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(54) ROAD SIGNS TRANSPORTATION UNIT

(57) A transportation unit, particularly for road signs, comprises a rack and road signs with wheels. The rack is designed as a frame (1) with vertical posts (1a) and external crossbars (1b) located between vertical posts (1a). Pairs of shaped sections (1c) are fixed between external crossbars (1b) to define horizontal levels. At every horizontal level a stopping member (2) is provided at one side of the rack to prevent displacement of the road sign. A locking mechanism (3) is mounted at the opposite side of the rack for engagement with a socket (4) attached to a pole (5) of the road sign board (6). The upper side of the post (5) of the road sign board (6) is provided with an axis (7) with wheels (8) mounted at its both ends. The distance between wheels (8) matches the span between shaped sections (1c).

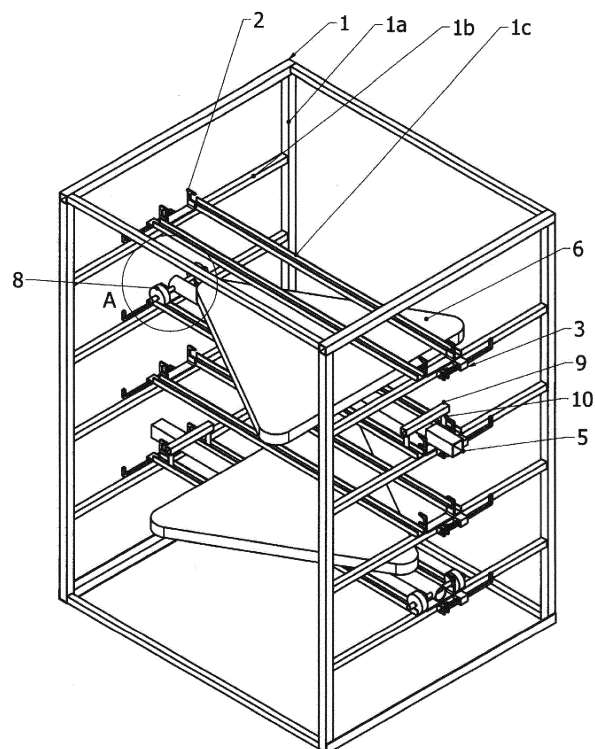


fig. 1

Description

[0001] The invention relates to a transportation unit, particularly for road signs, designed to store and transport road signs as well as designed for deploying road signs on road roadsides.

[0002] In the state-of-the-art there is patent application WO2012071001, which discloses a trailer designed to store and transport road signs. Such a trailer has dedicated support racks for signs with support wheels attached thereto.

[0003] Proper marking of roadwork areas is a significant obstacle when the roadworks are in progress. More than a dozen of signs are necessary to properly mark even a single section of roadworks. Each sign is coated with special luminescent film that is extremely vulnerable to scratches and abrasions, which makes the signs illegible and damaged signs must be replaced with new ones. Price of luminescent films that are used for coating road signs is relatively high, so recoating of damaged signs is not practicable, only replacement of signs with new ones is reasonable.

[0004] The present invention relates to a transportation unit for road signs as described in the preamble to the independent claim no. 1. The invention consists in that the unit comprises a rack designed as a frame with vertical posts and external crossbars that are disposed at various heights between mutually opposite pairs of vertical posts. Pairs of shaped sections are fixed between corresponding external crossbars mounted at the same height, defining horizontal levels. Stopping members are provided on each horizontal level at one side of the rack to prevent displacement of the road sign, whilst a locking mechanism is mounted at the opposite side of the rack for engagement with a socket attached to a pole of road sign board. Axis with wheels is mounted to the upper end of the pole of the road sign board. The distance between wheels matches the span between the shaped sections.

[0005] Preferably a second crossbar with feet is attached to the bottom end of the pole of the road sign board and the crossbar is provided with feet, where distance between feet matches the span between the shaped sections.

[0006] Preferably the locking mechanism is designed as a spring-actuated latch.

[0007] It is also preferable when the stopping member is designed as a set of hooks suitable to hold the axis or as a bumper suitable to block wheel.

[0008] It is yet again preferable when go-through holes are made in the bottom of the shaped sections to enable water drainage.

[0009] The beneficial effect of the invention designed as a transportation unit for road signs is the possibility to carry a plurality of road signs in steady positions, to unload them quickly from the transportation rack, to have them deployed on a road shoulder, and afterwards to easily and quickly collect them back. The rack design enables to access loaded road signs from both the left

side and the right side of the rack. This makes it possible to use the unit for transportation and deployment of road signs on motorways and highways when road signs are placed on both right and left sides of the roadway. Such a solution substantially facilitates and speeds up deployment of road signs, extends the lifetime of purchased road signs and contributes to safety of personnel since they do not have to enter on roadways. Another advantage of the solution consists in easy access to every single sign, in consequence the personnel no longer needs to pop signs that are on top of the heap to access the necessary sign in the bottom.

[0010] The invention according to its embodiment is presented in details on the attached drawing, which:

Fig. 1 is a top perspective view of the unit,

Fig. 1a presents the detail A from fig. 1,

Fig. 2 is a bottom perspective view of the unit,

Fig. 2a presents the detail B from fig. 2,

Fig. 3 is a front view of the unit,

Fig. 3a presents the detail C from fig. 3,

Fig. 3b is a cross-section view of the invention illustrated in fig. 3 and taken at D-D plane, and

Fig. 3c is a cross-section view of the invention illustrated in fig. 3 and taken at E-E plane.

[0011] The transportation unit, particularly to transport road signs, according to the embodiment presented in drawing includes a rack and two road signs. The rack has a form of a frame 1 made up of four vertical posts 1a being hollow tubes with square cross-section. External crossbars 1b are disposed at various heights between mutually opposite pairs of vertical posts, in particular there are four pairs of external crossbars 1b designed as hollow tubes with square cross-sections. Pairs of shaped sections 1c being channel bar with go-through holes in their bottom are fixed between corresponding external crossbars 1b mounted at the same height defining four horizontal levels. Owing to application of perforated channel bars, i.e. channel bars with go-through holes in their bottom, rainwater is prevented to accumulate in channel bars. On every horizontal level, on both sides of rack there are stopping members 2 attached to upper parts of crossbars 1b and designed as two hooks made of flat steel extending inwardly to the rack to lock axis 7 of wheels 8 of the road sign. Alternatively, the stopping member 2 can be designed as a bumper suitable to block movement of wheels 8. A locking mechanisms 3 designed as spring-actuated latches are attached to outer sides of the crossbars 1b. The latch is engaged with the socket 4 fixed to the pole 5 of the road sign board 6. The

upper end of the pole 5 of the road sign board 6 is provided with an axis 7 with wheels 8 mounted at its both ends. The distance between wheels 8 matches the span between shaped sections 1c. In addition, a crossbar 9 is attached to the bottom end of the pole 5 of the road sign board 6, which is provided with feet 10, where the distance between feet 10 matches the span between the shaped sections 1c, thus the feet 10 rest on said shaped sections 1c.

[0012] The number, form and shape of external crossbars, vertical posts and shaped sections presented in this embodiment are merely an example. In case of a rack with more external crossbars, it is able to transport more road signs.

Reference numbers

[0013]

- 1. frame
- 1a. post
- 1b. crossbar
- 1c. shaped section
- 2. stopping member
- 3. locking mechanism
- 4. socket
- 5. pole
- 6. road sign board
- 7. axis
- 8. wheel
- 9. crossbar
- 10. foot

Claims

1. Road signs transportation unit, comprising a rack and road signs with wheels (8), **characterized in that** the rack designed as a frame (1) comprises vertical posts (1a) and external crossbars (1b) that are disposed at various heights between mutually opposite pairs of the vertical posts (1a), and pairs of shaped sections (1c) are fixed between corresponding external crossbars (1b) mounted at the same height and defining horizontal levels, whereas stopping members (2) are provided on each horizontal level at one side of the rack to prevent displacement of the road sign, whilst a locking mechanism (3) is mounted at the opposite side of the rack for engagement with a socket (4) attached to a pole (5) of the road sign board (6), whereas an axis (7) with wheels (8) is mounted to the upper end of the pole (5) of the road sign board (6), where the distance between wheels (8) matches the span between the shaped sections (1c).
2. Transportation unit according to claim 1, **characterized in that** a second crossbar (9) is attached to the

bottom end of the pole (5) of the road sign board (6) and the crossbar is provided with feet (10), where distance between the feet (10) matches the span between the shaped sections (1c).

3. Transportation unit according to claim 1 or 2, **characterized in that** the locking mechanism (3) is designed as a spring-actuated latch.
4. Transportation unit according any of claims 1 to 3, **characterized in that** the stopping member (2) is designed as a set of hooks suitable to hold the axis (7).
5. Transportation unit according any of claims 1 to 3, **characterized in that** the stopping member (2) is designed as bumper suitable to block movement of wheels (8).
6. Transportation unit according any of claims 1 to 5, **characterized in that** go-through holes are made in the bottom of the shaped sections (1c).

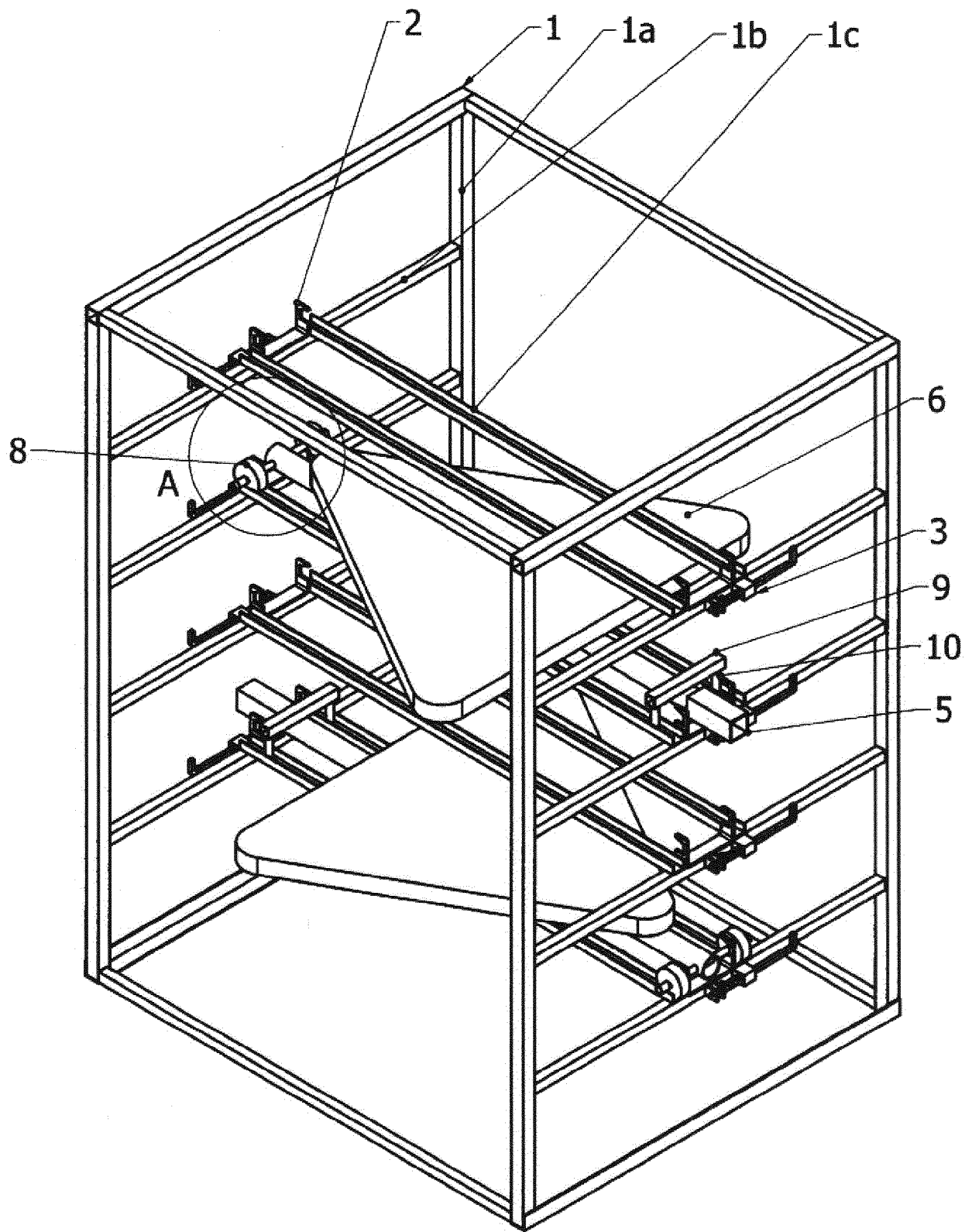


fig. 1

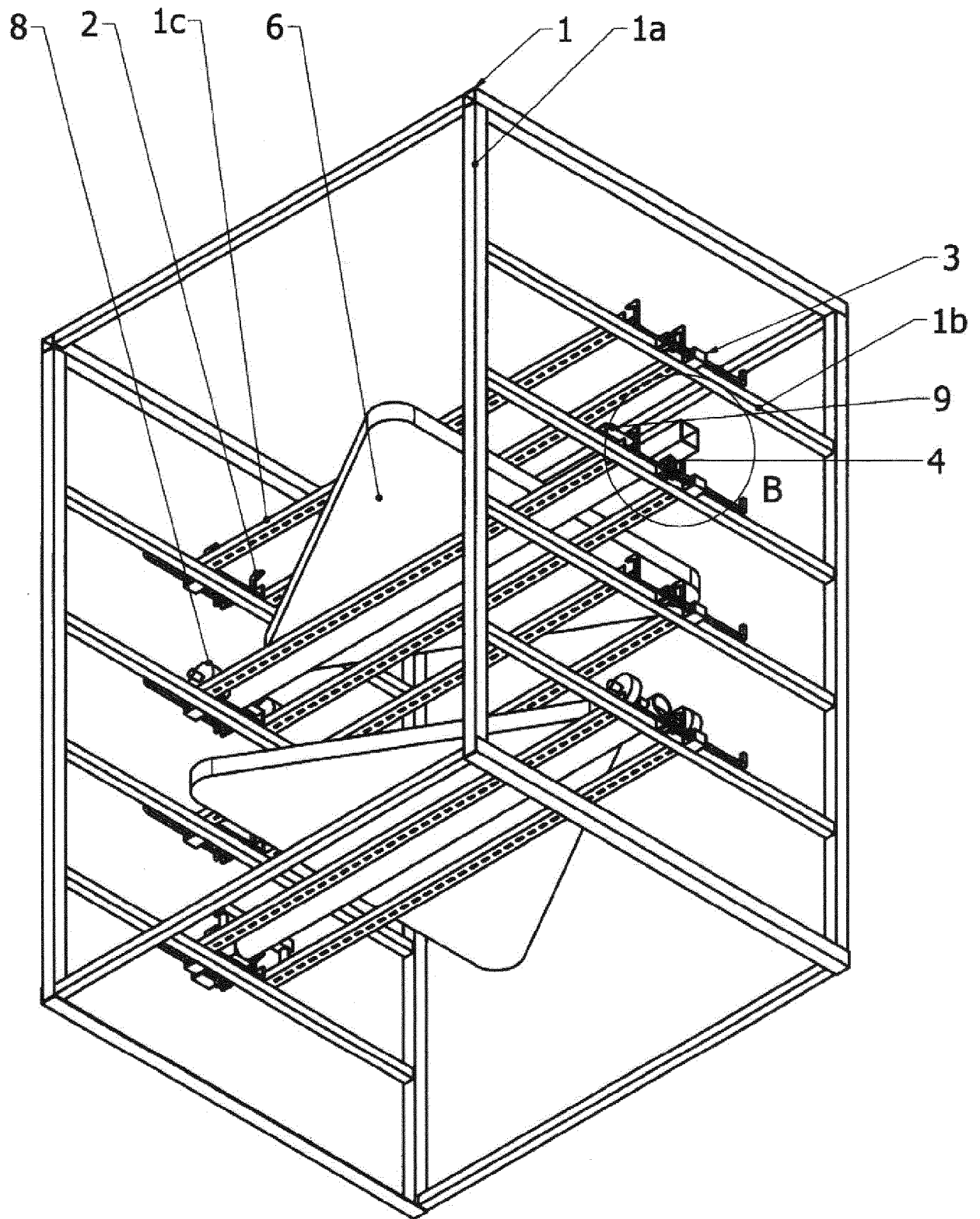


fig. 2

A

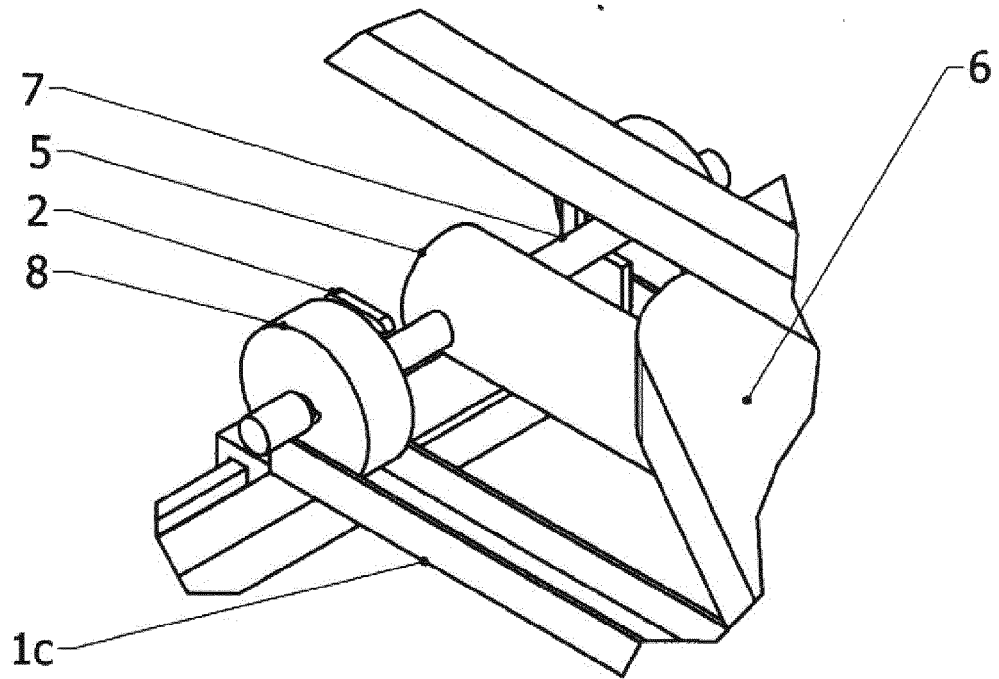


fig. 1a

B

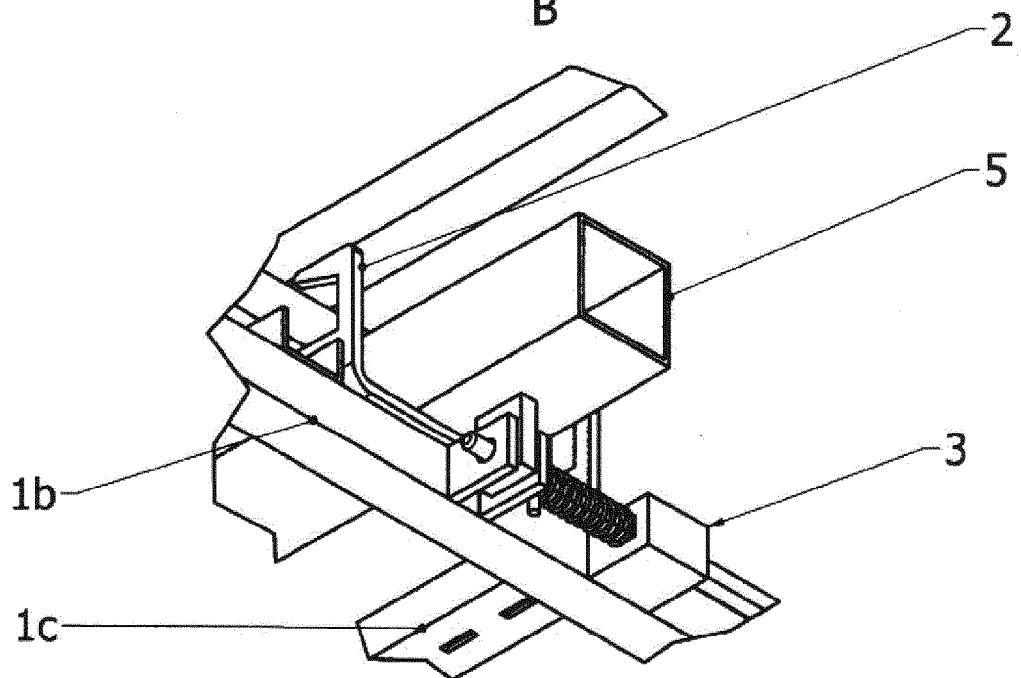


fig. 2a

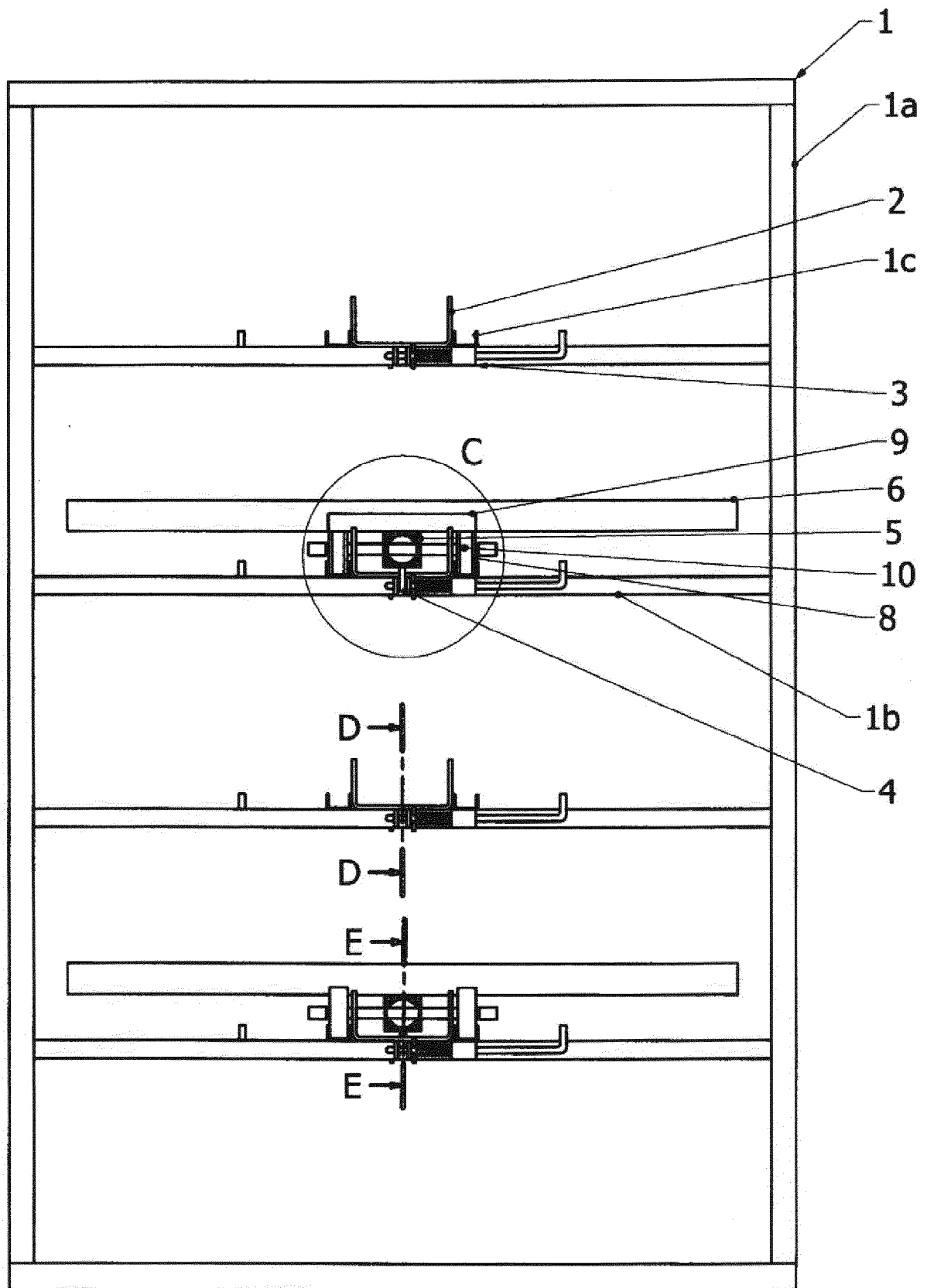


fig. 3

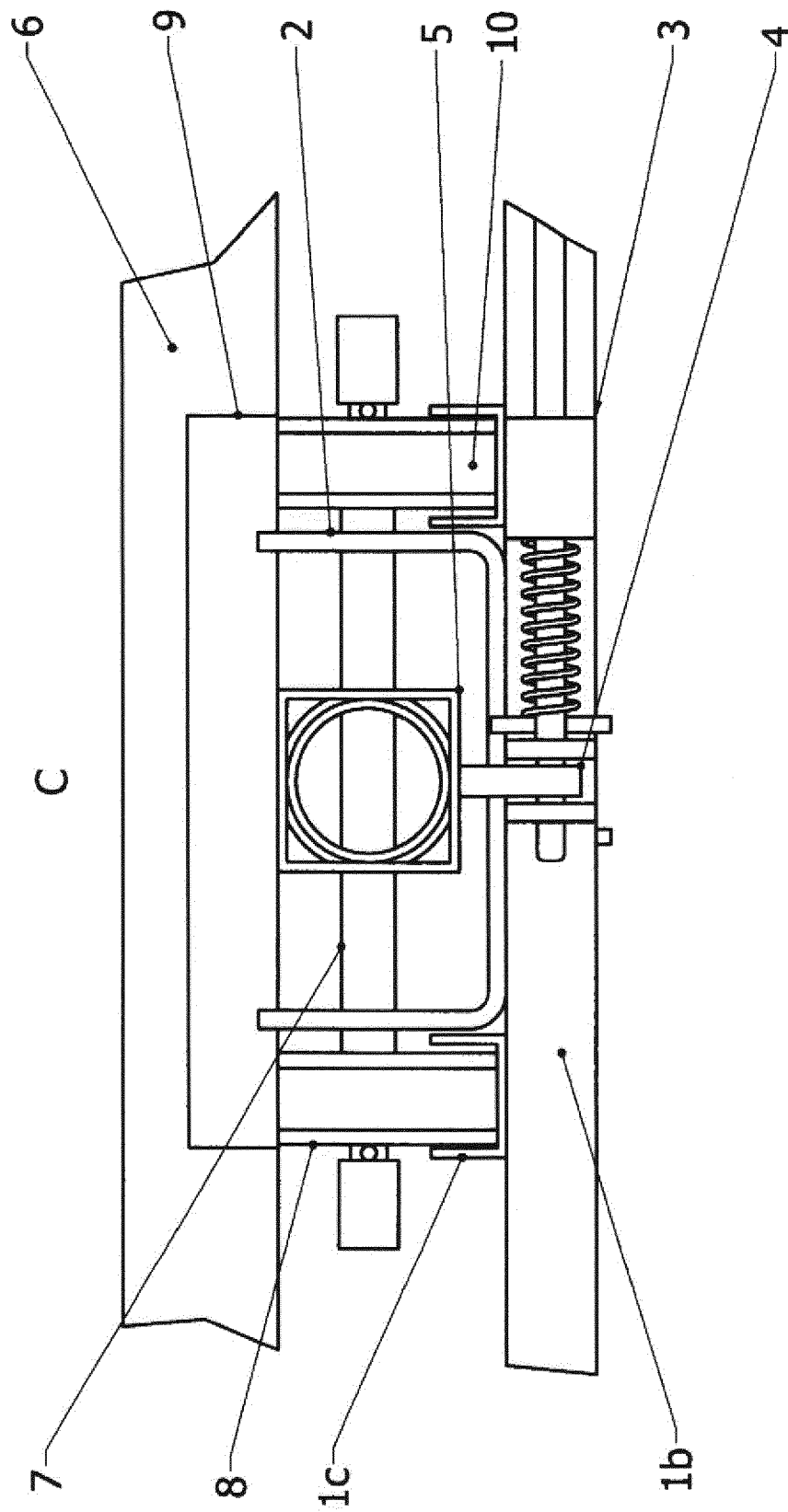


fig. 3a

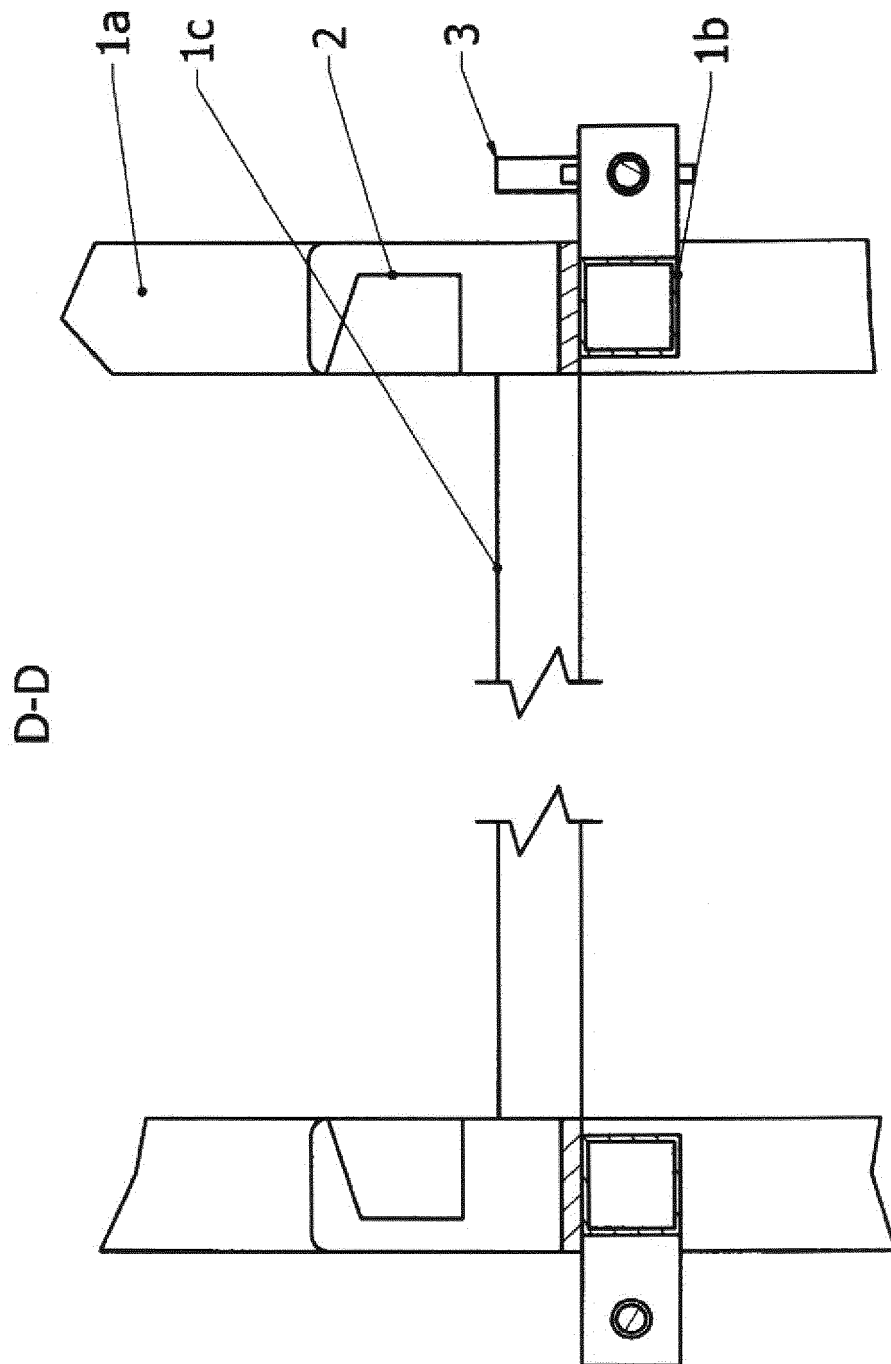


fig. 3b

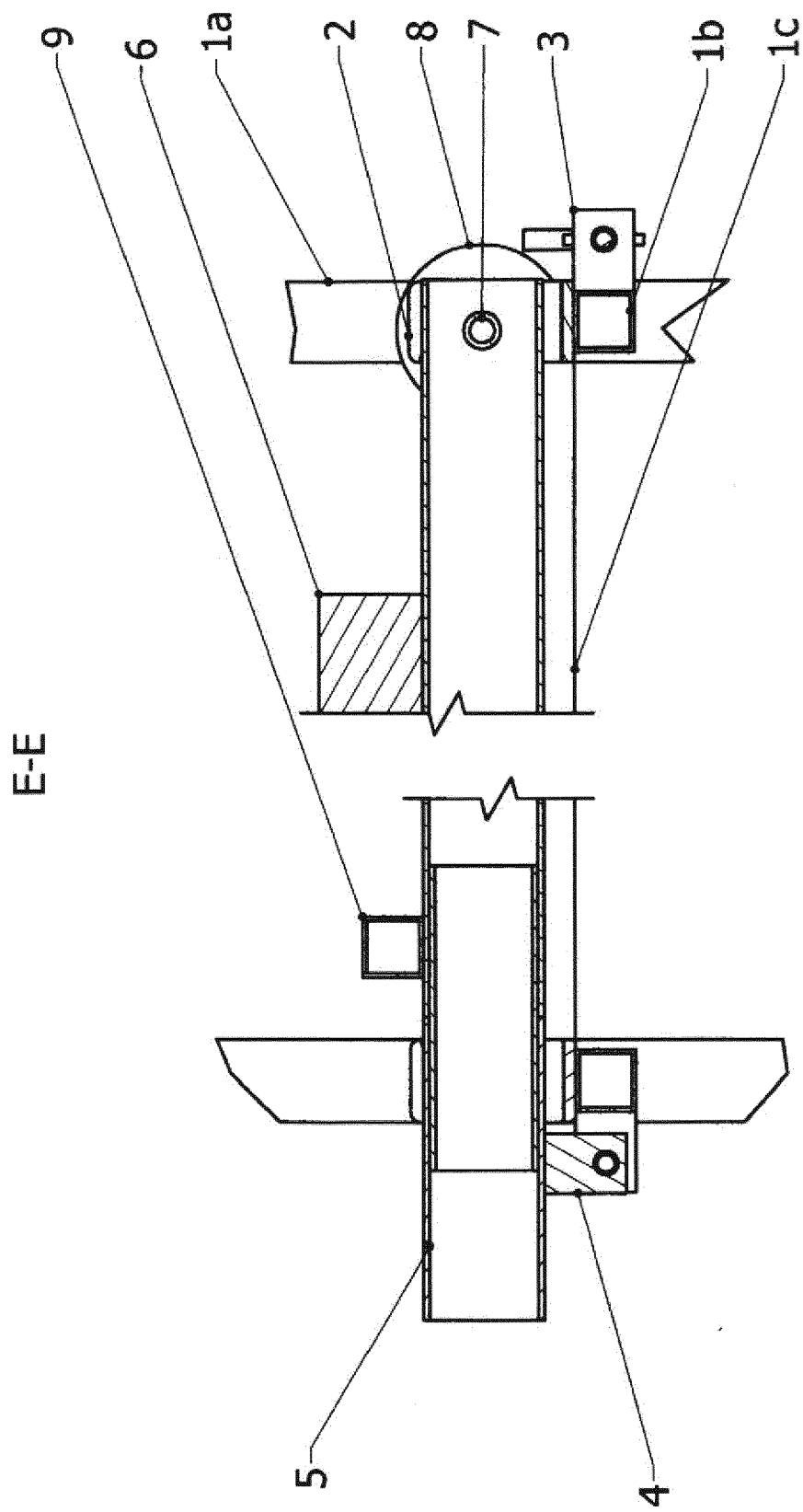


fig. 3c



EUROPEAN SEARCH REPORT

Application Number
EP 18 21 5937

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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)
A	FR 2 836 494 A1 (CRAPIE ETS [FR]) 29 August 2003 (2003-08-29) * page 3, line 16 - page 7, line 35; figures *	1	INV. E01F9/70
A	FR 2 264 683 A1 (VALLETTE ET PAVON SA ETS [FR]) 17 October 1975 (1975-10-17) * page 2, line 8 - page 4, line 2; figures *	1	
A	CH 507 825 A (ILE POUR LA REALISATION D INV [FR]) 31 May 1971 (1971-05-31) * figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E01F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 July 2019	Examiner Stern, Claudio
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EPO FORM 1503 03/82 (P04C01)

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

EP 18 21 5937

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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02-07-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2836494	A1	29-08-2003	NONE
FR 2264683	A1	17-10-1975	NONE
CH 507825	A	31-05-1971	NONE

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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