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(54) Reduced-encumbrance winding system

(57) A reduced-encumbrance winding system (1) is disclosed for winding material in mobile houses, bungalows, boat-houses, campers, roulettes and caravans, comprising: a containing case (2); a first and at least one second winding rollers (3a, 3b) of the winding material; a winding control system (6a); at least one small winding control chain (6b); and at least one resilient belt (8) adapted to perform the motion transmission between the winding rollers (3a, 3b).

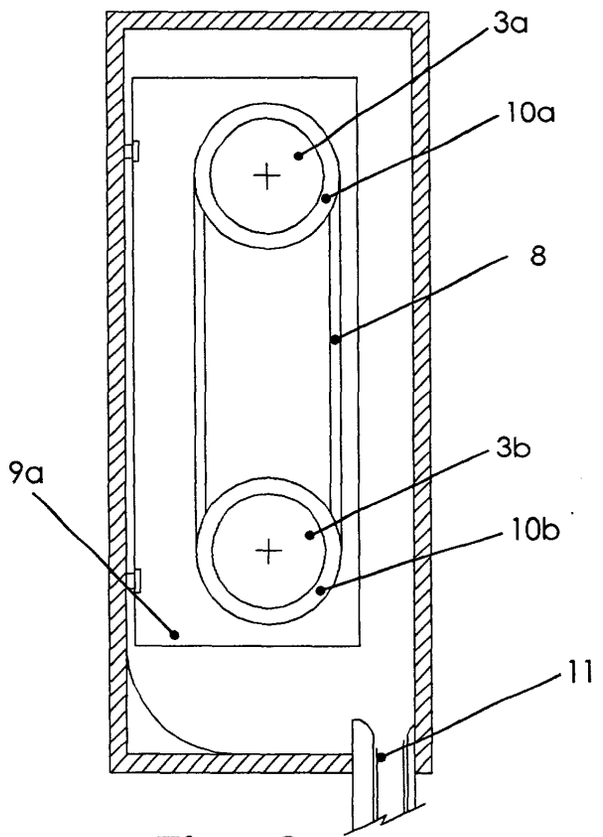

Fig. 2

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Description

[0001] The present invention refers to a reduced-encumbrance winding system for winding roller shutters and the like in window and door frames, particularly to be applied to mobile houses, bungalows, boat-houses, campers, roulottes and caravans.

[0002] The prior art in this field provides for arrangements aimed to wind roller shutters and other roller material around a single rotating winding roller, controlled through already known systems, comprising manual clutch kinematisms or by applying device for automatic handling, in which such roller is contained inside a case placed above the window or door frame.

[0003] Though this arrangement is still valid in classic building applications, it has disadvantages when it has to be applied to mobile houses and simmilar constructions, which, due to their own nature, have different and peculiar construction characteristics.

[0004] Mobile houses, for example, are living units that can be transported and the need of handling them makes their lightness an essential requirement. Due to this reason, mobile house walls are realised, obviously not in masonry, but with sandwich panels that are able to guarantee structural sturdiness, insulation and lightness. These parts further have, due to their construction characteristics, a reduced thickness.

[0005] The application of usual roller-type winding systems is badly suited for the small thickness of mobile house walls, since the roller containing case must be sized in order to be able to contain the roller shutter in all its length and this makes the sizes of the usual winding system exceed the wall thickness. For this reason currently the sector operators for mobile house roller shutters have arrangements that provide for the adoption of cases projecting outwards by at least 10 cm. These arrangements, in addition to be scarcely aesthetically appealing, heavily constrain the mobile house sizes. The Rules of the Road in fact state that the maximum width of a mobile house, in order to be able to be transported, must be, as lateral encumbrance, not greater than 4 m. It follows that the adoption of cases projecting by 10 mm on each side forces a reduction of the mobile house width, to allow transporting it, to at least 3.80 m with a high and unavoidable loss of living surfaces.

[0006] Object of the present invention is solving the above prior-art problems, by providing a reduced-encumbrance winding system that allows using cases with smaller sizes and a lower side encumbrance.

[0007] A further object of the present invention is providing a reduced-encumbrance winding system that, being dimensionally more compatible with the mobile house wall thickness, is more unobtrusive to be viewed guaranteeing a better aesthetic effect.

[0008] The above and other objects and advantages of the invention, as will appear from the following description, are obtained by a winding system as claimed in Claim 1. Preferred embodiments and non-trivial variations of the present invention are claimed in the dependent Claims.

[0009] The present invention will be better described by some preferred embodiments thereof, given as a non-limiting example, with reference to the enclosed drawings, in which:

- Figure 1 is a front cut-away view of a first embodiment of a winding system according to the present invention;
- Figure 2 is a side view of the first embodiment of the winding system according to the present invention;
- Figure 3 is a front perspective view of the system in Fig. 1;
- Figure 4 is a front detailed view of the system in Fig. 1;
- Figure 5 is a front detailed perspective view of the system in Fig. 1; and
- Figure 6 is a side perspective detailed view of the system in Fig. 1.

[0010] With reference to the Figures, a preferred embodiment of the winding system of the present invention is shown and described. It will be immediately obvious that numerous variations and modifications (for example related to shape, sizes and parts with equivalent functionalities) could be made to the described system without departing from the scope of the invention as claimed in the enclosed Claims.

[0011] Fig. 1 shows a cut-away view of the containing case 2 of the winding system 1 of the invention: the system 1 is composed of two winding rollers 3a and 3b secured to a containing case 2 by means of support brackets 5a, 5b, 5c, 5d, whose rotation with respect to their own axes is allowed by known kinematisms 4a, 4b, 4c, 4d. A control system with clutch 6a with a small chain 6b is strongly secured to the roller 3a. The small chain 6b, to allow the user to drive the system 1, projects out of the case 2 through a slot 7. It is obvious that the small chain control system 6a can be replaced by similar systems or systems automatised with similar functionality. To allow an integral movement of the two rollers 3a and 3b, they are equipped, in the present embodiment, respectively with a recess 10a and 10b on their own surface aimed to be a seat for a resilient belt 8 that connects such rollers 3a and 3b. It follows that the small chain 6b traction generates the related and homogeneous rotation of both rollers 3a and 3b. It is obvious that such belt 8 can be more than one or can be replaced by one or more toothed belts (not shown), by one or more chains (not shown) or by any other means that perform a similar function. The roller shutter (not shown), that projects out of the case 2 through the slit 11, is secured to the belt 8 through suitable devices known in the art.

[0012] The space saving resulting from the present invention stems from the fact that, with the same shutter length, while in the known systems the shutter is wound

wholly on a single roller whose final diameter is then determined by the rated roller shutter thickness plus the number of revolutions around the roller, in the winding system 1 of the present invention the roller shutter is distributed onto two different and separate rollers that mutually allow thereby to obtain a lower final roller diameter.

[0013] If the roller shutter slats are not mutually bound, it is provided to insert two abutment bulkheads 9a and 9b that prevent the mutual withdrawal of the slats when winding or during the transport of the winding system 1 of the present invention.

[0014] The two rollers can be placed so that their rotation axes are mutually parallel and placed on a vertical plane with respect to the ground (as shown), or they can be placed so that the rotation axes are mutually parallel and horizontally placed on the same plane, or still so that their rotation axes are mutually parallel and placed on a slanted plane with respect to the ground.

Claims

1. Reduced-encumbrance winding system (1) for winding material in mobile houses, bungalows, boat-houses, campers, roulottes and caravans, comprising:

   - a containing case (2);
   - a first winding roller (3a) of the winding material;
   - a winding control system (6a);
   - at least one small winding control chain (6b);

   characterised in that it is further equipped with:

   - at least one second widing roller (3b) for the winding material, adapted to operatively cooperate with said first winding roller (3a); and
   - at least one resilient belt (8) adapted to perform the motion transmission between said winding rollers (3a, 3b).

2. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** the rotation axes of said first and second winding rollers (3a, 3b) are mutually parallel and are placed on a vertical plane with respect to the ground, said at least one second winding roller (3b) being vertically placed at a lower height from the ground with respect to the placement height of said first winding roller (3a).

3. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** the rotation axes of said first and second winding rollers (3a, 3b) are mutually parallel and are placed on a horizontal plane with respect to the ground.

4. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** the rotation axes of said first and second winding rollers (3a, 3b) are mutually parallel and are placed on a slanted plane with respect to the ground.

5. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** it is further equipped with at least two abutment bulkheads (9a, 9b) adapted to prevent the winding material from going out of said winding rollers (3a, 3b) when the winding material is completely wound onto said winding rollers (3a, 3b), said abutment bulkheads (9a, 9b) being integral with said case (2) and being crossed by said winding rollers (3a, 3b).

6. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** said containing case (2) is equipped with at least one slit (11) for passing the winding material.

7. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** said winding rollers (3a, 3b) rotate around their axes through kinematisms (4a, 4b, 4c, 4d).

8. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** said first winding roller (3a) is of the clutch type and said first winding roller (3a) is constrained to said clutch control system (6a), said clutch control system (6a) being able to be actuated through said small control chain (6b) projecting from said case (2) through a slot (7).

9. Reduced-encumbrance winding system (1) according to Claim 1, **characterised in that** said winding rollers (3a, 3b) have on their respective surfaces some recesses (10a, 10b) that replace the rolling seat of said resilient belt (8).

10. Reduced-encumbrance winding system (1) according to any one of the previous Claims, **characterised in that** said winding material is selected among roller shutters, mosquito nets, curtains, cloths and screens.

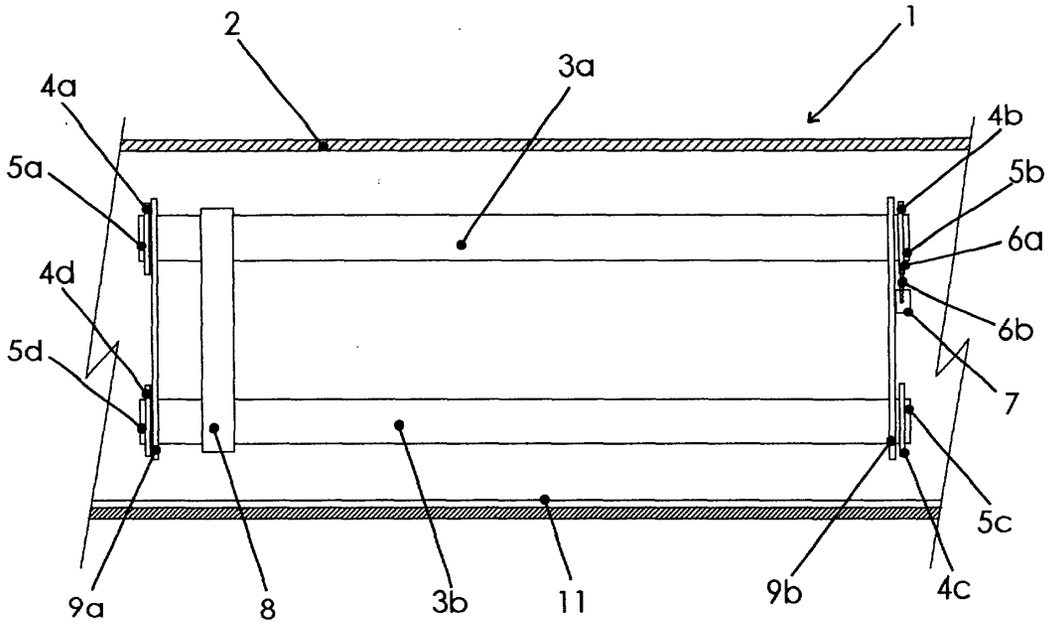

Fig. 1

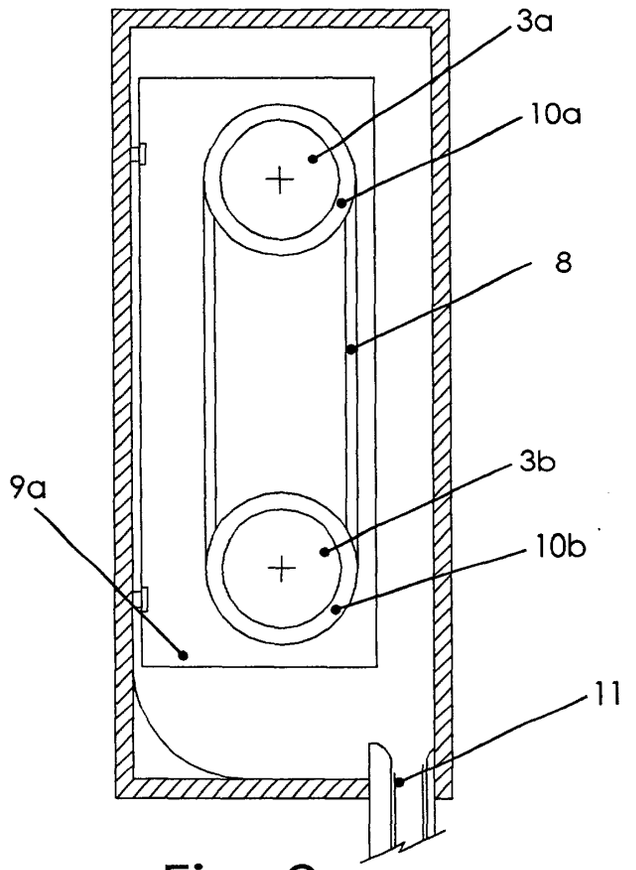

Fig. 2

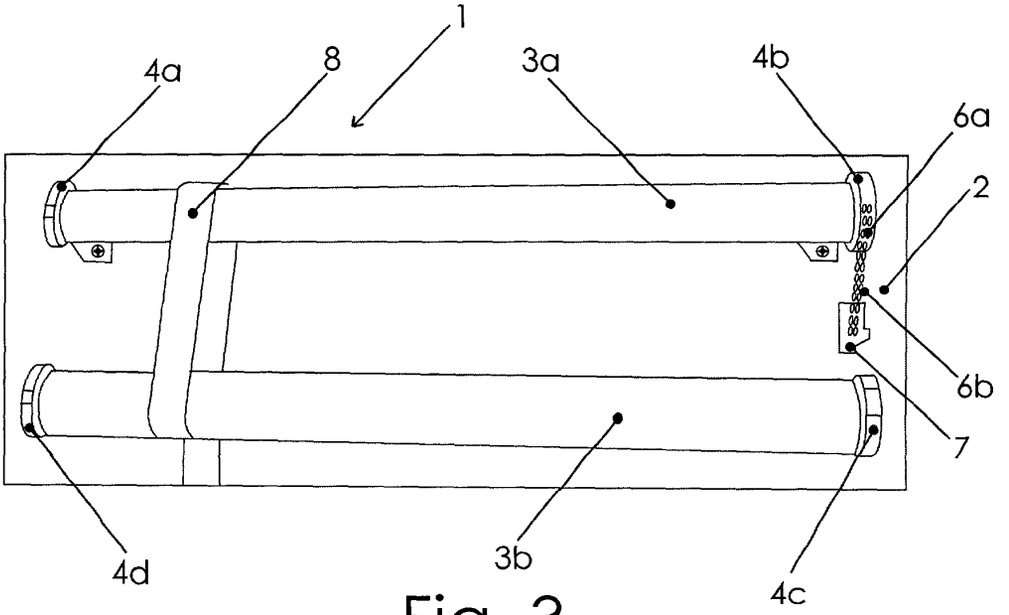

Fig. 3

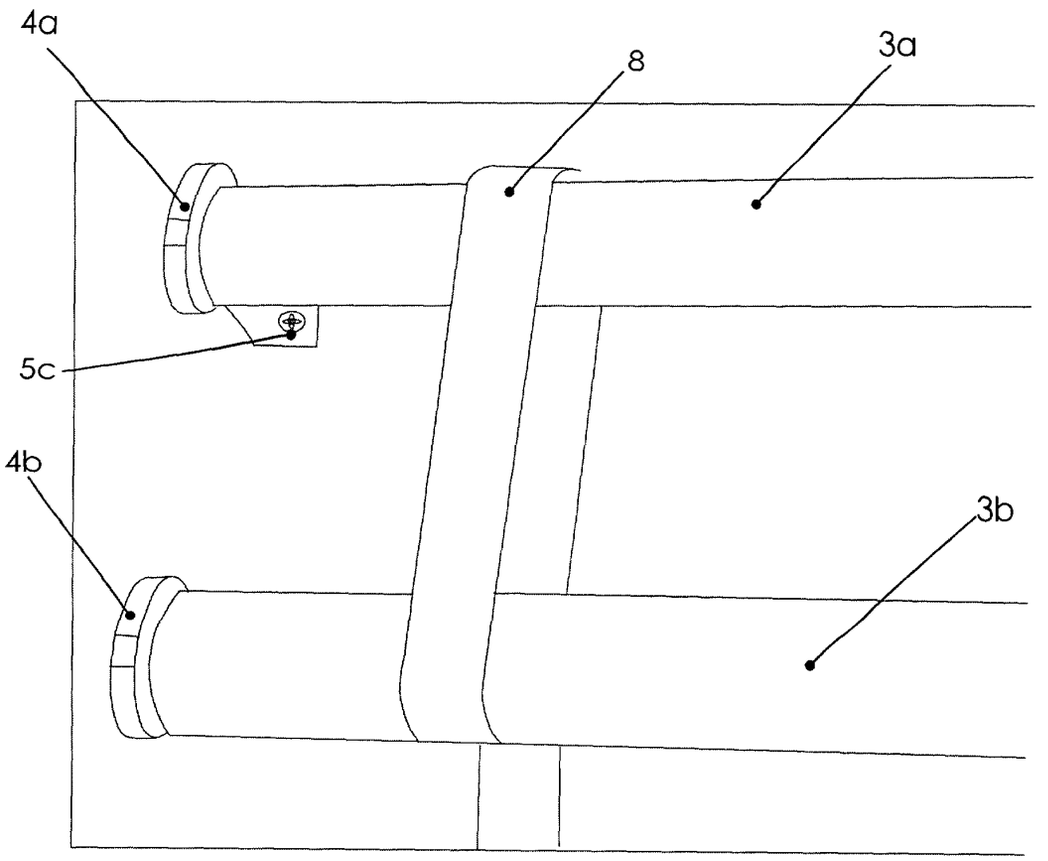

Fig. 4

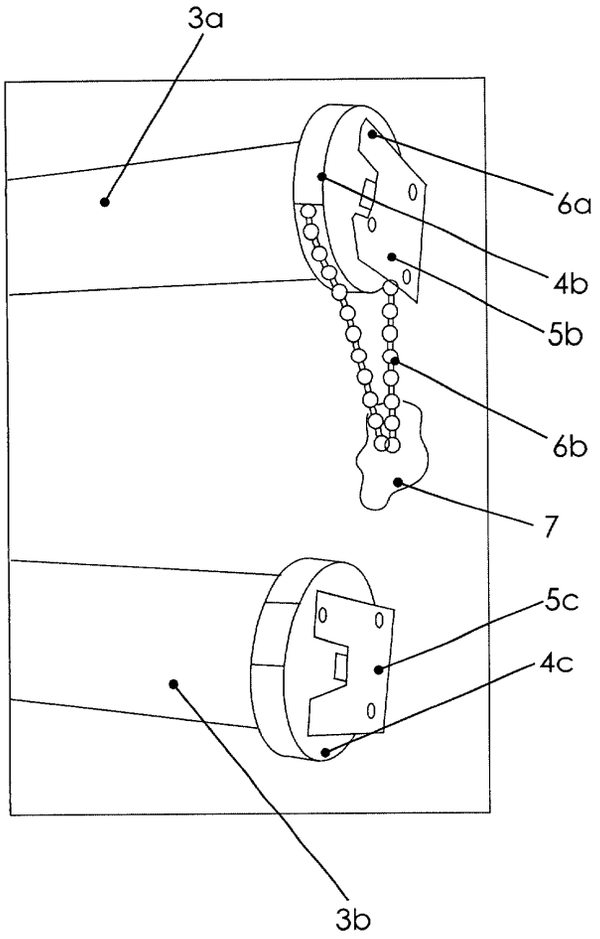

Fig. 5

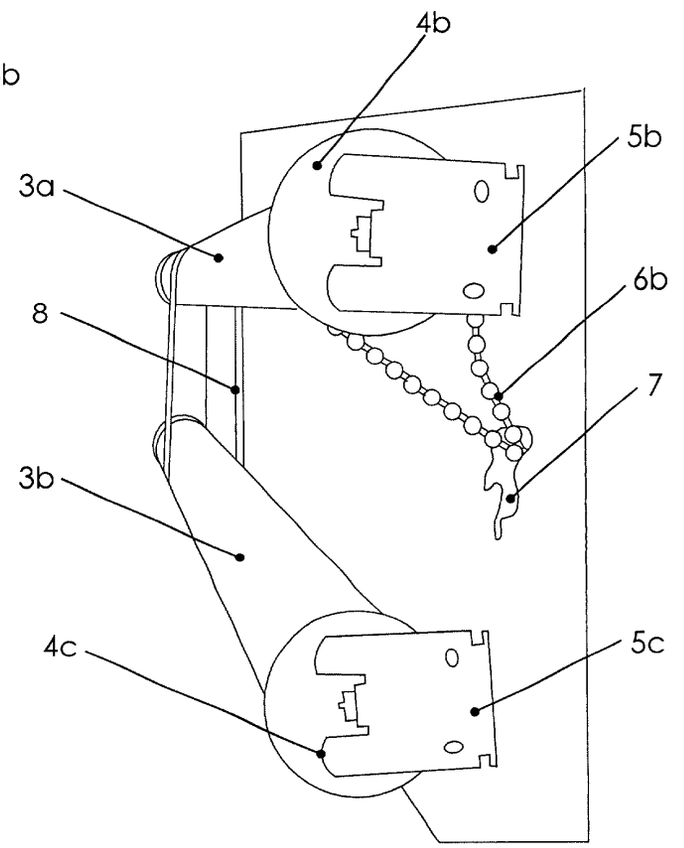

Fig. 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5119

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	CH 503 884 A (GRIESSER AG) 28 February 1971 (1971-02-28) * column 2, line 5 - column 3, line 19 * * figures 1-4 *	1-10	E06B9/68 E06B9/171
X	CH 625 311 A (PLANYA AG) 15 September 1981 (1981-09-15) * page 2, line 8 - line 61 * * figures 1,2 *	1-10	
X	DE 20 24 777 A (BASTGEN) 2 December 1971 (1971-12-02) * page 2, line 7 - line 25 * * figures 1-3 *	1-10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7) E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 July 2003	Geivaerts, D

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 42 5119

This annex lists the patent family membersrelating 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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17-07-2003

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