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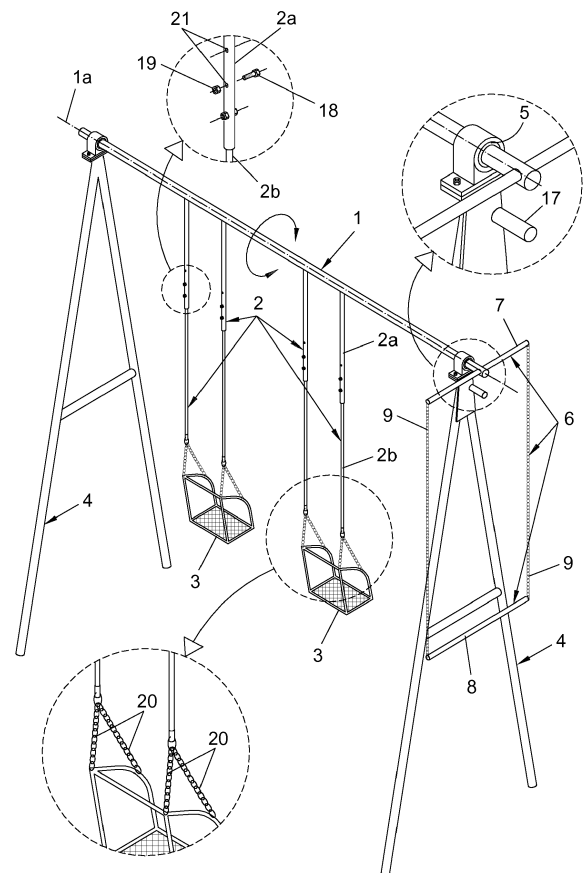
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(54) SAFETY DEVICE FOR DRIVING SWINGS

(57) The swings comprise pairs of elongated structures (2) and seat platforms (3) that hang from said elongated structures (2). The safety device comprises a horizontal cross-member (1) configured to rotate on the longitudinal direction thereof by means of a drive mechanism, wherein the elongated structures (2) are integrally joined to the horizontal cross-member (1), and wherein the rotation of the horizontal cross-member (1) drives the swings, thereby generating a pendular motion of the same. Thus, the purpose of the safety device of the invention is to prevent sudden shakes or jolts or in the driving of the swings, such that the driving of the swings is ensured without danger to the users, especially when small children are swinging on them. It is worth mentioning that the device of the invention is also applicable to wooden swings.

**FIG. 1**

Description

Object of the invention

[0001] The present invention, as expressed in the title of the present specification, relates to a safety device for driving swings, the purpose of which is to prevent sudden shakes or jolts in the driving of the swings, such that with the device of the invention the driving of the swings is ensured without danger to the user, especially when small children are swinging on them. Thus, the device of the invention is applicable to the safety of swings to prevent jolts, especially for small children during the driving of the swings, and, furthermore, it is worth pointing out the fact that with the device of the invention it is also possible to stop the mobility of the swings in a smooth, quick and safe way whenever there is a need to do so.

Technical problem to be solved and background of the invention

[0002] Swings basically comprise pairs of elongated elements in combination with seat platforms in which users sit to swing and thus enjoy the swings, and thus said swings normally hang from a support structure made up of two vertical frames in combination with a horizontal bar to which the upper ends of the pairs of elongated elements are anchored, elongated elements such as chains or swing lines, the lower ends of which are connected to the seat platform.

[0003] It is also possible for driving of the swing to be done by another person; for example when the users are children who have not yet learned how to initiate the swinging action by themselves. In these cases a person pushes the swing, pushing the seat platform or the users themselves each time the swing moves backwards during the swinging or pendular motion with continuous forward and backward motion.

[0004] In these cases, the controlled driving of the swing can be difficult, especially when small children are using the swings, usually resulting in a continuous driving of the swing that is not progressive or uniform, which could lead to the instability of the child supported by the seat platform, causing the child to fall to the ground. Likewise, when it is necessary to immediately stop the swing, this act must be done abruptly and is therefore dangerous for the child.

[0005] The American patent with publication number US2008/0090667 relates to a manual swing drive mechanism to drive swings, wherein each one of these swings comprises a seat platform and flexible swing lines that form part of a main structure that at a lower end connects to the seat platform and at an upper end the main structure couples to an articulated connection located below a horizontal bar that supports the set of the swing that hangs from said articulated connection.

[0006] Furthermore, the main structure of the swing includes a cross-member located below the articulated

connection of the main structure.

[0007] Said cross-member is joined to the flexible swing lines, interrupting the continuity thereof, such that integrally joined to said cross-member is an arm to which hanging chains connect, with lower handles which a person is able to use to push and/or stop (slow) the swing with their hands, grabbing said lower handles so that during the driving of the swing said cross-member has a swinging motion, distanced from the articulated connection that hangs from the main structure of the swing.

[0008] The distancing of the cross-member with respect to the articulated connection makes the driving and slowing of the set of swings difficult, precisely due to said distancing, and also because when acting on the lower handles to drive or slow the swing, there is a translational motion of the cross-member that makes the driving and especially the slowing of the swing difficult.

[0009] Another drawback is that when it is necessary to stop the swing because of an emergency with regard to the child that is on the swing, it is not possible to immediately stop said swing due to the fact that the swing lines are flexible and, therefore, the inertia caused by the swinging motion prevents the immediate stopping of the seat platform on which the child is swinging, thereby resulting in a dangerous situation by delaying the stopping of the swing.

[0010] Said inertia also makes the stopping of the arm and cross-member set difficult, such that said inertia also tends to displace the user who is handling the actuating device, all of which is due to the inertial translational motion that is generated in said arm and cross-member set, which is separated by a rotational radial distance with respect to the articulated connection.

Description of the invention

[0011] In order to meet the aims as well as to avoid the disadvantages mentioned in the preceding paragraphs, the invention proposes a safety device for driving swings, wherein the swings in principle comprise pairs of elongated structures and seat platforms that hang from said elongated structures, on each one of which a user can sit to enjoy the act of swinging.

[0012] The safety device of the invention comprises a horizontal cross-member configured to rotate on the longitudinal axis thereof by means of a drive mechanism.

[0013] The elongated structures of the swings are integrally joined to the horizontal cross-member, wherein the rotation of the horizontal cross-member drives the swings, generating a pendular motion of the same, highlighting the fact that the elongated structures of the swings comprise a rigid structure that maintains their stiffness at all times, both in the mobility of the swings and in the static positions thereof, which substantially facilitates the driving and slowing of the swings, also assisted by the fact that said elongated structures are directly joined to the articulated connection corresponding to the horizontal cross-member.

[0014] In a first embodiment of the invention, the safety device comprises at least a first drive mechanism that includes:

- an upper bar joined to an end section of the horizontal cross-member.
- a lower gripping bar in the form of a handle.
- two side elements that join the ends of the upper bar and the lower gripping bar.

[0015] In a second embodiment of the invention, the safety device comprises at least a second drive mechanism that includes:

- an upper bar joined to an end section of the horizontal cross-member.
- a wheel.
- two side elements that join the ends of the upper bar to two opposite connections of the wheel, wherein the rotation of the wheel makes the horizontal cross-member turn.

[0016] The wheel of the second drive mechanism comprises a lower bar that includes the opposite connections of the wheel to which the ends of the side elements are connected.

[0017] The wheel further comprises an annular body for gripping and a front plate joined to the annular body for gripping. In one embodiment of the invention, the opposite connections of the wheel comprise rings.

[0018] The wheel is coupled to a fixed shaft, wherein said wheel can rotate around said fixed shaft. In one embodiment of the invention, the fixed shaft is joined to a support joined to one of the two side frames that support the device of the invention.

[0019] The device of the invention further comprises a fixed stop that limits the rotation of the horizontal cross-member. Said limited rotation of the horizontal cross-member comprises the contact of the upper bar on the fixed stop, which in one embodiment of the invention is located below the upper bar.

[0020] The elongated structures of the swings comprise pairs of tubes with a telescopic coupling that includes means for regulating and fastening the length of said elongated structures.

[0021] Said means for regulating the length of the elongated structures comprise holes facing each other located on the pairs of tubes with telescopic coupling, where anchoring screws are inserted in said holes facing each other.

[0022] The horizontal cross-member is supported by end supports that form part of the side frames, where, in one embodiment of the invention, the horizontal cross-member is supported by said end supports with bearings interposed where the end sections of the horizontal cross-member are embedded, thereby facilitating the rotation of the horizontal cross-member and generally achieving improved functioning of the safety device of

the invention.

[0023] Considering the embodiment of the first drive mechanism, the possibility is provided that the lower gripping bar may be coupled in an articulate way by the center thereof to a fixed shaft joined to one of the frames.

[0024] With the device of the invention, one can act directly on the articulated connection from which the set of swings hangs, corresponding to the horizontal cross-member, thereby achieving precise and quick control, both for the driving and for the slowing of the swings; unlike the American patent with publication number US2008/0090667, wherein the driving and slowing of the swings is more difficult, slower and less precise, due precisely to the difference of the fact that in said patent the articulated connection is not directly acted upon, but rather actuation takes place on a part of the flexible swing lines through a cross-member joined to said flexible swing lines. Said difficulty, slowness and imprecision for driving and slowing the swings is compounded by the flexible structure of the swing lines.

[0025] For the purpose of helping to make this specification more readily understandable, a set of drawings constituting an integral part of the same has been included below, wherein by way of illustration and not limitation the object of the invention has been represented.

Description of the figures

[0026]

Figure 1 shows a perspective view of the safety device for driving swings, object of the invention. A first drive mechanism of the swing is shown in detail.

Figure 2 shows a profile view of the safety device of the invention which includes the first drive mechanism.

Figure 3 shows another profile view of the device of the invention

Figure 4 shows a profile view of the safety device for driving swings, wherein a second drive mechanism of the swing is shown in detail which is different from the one shown in the two previous figures.

Figure 5 shows an elevation view of a part of the second drive mechanism of the swing.

Figure 6 shows a cross-sectional view of a part of the second drive mechanism of the swings according to the A-B line of figure 5.

Description of an exemplary embodiment of the invention

[0027] Considering the numbering system used in the figures, the safety device for driving swings comprises a horizontal cross-member 1, with rotational mobility around the longitudinal axis 1a thereof, wherein the rotation of said horizontal cross-member 1 is done by means of a drive mechanism.

[0028] Fixed on said horizontal cross-member 1 are

first ends of pairs of elongated structures 2 that have second ends from which seat platforms 3 hang, in which users sit to be able to swing, either by themselves or by means of a drive mechanism.

[0029] In the embodiment shown in the figures, sections of horizontal crossmembers 1 are coupled to end supports of the side frames 4 with the interposition of bearings 5, such that the incorporation of said bearings 5 facilitates the rotation of the horizontal cross-member 1 during the pendular swinging of the swings fixed to said horizontal cross-member 1.

[0030] In a first embodiment of the invention, the horizontal cross-member 1 rotates by means of the transmission of a first drive mechanism 6 that comprises an upper bar 7 joined to an end section of the horizontal cross-member 1; a lower gripping bar 8 in the shape of a handle, and two side elements 9 that join the ends of the upper bar 8 and the lower gripping bar 8. In the figures, said side elements 9 comprise chains.

[0031] In a second embodiment of the invention, the safety device comprises a second drive mechanism 10 that comprises an upper bar 7' joined to an end section of the horizontal cross-member 1; a rotational wheel 11 and two side elements 9' that join the ends of the upper bar 7' to two opposite connections 12 of the wheel 11. In this second embodiment, the side elements 9' also comprise chains.

[0032] Pursuant to the previous paragraph, the wheel 11 includes an annular body for gripping 13, a front plate 14 joined to the annular body for gripping 13 and a lower bar 8' joined to the front plate 14, wherein the lower bar 8' includes the opposite connections 12 of the wheel 11 to which the ends of the side elements 9' are connected. In one embodiment, said opposite connections 12 comprise rings.

[0033] The wheel 11 is coupled to a fixed shaft 15 joined to one end of a support 16 joined to one of the side frames 4 as shown more clearly in figures 4 and 5.

[0034] In this situation, when a user rotates the wheel 11, grabbing it with their hands by the annular body for gripping 13, the lower bar 8' takes on different inclined positions in accordance with other inclined positions parallel to the upper bar 7' and obviously in this rotational operation of the wheel 11, the rotation is transmitted to the horizontal cross-member 1, driving the swings and generating a pendular motion of the same.

[0035] The wheel 11 makes the swings more appealing to children and is also more easily managed and facilitates the driving of the swings.

[0036] In the same way, in the embodiment of the first drive mechanism 6 for carrying out the rotation of the horizontal cross-member 1, the user grabs the lower gripping bar 8 with their hands, making a movement that is transmitted to the upper bar 6 and obviously to the horizontal cross-member 1, generating in the same a rotational movement that drives the swings, also generating a pendular motion of the same.

[0037] Considering the first drive mechanism 6, it is

possible to adapt it to the height required by the user who is going to provide the drive. To do so, the side elements 9 can be shorten or lengthened, thereby placing the lower gripping bar 8 at a higher or lower height.

[0038] In one embodiment, the side elements 9 form part of a single closed-loop chain that passes through the inside of the upper bar 7 and lower bar 8 when they have a tubular configuration, such that in this case the first drive mechanism 6 is adapted to the height of the user who drives the swing, shortening or lengthening the closed-loop chain.

[0039] On the other hand, in order to limit the angular amplitude of the rotation of the horizontal cross-member 1, and therefore the angular amplitude of the swings, a fixed stop 17 is provided on which the upper bar 7, 7' makes contact in the position of maximum amplitude. In one embodiment of the invention, said maximum angular amplitude is 45°. The fixed stop 17 is joined to an upper part of at least one of the side frames 4, and at the same time said fixed stop 17 is situated below the upper bar 7, 7' joined to the horizontal cross-member 1.

[0040] The elongated structures 2 of the swings comprise pairs of telescopic tubes 2a, 2b, such that each pair of them is immobilized in relation to one another by means of anchoring screws 18 associated with nuts 19 to ensure the immobilization thereof. One end of each pair of telescopic tubes 2a, 2b is fastened at an upper end to the horizontal cross-member 1, while the seat platform 3 of the swing is coupled to the other opposite lower end of each pair of telescopic tubes 2a, 2b, either directly or by means of a chain structure 20.

[0041] In the embodiment shown in the figures, each pair of telescopic tubes 2a, 2b comprises a first tube 2a of a greater diameter fixed to the horizontal cross-member 1 and a second tube 2b to which the seat platform 3 is coupled. The telescopic tubes 2a, 2b have a succession of holes 21 facing one another in order to be able to change the length of the elongated structures of the swings, such that through said facing holes 21 the anchoring screws 18 are inserted to fix the desired length of the elongated structures of the swings.

[0042] Considering the embodiment of the first drive mechanism (6), the possibility is provided that the lower gripping bar (8) may be coupled in an articulate way by the center thereof to a fixed shaft (15') joined to one of the frames (4).

[0043] On the other hand, a first option has been envisaged which includes a single drive mechanism 6, 10 placed in correspondence with an end of the horizontal cross-member 1; and a second option which includes two drive mechanisms 6, 10 placed in correspondence with the two ends of the horizontal cross-member 1.

[0044] The device of the invention is also applicable to wooden swings that are normally mounted in parks and gardens, such that in these cases, in order to mount the device of the invention, all that needs to be done is to first disassemble the horizontal bar from which the conventional swings hang, and then mount the horizontal

cross-member 1 together with the bearings 5 and elongated structures 2 thereof joined to said horizontal cross-member 1. To do so, on the upper part of the wooden side frames, supports are fixed to be able to better couple the horizontal cross-member 1 together with the bearings thereof; the operation being relatively simple and fast, since it is easy to work with wood. It is worth noting that 80% of parks and gardens have swings made of wood.

Claims

1. **A safety device for driving swings** wherein the swings comprise pairs of elongated structures (2) and seat platforms (3) that hang from said elongated structures (2), **characterized in that:**

- it comprises a horizontal cross-member (1) configured to rotate around the longitudinal axis (1a) thereof by means of a drive mechanism;
- the elongated structures (2) of the swings are integrally joined to the horizontal cross-member (1), wherein the rotation of the horizontal cross-member (1) drives the swings, thereby generating a pendular motion of the same;
- the elongated structures (2) of the swings comprise a rigid structure.

2. **The safety device for driving swings** according to claim 1, **characterized in that** it comprises at least a first drive mechanism (6) that includes:

- an upper bar (7) joined to an end section of the horizontal cross-member (1);
- a lower gripping bar (8) in the form of a handle.
- two side elements (9) that join the ends of the upper bar (7) and the lower gripping bar (8).

3. **The safety device for driving swings** according to claim 1, **characterized in that** it comprises at least a second drive mechanism (10) that includes:

- an upper bar (7') joined to an end section of the horizontal cross-member (1);
- a wheel (11);
- two side elements (9') that join the ends of the upper bar (7') to two opposite connections (12) of the wheel (11), wherein the rotation of the wheel (11) makes the horizontal cross-member turn (1).

4. **The safety device for driving swings** according to claim 3, **characterized in that** the wheel (11) comprises a lower bar (8') that includes the opposite connections (12) of the wheel (11) to which the ends of the side elements (9') are connected.

5. **The safety device for driving swings** according to

claim 4, **characterized in that** the wheel (11) further comprises an annular body for gripping (13) and a front plate (14) joined to the annular body for gripping (13), wherein the lower bar (8') is joined to the front plate (14).

6. **The safety device for driving swings** according to any one of the preceding claims 3 to 5, **characterized in that** opposite connections (12) comprise rings.

7. **The safety device for driving swings** according to any one of claims 3 to 6, **characterized in that** the wheel (11) is coupled to a fixed shaft (15), wherein said wheel (11) can rotate around said fixed shaft (15).

8. **The safety device for driving swings** according to any one of the preceding claims 2 or 3, **characterized in that** it comprises a fixed stop (17) that limits the rotation of the horizontal cross-member (1).

9. **The safety device for driving swings** according to claim 8, **characterized in that** the limited rotation of the horizontal cross-member (1) comprises the contact of the upper bar (7, 7') on the fixed stop (17).

10. **The safety device for driving swings** according to any one of the preceding claims 8 or 9, **characterized in that** the fixed stop (17) is located below the upper bar (7, 7').

11. **The safety device for driving swings** according to claim 1, **characterized in that** the elongated structures (2) of the swings comprise pairs of tubes (2a), (2b) with a telescopic coupling that include means for regulating and fastening the length of said elongated structures (2).

12. **The safety device for driving swings** according to claim 11, **characterized in that** the means for regulating the length of the elongated structures (2) comprise holes (21) facing each other located on the pairs of tubes (2a, 2b) with telescopic coupling, wherein anchoring screws (18) are inserted in said holes (21) facing each other.

13. **The safety device for driving swings** according to claim 1, **characterized in that** the horizontal cross-member (1) is supported by end supports.

14. **The safety device for driving swings** according to claim 13, **characterized in that** the horizontal cross-member (1) is supported by end supports with bearings (5) interposed, wherein end sections of the horizontal cross-member (1) are embedded.

15. **The safety device for driving swings**, according

to claim 2, **characterized in that** the lower gripping bar (8) is coupled in an articulate way by the center thereof to a fixed shaft (15') joined to one of the frames (4).

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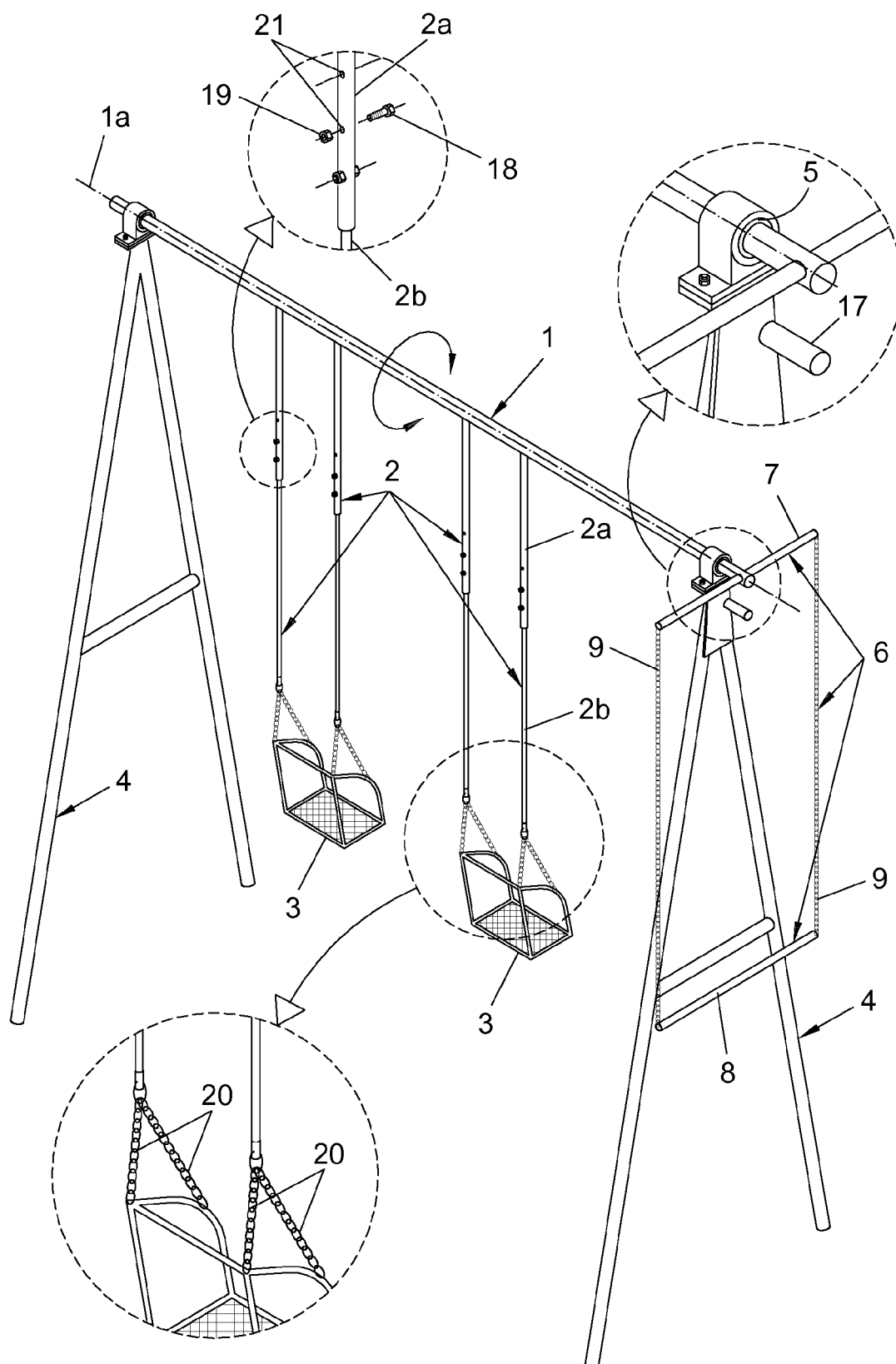


FIG. 1

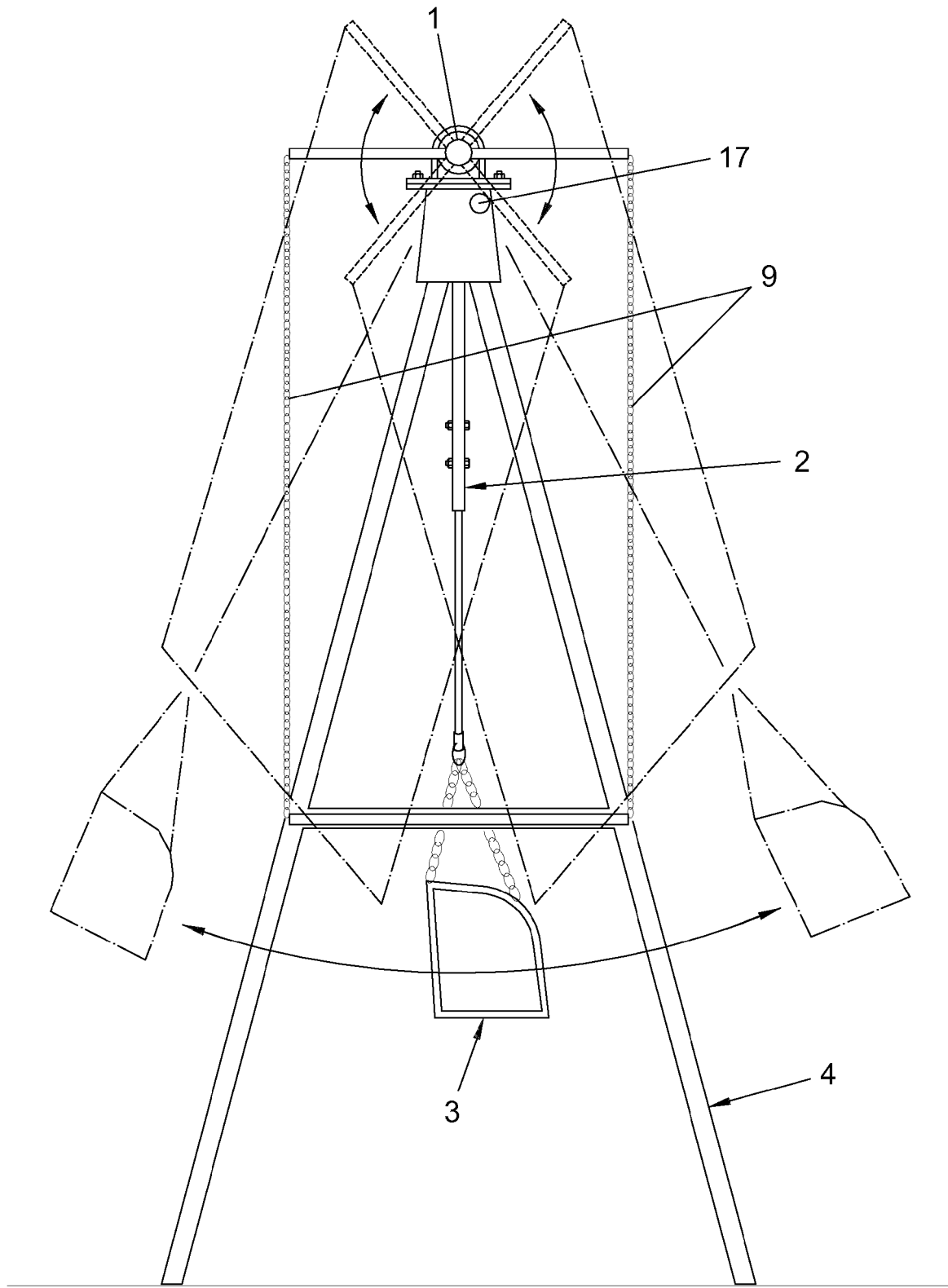


FIG. 2

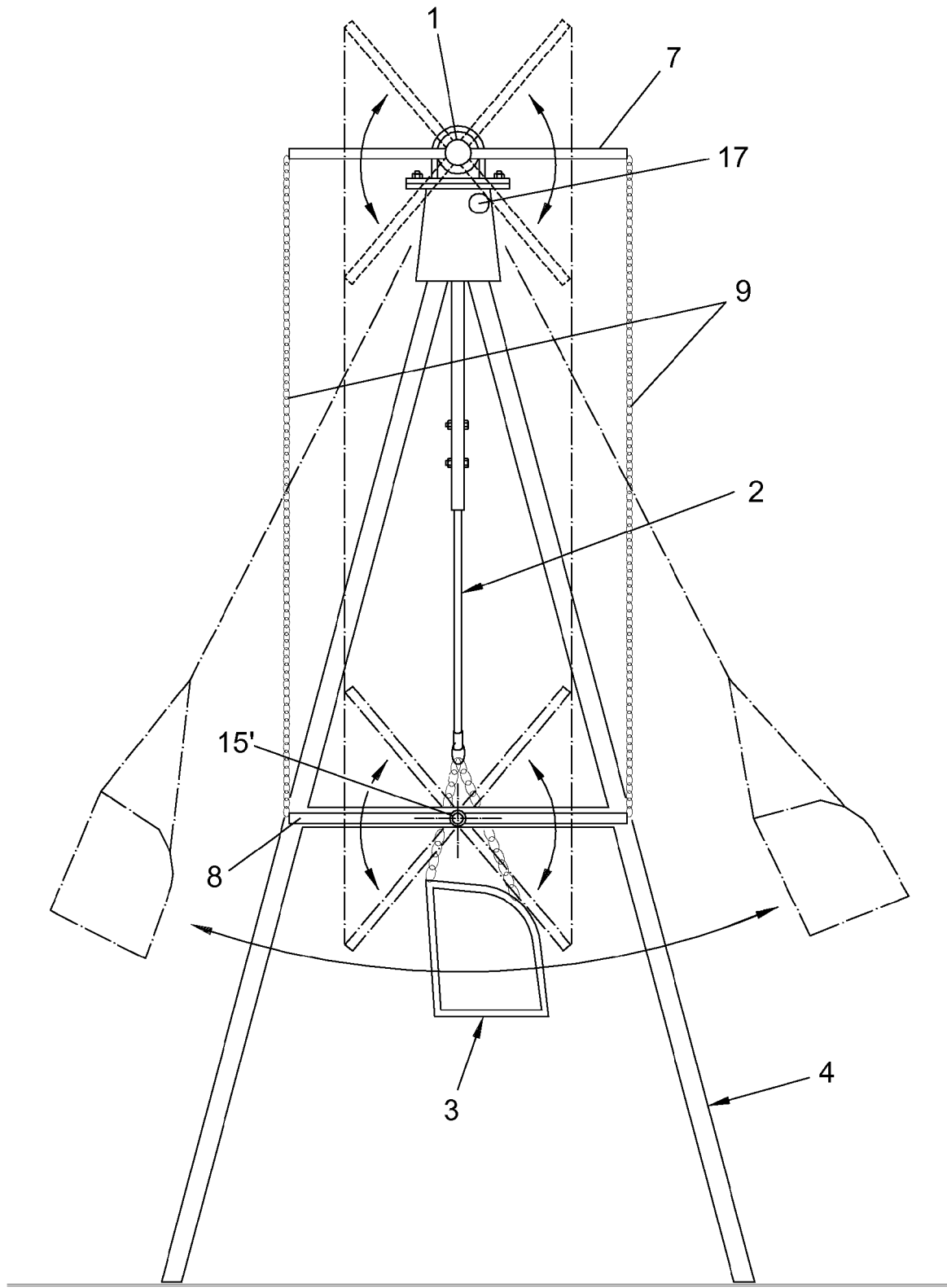


FIG. 3

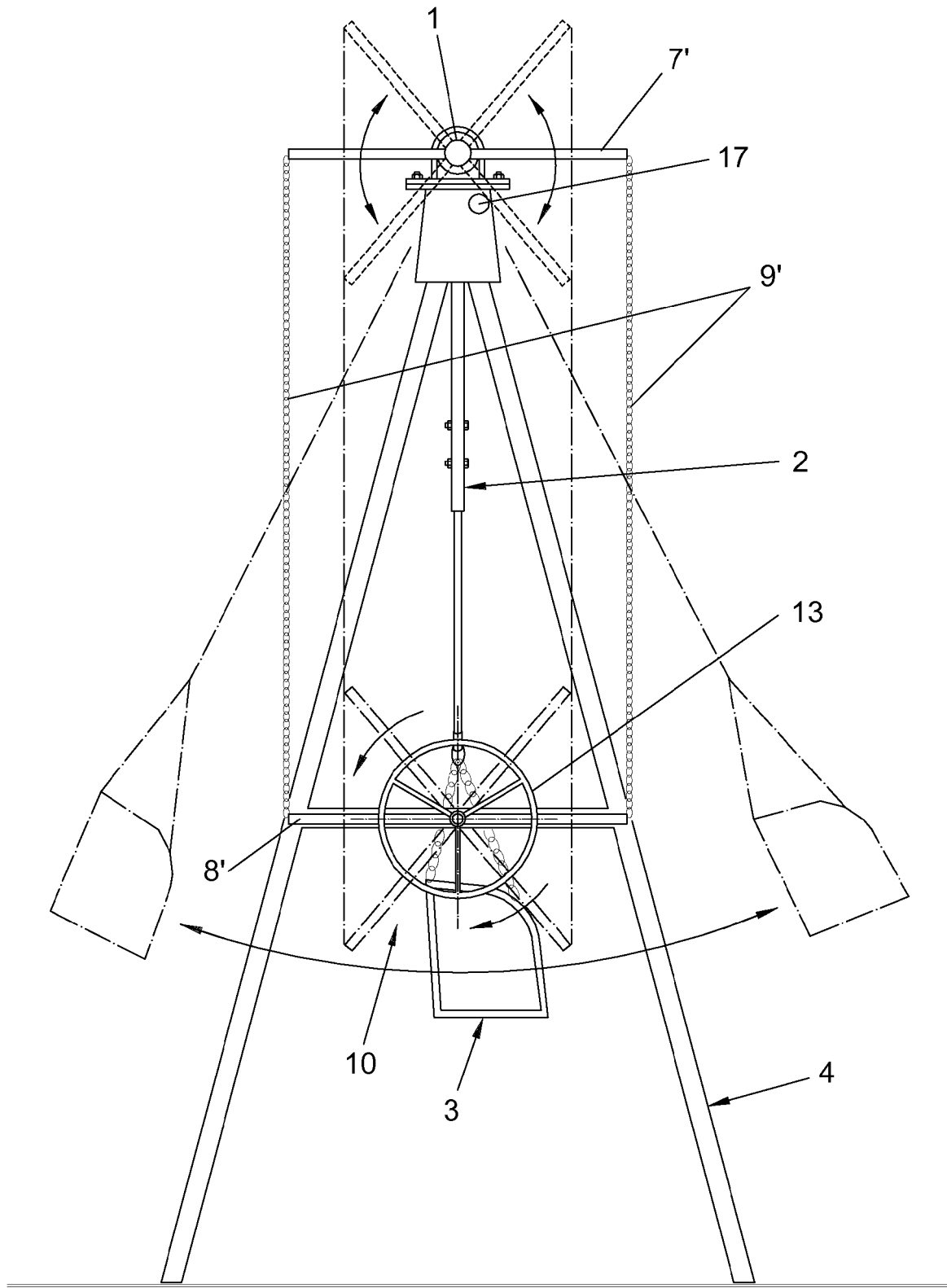


FIG. 4

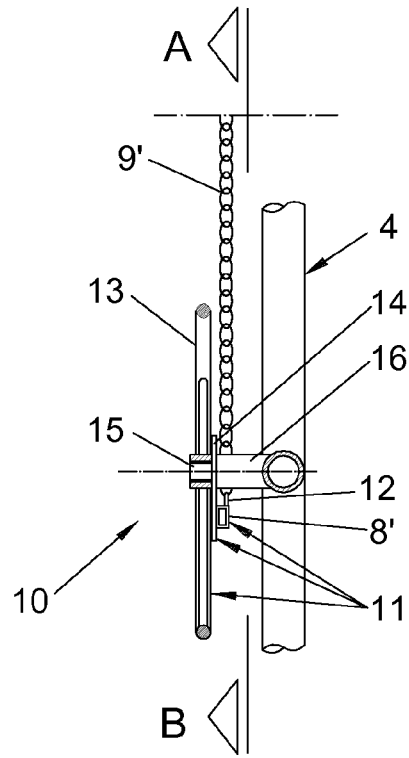


FIG. 5

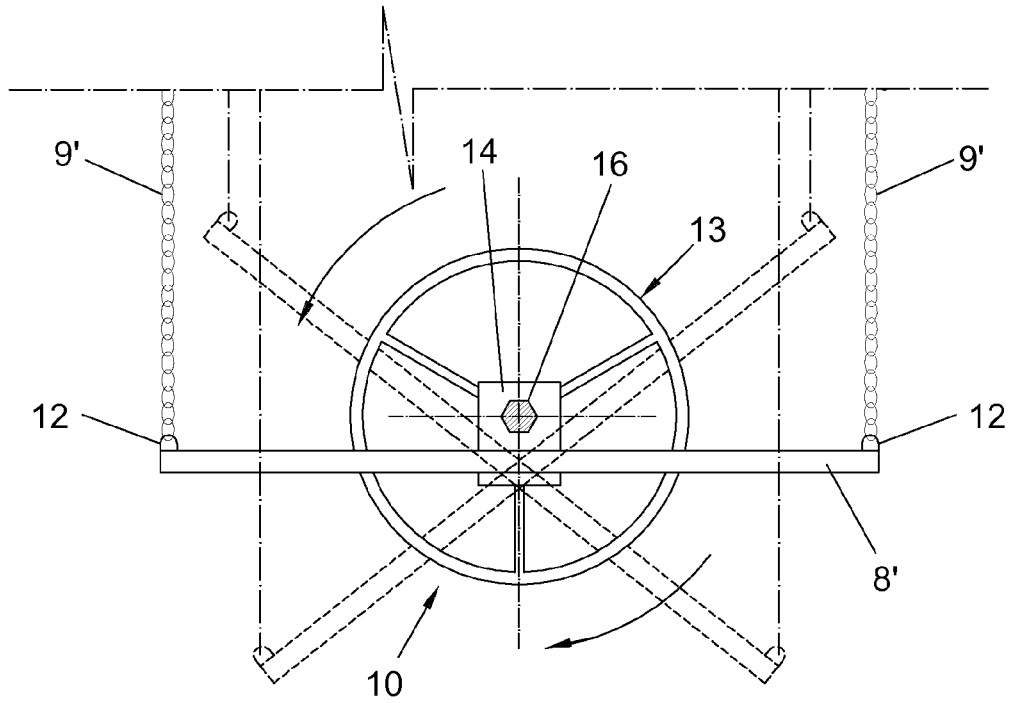


FIG. 6

LINE A-B



EUROPEAN SEARCH REPORT

Application Number
EP 17 38 2846

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Place of search Munich		Date of completion of the search 12 June 2018	Examiner Bagarry, Damien
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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