle equal to or less than 90° with respect to each other. Particularly in this case, linear drive units such as hydraulically or pneumatically powered pistons or similar may be used, as they are relatively inexpensive and fast, thereby further reducing retooling times.

[0011] In addition or alternatively to the solutions described in the foregoing, in a winder having at least one displaceable winding assembly the winding assembly may be supported on a sliding bearing. Such a sliding bearing has a relatively low profile and because of the large sliding areas available underneath a winding assembly may operate with relatively low surface contact pressures, so that the displacement may be effected with little consumption of power.

[0012] In this respect, it is advantageous if a sliding surface of the sliding bearing is an base surface, such as a floor panel for example, on which the winding assembly is disposed. If the base surface is used as a sliding surface for a sliding bearing, the installation of the entire winding assembly sliding bearing is particularly simple, with the result that the entire sliding bearing has a particularly low profile. As a result, excessively deep excavations in the factory foundations, such as are required for known bearings of species-related winding assemblies, may advantageously be avoided. Under certain circumstances, particularly with appropriate consideration for the overall floor construction, special excavations may be dispensed with entirely.

[0013] Moreover, a sliding bearing of such kind may be provided in addition or alternatively to the use of a sliding bearing in a winder having at least one displaceable winding assembly if the winding assembly is arranged on a carriage that is supported on a floor or floor panel via an air cushion that may be switched on and off. In fact, other sliding bearings or sliding bearings according to a broader definition may be constructed in a different manner, for example with suitable sliding surfaces, a fluid sliding film or a magnetic bearing or similar. However, with an air cushion that may be switched on and off, it is possible to manufacture a very inexpensive, highly reliable sliding bearing of such kind.

Moreover, an air cushion has the advantage that no sticking occurs (stick-slip freedom) when the carriage is set into motion from a resting position. When the air cushion is switched off, the carriage also rests relatively rigidly on a floor.

[0014] Since an air cushion is not the only solution in this context, a winder with at least one displaceable winding assembly in which the winding assembly is arranged on a carriage, the underside of which includes openings through which a fluid medium may be passed, is advantageous for the same reason.

[0015] Regardless of the other features of the invention, a displaceable winding assembly carriage may be secured to the floor via apertures in the underside of the carriage, in which an underpressure is created, thereby creating an extremely solid connection between the winding assembly and the its base and with regard to the rest of the system.

[0016] Of course, apertures in a winding assembly carriage, particularly on the underside of a winding assembly carriage, may be used both to load with a fluid and also for applying an under pressure, so that both of these effects may be used to advantage.

[0017] Other mechanisms that are used in conjunction with a winder, such as a release mechanism, may be supported accordingly.

[0018] In the present context, a winding assembly includes a winding element, onto which the workpiece is wound, and a corresponding drive unit. Preferably, at least one retaining device is present, with which a completed bobbin may be secured temporarily, so that it does not uncoil before it is processed further, for example finally tied.

[0019] In addition or alternatively to the solutions described in the preceding, a winder is suggested having a winding element onto which a workpiece is wound, wherein the winding element includes at least one winding cylinder and at least one winding flange as well as at least one workpiece retaining element, with a workpiece feed provided radially inside the outer radius of the winding flange. This allows the threading operation to be performed considerably more reliably than is the case in the prior art, until the workpiece can be secured in a workpiece retaining arrangement and the actual winding process can be initialized.

[0020] The workpiece guide is preferably removable from the winding area, i.e. from area in which the bobbin is to be created, after the workpiece has been secured, so that it does not further obstruct the winding process.

[0021] All devices that are suitable for securing a workpiece to a winding hub, such as grippers, clamp connections, screw fixtures or similar, may be used to secure the workpiece, before the actual winding process is initialized. A securing mechanism of such kind ensures particularly during the first windings that they do not uncoil again. Even when a larger number of bobbins have been completed, a securing mechanism can prevent the workpiece from slipping, although this may not be necessary depending on the nature of the workpiece, and the workpiece securing mechanism in these cases may be opened again before the end of the winding process.

[0022] Preferably, the workpiece guide is itself mounted on a winding flange, so that it may be retained reliably in its optimum position for a considerable depth into the winding area. In particular, the workpiece guide may be axially movable into and out of a winding flange. In this way, the workpiece guide may easily be removed from the winding area as necessary. Additionally, the distance by which the workpiece guide is movable axially into the winding area may be variable, particularly so that adaptations may be made to various workpiece diameters.

[0023] On the one hand, the workpiece guide may also be equipped with an axial guide, particularly on the side facing away from the side on which the workpiece guide is itself mounted, to ensure secure axial guidance. On the other hand it is known from the related art to bring the two flanges of a winding hub together axially, particularly when threading or winding the first winding, so that only the axial space the workpiece actually needs for the next winding to be arranged axially adjacent the previous one is provided. Similarly, the two winding flanges may be moved towards one another other in the present context as well, so that the workpiece is sufficiently precisely arranged, and in particular guided sufficiently precisely in the axial direction to the workpiece securing mechanism, while the workpiece guide spans the existing radial gap remaining between the two flanges sufficiently to ensure that the workpiece is fed reliably into the workpiece guide.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Further advantages, objectives and properties of the present invention will be explained in greater detail with reference to the drawing accompanying the following description, in which a winder according to the invention is represented. In the drawing:

[0025] **FIG. 1** is a winder according to the invention in a perspective overall view of a processing installation;

[0026] **FIG. 2** is an enlarged section of the view of **FIG. 1** with a tying mechanism in a tying position for the first winding assembly;

[0027] **FIG. 3** is the arrangement of **FIG. 2** with the tying mechanism moved back in a tying position for the second winding assembly;

[0028] **FIG. 4** is a plan view of the arrangement of **FIG. 3** with the centers and directions of rotation for swinging the first winding assembly into its winding position and the second winding assembly into its auxiliary activity position;

[0029] **FIG. 5** is the arrangement of FIGS. **2** to **4** in a similar representation to **FIGS. 2 and 3**, wherein the first winding assembly is in its winding position and the second winding assembly in its auxiliary activity position, in which the tying mechanism is disposed in the work opening;

[0030] **FIG. 6** is a top view of the arrangement of **FIG. 5** with the centers and directions of rotations for swinging the second winding assembly into its winding position and the first winding assembly into its auxiliary activity position;

[0031] **FIG. 7** is a plan view of an alternative embodiment with three winding assemblies, which are movable about a single center of rotation between three working positions;

[0032] **FIG. 8** is a further alternative embodiment in similar representation to **FIG. 6**, wherein the winding assemblies are moved in the same direction, not in opposite directions as in **FIG. 6**;

[0033] **FIG. 9** is a top view of a further alternative embodiment with two winding assemblies that are offset with respect to one another and are movable about a shared center of rotation in a first winding position;

[0034] **FIG. 10** is a top view to two winding assemblies offset with respect to one another in a second winding position;

[0035] **FIG. 11** is an exploded view of a winding hub with a winding cylinder and a winding flange; and

[0036] **FIG. 12** is a plan view of the components shown in **FIG. 11**.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0037] The processing installation **1** shown in **FIG. 1** includes on the infeed side a material stock basket **2**, where pipe material **3** is held in stock and may be replaced so that other pipe material, or other long workpieces, such as rods, wire or similar, may be supplied. From the infeed side, pipe material **3** passes through various processing station **4** and at the outfeed side of processing installation **1** reaches a bender **5**, which serves to bend pipe material **3** before it is wound onto a bobbin **6**.

[0038] Bobbin **6** is a part of a winder **7**, to which a first winding assembly **8** and a second winding assembly **9** are attached. Both first winding assembly **8** and second winding assembly **9** are located on a baseplate **10** of winder **7**. In the arrangement shown until **FIG. 4**, first winding assembly **8** is in a winding position **11**, while second winding assembly **9** is in an auxiliary activity position **12**. The main feature of winding position **11** is that in this position pipe it is possible to wind material **3** onto bobbin **6** of first winding assembly **8**. In the present document, bobbins **6** are designated collectively with a single **FIG. 6**, because the accessories for winding assemblies **8** and **9** are essentially of the same construction in this embodiment.

[0039] In order to move both winding assemblies **8** and **9** back and forth between winding position **11** and auxiliary activity position **12**, first winding assembly **8** is secured to a first carriage **13**, and second winding assembly **9** is secured on a second carriage **14**. Both carriages **13** and **14** are arranged independently of one another and movably on base plate **10**. Carriages **13** and **14** may also be coupled and driven together if such a need arises.

[0040] In this embodiment, the sides of both first carriage **13** and second carriage **14** facing base plate **10** are furnished with a plurality of air nozzles (not shown explicitly here), through which compressed air may be forced as needed to form an air cushion between carriages **13** and **14** of winding assemblies **8** and **9** and the base plate **10**, and both winding assemblies **8** and **8** are easily movable over base plate **10**, possibly in guidance tracks, such as a linear displacement track or a straight displacement track, for instance.

[0041] To ensure that pipe material **3** remains wound on a bobbin **6** once it has been wound and does not become at least partly unwound by accident, when it has been wound, pipe material **2** is secured with a tying mechanism **15**.

[0042] As shown in **FIG. 2**, for this purpose tying mechanism **15** is inserted into a tying chuck **16** (for purposes of clarity designated by a number on first winding assembly **8**). As is shown clearly on second winding assembly **9**, this ensures that tying mechanism **15** is arranged particularly reliably and above all tightly on second winding assembly **9**. When pipe material **3** on bobbin **6** at second winding assembly **9** has been tied (see **FIG. 3**), tying mechanism **15** is moved to a second tying position **18**, where it is ready to tie bobbin **6**, or pipe material **3** on bobbin **6** of first winding assembly **8**. For this purpose, first winding assembly **8** swings in rotation direction **19** about a center of rotation **20** from winding position **11** to a second, auxiliary activity position **21** (see **FIGS. 5 and 6**). In second, auxiliary activity position **21**, tying mechanism **15** ties wound pipe material **3** on bobbin **6** of first winding assembly **8**. Meanwhile, second winding assembly **9** is moved to winding position **11** (see **FIGS. 5 and 6**). For this, winding assembly **9** swings in rotation direction **22** about center of rotation **23**.

[0043] Center of rotation **20** for first winding assembly **8** is located below first winding assembly **8**. The same is true of center of rotation **23** for second winding assembly **9**. This center of rotation **23** is also located below second winding assembly **9**. Rotation direction **19** and rotation direction **22** are both anticlockwise, whereas both return rotation directions **24** and **25** are clockwise.

[0044] Once tying mechanism **15** has been moved away from second winding assembly **9** and is already in second tying position **18**, tied bobbin **6** of second winding assembly **9** may easily be replaced with an empty bobbin, so that second winding assembly **9** is again ready for operation and may be moved back to its winding position **11**.

[0045] Once pipe material **3** has been wound onto bobbin **6** at second winding assembly **9**, second winding assembly **9** is swung back from winding position **11** to auxiliary activity position **12** in reverse rotation direction **24** about center of rotation **23**. Then, second winding assembly **8** is swung back from auxiliary activity position **21** into winding position **11**, again in return rotation direction **24** about center of rotation **20**, and is ready for use.

[0046] The winder **107** shown in **FIG. 7** has a first winding assembly **108**, a second winding assembly **109**, and also a third winding assembly **130**. All three winding assemblies **108**, **109** and **130** are supported on a base plate **119** and are rotatable about a single center of rotation **131**.

[0047] For this purpose, first winding assembly **108**, second winding assembly **109**, and third winding assembly **130** are all supported separately on a base plate **110** by an air cushion via a first carriage **113**, a second carriage **114**, and a third carriage **136** respectively. Instead of this arrangement, a sliding bearing or a magnetic bearing, or also a blown fluid other than air may be used.

[0048] As shown in **FIG. 7**, first winding assembly **108** is in a winding position **111**, in which pipe material is being wound onto a bobbin **106** via a bender **105**. Second winding assembly **109** is in an auxiliary activity position **112** and third winding assembly **130** is in a second auxiliary activity position **121**. A tying mechanism (not shown here) may be moved up to the second winding assembly **109** or the third winding assembly **130** in both auxiliary activity positions, **112** and **121** to tie pipe material that has been wound onto bobbins **106**. Of course, any other activities, such as removing the wound bobbin, may also be carried out in auxiliary activity positions **112** and **121**. In particular, third winding

assembly **130** may already be in a waiting position in the second auxiliary activity position **121** when the pipe material on bobbin **106** has already been tied in auxiliary activity position **112**.

[**0049**] In particular, it is possible to move the three winding assemblies **108**, **109** and **130** synchronously via a single drive unit. In this case, it is advantageous if the assemblies are rigidly attached to each other and it is possible to actuate their air cushions together. On the other hand, it may be advantageous to actuate the air cushions or similar of the three winding assemblies **108**, **109** and **130** separately, particularly if they are being moved asynchronously. In such an operating mode, the two assemblies that are in the auxiliary activity positions, particularly the assembly that is to be moved to the winding position, may already be in motion when the assembly that is currently in the winding position has finished winding and is to be moved away. In this way, considerable time may be saved in changing winding assemblies. If the assemblies are able to be moved independently of each other, it is also possible to provide a smaller drive unit, since the masses to be accelerated and slowed are significantly smaller for one assembly than for all three assemblies at once. In such a case, the energy that must be expended to slow the assemblies may also be used as necessary to accelerate another assembly, thereby enabling the size of the drive unit to be reduced further.

[**0050**] In an alternative embodiment, each of winding assemblies **108**, **109** and **130** may also be arranged with respect to the base plate **110** so that it is movable on base plate **110** and axially along its respective displacement axis **133**, **134** or **135** relative to center of rotation **131**. In this way, additional working space may be gained.

[**0051**] The winder **207** shown in **FIG. 8** also has a base plate **210**, on which a first winding assembly **208** and a second winding assembly **209** are disposed. In this representation, first winding assembly **208** is in a second auxiliary activity position **221**. In this second auxiliary activity position **221**, a tying mechanism **215** has been moved against first winding assembly **208** in such manner that tying mechanism **215** is tying pipe material **203** that has been wound onto bobbin **206**. Second winding assembly **209** is in a winding position **211**, to that bobbin **206** of second winding assembly **209** communicates with bender **205** such that pipe material **203** is wound onto bobbin **206** for second winding assembly **209**.

[**0052**] Once bobbin **206** for second winding assembly **209** is full, second winding assembly **209** is rotated about a center of rotation **241** in direction **240**. In this embodiment, center of rotation **241** is not located directly below second winding assembly **209**, but is offset therefrom. Of course, a common center of rotation may also be provided here.

[**0053**] Once second winding assembly **209** has been swivelled about center of rotation **241** out of winding position **211** and into an auxiliary activity position **212**, first winding assembly **208** may then be swivelled from second auxiliary position **221** into winding position **211** by rotating it in direction **242** about center of rotation **243**. Both directions of motion **240** and **242** rotate clockwise about their respective centers of rotation **242** and **243**, and are rectified accordingly.

[**0054**] In this embodiment too, the two carriages may be harnessed together and moved synchronously. However, it is also possible to perform the movements consecutively, for example by accelerating the carriage in the auxiliary activity position towards the winding position before the carriage in the winding position is accelerated into its adjacent position.

[**0055**] Winding assemblies **308** and **309** of the winding assembly pair **350** shown in **FIGS. 9 and 10** have a common center of rotation **351**, which means that first winding assembly **308** and second winding assembly **309** may be rotated about this common center of rotation **351** if necessary, but they are arranged offset by a distance **352** along a common longitudinal axis **353** relative to one another.

[**0056**] For example, when bobbin **306** for first winding assembly **308** is full, winding assembly pair **350** is rotated in the direction of arrow **354** until second winding assembly **309** is positioned opposite bender **305**, so that empty bobbin **306** of second winding assembly **309** may be wound with pipe material **303** and the wound bobbin from first winding assembly **308** may be tied and removed. As is shown in **FIG. 10**, this arrangement particularly enables the winding assembly to be positioned at an angle to the bender if this is helpful for winding. The air cushion means that this may also be performed in other embodiments if required.

[**0057**] The bobbin shown in **FIGS. 11 and 12** has a bobbin core **406** and is arranged on a winding assembly **408**. Winding assembly **408** stands on a base plate **410** together with its carriage **413**. A bender **405**, which feeds bent pipe material **403** to bobbin **406**, is arranged above the bobbin **406**.

[**0058**] The leading edge **460** of the bent pipe material **403** is fed into a pipe securing mechanism **461** on bobbin **406**. To facilitate this, bobbin **406** is equipped with a pipe guide **462**. Whereas pipe securing mechanism **461** is arranged inside winding hub **406**, pipe guide **462** is located on a winding flange **463** that separates winding cylinder **464** from winding assembly **408**. Winding cylinder **464** is also furnished with tying grooves **465**, which extend into winding flange **463** in the form of tying apertures **466**.

[**0059**] Pipe guide **462** ensures that pipe material **403** reliably reaches pipe securing mechanism **461** and is secured there. After the workpiece is secured, pipe guide **462** is retracted inside winding flange **463**, but in an alternative embodiment it may also be removed in any other suitable manner. In this embodiment, pipe guide **462** has an axial guide (not shown), which forms a channel together with the axial outer side of pipe guide **462** and winding flange **463**, which channel also provides reliable axial guidance for the workpiece.

[**0060**] Accordingly, while only a few embodiments of the present invention have been shown and described, it is obvious that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention.

## LIST OF REFERENCE NUMBERS

[**0061**] **1** Processing installation

[**0062**] **2** Material stock basket

[**0063**] **3** Pipe material

[**0064**] **4** Processing stations

[**0065**] **5** Bender

[0066] **6** Bobbin

[0067] **7** Winder

[0068] **8** First winding assembly

[0069] **9** Second winding assembly

[0070] **10** Base plate

[0071] **11** Winding position

[0072] **12** Auxiliary activity position

[0073] **13** First carriage

[0074] **14** Second carriage

[0075] **15** Tying machine

[0076] **16** Tying chuck

[0077] **17** First tying position

[0078] **18** Second tying position

[0079] **19** Direction of rotation of the first winding assembly

[0080] **20** Center of rotation of the first winding assembly

[0081] **21** Second auxiliary activity position

[0082] **22** Direction of rotation of the second winding assembly

[0083] **23** Center of rotation of the second winding assembly

[0084] **24** Return direction of rotation of the second winding assembly

[0085] **25** Return direction of rotation of the first winding assembly

[0086] **105** Bender

[0087] **106** Bobbin

[0088] **107** Winder

[0089] **108** First winding assembly

[0090] **109** Second winding assembly

[0091] **110** Base plate

[0092] **111** Winding position

[0093] **112** Auxiliary activity position

[0094] **113** First carriage

[0095] **114** Second carriage

[0096] **121** Second auxiliary activity position

[0097] **130** Third winding assembly

[0098] **131** Central center of rotation

[0099] **132** Central direction of rotation

[0100] **133** Displacement axis of the first winding assembly

[0101] **134** Displacement axis of the second winding assembly

[0102] **135** Displacement axis of the third winding assembly

[0103] **136** Third carriage

[0104] **203** Pipe material

[0105] **205** Bender

[0106] **206** Bobbin

[0107] **207** Winder

[0108] **208** First winding assembly

[0109] **209** Second winding assembly

[0110] **210** Base plate

[0111] **211** Winding position

[0112] **212** Auxiliary activity position

[0113] **213** First carriage

[0114] **214** Second carriage

[0115] **215** Tying machine

[0116] **221** Second auxiliary activity position

[0117] **240** Displacement axis of the second winding assembly

[0118] **241** Center of rotation of the second winding assembly

[0119] **242** Displacement axis of the first winding assembly

[0120] **243** Center of rotation of the first winding assembly

[0121] **303** Pipe material

[0122] **305** Bender

[0123] **306** Bobbin

[0124] **308** First winding assembly

[0125] **309** Second winding assembly

[0126] **310** Base plate

[0127] **350** Winding assembly pair

[0128] **351** Secondary center of rotation

[0129] **352** Offset

[0130] **353** Common longitudinal axis

[0131] **354** Direction of arrow

[0132] **403** Pipe material

[0133] **405** Bender

[0134] **406** Bobbin

[0135] **408** First winding assembly

[0136] **410** Base plate

[0137] **413** Carriage

[0138] **460** Leading edge of pipe

[0139] **461** Pipe securing mechanism

[0140] **462** Ripe guide

[0141] **463** Winding flange

[0142] **464** Winding cylinder

[0143] **465** Tying grooves

[0144] **466** Tying aperture

**1**. A winder comprising at least two winding assemblies, each winding assembly being disposed on a separate carriage.

**2**. The winder according to claim 1, wherein the carriages have separate drives.

**3**. The winder according to claim 1, wherein the carriages are displaceable about different centers of rotation.

**4**. A winder comprising at least two winding assemblies that are displaceable between a winding position and an auxiliary activity position, said two positions being arranged at an angle less than 180° relative to one another.

**5**. The winder according to claim 4, wherein said two positions are arranged at an angle equal to or less than 90° relative to one another.

**6**. A winder comprising at least one winding assembly that is displaceable and supported on a sliding bearing.

**7**. The winder according to claim 6, wherein the sliding bearing has a sliding surface that is a flooring surface on which said at least one winding assembly is arranged.

**8**. A winder comprising at least one displaceable winding assembly arranged on a carriage that is supported on a floor or base plate by an air cushion, said air cushion being adapted to be switched on and off.

**9**. A winder comprising at least one displaceable winding assembly arranged on a carriage, said carriage having apertures in an underside thereof, through which fluid media can be passed.

**10**. A winder comprising at least one displaceable winding assembly arranged on a carriage, said carriage having apertures in an underside thereof, in which an underpressure is created.

**11**. A winder comprising a winding element for winding a workpiece, said winding element comprising:

at least one winding cylinder;

at least one winding flange;

at least one workpiece securing mechanism, and

a workpiece guide that is provided radially inside an outer radius of the winding flange.

**12**. The winder according to claim 11, wherein the workpiece guide is removable from the winding flange.

**13**. The winder according to claim 11, wherein the workpiece guide is guided on the winding flange.

**14**. The winder according to claim 11, wherein the workpiece guide is displaceable into and out of the winding flange.

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