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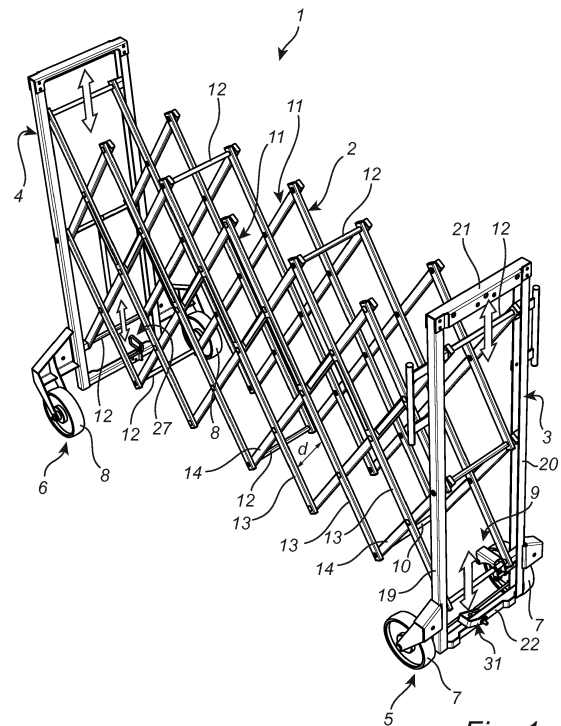
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(54) **A PORTABLE SCISSOR GATE**

(57) The invention relates to a portable scissor gate (1) comprising a grid (2), which is collapsible, wherein the length of the portable scissor gate is adjustable between a maximum length and a minimum length by collapsing and extending the portable scissor gate, a first end frame (3) connected with a first end of the grid, and a second end frame (4) connected with a second end of the grid. Each end frame comprises a pair of ground wheels (5, 6), wherein the wheels (7, 8) of each pair are spaced transversally of the portable scissor gate, wherein the first end frame is provided with a stop element (9) protruding towards the second end frame. The stop element is operable between an active position and an inactive position. The grid is provided with a stop portion (10) arranged to, when collapsing the portable scissor gate while the stop element is in its active position, engage with the stop element such that the collapsing movement is stopped before the portable scissor gate is fully collapsed.



**Fig. 1**

## Description

### FIELD OF THE INVENTION

**[0001]** The present invention relates to the field of portable scissor gates.

### BACKGROUND OF THE INVENTION

**[0002]** A portable scissor gate is a gate that is collapsible, i.e. it has two opposites states, one where it is collapsed to its minimum length and one where it is extended to its maximum length. The overall construction of the portable scissor gate, for instance as shown at the web page <http://blockadergates.com/low-portable-folding-steel-security-gates/>, is a grid built from elongated bars which have been rotatably interconnected thereby providing the collapsibility; vertical end posts to which the grid has been attached, and ground wheels arranged in pairs at both end posts. In order to provide a robust portable scissor gate, it is typically made of steel and being too heavy to be easily carried, and therefore the wheels are provided to enable the portable scissor gate to be pushed or pulled. In order to build long fences or cover a very wide opening, several scissors gates are connected to each other.

**[0003]** For storage purposes the aim is to obtain as small collapsed width as possible. Not the least when several portable scissor gates are interconnected. However, since the construction is most efficient from a collapsible perspective, a single collapsed portable scissor gate has a tendency to turn over when being pushed due to its small length, in particular on a rough ground.

### SUMMARY OF THE INVENTION

**[0004]** It would be advantageous to solve the above-mentioned problem. In a first aspect of the invention there is presented a portable scissor gate comprising a grid, which is collapsible, wherein the length of the portable scissor gate is adjustable between a maximum length and a minimum length by collapsing and extending the portable scissor gate, a first end frame connected with a first end of the grid, and a second end frame connected with a second end of the grid. Each end frame comprises a pair of ground wheels, wherein the wheels of each pair are spaced transversally of the portable scissor gate. The first end frame is provided with a stop element protruding towards the second end frame, wherein the stop element is operable between an active position and an inactive position. The grid is provided with a stop portion arranged to, when collapsing the portable scissor gate while the stop element is in its active position, engage with the stop element such that the collapsing movement is stopped before the portable scissor gate is fully collapsed. Consequently, by means of the stop element the portable scissor gate is prevented from reaching its minimum length. Due to the larger length the risk of the portable

scissor gate turning over is reduced.

**[0005]** In accordance with an embodiment of the portable scissor gate, the stop element comprises a pivoting arm arranged to engage with the stop portion and arranged to pivot between the active position and the inactive position. This is a simple and efficient way of providing the two-position function.

**[0006]** In accordance with an embodiment of the portable scissor gate, the first end frame comprises opposite side members, extending vertically in an operable position of the portable scissor gate, and a transverse member connecting the side members, wherein each side member is provided with a groove facing the opposite side member, wherein the stop element comprises a support rod extending transversally of the portable scissor gate between the side members, wherein the support rod is vertically slidably received in the respective groove at its ends.

**[0007]** In accordance with an embodiment of the portable scissor gate, the pivoting arm is pivotally attached to the support rod.

**[0008]** In accordance with an embodiment of the portable scissor gate, the pivoting arm comprises a transverse protrusion extending into at least one of the grooves, and having a width which is smaller than a width of the groove, wherein a centre axis of the transverse protrusion, which centre axis extends transversally of the portable scissor gate, is eccentric relative to the support bar, thereby causing the transverse protrusion to move across the width of the groove when the pivoting arm is operated between its active and inactive positions, and thereby limiting the pivoting movement of the pivoting arm.

**[0009]** In accordance with an embodiment of the portable scissor gate, the support rod is attached to the first end of the grid.

**[0010]** In accordance with an embodiment of the portable scissor gate, it comprises an inhibition element, which is arranged at the second end frame, and which is switchable between an inhibition position where it is arranged to engage with the stop element of an adjacent portable scissor gate when the adjacent portable scissor gate is collapsed, and an idle position where it does not engage with the stop element of the adjacent portable scissor gate, wherein the inhibition element, in the inhibition position, is arranged to operate the stop element of the adjacent portable scissor gate from its active position to its inactive position during collapsing of the adjacent portable scissor gate, thereby enabling the adjacent portable scissor gate to reach its minimum length. The inhibition element provides for an automated inhibition function when two or more portable scissor gates are attached to each other. By first operating the inhibition element to the inhibition position, such as before interconnecting the portable scissor gates, or before collapsing one or more of them, the inhibition element moves the stop element to its inactive position, either already at the interconnection or during the collapsing operation.

**[0011]** In accordance with an embodiment of the portable scissor gate, the pivoting arm comprises an inhibition portion extending downwards, the inhibition portion being arranged to engage with the inhibition element of an adjacent portable scissor gate.

**[0012]** In accordance with an embodiment of the portable scissor gate, the inhibition element is pivotally mounted at the second end frame, and is pivotable between the idle position and the inhibition position. Thereby, a simple operation of the inhibition element between its two positions is provided.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0013]** The invention will now be described in more detail and with reference to the appended drawings in which:

Fig. 1 is a perspective view of an embodiment of a portable scissor gate according to the present invention;

Fig. 2 is a side view of the portable scissor gate shown in Fig. 1;

Fig. 3 is an enlarged end view of a portion of the portable scissor gate shown in Fig. 1;

Fig. 4 is an enlarged perspective view of a portion of the portable scissor gate shown in Fig. 1;

Fig. 5 is an enlarged portion of Fig. 2;

Fig. 6 is a perspective view of a system of several portable scissor gates of the embodiment shown in Fig. 1;

Fig. 7 is an enlarged portion of Fig. 6;

Fig. 8 is a side view of the portable scissor gate shown in Fig. 1 in a collapsed state;

Fig. 9 is an enlarged perspective view of a portion of the portable scissor gate shown in Fig. 1;

Fig. 10 is a side view of the portable scissor gate shown in Fig. 1 in an alternative collapsed state; and

Fig. 11 is a perspective view of a portion of the system shown in Fig. 6.

#### DESCRIPTION OF EMBODIMENTS

**[0014]** An embodiment of the portable scissor gate 1 according to the present invention comprises a grid 2, a first end frame 3 connected with a first end of the grid 2, and a second end frame 4 connected with a second end of the grid 2. Each end frame 3, 4 comprises a pair of ground wheels 5, 6. The wheels 7, 8 of each pair 5, 6 are spaced transversally of the portable scissor gate 1. Words relating to orientation in space have been defined with respect to the portable scissor gate 1 being in an operable position, such as shown in Fig. 1, i.e. a position where it stands up on its wheels 7, 8. The portable scissor gate 1 is portable to such an extent that it can be rolled about, mounted and demounted by a person, but it typically requires several persons to be lifted.

**[0015]** The portable scissor gate 1 is extendable/col-

lapsible, and the length of the portable scissor gate 1 is adjustable between a maximum length and a minimum length by collapsing and extending the portable scissor gate 1. The maximum length is, for instance shown in Figs. 1 and 2, while the minimum length, for instance, is shown in Fig. 8.

**[0016]** The first end frame 3 is provided with a stop element 9 protruding towards the second end frame 4, wherein the stop element 9 is operable between an active position and an inactive position, wherein the grid 2 is provided with a stop portion 10 arranged to, when collapsing the portable scissor gate 1 while the stop element 9 is in its active position, engage with the stop element 9 such that the collapsing movement is stopped before the portable scissor gate 1 is fully collapsed. In other words, when the stop element 9 is in the active position, the portable scissor gate 1 becomes semi-collapsed.

**[0017]** The grid 2 comprises two grid sections 11, arranged in parallel with each other and laterally spaced. The grid sections 11 are attached to each other by means of transverse connection bars 12. Each grid section comprises two sets of several grid bars 13, 14, where the grid bars 13, 14 of each set are parallel to each other and arranged with a space between them, and where grid bars 13 of one set extends obliquely to the grid bars 14 of the other set to form the grid structure, and they are rotatably attached to the grid bars 14 of the other set. Thereby, the grid 2 is extendable/collapsible. When collapsing the portable scissor gate 1, and thus the grid 2, from an extended state, the angle between the grid bars 13 of one set of grid bars and the grid bars of the other set of grid bars decreases. Similarly, a distance  $d$  between the grid bars 13, 14 of each set of grid bars in a direction perpendicular of the grid bars decreases down to almost zero in the fully collapsed state, which is shown in Fig. 8.

**[0018]** As shown, inter alia, in Fig. 4, the stop element 9 comprises a pivoting arm 15 arranged to engage with the stop portion 10 and arranged to pivot between the active position and the inactive position. The active position is a default position, which the pivoting arm takes if not forced to pivot. The pivoting arm 15 pivots upwards from the active position to the inactive position, as will be further described below. The pivoting arm 15 has a front end 16 with a recessed portion 17, which is arranged to receive the stop portion 10. The stop portion 10 is a middle portion of one of the transverse connection bars 12, which is located at a bottom of the grid 2.

**[0019]** The stop element 9 further comprises a support rod 18, which also is one of the transverse connection bars 12 and is located at the bottom of the grid 2. More particularly, the support rod 18 is the end most transverse connection rod 12 at the bottom of the grid 2, at a first end of the grid 2 at the first end frame 3, while the transverse connection bar 12 comprising the stop portion 10 is the second end most transverse connection bar 12 at the bottom of the grid 2 at the first end thereof. The pivoting arm 15 is pivotally attached to the support rod 18

at a rear end 24 of the pivoting arm 15, i.e. it rotates about the support rod 18.

**[0020]** The first end frame 3 comprises opposite side members 19, 20, extending vertically in an operable position of the portable scissor gate 1, a top transverse member 21, and a bottom transverse member 22. The top and bottom transverse members 21, 22 are connected with the side members 19, 20 at the top and bottom, respectively, of the first end frame 3. Each side member 19, 20 is provided with a groove 23 facing the opposite side member 20, 19. The opposite ends of the support rod 18 extend into the grooves 23, and they are vertically slidable in the grooves 23.

**[0021]** The pivoting arm 15 further comprises an inhibition portion 25 extending downwards at the rear end 24 of the pivoting arm 15, and a transverse protrusion 26 extending into at least one of the grooves 23. Here, the transverse protrusion 26 is a pin. The transverse protrusion 26 has a width which is smaller than a width of the groove 23. A centre axis of the transverse protrusion 26, which centre axis, thus, extends transversally of the portable scissor gate 1, is eccentric relative to the support bar 18, thereby causing the transverse protrusion 26 to move across the width of the groove 23 when the pivoting arm 15 is operated between its active and inactive positions. Thereby, the pivoting movement of the pivoting arm 15 is limited.

**[0022]** As shown in Fig. 10, when a user is collapsing the portable scissor gate 1 from an extended position as shown in several of the figures, the support bar 24 moves downwards in the grooves 23, while the stop portion 10 moves closer to the stop element 9 as well as downwards. The downward movements are caused by the grid 2 being vertically fixed by a middle transverse connection bar 12 at each end thereof, being fixedly attached to the respective end frame 3, 4 at approximately half the height of the end frame 3, 4. During the collapse the grid bars 13, 14 becomes more and more vertical, and the vertical position of the ends of each grid bar 13, 14 consequently moving away from the middle point of the grid bar 13, 14.

**[0023]** Eventually, the stop portion 10 engages with the recess 17 of the front end 16 of the pivoting arm 15, and halts the collapsing movement. The portable scissor gate 1 is now semi-collapsed, and more particularly it is substantially, but not fully, collapsed. Thus, the length of the portable scissor gate 1 is longer than the minimum length shown in Fig. 8, and the portable scissor gate 1 can be pushed around with a reduced risk of turning over compared to if it had been fully collapsed.

**[0024]** In some situations, though, such as then two or more portable scissor gates 1 have been connected with each other in a row, it is desirable to be able to completely collapse the portable scissor gate 1. This can of course be obtained by manually lifting the first end of the pivoting arm 15, and then finish the collapsing operation to the fully collapsed state. However, it would be advantageous to have a more automatic mechanism eliminating that user operation. To solve that problem the portable scissor

gate 1 further comprises an inhibition element 27, which is arranged at the second end frame 4, and which is switchable between an inhibition position, shown in Fig. 5, where it is arranged to engage with the stop element 9 of an adjacent portable scissor gate 30, see Fig. 6, when the adjacent portable scissor gate 30 is collapsed, and an idle position, shown in Fig. 5 with broken lines, where it does not engage with the stop element 9 of the adjacent portable scissor gate 30. The inhibition element 27 is arranged to, in the inhibition position, operate the stop element 9 of the adjacent portable scissor gate 30 from its active position to its inactive position during collapsing of the adjacent portable scissor gate 30, thereby enabling the adjacent portable scissor gate 30 to reach its minimum length. Furthermore, the inhibition element 27 is pivotally mounted at the second end frame 4, at the bottom transverse member 22 thereof, and is pivotable between the idle position and the inhibition position.

**[0025]** Referring to inter alia Figs. 6 and 11, the collapsing of a portable scissor gate when it is connected with another portable scissor gate is operated as follows. The portable scissor gates 1, 30 have been attached to each other, for example by means of a screw joint, such that the second end frame 4 of one portable scissor gate 1, below referred to as the first portable scissor gate, has been connected with the first end frame 3 of the other portable scissor gate 30, below referred to as the second portable scissor gate. Before connecting the portable scissor gates 1, 30, the inhibition element 27 of the first portable scissor gate 1 is operated to the inhibition position, where it protrudes beyond the rest of the second end frame 4, such that when the first and second portable scissor gates 1, 30 have been interconnected the inhibition element 27 extends into the first end frame of the second portable scissor gate 30, as can be seen in Figs. 7 and 11. The user starts collapsing the second portable scissor gate 30 by pushing its second end frame end towards its first end frame, and thus towards the first portable scissor gate 1. Then the grid 2 starts collapsing, and thereby inclination of the grid bars 13, 14, decreases as they become more and more vertical. That causes the support rod 18 to move downwards in the grooves 23 of the side members 19, 20 of the first end frame 3, and causes the connection bar 12 comprising the stop portion 10 to move towards the front end 16 of the pivoting arm 15. Before the stop portion 10 reaches the pivoting arm 15, the inhibition portion 25 at the rear end 24 of the pivoting arm 15 impinges on the inhibition element 27. More particularly, the inhibition portion 25 engages with a sloping top portion 28 of the inhibition element 27. During the continued collapsing movement, the pivoting arm 15 continues to descend and the inhibition portion 25 slides along the sloping top portion 28 causing the front end 16 of the pivoting arm 15 to pivot upwards. When the stop portion 10 reaches the pivoting arm 15, the front portion 16 thereof has been raised enough to let the stop portion 10 pass below the pivoting arm 15, and more particularly to slide along a bottom surface of the pivoting

arm 15, as illustrated in Fig. 11. Consequently, the second portable scissor gate 30 will be fully collapsed to its minimum length.

**[0026]** The portable scissor gate 1 further comprises a brake device 31 having a brake operating member 32, and brake rods 33. The brake operating member 32 is rotatably attached to the bottom transverse member 22 of the first end frame 3. The rotation axis extends longitudinally of the portable scissor gate 1. The brake operating member 32 is operable to a brake position and to a release position by rotating it about the rotation axis. The brake rods 33 constitute of a first and a second brake rod 33, and extend transversally of the portable scissor gate 1. A first end of each brake rod 33 is rotatably attached to the brake operating member 32, and a second end extends longitudinally movably through a guide hole of wheel holder 34. The first end of the first brake rod 33 is attached above the rotation axis of the brake operating member 32, and the first end of the second brake rod 33 is attached below the rotation axis. The brake rods 33 extend transversally of the portable scissor gate 1 in opposite directions, i.e. towards the respective wheels 7 at opposite sides of the portable scissor gate 1. Thereby, when rotating the brake operating member 32 to the brake position, the brake rods 33 are transversally displaced and their second ends thereof moves into the wheels 7 and prevents them from rolling. For instance, each brake rod 33 extends into the space between two spokes of the wheel, or into a recess of the wheel 7.

**[0027]** While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive. The invention is not limited to the disclosed embodiments.

**[0028]** Other variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

## Claims

1. A portable scissor gate (1) comprising a grid (2), which is collapsible, wherein the length of the portable scissor gate is adjustable between a maximum length and a minimum length by collapsing and extending the portable scissor gate, a first end frame (3) connected with a first end of the grid, and a second end frame (4) connected with a second end of the grid, wherein each end frame comprises a pair

of ground wheels (5, 6), wherein the wheels (7, 8) of each pair are spaced transversally of the portable scissor gate, wherein the first end frame is provided with a stop element (9) protruding towards the second end frame, wherein the stop element is operable between an active position and an inactive position, wherein the grid is provided with a stop portion (10) arranged to, when collapsing the portable scissor gate while the stop element is in its active position, engage with the stop element such that the collapsing movement is stopped before the portable scissor gate is fully collapsed.

2. The portable scissor gate according to claim 1, wherein the stop element (9) comprises a pivoting arm (15) arranged to engage with the stop portion (10) and arranged to pivot between the active position and the inactive position.

3. The portable scissor gate according to claim 2, wherein the first end frame (3) comprises opposite side members (19, 20), extending vertically in an operable position of the portable scissor gate (1), and a transverse member (12) connecting the side members, wherein each side member is provided with a groove (23) facing the opposite side member, wherein the stop element comprises a support rod (18) extending transversally of the portable scissor gate between the side members, wherein the support rod is vertically slidably received in the respective groove at its ends.

4. The portable scissor gate according to claim 3, wherein the pivoting arm (15) is pivotally attached to the support rod (18).

5. The portable scissor gate according to claim 4, wherein the pivoting arm (15) comprises a transverse protrusion (26) extending into at least one of the grooves (23), and having a width which is smaller than a width of the groove, wherein a centre axis of the transverse protrusion, which centre axis extends transversally of the portable scissor gate (1), is eccentric relative to the support bar (18), thereby causing the transverse protrusion to move across the width of the groove when the pivoting arm (18) is operated between its active and inactive positions, and thereby limiting the pivoting movement of the pivoting arm (15).

6. The portable scissor gate according to any one of claims 3 to 5, wherein the support rod (18) is attached to the first end of the grid (2).

7. The portable scissor gate according to claim 1, further comprising an inhibition element (27), which is arranged at the second end frame (4), and which is switchable between an inhibition position where it is

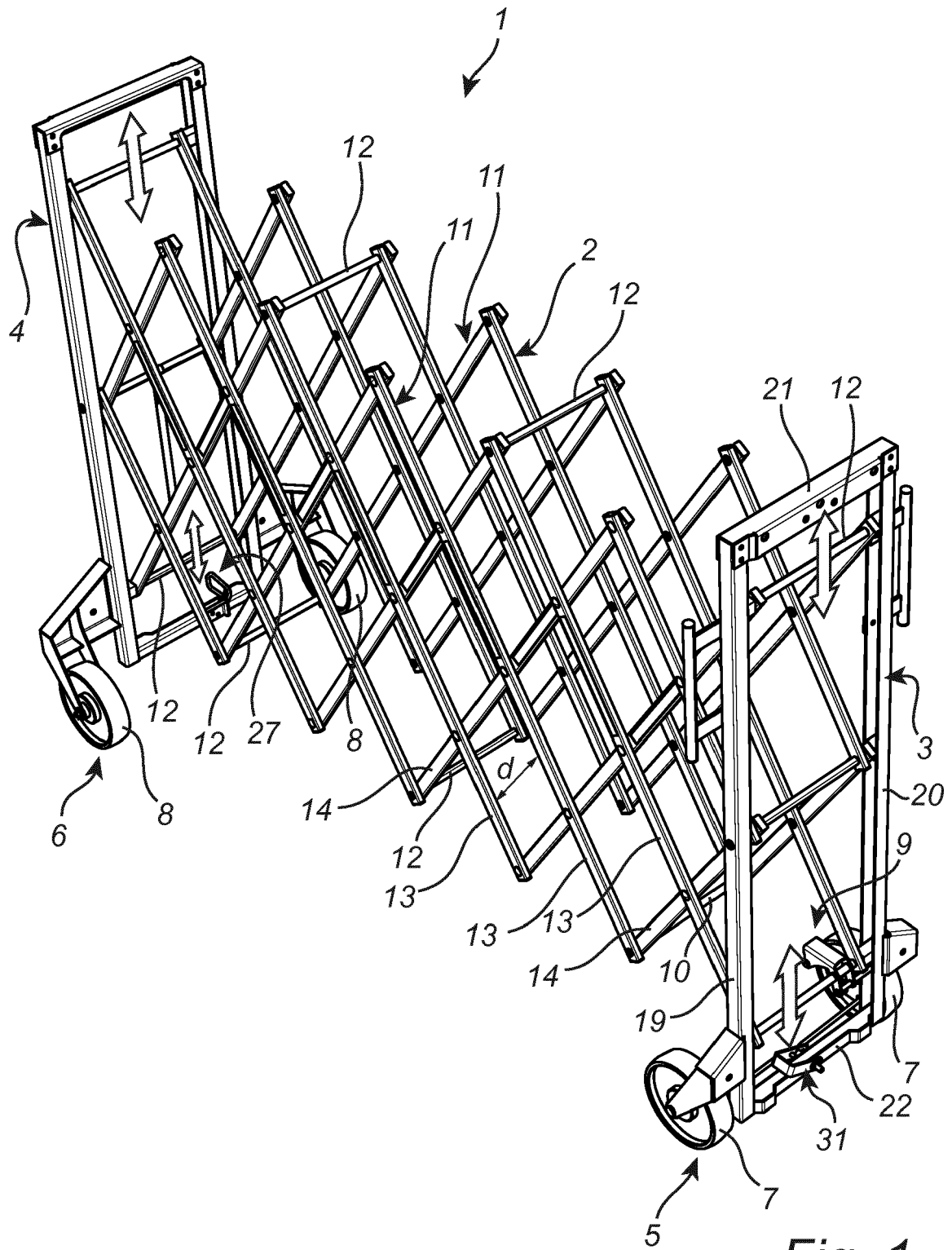
arranged to engage with the stop element (9) of an adjacent portable scissor gate (30) when the adjacent portable scissor gate is collapsed, and an idle position where it does not engage with the stop element of the adjacent portable scissor gate, wherein the inhibition element, in the inhibition position, is arranged to operate the stop element of the adjacent portable scissor gate from its active position to its inactive position during collapsing of the adjacent portable scissor gate, thereby enabling the adjacent portable scissor gate to reach its minimum length.

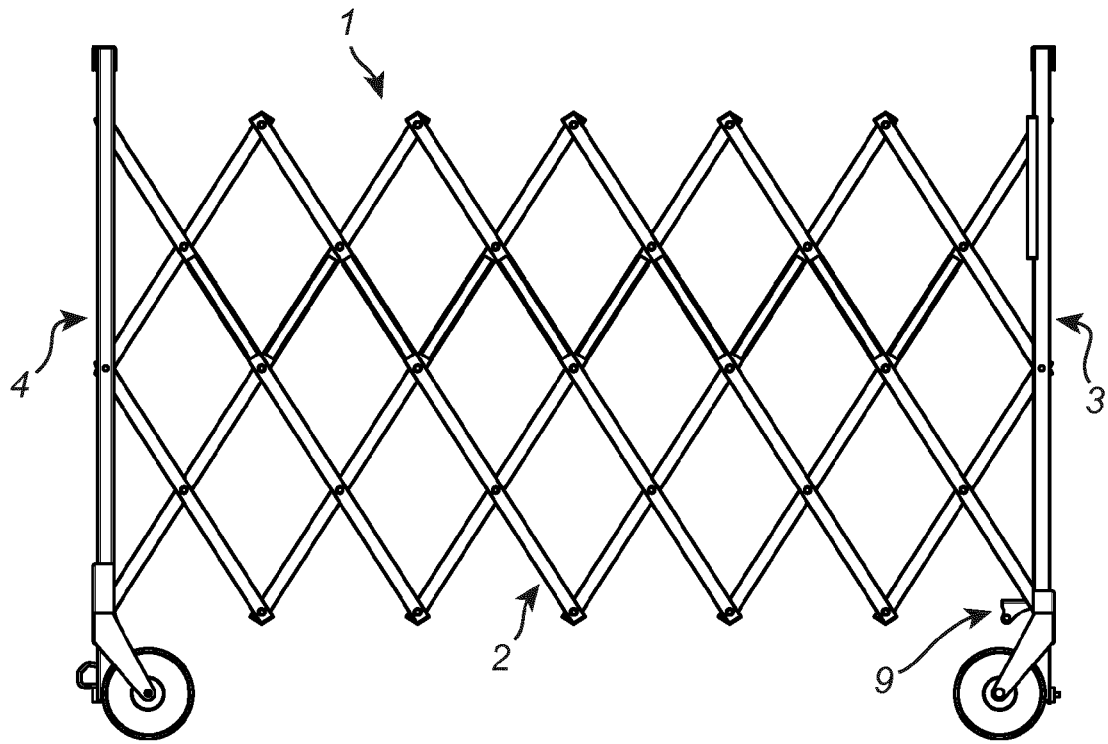
8. The portable scissor gate according to any one of claims 2 to 6, further comprising an inhibition element (27), which is arranged at the second end frame (4), and which is switchable between an inhibition position where it is arranged to engage with the stop element (9) of an adjacent portable scissor gate (30) when the adjacent portable scissor gate is collapsed, and an idle position where it does not engage with the stop element of the adjacent portable scissor gate, wherein the inhibition element, in the inhibition position, is arranged to operate the stop element of the adjacent portable scissor gate from its active position to its inactive position during collapsing of the adjacent portable scissor gate, thereby enabling the adjacent portable scissor gate to reach its minimum length.
9. The portable scissor gate according to claim 8, wherein the pivoting arm (15) comprises an inhibition portion (25) extending downwards, the inhibition portion being arranged to engage with the inhibition element (27) of an adjacent portable scissor gate.
10. The portable scissor gate according to any one of claims 5 to 9, wherein the inhibition element (27) is pivotally mounted at the second end frame (4), and is pivotable between the idle position and the inhibition position.

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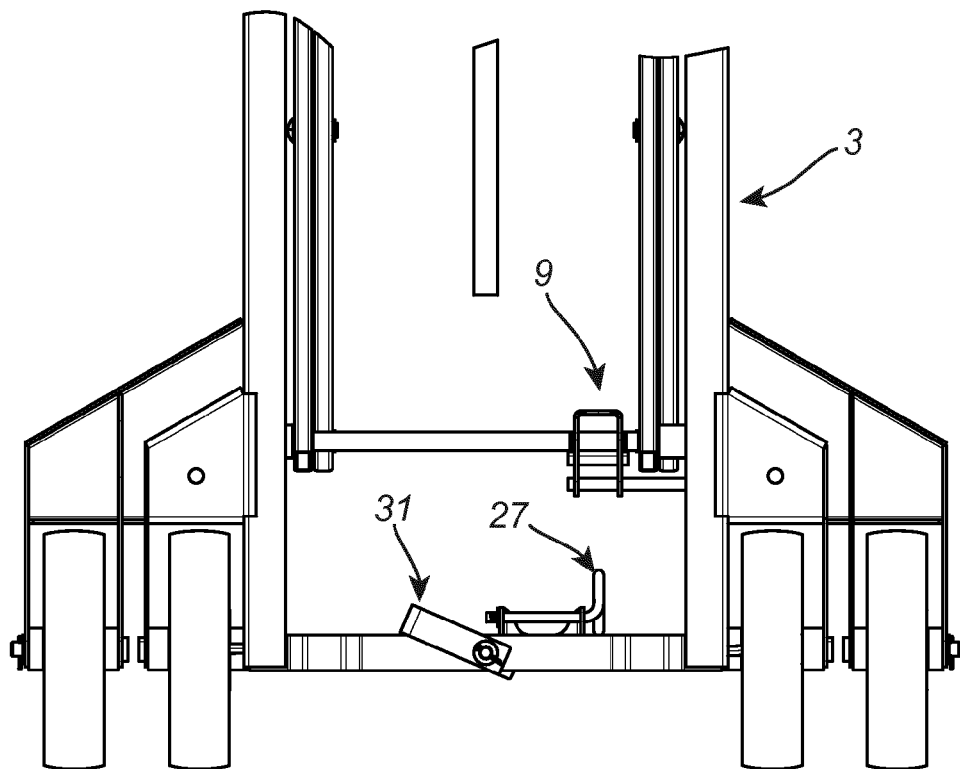
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*Fig. 2*



*Fig. 3*



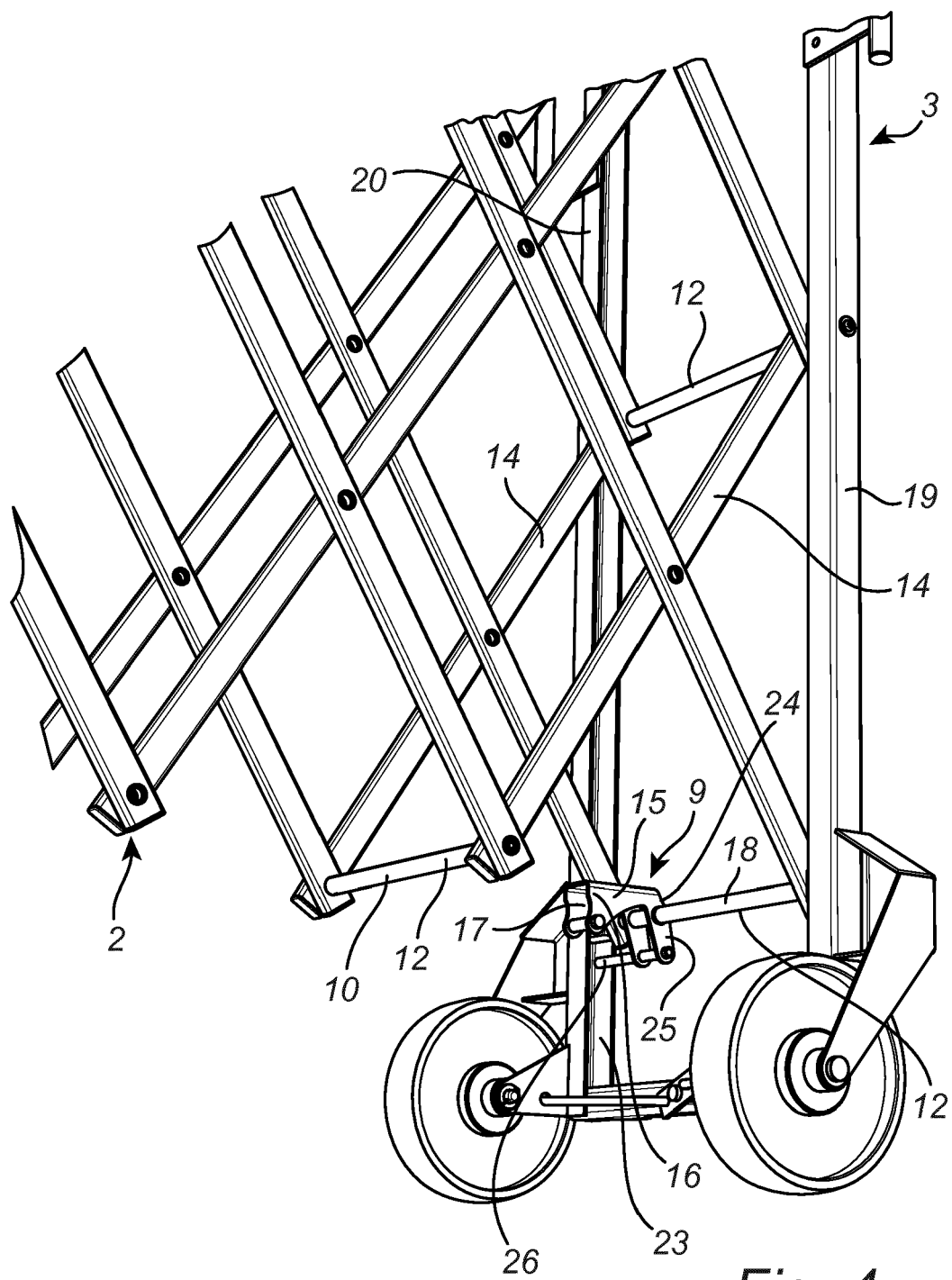
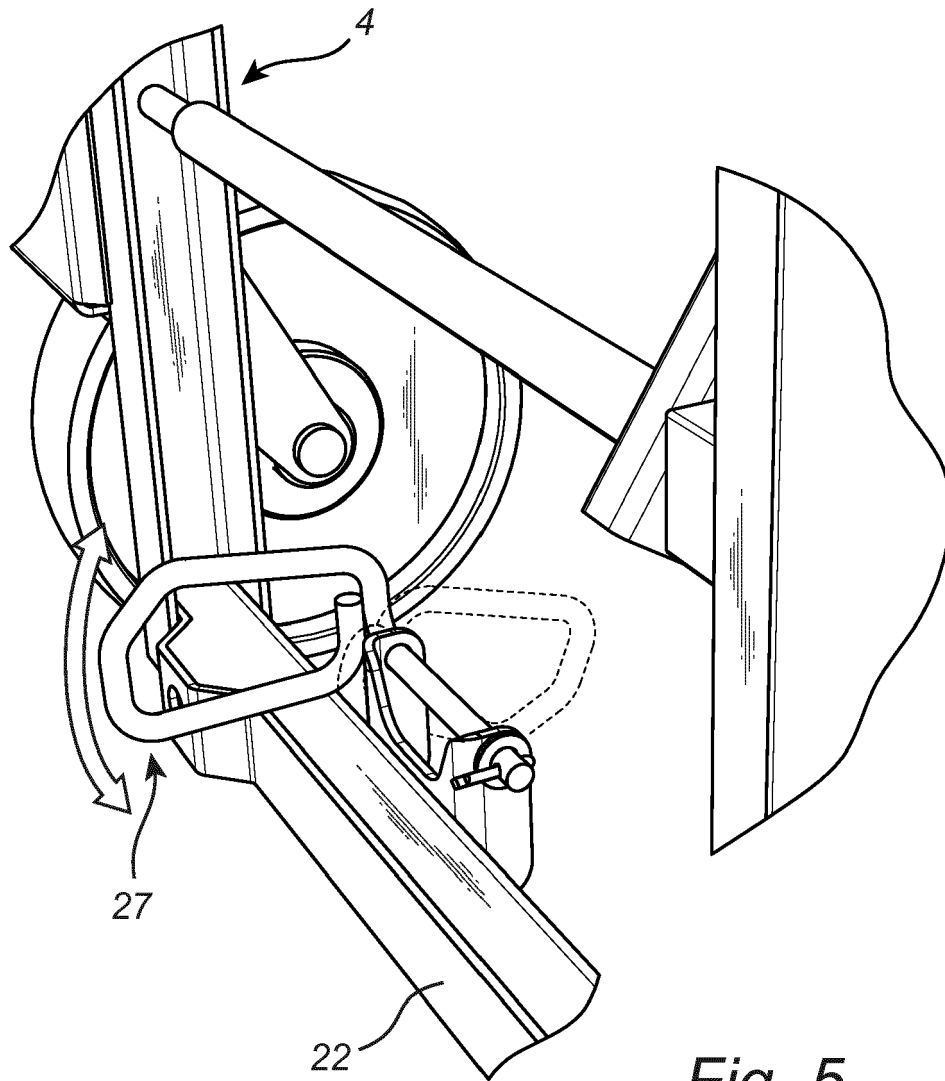


Fig. 4



*Fig. 5*

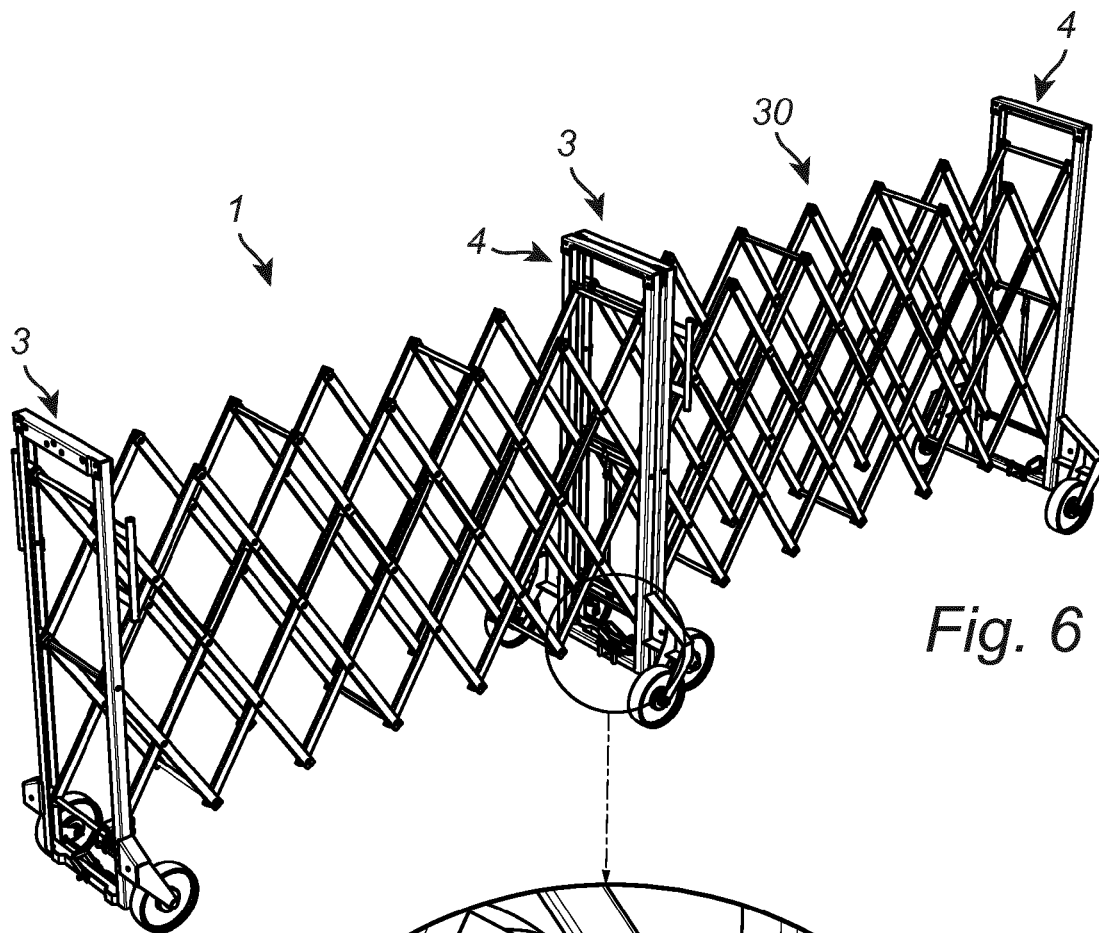


Fig. 6

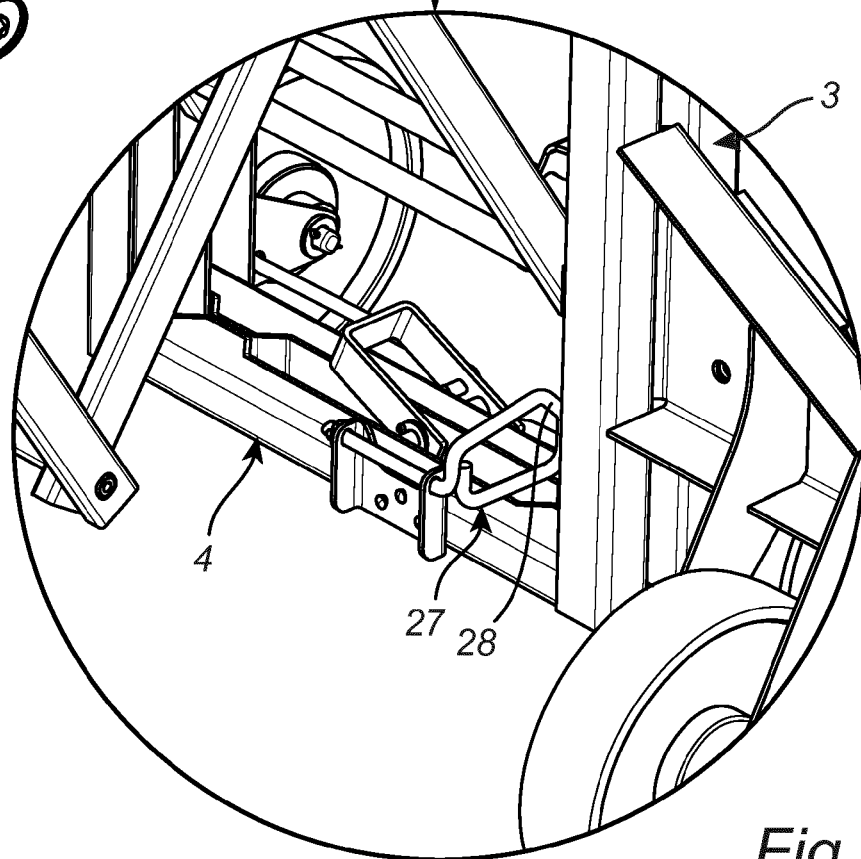
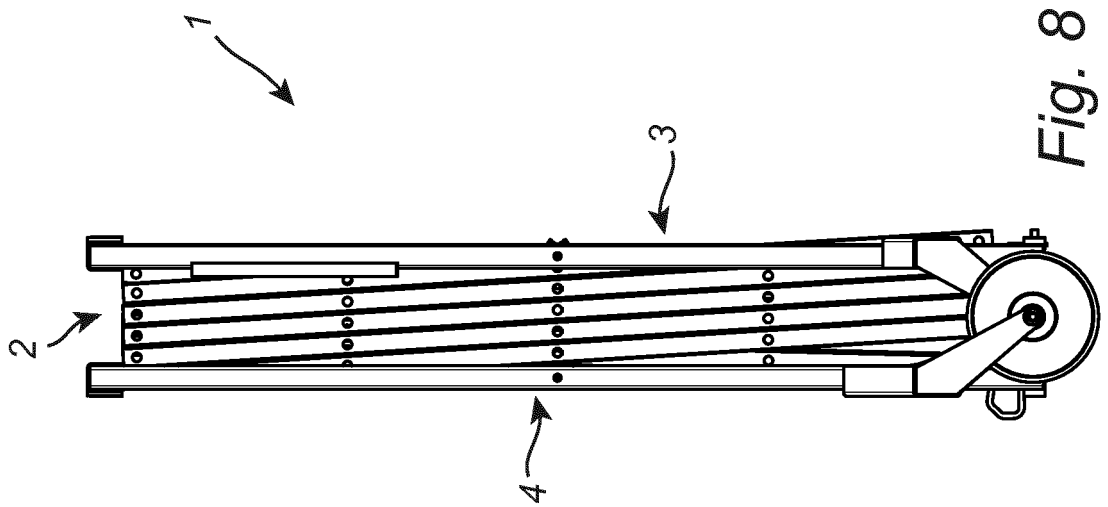
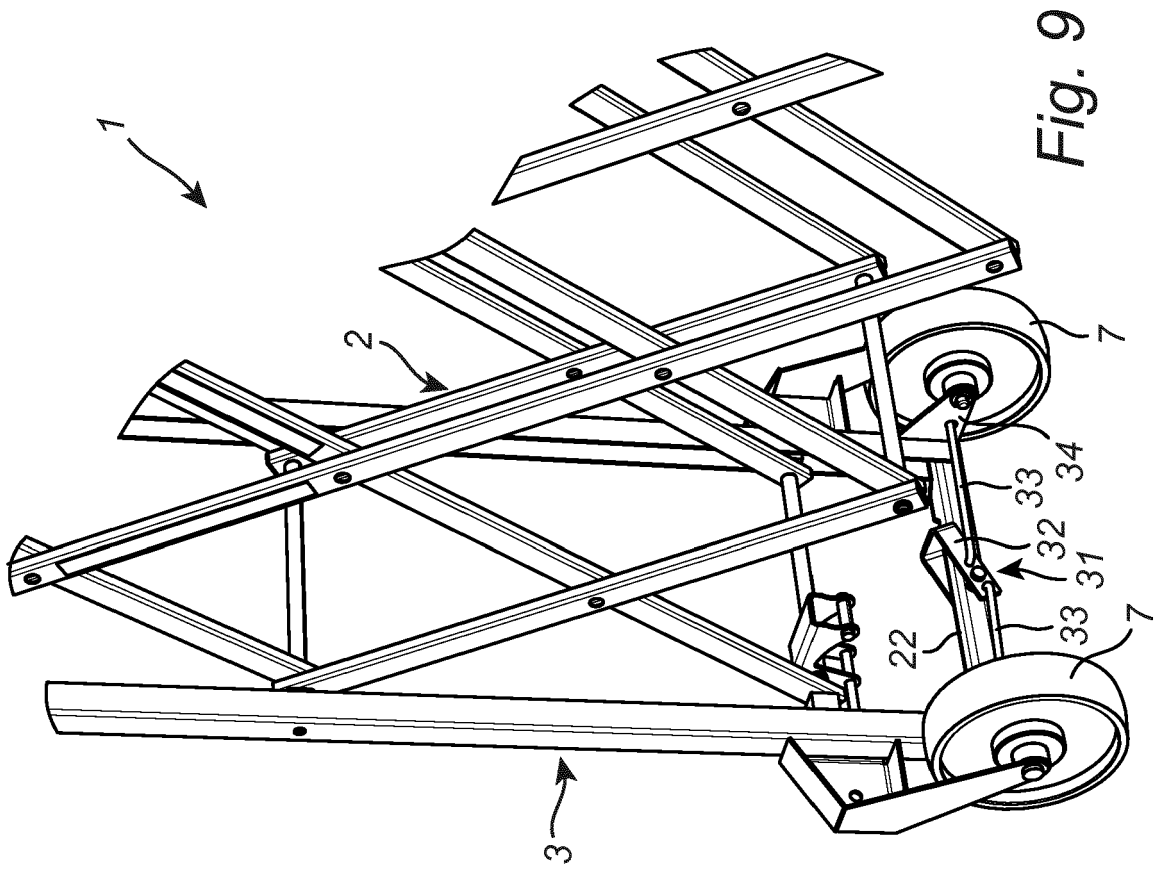
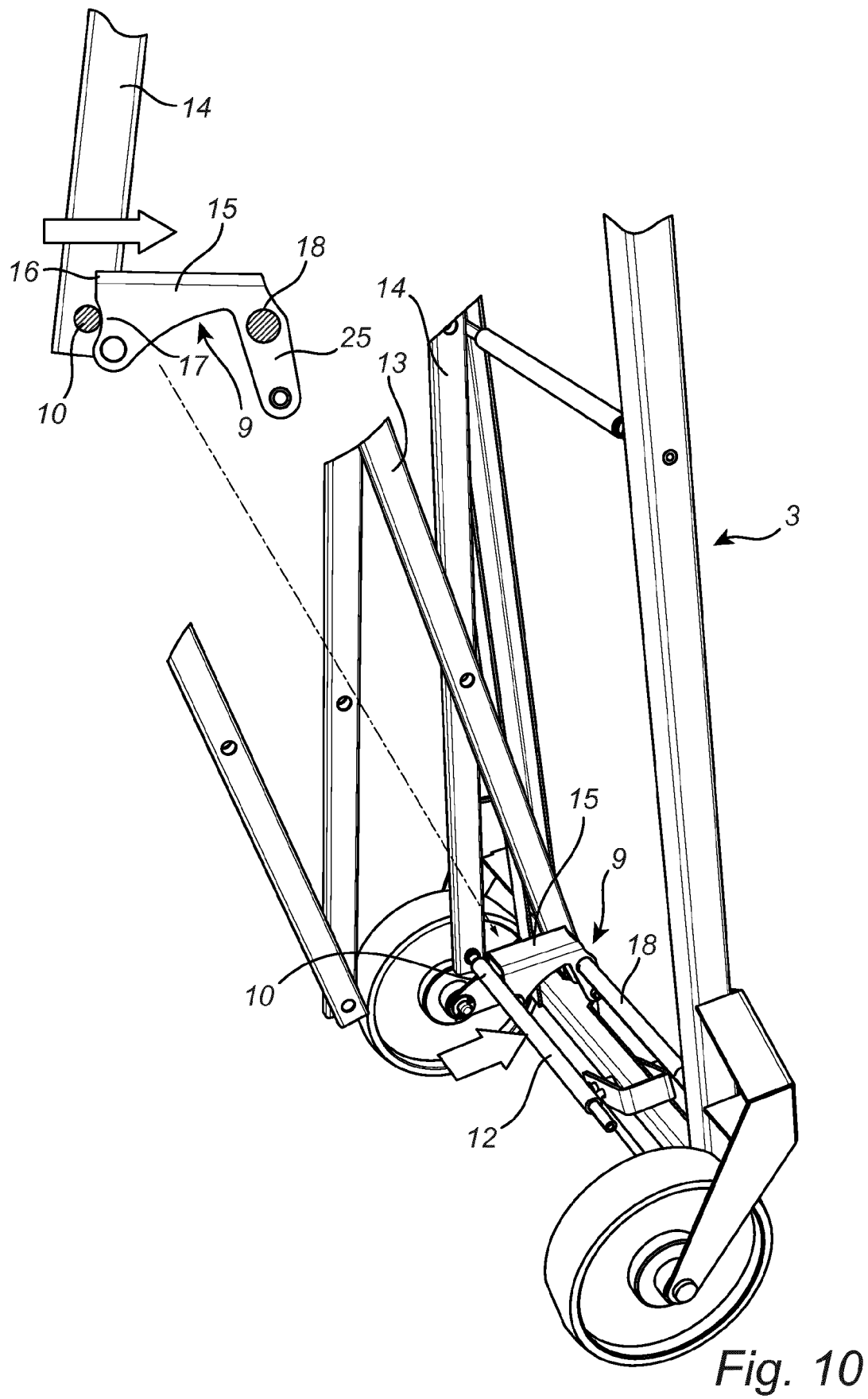


Fig. 7





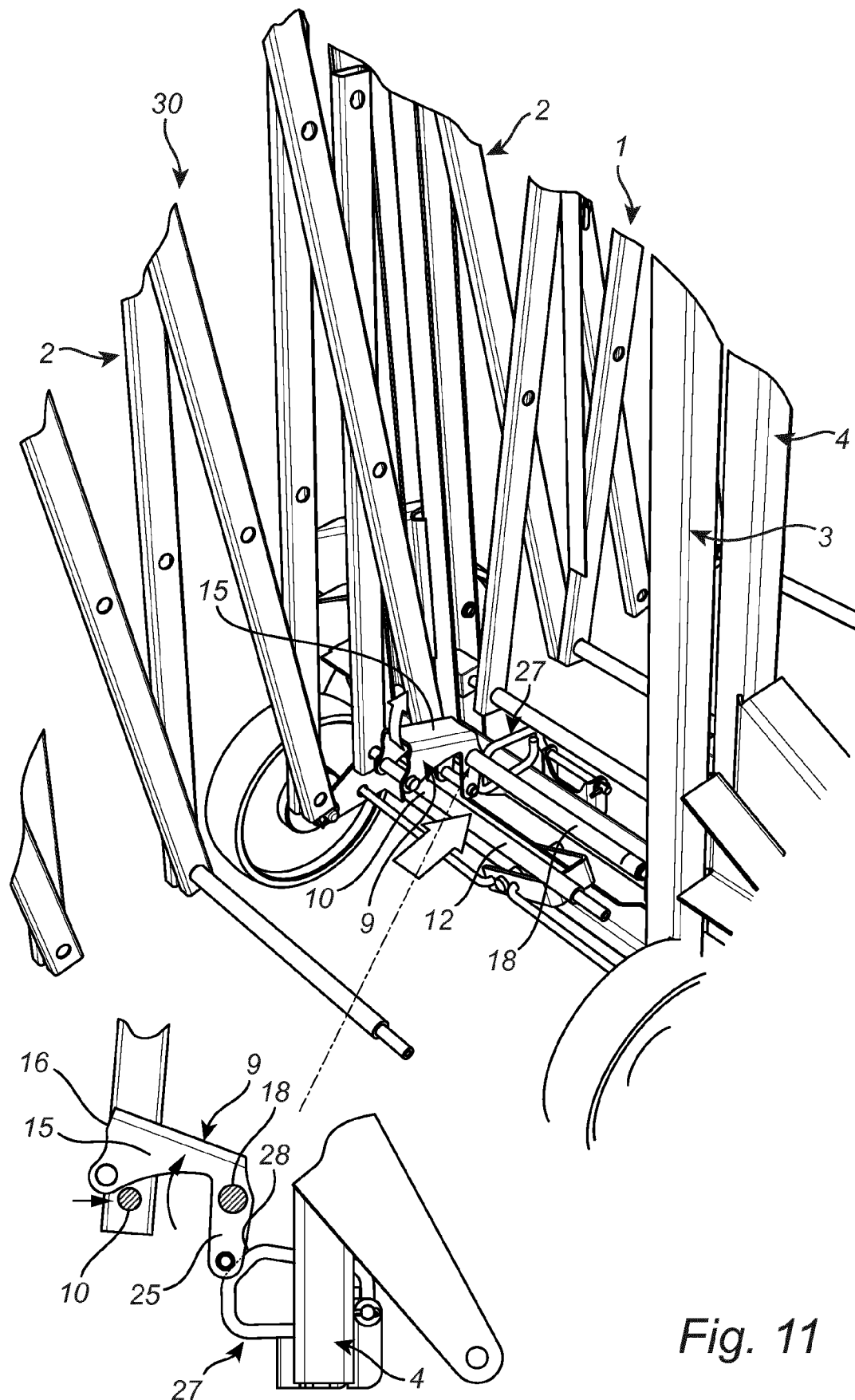


Fig. 11



## EUROPEAN SEARCH REPORT

 Application Number  
 EP 19 18 2981

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                             |                                                             |                                                                     |
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                               | Relevant to claim                                           | CLASSIFICATION OF THE APPLICATION (IPC)                             |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | KR 200 470 049 Y1 (SANG K L)<br>22 November 2013 (2013-11-22)<br>* paragraph [0008] - paragraph [0028];<br>figures 1-6 *                                                    | 1-6                                                         | INV.<br>E01F13/02<br>E06B3/92<br>E06B11/02<br>E06B9/00<br>E04H17/18 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | KR 2010 0078101 A (KIM KI NAM [KR])<br>8 July 2010 (2010-07-08)<br>* cf. English translation, page 2, lines 21-40;<br>paragraph [0020] - paragraph [0027];<br>figures 1-3 * | 1-10                                                        |                                                                     |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CA 2 233 760 A1 (SECUR PLAST INC [CA])<br>27 November 1999 (1999-11-27)<br>* page 5, line 3 - page 11, line 26;<br>figure 1 *                                               | 1-4                                                         |                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                             |                                                             | TECHNICAL FIELDS SEARCHED (IPC)                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                             |                                                             | E01F<br>E04H<br>E06B<br>E05F                                        |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                             |                                                             |                                                                     |
| Place of search<br><b>Munich</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                             | Date of completion of the search<br><b>20 December 2019</b> | Examiner<br><b>Stefanescu, Radu</b>                                 |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                             |                                                             |                                                                     |

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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20-12-2019

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