

(19)



(11)

EP 3 542 673 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.09.2019 Bulletin 2019/39

(51) Int Cl.:
A47B 88/467 (2017.01)

(21) Application number: **18162518.7**

(22) Date of filing: **19.03.2018**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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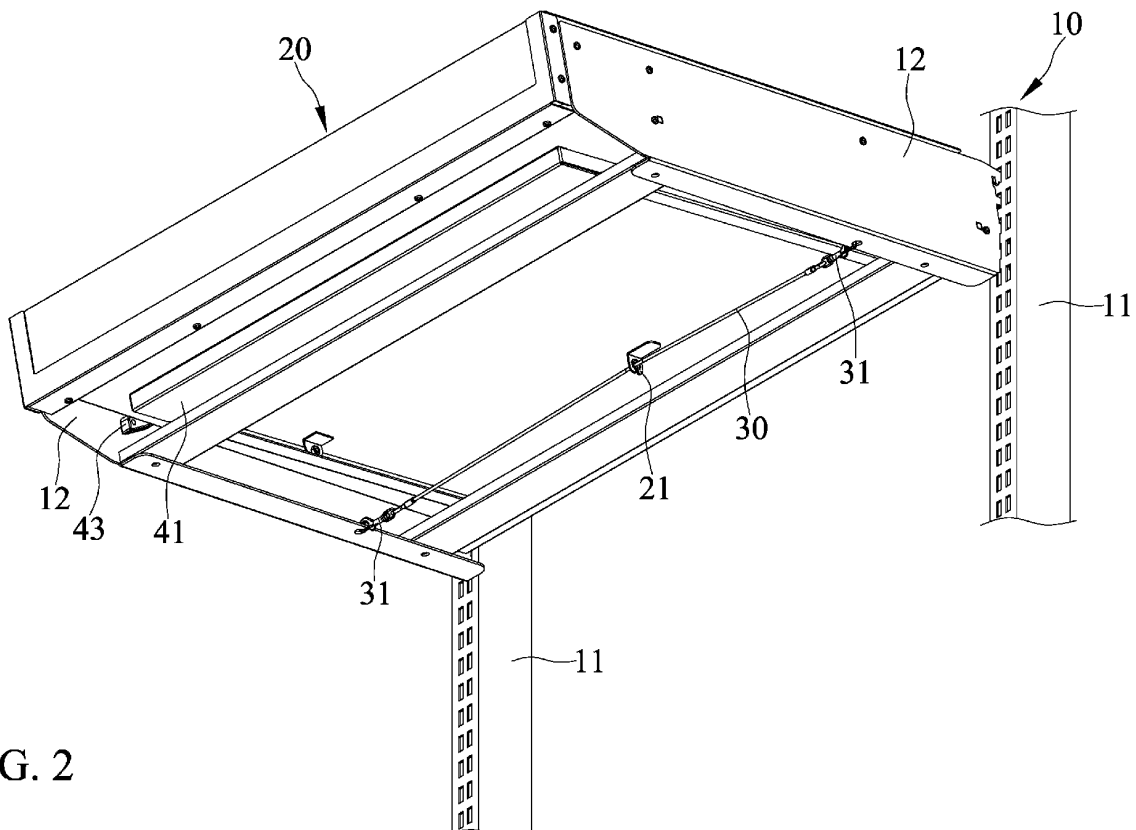
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(54) DRAWER SLIDE ASSEMBLY

(57) A drawer slide assembly includes a frame (10) including a pair of connecting portions (11) and a pair of guide portions (12) connected to the pair of connecting portions respectively. A drawer (20) is slidably engaged with and disposed between the pair of guide portions. The drawer defines a receptacle (22) and includes a

catch (21) located on a bottom side thereof and outside of the receptacle. A first elastic member (30) has a first end secured to one of the pair of guide portions, is inserted through and held by the catch, and has a second end secured to the other of the pair of guide portions.

**FIG. 2****EP 3 542 673 A1**

Description

Background of the Invention

[0001] The present invention relates to the field of cabinets and, particularly, to a drawer slide assembly.

[0002] There are two types of cabinet drawers. Cabinet drawers of one type operably move in horizontal direction between their open and closed positions. Cabinet drawers of another type operably move in tilting direction between their open and closed positions and have front ends located lower than rear ends. The drawers that move in tilting direction can be opened easily. However, the drawers can be forced to open unintentionally by object(s) stored therein if the object(s) are positioned too close to the front ends of the drawers.

[0003] The present invention is, therefore, intended to obviate or at least alleviate the problems encountered in the prior art.

Summary of the Invention

[0004] A drawer slide assembly includes a frame including a pair of connecting portions and a pair of guide portions connected to the pair of connecting portions respectively. A drawer is slidably engaged with and disposed between the pair of guide portions. The drawer defines a receptacle and includes a catch located on a bottom side thereof and outside of the receptacle. A first elastic member has a first end secured to one of the pair of guide portions, is inserted through and held by the catch, and has a second end secured to the other of the pair of guide portions.

[0005] The drawer is movable to a closed position and an open position and is under tension of the first elastic member. The tension of first elastic member increases as the drawer moves from the closed position to the open position.

Brief Description of the Drawings

[0006]

Fig. 1 is a perspective view showing a drawer slide assembly in accordance with the present invention. Fig. 2 is a perspective view showing the drawer slide assembly of the present invention at a different view from that of Fig. 1.

Fig. 3 is an exploded perspective view of the drawer slide assembly of the present invention.

Fig. 4 is a cross-sectional view showing the drawer slide assembly of the present invention retained in the closed position.

Fig. 5 is a cross-sectional view showing the drawer slide assembly of the present invention disengaged from a stop member and adapted to be opened.

Fig. 6 is a cross-sectional view showing the drawer slide assembly of the present invention in a position

between the open and closed positions.

Fig. 7 is a cross-sectional view showing the drawer slide assembly of the present invention retained in the open position.

Detailed Description of the Invention

[0007] Figs. 1 through 7 show a drawer slide assembly in accordance with the present invention.

[0008] A frame 10 includes a pair of connecting portions 11 and a pair of guide portions 12 connected to the pair of connecting portions 11 respectively. The pair of guide portions 12 is tilted with respect to the pair of connecting portions 11 connected thereto. Included angles between the pair of guide portions 12 and the pair of connecting portions 11 connected thereto are less than 90 degrees. Each of the pair of guide portions 12 has a rear end 121 and a front end 122 located lower than the rear end 121. The rear ends 121 of the pair of guide portions 12 are releasably connectible to the pair of connecting portions 11. The rear ends 121 of the pair of guide portions 12 are releasably connected to the pair of connecting portions 11 respectively when the pair of guide portions 12 are releasably connected to the pair of connecting portions 11 respectively.

[0009] A drawer 20 is slidably engaged with and disposed between the pair of guide portions 12. The drawer 20 defines a receptacle 22 and includes a catch 21 located on a bottom side thereof and outside of the receptacle 22.

[0010] A first elastic member 30 has a first end secured to one of the pair of guide portions 12, is inserted through and held by the catch 21, and has a second end secured to the other of the pair of guide portions 12. The first elastic member 30 is an elastic rope.

[0011] Two fasteners 31 are adapted to receive the first and second ends of the first elastic member 30 and to releasably connect to the pair of guide portions 12 respectively. When the first elastic member 30 is releasably connected to the pair of guide portions 12 through the two fasteners 31, one of the two fasteners 31 receives the first end of the first elastic member 30 and is releasably connected to one of the pair of guide portions 12, and the other of the two fasteners 31 receives the second end of the first elastic member 30 and is releasably connected to the other of the pair of guide portions 12. The pair of guide portions 12 each has a hole, and the two fasteners 31 each have a connecting portion releasably engagable in the hole of the guide portion 12 connected thereto. Thus, when the two fasteners 31 are connected to the pair of guide portions 12 respectively, the connecting portions of the two fasteners 31 are releasably engaged in the holes of the pair of guide portions 12 connected thereto.

[0012] The drawer 20 is movable to a closed position and an open position and is under tension of the first elastic member 30. The drawer 20 moves in tilting direction between the open and closed positions thereof. Figs.

6 and 7 clearly show the sliding direction SD of drawer 20 is in a tilting direction. The first elastic member 30 has a first length when the drawer 20 is in the closed position. The first elastic member 30 is stretched and has a second length when the drawer 20 is in the open position. The second length is longer than the first length. Consequently, the tension of first elastic member 30 increases as the drawer 20 moves from the closed position to the open position.

[0013] Furthermore, the drawer 20 is adapted to be sustained by a positioning device 40. The positioning device 40 includes at least one stop member fixed to the frame 10 for obstructing a movement of the drawer 20 and an actuator 41 pivotally connected to the drawer 20 and operably pivotal to position for selectively engaging with the at least one stop member, thereby stopping the movement of the drawer 20. The actuator 41 has a front end portion 411, a rear end portion 412 opposing the front end portion 411, and a middle portion 413 between the front and rear end portions 411 and 412. The middle portion 413 of the actuator 41 is pivotally connected to the drawer 20. The front end portion 411 of the actuator 41 provides a control input such that the actuator 41 is operably pivotal from the control input. The rear end portion 412 of the actuator 41 is selectively engagable with the at least one stop member. The rear end portion 412 of the actuator 41 is engaged with the at least one stop member when the at least one stop member stops the movement of the drawer 20. The at least one stop member includes at least one first stop member 42 fixed to one of the pair of guide portions 12. Fig. 4 shows that the drawer 20 is sustained in the closed position and is prevented from being opened when the actuator 41 is engaged with the at least one first stop member 42. The actuator 41 is engaged with a first surface 421 of the at least one first stop member 42 when the drawer 20 is sustained in the closed position. The at least one first stop member 42 has a small leading end and a large trailing end and includes a second surface 422 being contiguous and angled with respect to the first surface 421 at an angle less than 90 degrees. Fig. 5 shows that the drawer 20 is able to be opened when the actuator 41 is disengaged from the at least one first stop member 42. Furthermore, Fig. 5 shows the length of at least one second elastic member 44 is longer than that shown in Fig. 4. Consequently, the tension of at least one second elastic member 44 increases as the actuator 41 is being moved to disengage from the at least one first stop member 42. The at least one stop member also includes at least one second stop member 43 fixed to one of the pair of guide portions 12. Fig. 7 shows that the drawer 20 is sustained in the open position and is prevented from being closed when the actuator 41 is engaged with the at least one second stop member 43. The actuator 41 is engaged with a first surface 431 of the at least one second stop member 43 when the drawer 20 is sustained in the open position. The at least one second stop member 43 has a large leading end and a small trailing end and in-

cludes a second surface 432 being contiguous and angled with respect to the first surface 421 at an angle less than 90 degrees. The drawer 20 is able to be closed when the actuator 41 is disengaged from the at least one second stop member 43. Fig. 6 shows the drawer 20 is opened and the actuator 41 is disengaged from the at least one first stop member 42. Fig. 6 also shows the actuator 41 is disengaged from the at least one second stop member 43.

[0014] In addition, the actuator 41 is in the form of a frame and defines a through hole allowing the first elastic member 30 to be held by the catch (21) located on one of opposite sides of the actuator 41 and secured to the pair of guide portions 12 located on another of the opposite sides of the actuator 41. The positioning device 40 includes at least one second elastic member 44 counteracting a force applied to the front end portion 411 of the actuator 41. The at least one second elastic member 44 has a first end secured to the actuator 41 and a second end secured to the drawer 20 respectively. The at least one second elastic member 44 is a torsion spring.

[0015] In view of the forgoing, the drawer 20 moves in tilting direction and can be opened easily. Furthermore, the first elastic member 30 prevents the drawer 20 from being forced to open when object(s) held in the drawer 20 are positioned too close to a front end of the drawer 20.

Claims

1. A drawer slide assembly comprising:

a frame (10) including a pair of connecting portions (11) and a pair of guide portions (12) connected to the pair connecting portions (11) respectively;
a drawer (20) slidably engaged with and disposed between the pair of guide portions (12), wherein the drawer (20) defines a receptacle (22) and includes a catch (21) located on a bottom side thereof and outside of the receptacle (22); and
a first elastic member (30) having a first end secured to one of the pair of guide portions (12), being inserted through and held by the catch (21), and having a second end secured to the other of the pair of guide portions (12);
wherein the drawer (20) is movable to a closed position and an open position and is under tension of the first elastic member (30); and
wherein the tension of first elastic member (30) increases as the drawer (20) moves from the closed position to the open position.

2. The drawer slide assembly as claimed in claim 1, wherein the first elastic member (30) is an elastic rope.

3. The drawer slide assembly as claimed in any of claims 1 and 2 further comprising two fasteners (31) adapted to receive the first and second ends of the first elastic member (30) and to releasably connect to the pair of guide portions (12) respectively, and wherein when the first elastic member (30) is releasably connected to the pair of guide portions (12) through the two fasteners (31), one of the two fasteners (31) receives the first end of the first elastic member (30) and is releasably connected to one of the pair of guide portions (12), and the other of the two fasteners (31) receives the second end of the first elastic member (30) and is releasably connected to the other of the pair of guide portions (12). 5 10
4. The drawer slide assembly as claimed in any of claims 1 through 3, wherein the drawer (20) is adapted to be sustained by a positioning device (40), and wherein the positioning device (40) includes at least one stop member fixed to the frame (10) for obstructing a movement of the drawer (20) and an actuator (41) pivotally connected to the drawer (20) and operably pivotal to position for selectively engaging with the at least one stop member, thereby stopping the movement of the drawer (20). 15 20
5. The drawer slide assembly as claimed in claim 4, wherein the actuator (41) has a front end portion (411), a rear end portion (412) opposing the front end portion (411), and a middle portion (413) between the front and rear end portions (411, 412), and wherein the middle portion (413) of the actuator (41) is pivotally connected to the drawer (20). 25 30
6. The drawer slide assembly as claimed in claim 5, wherein the front end portion (411) of the actuator (41) provides a control input such that the actuator (41) is operably pivotal from the control input, wherein the rear end portion (412) of the actuator (41) is selectively engagable with the at least one stop member, and wherein the rear end portion (412) of the actuator (41) is engaged with the at least one stop member when the at least one stop member stops the movement of the drawer (20). 35 40
7. The drawer slide assembly as claimed in 6, wherein the positioning device (40) includes at least one second elastic member (44) counteracting a force applied to the front end portion (411) of the actuator (41), and wherein the at least one second elastic member (44) has a first end secured to the actuator (41) and a second end secured to the drawer (20) respectively. 45 50
8. The drawer slide assembly as claimed in 7, wherein the at least one second elastic member (44) is a torsion spring. 55
9. The drawer slide assembly as claimed in any of claims 4 through 8, wherein the at least one stop member includes at least one first stop member (42) fixed to one of the pair of guide portions (12), wherein the drawer (20) is sustained in the closed position and is prevented from being opened when the actuator (41) is engaged with the at least one first stop member (42), and wherein the drawer (20) is able to be opened when the actuator (41) is disengaged from the at least one first stop member (42).
10. The drawer slide assembly as claimed in claim 9, wherein the actuator (41) is engaged with a first surface (421) of the at least one first stop member (42) when the drawer (20) is sustained in the closed position, and wherein the at least one first stop member (42) has a small leading end and a large trailing end and includes a second surface (422) being contiguous and angled with respect to the first surface (421) at an angle less than 90 degrees.
11. The drawer slide assembly as claimed in any of claims 4 through 10, wherein the at least one stop member includes at least one second stop member (43) fixed to one of the pair of guide portions (12), wherein the drawer (20) is sustained in the open position and is prevented from being closed when the actuator (41) is engaged with the at least one second stop member (43), and wherein the drawer (20) is able to be closed when the actuator (41) is disengaged from the at least one second stop member (43).
12. The drawer slide assembly as claimed in claim 11, wherein the actuator (41) is engaged with a first surface (431) of the at least one second stop member (43) when the drawer (20) is sustained in the open position, and wherein the at least one second stop member (43) has a large leading end and a small trailing end and includes a second surface (432) being contiguous and angled with respect to the first surface (421) at an angle less than 90 degrees.
13. The drawer slide assembly as claimed in any of claims 1 through 12, wherein the drawer (20) moves in tilting direction between the open and closed positions thereof, wherein the pair of guide portions (12) is tilted with respect to the pair of connecting portions (11) connected thereto, wherein included angles between the pair of guide portions (12) and the pair of connecting portions (11) connected thereto are less than 90 degrees, and wherein each of the pair of guide portions (12) has a rear end (121) and a front end (122) located lower than the rear end (121).
14. The drawer slide assembly as claimed in claim 13, wherein the rear ends (121) of the pair of guide portions (12) are releasably connectible to the pair of

connecting portions (11), and wherein the rear ends (121) of the pair of guide portions (12) are releasably connected to the pair of connecting portions (11) respectively when the pair of guide portions (12) are releasably connected to the pair of connecting portions (11) respectively. 5

15. The drawer slide assembly as claimed in any of claims 1 through 14, wherein the actuator (41) is in the form of a frame and defines a through hole allowing the first elastic member (30) to be held by the catch (21) located on one of opposite sides of the actuator (41) and secured to the pair of guide portions (12) located on another of the opposite sides of the actuator (41). 10 15

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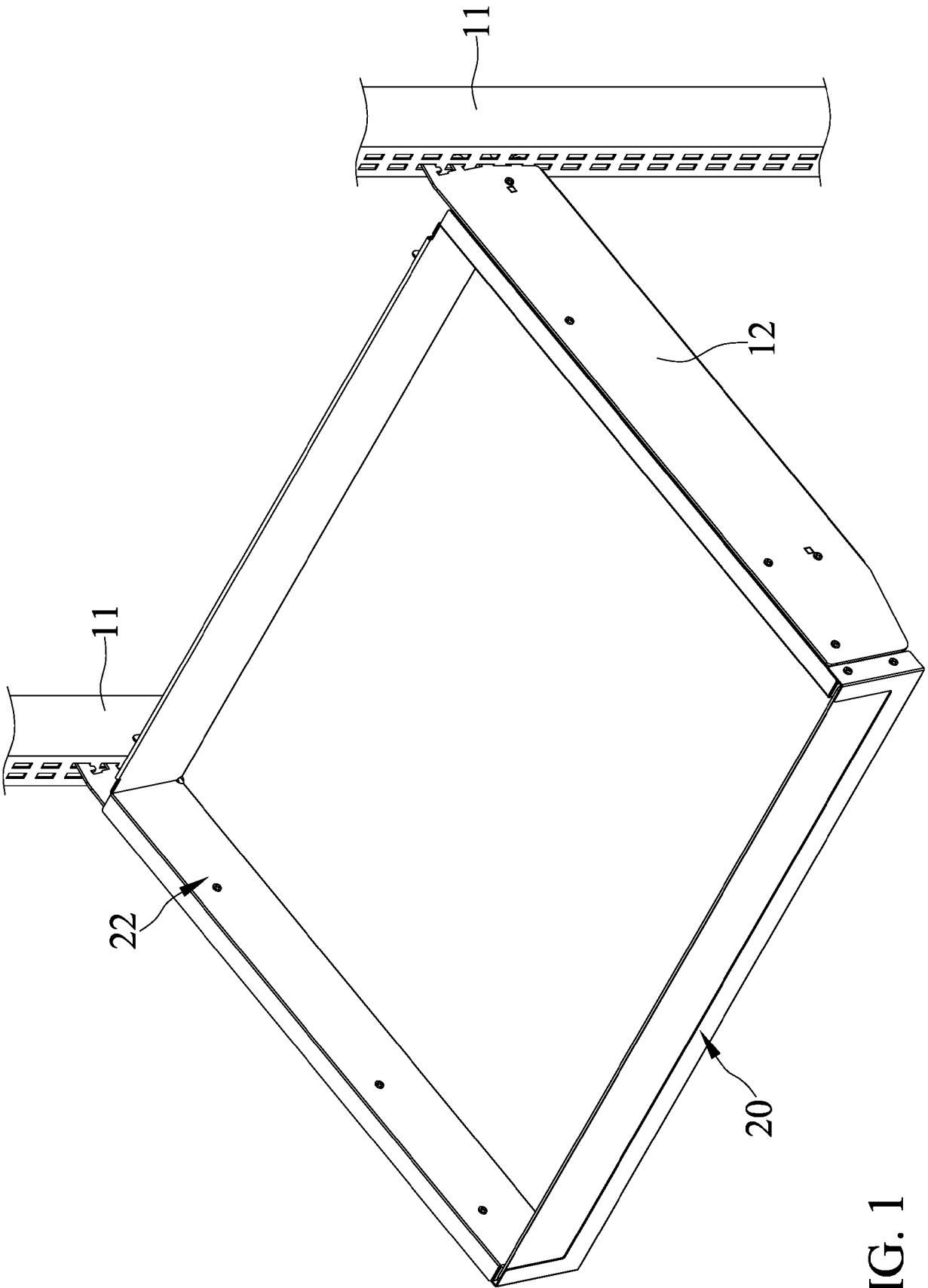


FIG. 1

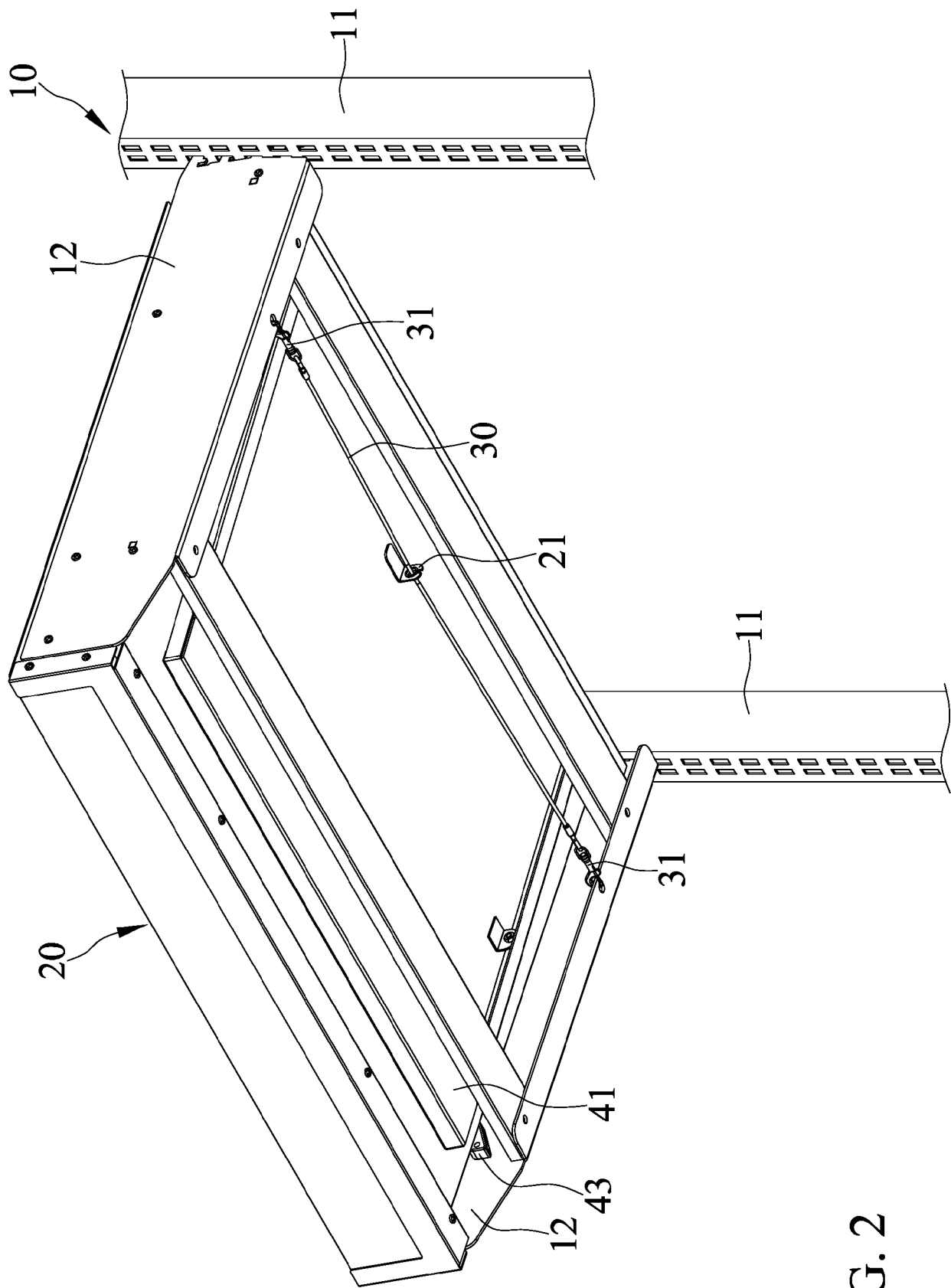


FIG. 2

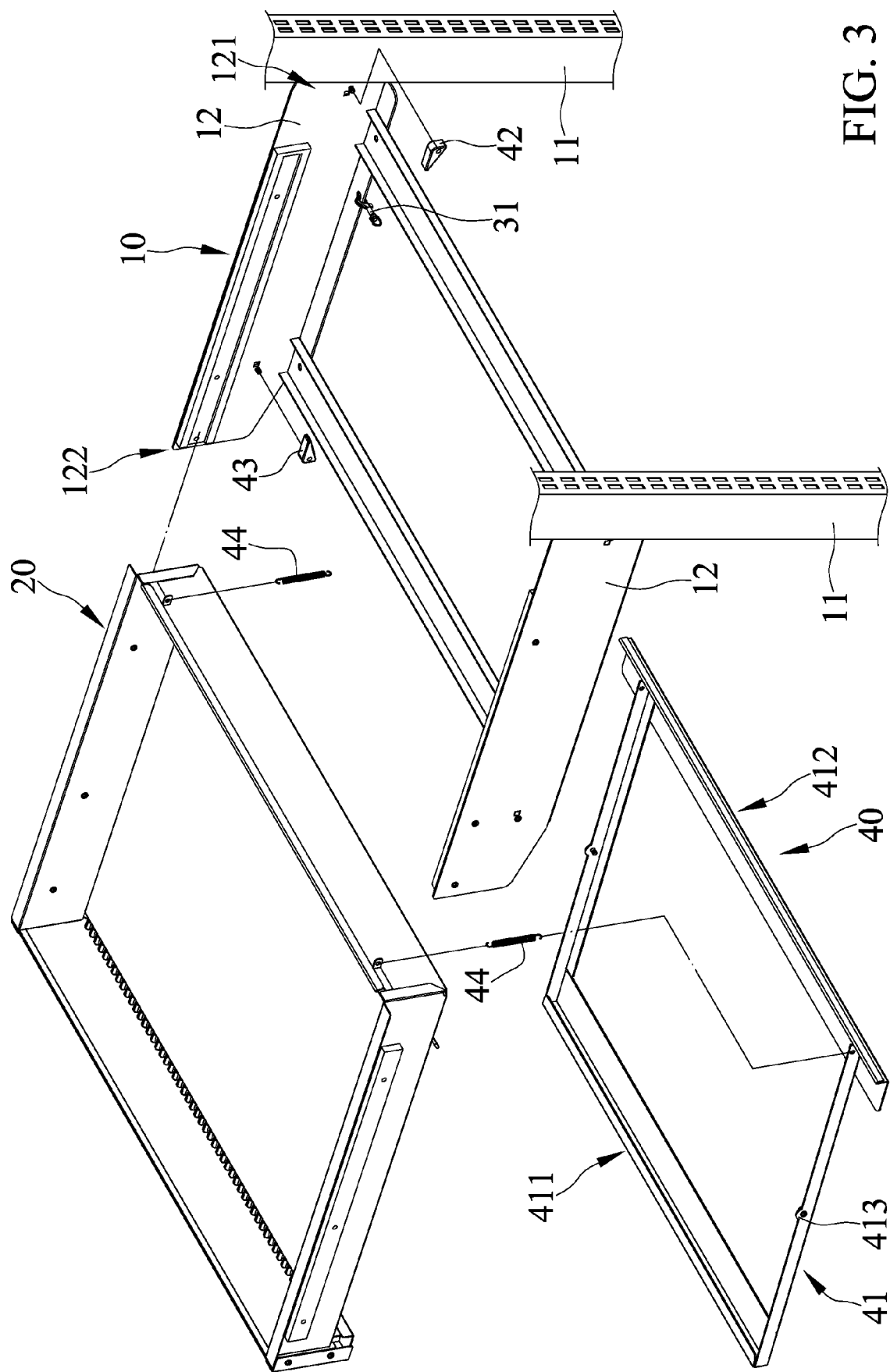


FIG. 3

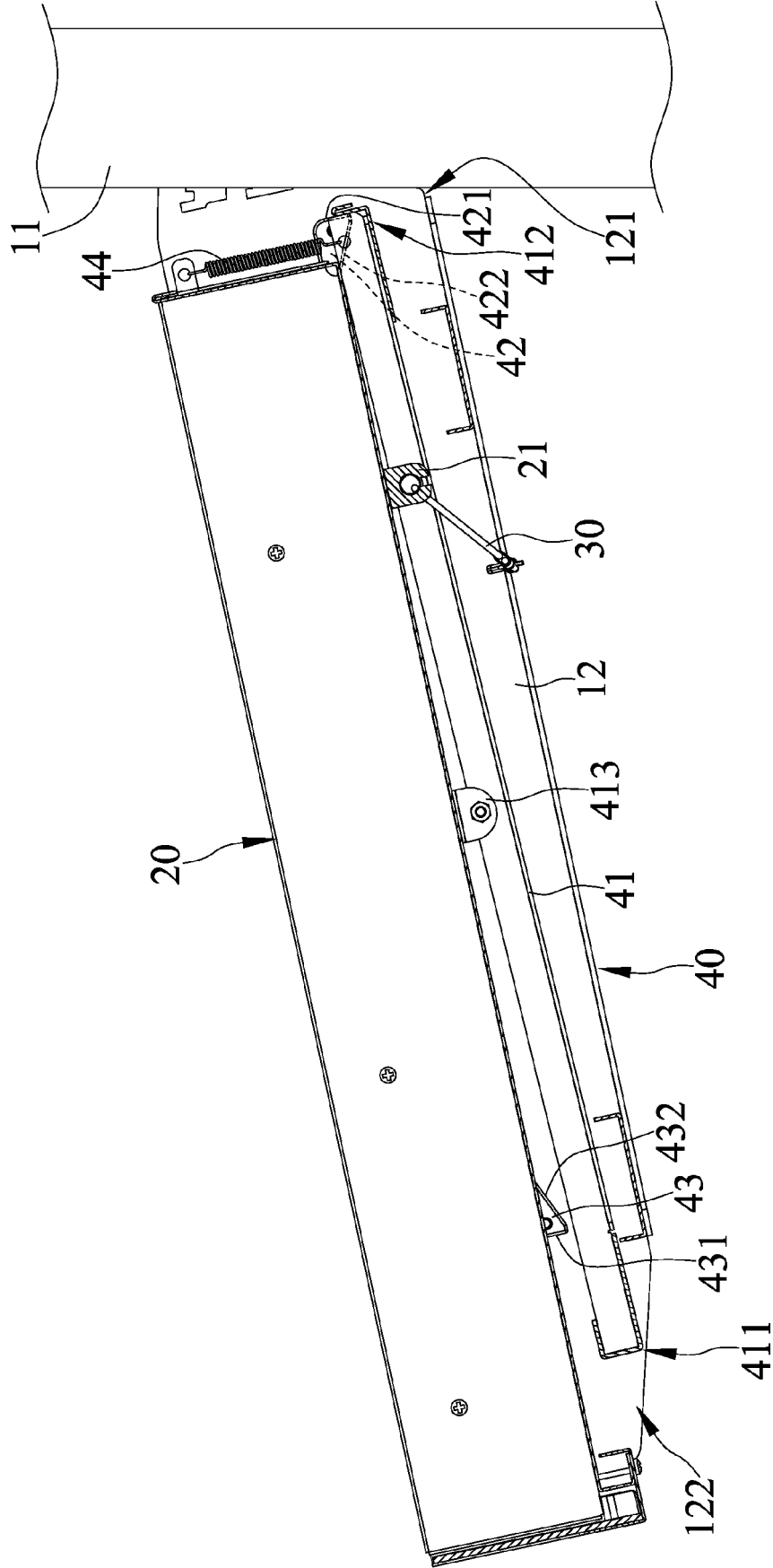


FIG. 4

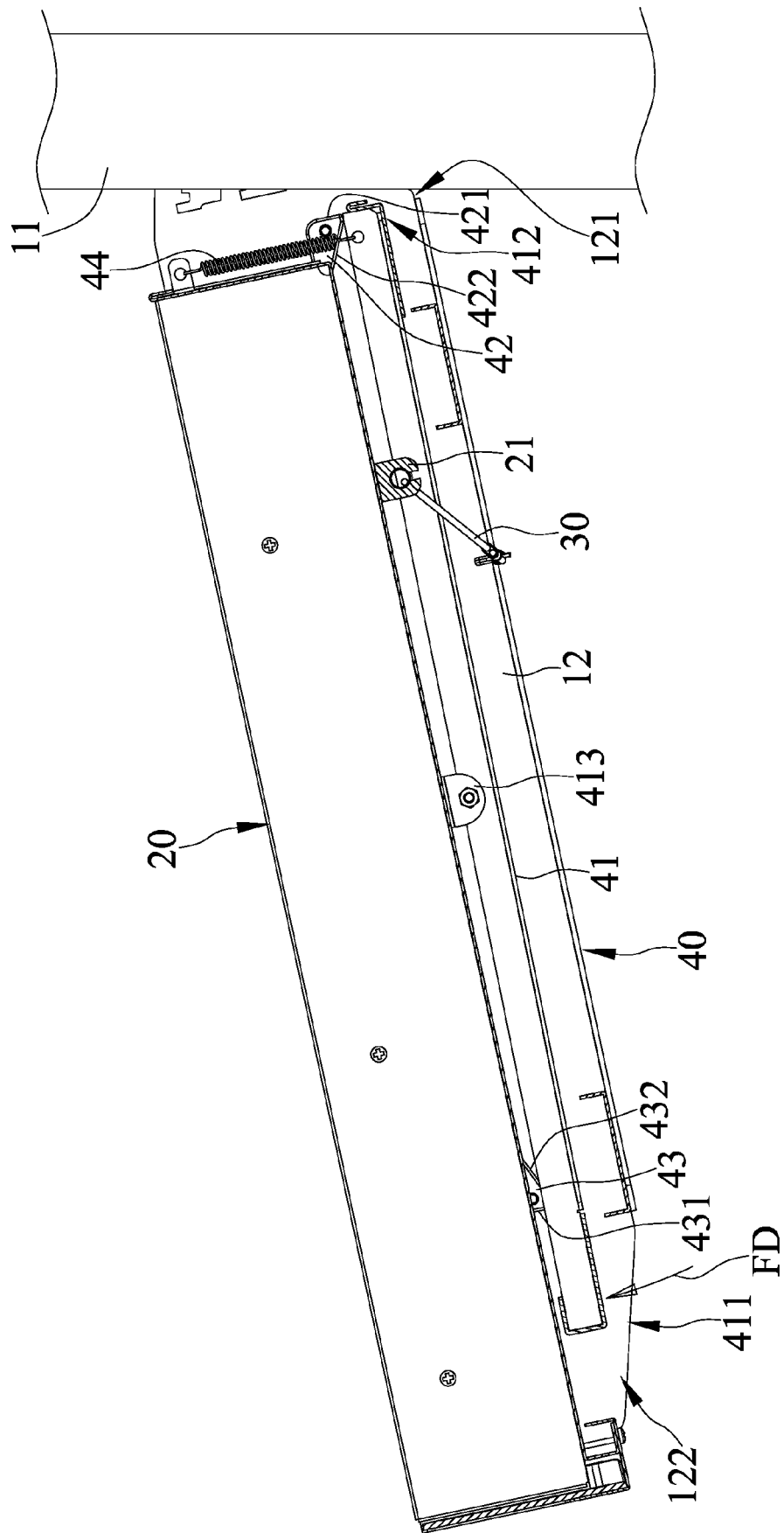


FIG. 5

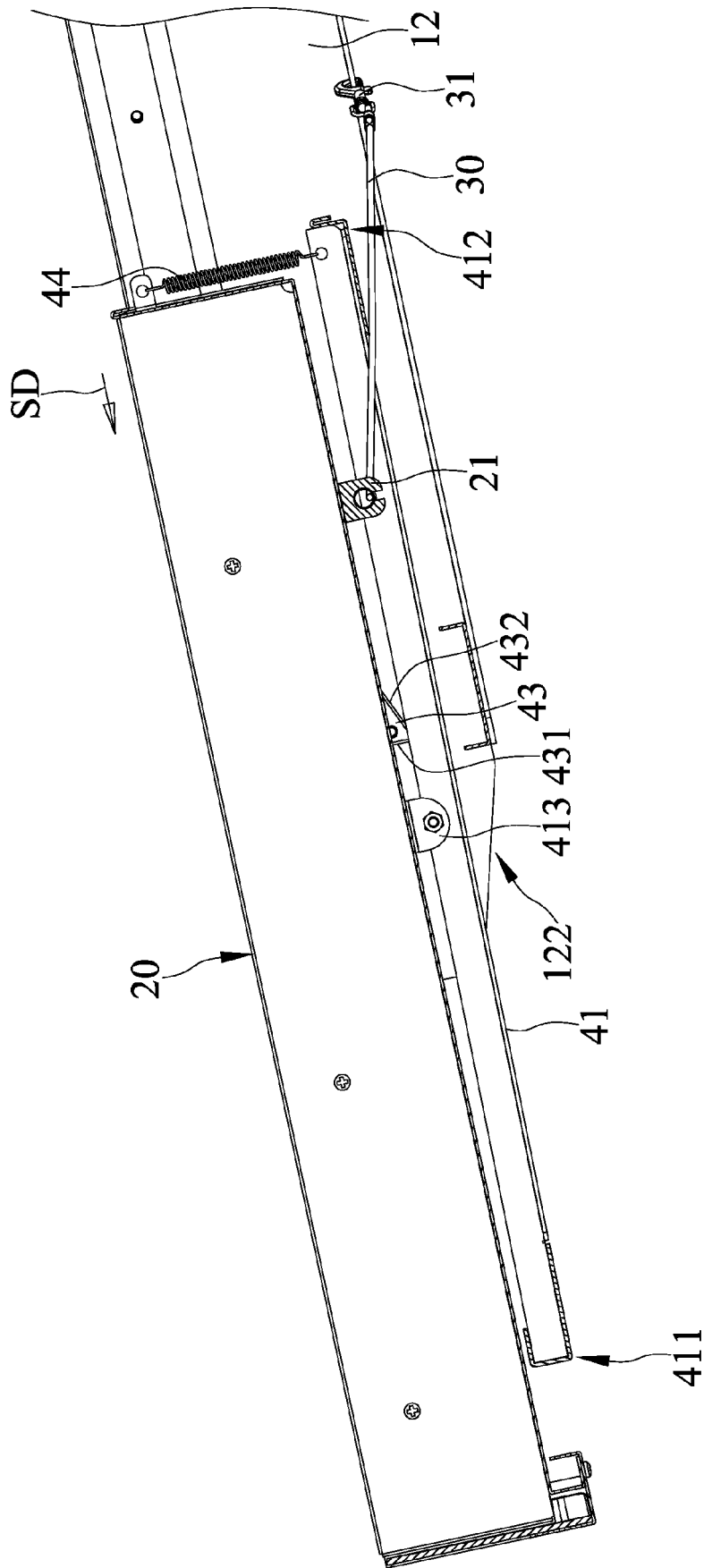


FIG. 6

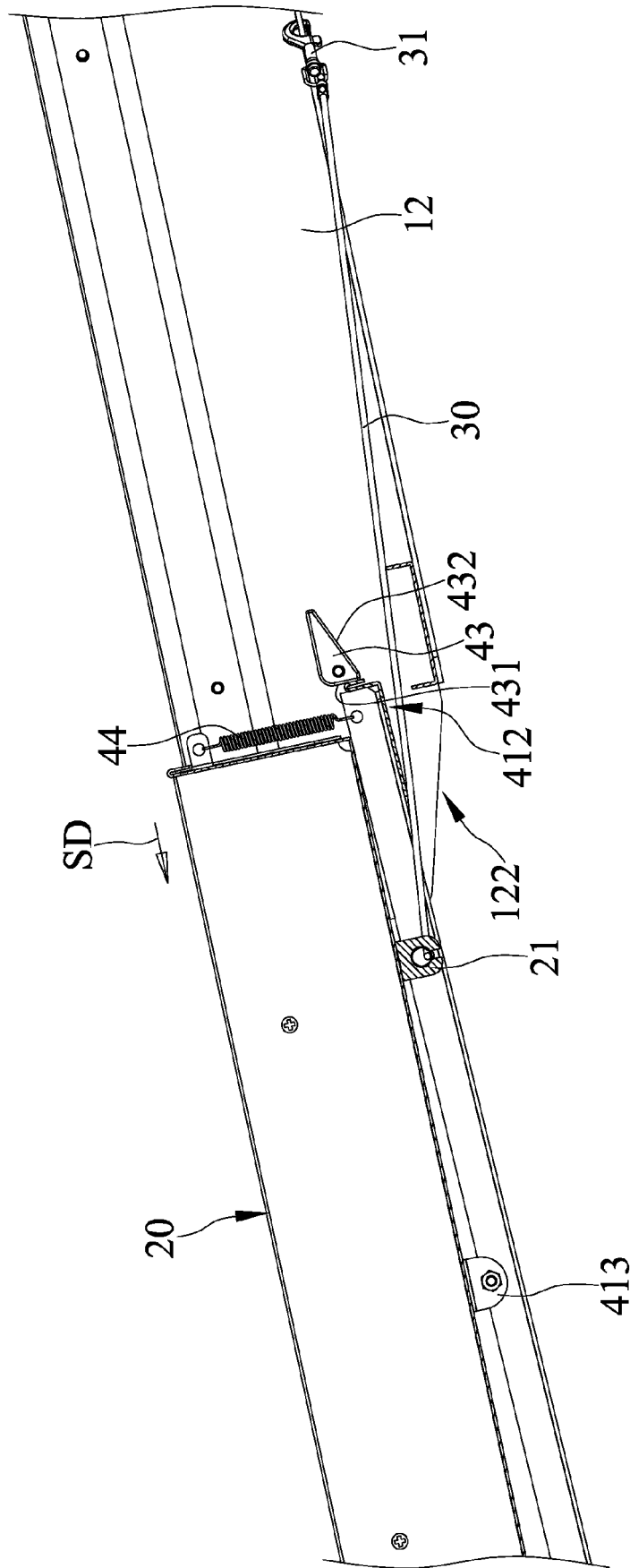


FIG. 7



EUROPEAN SEARCH REPORT

Application Number
EP 18 16 2518

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 102 01 242 A1 (HE PA GMBH [DE]) 24 July 2003 (2003-07-24)	1-7,9,10	INV. A47B88/467
A	* figure 2 *	8,11-15	
A	----- US 2009/127990 A1 (DUBACH FREDI [CH] ET AL) 21 May 2009 (2009-05-21) * figure 1 *	1	
A	----- US 905 544 A (LAMBERT WALTER [US] ET AL) 1 December 1908 (1908-12-01) * figures 1-7 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 April 2018	Examiner Ibarrondo, Borja
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			

EPO FORM 1503 03.02 (P04C01)

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

EP 18 16 2518

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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11-04-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10201242 A1	24-07-2003	NONE	
US 2009127990 A1	21-05-2009	AT 476115 T AT 503880 A1 CN 101472506 A EP 2028972 A2 ES 2348562 T3 JP 5357018 B2 JP 2009541611 A MY 149455 A US 2009127990 A1 WO 2007147180 A2	15-08-2010 15-01-2008 01-07-2009 04-03-2009 09-12-2010 04-12-2013 26-11-2009 30-08-2013 21-05-2009 27-12-2007
US 905544 A	01-12-1908	NONE	