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KOVAŠKA INDUSTRIJA D.D. [SI/SI]; Kovaška c. 10,  
3214 Zreče (SI).

(72) Inventor; and

(75) Inventor/Applicant (for US only): JELENKO, Damir [SI/SI];  
Nikova ul. 14, 2230 Lenart (SI).(74) Agent: BORŠTAR, Dušan; Nova ul. 11, P.O. Box 74, 1230  
Domžale (SI).

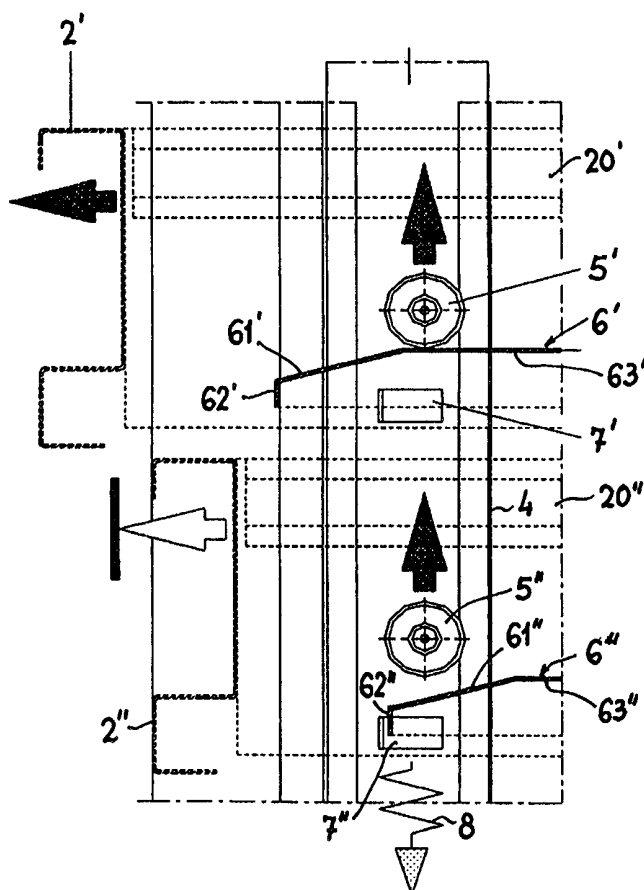
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(54) Title: MOBILE HAND TOOL CONTAINER

## (57) Abstract

The present invention relates to a mobile hand tool container comprising a housing (1), in which several drawers (2', 2'') are placed, which can be pulled-out by moving in the horizontal direction. Such a container is improved in such a manner, that by maintaining rationality of exploitation a complete interior of the container respectively its optimal storage capacity and moreover appropriate accessibility, by one already opened i.e. pulled-out drawer simultaneously pulling-out any other or even more drawers (2', 2'') is strictly prevented until the pulled-out drawer (2') is returned into its original i.e. closed position. To this aim, within the said housing (1) a beam (4) is arranged, which is movable in the vertical direction and is moreover equipped with appropriate stoppers (7', 7''), by means of which and thanks also to appropriate protrusions (62', 62'') available on the drawers (2', 2'') any other pushed-in respectively closed drawer (2'') is prevented from being pulled-out or opened.



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### **Mobile hand tool container**

The invention relates to a mobile hand tool container, especially a hand tool trolley or a mobile tool box equipped with appropriate wheels.

With respect to available mobile hand tool containers comprising a housing wherein several drawers are available, which can be pulled-out in a horizontal direction, the invention is directed towards further possible improvements of such a container especially in view of its stability, which means that without any essential influence on rationality of exploitation of the whole interior of the container respectively on its optimal storage capacity and moreover also on appropriate accessibility, when one drawer is already opened i.e. pulled-out, simultaneously pulling-out any other or even more drawers should be efficiently prevented, until the pulled-out drawer is returned into its original i.e. closed position.

One of the already known devices for storage hand tools and other materials is described in the DE 4 324 628. Such a device consists of a framework to which appropriate housings with drawers are attached. In its plane view the said device is of rectangular shape, so that it looks like a box. The framework is equipped by rollers or wheels and is therefore mobile; the rollers arranged on the one of its ends are embedded on the same axle, while on its other end the rollers should be turntable around vertical axles, by which appropriate maneuvering of the device during its moving between certain places may be ensured. The drawers placed within the said housings available on the framework can be pulled-out in a horizontal direction. Those housings with drawers, which are arranged higher on the framework, are arranged forwards and rearwards, while between them there is another housing with drawers, which is arranged lower on the framework. The drawers of the end housings may be pulled-out in a longitudinal direction of the framework. The drawers of the housing placed in-between can be pulled-out in a transversal direction of the framework and are usually easier accessible.

The main reason for such an arrangement seems to be a required stability of the device. The height of the tools or materials placed in the drawers is usually much higher as the weight of the drawers and the framework as such. Due the fact that the higher housings are arranged in the area of the forward and rearward end of the framework, they are difficult to access, but the possibility of simultaneously pulling-out more than one drawer, e.g. two or three drawers without is achieved without any essential risk on turning-over the framework. On the contrary, if more drawers would be pulled-out in a transversal direction, the consequences might no doubt be quite different. That is why only two drawers in appropriate central housing are available, which can be pulled-out in the transversal direction and are moreover arranged at utmost acceptable low position on the framework. The

consequence of such an arrangement is inefficiency in view of exploitation of the space required due the dimensions of the device e.g. in its plan view.

Namely, in field of storage equipment it is important to ensure appropriate accessibility and at the same time a possibility of an efficient exploitation of the whole space required by the device due its dimensions observed in the plan view. The best practical results in this course are ordinary obtained by using a container or its housing, the shape of which is parallelepiped. Many containers of such a shape are known to those skilled in the art, which are however on the other hand unfortunately often bound to serious problems with respect to stability, where the various manufactures try to avoid such problems in different ways. Some manufactures use preventive measurements as e.g. labels or similar instructions, by means of which the user is advised, not to pull-out several drawers simultaneously. Some other manufacturers have decided to increase distances among the points of contact to the ground, i.e. among the rollers or wheels supported by the ground, by which some better stability can be obtained on the one hand and essentially worse maneuvering performances are to be taken into account on the other hand. Placing the wheels or rollers of the container even outside of the plan view of the container could of course result some additional effects in course of stability, which may however simultaneously also involve corresponding problems during moving the container and also during its use on the certain place when the user is moving intensively around the container.

The aforementioned problem is avoided by means of the solution of the invention offering a new concept of the container, by which simultaneously opening i.e. pulling-out of more than one drawer is prevented in an efficient manner, so that in case when certain drawer is opened i.e. pulled-out, opening or pulling-out any

other drawer(s) is prevented until the first mentioned drawer is returned in its original i.e. closed or pushed-in position. In such a manner also a relatively elongated and relatively high container provided by several horizontally in its transversal direction movable drawers loaded by hand tools of appropriate weight may be stable and prevented against turning over. A hand tool container according to the invention comprises a housing, in which several drawers are placed, which can be pulled-out respectively opened by moving in the horizontal direction, and is characterized by that within the said housing a beam is arranged, which is movable in the vertical direction and is moreover equipped with appropriate stoppers, by means of which and thanks also to appropriate protrusions available on the drawers any other pushed-in respectively closed drawer is prevented from being pulled-out or opening.

A preferred embodiment of the invention is characterized by that each drawer comprises at least one guide rail consisting of a part, which is inclined downwards in a direction of pulling out the drawers and equipped by a vertically downwards extending protrusion, as well as of a part extending horizontally in a direction of pushing-in the drawers. At least one roller is supported by each guide rail of each drawer and attached to the said beam. Moreover, the said beam is pulled downwards by means of appropriate spring and is moreover equipped with appropriate stoppers. At least one stopper is arranged adjacent to each belonging drawer in such a manner that pulling-out one drawer results in lifting the beam or more exactly its moving in a vertical direction upwards against the force of the said spring. In such a position the roller of the pulled-out drawer is located on the horizontally extending part of the belonging guide rail of the opened drawer. The stoppers on the beam belonging to any other of the closed respectively pushed-in drawers are located - when looking in a direction of pulling-out the drawers - in

front of the said protrusions of the guide rails belonging to the closed drawers, which are herewith in an efficient manner prevented from being opened respectively pulled-out.

Furthermore, it may be preferred when the said beam is embedded in the guide, especially in two guides, which are welded to the housing, and moreover, when the said stoppers are conceived as angle pieces and when the said spring is available as a tension spring, which is attached to the bottom plate of the housing, as well as when the guide rails comprising inclined parts with appropriate protrusions and horizontally extending parts are attached to the side walls of the drawers.

Now, the invention will be explained in more detail on the basis of an embodiment as shown in the accompanied drawings, where

Fig. 1 is a plan view of a mobile hand tool container, respectively its cross-section in the horizontal plane;

Fig. 2 is a front view of the container with pushed-in drawers, respectively its cross-section in the longitudinal horizontal plane.

Fig. 3 is a front view of the container after partially pulling-out one of its drawers, respectively its cross-section in the longitudinal horizontal plane; and

Fig. 4 is a front view of the container after pulling-out one of its drawers, respectively its cross-section in the longitudinal horizontal plane.

A mobile hand tool container (Fig. 1) mainly consists of an appropriate housing 1 and several corresponding drawers 2', 2". Within the said housing 1 there is placed a beam 4, which is movable in a vertical direction and is moreover by the shown embodiment embedded in a corresponding guide 3. Furthermore, at least one

stopper 7', 7" as well as at least one roller 5', 5" is arranged on the said beam 4 in the area of each belonging drawer 4; by the shown embodiment the number of the stoppers 7', 7" and the rollers 5', 5" corresponds exactly to the number of drawers 2', 2". Moreover, each drawer 2', 2" comprises a guide rail 6', 6", which is bent in such a manner that it is partially inclined and partially extends in a horizontal direction. Again, the number of guide rails 6', 6" by the embodiment as shown corresponds to the number of drawers 2', 2", and the guide rails 6', 6" are welded to belonging side walls 20', 20" of the drawers 2', 2".

By the present embodiment the stoppers 7', 7" are available in form of angle pieces or L-pieces and the movable beam 4 is freely inserted into the guide 3, which is welded to the housing 1. The movable beam 4 is attached to the housing 1 by means of a spring 8 and is more exactly by the shown embodiment attached to the bottom plate 10 of the housing 1 by means of a tension spring 8. Simple guide rails 6', 6" in form of bent plates are used by the shown embodiment, by which one part 61', 61" protruding in a direction of pulling-out the drawers 2', 2" is inclined towards the bottom plate 10 and equipped with a protrusion 62', 62 extending vertically downwards, while the rest part 63', 63" - extending in a direction of pushing-in the drawers 2', 2" - is arranged horizontally.

Fig. 2 shows a mobile hand tool container, by which all drawers 2', 2" are closed i.e. pushed-in. Here, the beam 4 is attached to the bottom plate 10 of the housing 1 by means of the said spring 8, and the rollers 5', 5" are supported by the inclined parts 61', 61" of the belonging guide rails 6', 6".

Fig. 3 shows a mobile hand tool container during opening i.e. pulling-out one of the drawers 2', 2", namely the drawer 2'. When pulling-out the drawer 2' (after



being moved e.g. for approximately three millimeters) the belonging guide rail 6' is moved simultaneously, so that the roller 5' of the drawer 2' is rolled along the inclined part 61' of the guide rail 6'. As the roller 5' is attached to the beam 4, during its moving also the beam 4 is moved in a direction vertically upwards and therefore in an opposite direction with respect to the force resulted by the said spring 8. When pulling-out the drawer 2' is continued, the roller 5' is rolled along the inclined part 61' of the guide rail 6' until it reaches the horizontally extending part 63' of the guide rail 6'. In this point any further moving of the beam 4 in a direction vertically upwards and therefore opposite to the direction of appropriate force available thanks to the spring 8 is excluded (Fig. 4). Whenever the beam 4 is placed in such a position, all the protrusions 62" belonging to any other drawers 2" are blocked by means of stoppers 7", so that pulling-out any other drawer 2" is obviously impossible.

In accordance with the present invention and also with its preferably embodiment each drawer 2', 2" is therefore equipped by at least one guide rail 6', 6" comprising a part 61', 61", which is inclined downwards in a direction of pulling-out the drawers 2', 2" and is moreover equipped with a vertically downwards extending protrusion 62', 62", and moreover a part 63', 63" extending horizontally in a direction of pulling-out the drawers 2', 2". By the said guide rail 6', 6" at least one roller 5', 5" is supported, which is attached to the beam 4, which is equipped by appropriate stoppers 7', 7" and arranged in the housing 1 in such a manner that it is movable in the vertical direction and moreover pulled downwards by means of appropriate spring 8. Each stopper 7', 7" is arranged adjacent to each belonging drawer 2', 2" in such a manner that by lifted or more exactly in a direction opposite to the force of the spring 8 moved beam 4, when the roller 5' of the actually opened respectively pulled-out drawer 2' is located on the horizontally extending part 63'

of the guide rail 6' of the opened drawer 4', all those stoppers 7" of the beam 4 belonging to the closed respectively pushed in drawers 2" are located - when looking in a direction of pulling out the drawers 2', 2" - in front of protrusions 62" of the guide rails 6" belonging to any other closed drawers 2", which are herewith strictly prevented from opening respectively pulling-out.

During pushing-in the drawer 2' the said roller 5' is moved along the inclined part 61' downwards, while the beam 4 is pulled towards the bottom plate 10 of the housing 1 by means of the said spring 8. Herewith also the said blocking effect on the vertically downwards extending protrusions 62" of the guide rails 6" achieved by means of stoppers 7" of the belonging closed respectively pushed-in drawers 2" is eliminated, so that whenever e.g. the opened respectively pulled-out drawer 2" is pushed-in respectively closed again, any other drawer 2" can be pulled-out respectively opened. According to the invention, the mobile hand tool container is therefore improved in such a manner, that by maintaining rationality of exploitation a complete interior of the container respectively its optimal storage capacity and moreover appropriate accessibility, by one already opened i.e. pulled-out drawer simultaneously pulling-out any other or even more drawers 2', 2" is strictly prevented until the pulled-out drawer 2' is returned back into its original i.e. closed position.

## PATENT CLAIMS

1. A mobile hand tool container comprising a housing (1), in which several drawers (2', 2'') are placed, which can be pulled-out respectively opened by moving in the horizontal direction, characterized in that within the said housing (1) a beam (4) is arranged, which is movable in the vertical direction and is moreover equipped with appropriate stoppers (7', 7''), by means of which and thanks also to appropriate protrusions (62', 62'') available on the drawers (2', 2'') any other pushed-in respectively closed drawer (2'') is prevented from being pulled-out or opened.

2. A mobile hand tool container according to Claim 1, characterized in that each drawer (2', 2'') comprises at least one guide rail (6', 6'') consisting of a part (61', 61''), which is inclined downwards in a direction of pulling-out the drawers (2', 2'') and equipped by a vertically downwards extended protrusion (62', 62''), as well as of a part (63', 63'') extending horizontally in a direction of pushing-in the drawers (2', 2''), where moreover by each guide rail (6', 6'') at least one roller (5', 5'') is supported being attached thereby to the said beam (4), which is arranged within the housing (1) and pulled downwards by means of appropriate spring (8) and is moreover equipped with appropriate stoppers (7', 7'') arranged adjacent to the belonging drawers (2', 2'') in such a manner that during pulling-out the corresponding drawer (2') and herewith by moving and lifting the beam (4) in a direction opposite to the force of the spring (8) and when the roller (5') of the pulled out-drawer (2') is located on the horizontally extending part (63') of the guide rail (6') of the said drawer (2'), all the stoppers (7'') of the said beam (4) belonging to the closed drawers (2'') are located - when looking in a direction of

puling-out the drawers (2', 2'') - in front of protrusions (62'') of the guide rails (6'') belonging to closed drawers (2''), which are herewith strictly prevented from being pulled-out.

3. A mobile hand tool container according to Claim 1 and/or 2, characterized in that the beam (4) is embedded in the guide (3).

4. A mobile hand tool container according to Claim 3, characterized in that two guides (3) are foreseen, which are welded to the housing (1).

5. A mobile hand tool container according to Claim 1 and/or 2, characterized in that the stoppers (7', 7'') are available in form of angle pieces, especially L-pieces..

6. A mobile hand tool container according to Claim 2, characterized in that the spring (8) is a tension spring, which is by its one end attached to the bottom plate (10) of the housing (1) and by its another end to the beam (4).

7. A mobile hand tool container according to Claim 1 and/or 2, characterized in that the guide rails (6', 6'') comprising inclined parts (61', 61'') with protrusions (62', 62) and horizontally extending parts (63', 63'') are attached to the side walls (20', 20'') of the drawers (2', 2'').

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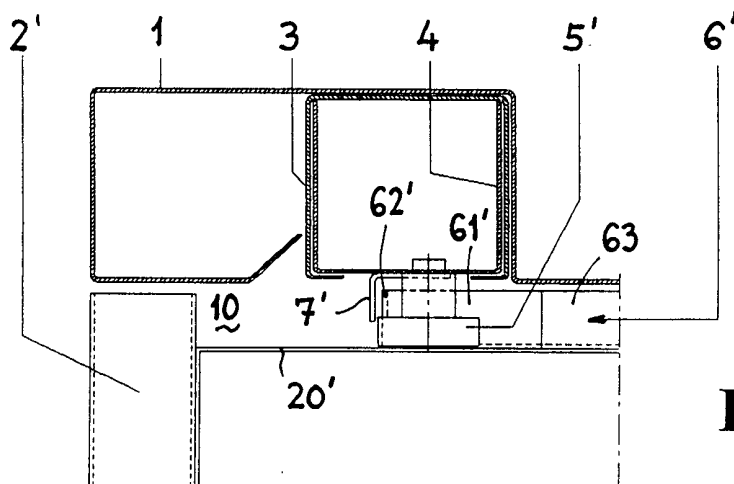


Fig. 1

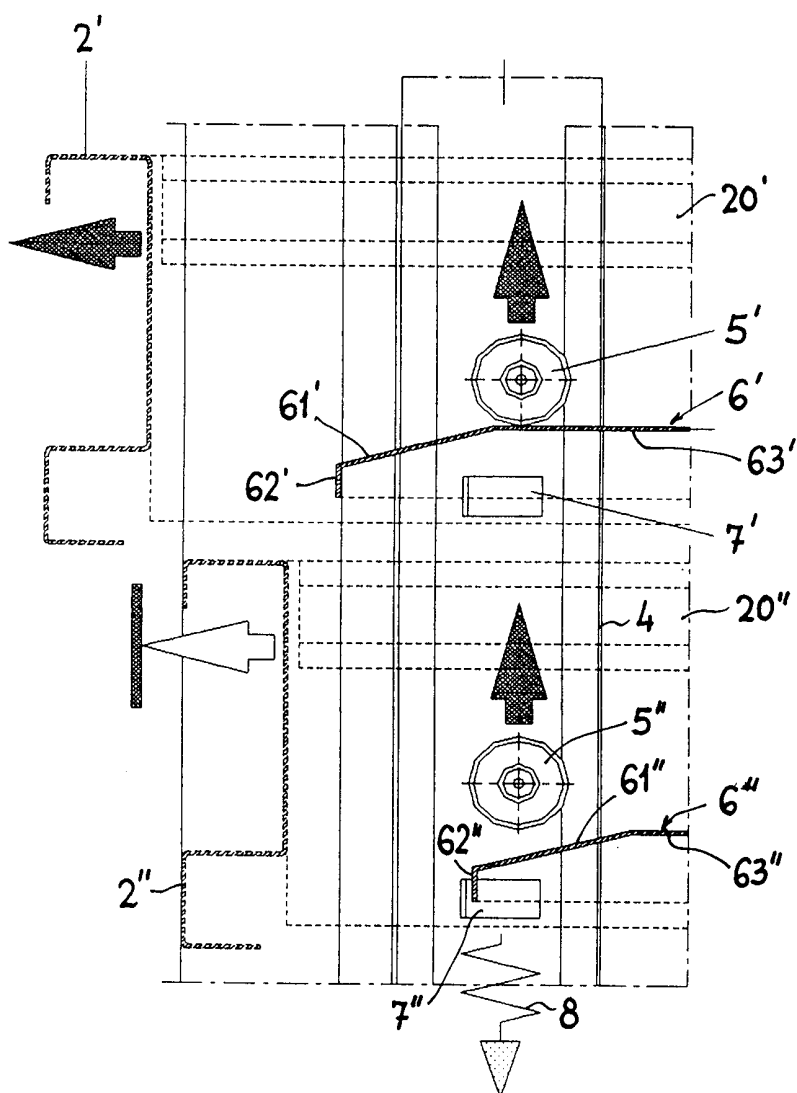


Fig. 4

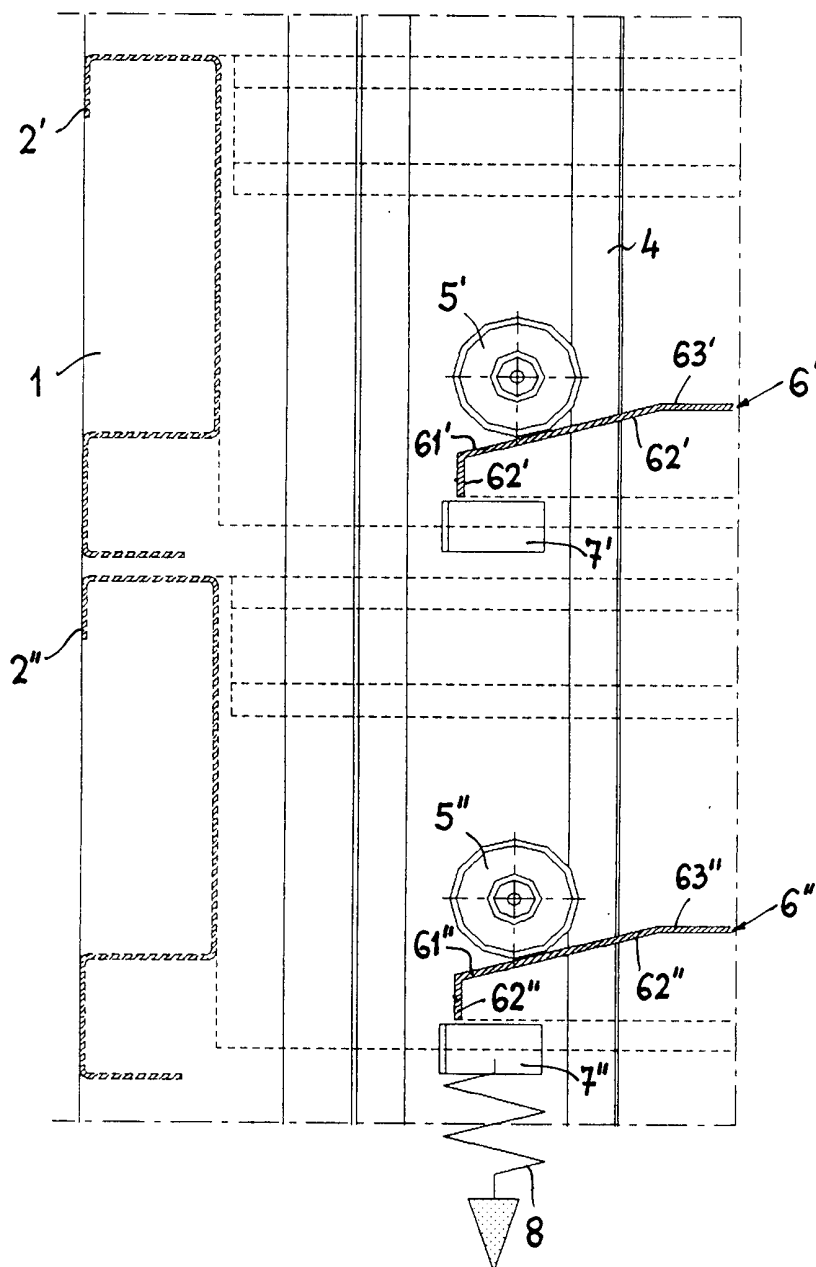
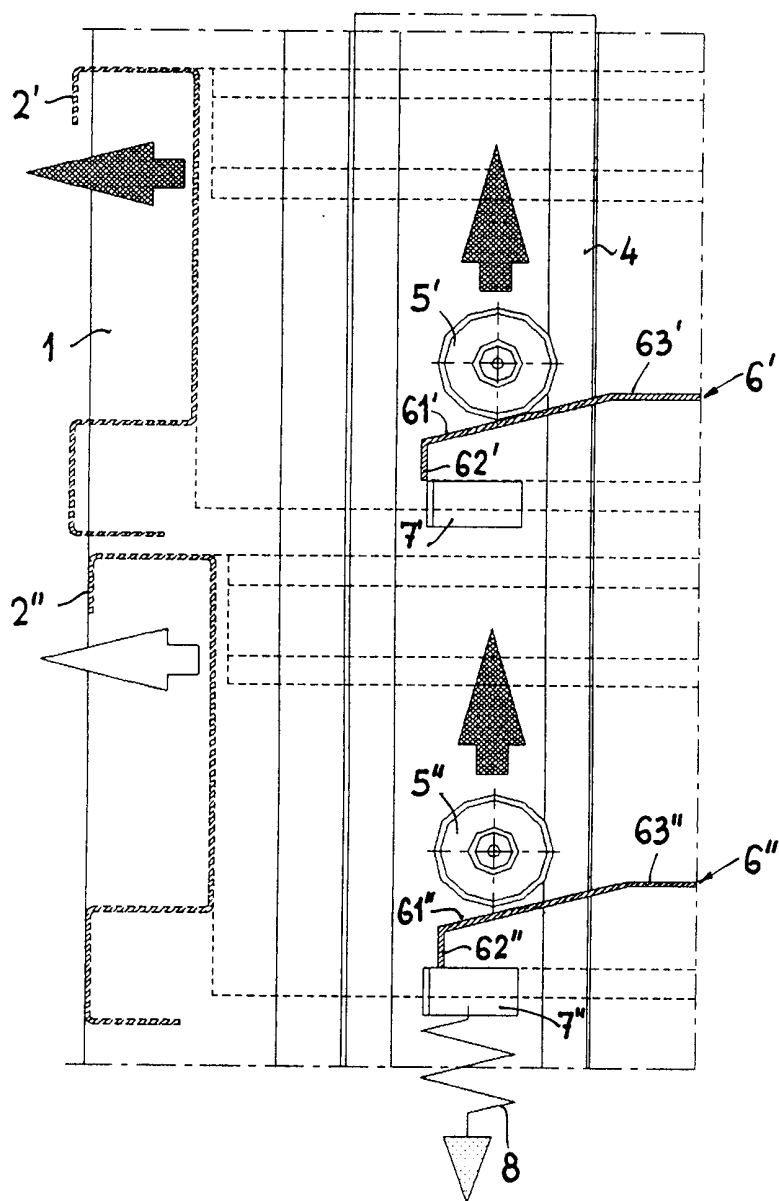


Fig. 2

**Fig. 3**

# INTERNATIONAL SEARCH REPORT

International Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages    | Relevant to claim No. |
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| X          | FR 2 523 631 A (JACQUES) 23 September 1983<br>see the whole document<br>---           | 1,2,5                 |
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|            | -/--                                                                                  |                       |



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Information on patent family members

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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                                                 | Publication<br>date                                                                                          |
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